ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

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Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
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HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

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To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

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Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
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8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

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W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
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W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

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Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

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Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
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W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

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Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

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Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

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Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
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References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

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Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
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Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
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WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

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Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

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Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

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* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

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ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

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Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

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Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

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Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
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* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
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Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

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Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
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Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
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Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

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Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
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Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
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MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
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Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
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MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
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Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

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1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

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C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
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Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

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W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
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W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
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W10: 3/18	Spring Break – No Class		
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W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
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W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

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Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

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Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

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Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

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Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
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References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

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Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

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Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
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Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
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Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
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WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

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Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

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Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

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* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

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ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

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Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

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Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

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Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
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Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
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Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
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* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

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Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
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Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
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Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
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Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
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WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
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References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

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Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
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Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

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Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
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Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
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Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
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MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
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Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
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Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
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WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

Grading

Grading will not necessarily be "on a curve." There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

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Note: the points and percentages given are approximations and may vary slightly

	Total Points	Percentage
Discussion Questions	100	25%
4 Assignments	100	25%
In class Discussion/Activities/Attendance	50	12.5%
Final Paper/Project & Presentation	150	37.5%
Total	**400**	**100%**

Grade Structure

Letter	Percentage
A	93.50-100.00
A-	90.00-93.49
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

Adjustment of letter grade: One can receive an **upward** adjustment of letter grade for a number of reasons (e.g. very strong improvement during the semester, notable participation during class, exceptional effort). Under no circumstances will a reduction in letter grade be given, and these adjustments are made after the normal grades are assigned and therefore affect no one else's letter grade.

Dropping the Course

You are responsible for managing your courses. If you need to drop without a "W" grade make sure you know the appropriate deadlines. This is your responsibility. If you miss the general drop date you will need a signature from me on the "Drop Form" if you drop the class after that date.

General Learning Objectives for Hawaiian, Asian, & Pacific Issue Classes

At the end of a course that fulfills the Hawaiian, Asian, and Pacific Issues Focus requirement, students will be able to:

HLO1: Explain the intersection of Native Hawaiian issues with Asian and/or Pacific Island issues.
HLO2: Analyze issues using the conceptual and ethical frameworks and practices of the cultural perspectives, values, and world views of the Indigenous peoples of Hawai'i, and the Pacific and/or Asia.
HLO3: Integrate the histories, cultures, beliefs, arts, social, political, economic, or technological processes in their analysis of Hawai'i, and the Pacific and/or Asia.
HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.

ATMO 102 – Pacific Climates and Cultures SPRING 2020

Instructor: Jennifer Griswold
Email: smalljen@hawaii.edu
Office Hours: TBA

Class Times: Mon-Wed-Fri 11:30-12:20
Class Location: HIG 311
Course Web address: http://jenniferdsmallphd.com/ATMO_102.html

Course Description
This course is designed to give you an overview of the interface between the observed Weather and Climate of the Pacific Island region and the past and future the culture of the peoples of the Pacific Islands. You will learn about the Earth's atmosphere, temperature, precipitation, winds, storm systems, hurricanes, tornadoes, air pollution, weather and agriculture, rainbows, and climate change. As we learn about each weather or climate topic we will view these natural phenomena through the cultural lenses of the native peoples of the Pacific region through the historical writings and poetry, music, dance and films of Native Hawaiian and Indigenous Pacific Islanders. You will also participate in activities and in-class experiences that will allow you to experience some of the cultural aspects (e.g. hula, poetry, etc.) each week of the course.

Basic Course and Classroom Conduct
1. Cell phones/iPods/etc. will remain off while in class or you will be asked to leave class.
2. Dropping the class is your responsibility. If you forget to drop the class formally, you will receive an F grade.
3. Cheating will result in a failing class grade.

Attendance Policy – 50 points (includes in class discussion and activities)
Attendance is mandatory and will be taken each class and counts towards your grade. Students not in attendance on the first day will be dropped as a "no-show" if there are waitlisted students. Due to in-class presentations and presentations by quest speakers and performers it is imperative that you attend class. If your ***excused*** absence prevents you from turning in an assignment on its due date then you must turn in the work at the beginning of the next class you attend.

Reading Assignments and Discussion Questions
In order to succeed in this class, reading should be considered an ongoing homework assignment. Completing reading assignments will prepare you for assignments and projects. There is no one book that is ideal for this type of cross discipline course. Therefore, all reading will be presented as pdf files on Laulima and on the class website.

In-Class Activities, Extra Credit, Surveys and Review Sessions
Throughout the course you will be asked for input regarding the various topics. You will need to participate during in-class activities and extra credit challenges that will take place throughout the semester. You will be expected to turn in proof of attendance (filling out worksheets or completing activities) to get participation credit.

Extra Credit -- ** There will be no extra credit offered to any individuals. No exceptions. **
I may give out extra credit work, but if I do, it will be available for *all* students in the class.

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HLO4: Demonstrate respect and empathy as defined by the Indigenous peoples of Hawai'i and the pacific and/or Asia in interpersonal and intergroup relationships.

Hallmarks of Hawaiian, Asian, & Pacific Issues Classes

To fulfill the Hawaiian, Asian, and Pacific Issues Focus requirement, at least two-thirds of a class must satisfy the following Hallmarks:

H1. The content should reflect the intersection of Asian and/or Pacific Island cultures with Native Hawaiian culture.
H2. A course can use any disciplinary or multi-disciplinary approach provided that a component of the course uses assignments or practica that encourage learning that comes from the cultural perspectives, values, and world views rooted in the experience of peoples indigenous to Hawai'i, the Pacific, and Asia.

H3. A course should include at least one topic that is crucial to an understanding of the histories, or cultures, or beliefs, or the arts, or the societal, or political, or economic, or technological processes of these regions; for example, the relationships of societal structures to the natural environment.

H4. A course should involve an in-depth analysis or understanding of the issues being studied in the hope of fostering multi-cultural respect and understanding.

Student Learning Objectives (SLOs): Upon completion of the course, the student should be able to:

** NOTE: "HAP" represents Hawaiian, Asian and Pacific.*

Pacific Island Culture and Environment SLOs

1. Identify key differences and similarities between Hawaiian and other Pacific Island Cultures.
2. Identify impacts of weather and climate on clothing style and development over time.
3. Describe they mythological representation of weather phenomena for a variety of Island peoples.
4. Describe the way in which clouds and cloud formation are represented in HAP mythologies
5. Describe how precipitation type, timing, and patterns are related to cultural events and agriculture.
6. Describe the how weather phenomena are incorporated in to the various dance forms of the Pacific Islands.
7. Identify examples of weather phenomena as represented in music, songs and chants.
8. Identify regional wind patterns and how they relate to the location of HAP cultures.
9. Describe the impact of weather on place names and wind names.
10. Describe the way in weather and ocean currents are related to inter-island travel in the pacific.
11. Describe how the ocean currents and wave shape/types played a role in the development of surfing.
12. Describe the historical and current implication of El Niño events in the Pacific.
13. Be able to generalize how storms and other large weather events are depicted by HAP cultures.
14. Understand and critically examine the social impacts typhoons and hurricanes in HAP cultures.
15. Describe air pollution concerns for the peoples of HAP cultures in the past and present.
16. Identify the ways in which optical effects (e.g. rainbows) are incorporated into HAP mythologies.
17. Describe how the general climate and micro climates of the various Pacific Islands impacted agriculture.
18. Identify the ways in which HAP cultures will be impacted by climate change and sea level rise.

Atmospheric and Environmental Science SLOs

1. Demonstrate a familiarity with the basic vocabulary of meteorology.
2. Demonstrate a familiarity with the geographic location of Hawaii and the Pacific Islands.
3. Describe how temperature changes horizontally and vertically in the atmosphere.
4. Describe and explain the origin, composition, structure, and behaviors of the earth's atmosphere.
5. Understand and analyze important environmental problems related to the Pacific atmosphere.
6. Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
7. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
8. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
9. Define a cold and warm front and explain the processes leading to the formation of each and also explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
10. Understand and describe the formation of thunderstorms, lightning and thunder.
11. Describe and analyze the changing climate in the past, present and future
12. Understand the impact that people have on the atmospheric environment.

13. Differentiate between global warming and the greenhouse effect.
14. Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
15. Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sun dogs, sun pillars, corona and glories.
16. Understand the various impacts and mitigation strategies for climate change and sea level rise in the Pacific region.

Lecture Topic Schedule and Reading Assignments

All reading material will be provided in PDF format through Laulima and the Class Website. Page assignments are subject to change as is schedule for field trips! Activities, Experiences, and Field Trips and Holidays are Shaded. Readings that are *italicized* are not required, but are suggested reading.

Week & Day	Topic	Weather Readings	Native Voice Readings
W1: 1/13	Welcome and Course Topics/Description	Lutgens & Tarbuck (2013: 4-7, 12-16) *Andrade (2008: 1-23)*	Alamedia (1997: 1-4) *Malo/Emerson (1951: 9-16)*
W1: 1/15	Intro to Islands	Menard (1986:1-3, 6-25)	Talu et al (1979: 1-6)
W1: 1/17	Activity/Experience – Ice Breaker and Class Bonding		
W2: 1/20	HOLIDAY – Martin Luther King Jr. Day – No Class		
W2: 1/22	Temperature and Clothing	MetEd Module (web link)	Keawe (2014: 12-33) *Hīroa (1944: 1-16), Holt (1997: TBD)*
W2: 1/24	Pacific Natural Environment	Kirch (2000: 42-62)	Hīroa (1924: 25-47) *Maynard (2010: 389-392)*
W3: 1/27	Activity/Experience – Clothing of the Pacific Islands		
W3: 1/29	Rising Air, Humidity & Clouds	Ackerman & Knox (2012: 98-126)	Pukui (1983: Various)
W3: 1/31	Pacific Ocean Clouds and Island Effects	*Oliveira (2014: 25-45)*	*Pukui (1995: 30-31; 103-104)*
W4: 2/3	Precipitation Processes and Types	Aguado & Burt (2013: 189-209)	Maikunu (1862: Newspaper) *Kamae (2005: DVD 60 min)*
W4: 2/5	Precipitation Across the Pacific	Current Precipitation Maps & Satellite Data (Real Time Images)	Kauraka (1987: 52); *Fanshawe (2001); Kanahele (2012: xli-xlix; 438-441)*
W4: 2/7	Activity/Experience – TBD (Hawaiian Music or other)		
W5: 2/10	Pressure and Wind	MetEd Module (web link) *Moran and Morgan (1997: 201-225)*	Alamedia (1997: 10-13); *Aloikeanu (1866: Newspaper)*
W5: 2/12	Global and Pacific Regional Patterns	Ahrens (2015: 201-218) *Caviedes (2001: 1-25)*	Finney (1994: 97-106; 202-254)
W5: 2/14	Activity/Experience – Hawaiian Navigation		
W6: 2/17	HOLIDAY – President's Day– No Class		
W6: 2/19	Local Winds	Caviedes (2001: 234-249)	Kuapu'u (1902: pg1) Ka Nupepa Kuokoa (1869)
W6: 2/21	Hawaiian and Pacific Island Winds and Travel	Finney (1994: 125-162)	Poliwela (1862:Newspaper) Kane (1997: 96-101)
W7: 2/24	Fronts and Mid-Latitude Storm Systems	Weather 2010 (weblink)	Pukui (1983: Various)
W7: 2/26	Historical Impacts of North Pacific Storms	Nakuina (2005: TBD)	Kauraka (1987: 10)
W7: 2/28	Activity/Experience – Poetry Writing in the Style of Pukui and Kauraka		
W8: 3/2	Ocean Currents and Waves	Press and Siever (1999: 418-435)	Finney (1959: 327-347) *Finney (1960: 314-331)*
W8: 3/4	Hawaiian and Pacific Island Currents & Waves	Kane (1976: TBD)	Clark (2011: 19-37)
W8: 3/6	NO CLASS – Dr. Griswold at at Meeting		
W9: 3/9	Thunderstorms & Tornadoes: Global vs. Pacific	Ahrens (2015: 287-328)	Ami (1860); Thomson (1988: 20-27)
W9: 3/11	Severe Weather in the Pacific	Haraguchi (1979: 32-37)	Poliwela (1862)
W9: 3/13	Activity/Experience – In-Class "Lightning" and "Hail"		
W10: 3/16	Spring Break – No Class		
W10: 3/18	Spring Break – No Class		
W10: 3/20	Spring Break – No Class		
W11: 3/23	Hurricane and Typhoon Formation	Weather 2010 (weblink)	O'Malley (1993: 1-5) *Hairama (1871)*

W11: 3/25	Case Studies of Historical and Recent Hurricanes and Typhoons	Longshore (2008: 231-233) Longshore (2008: 261-262)	Borg (1992: 3-6, 8-9, 17-23)
W11: 3/27	Activity/Experience – Visit Honolulu NWS to learn about Hawaiian Hurricane Tracking		
W12: 3/30	Air Pollution and Quality – City vs. Remote	Withgott & Brennan (2009: 288-301)	Ho'omanawanui (2014: xxii-xlix)
W12: 4/1	Pacific Air Pollution: Vog, Fires & Nuclear Tests	www.weather.hawaii.edu	Kane (1996: 13-17, 27-30)
W12: 4/3	Activity/Experience – TBA		
W13: 4/6	Atmospheric Optical Phenomena	Oliveira (2014: Chapter 65-93)	Kauraka (1987: 62) *Malo (1951: 264-266)*
W13: 4/8	Rainbows, Mirages and Cultural Contexts	Weather 2010 (weblink)	Thurm Nakuina 1907
W13: 4/10	Holiday – Good Friday – No Class		
W14: 4/13	Hawaiian Climate Types	Davey et al (2006: 11-18)	Liliuokalani 1878, Imada 2013
W14: 4/15	Pacific Island Climate Types	Davey et al (2006: 11-18)	Kirch (2010: 65-88)
W14: 4/17	Activity/Experience: Mapping Hawaii's Climate Zones		
W15: 4/20	Climate, Agriculture & History	Aalbersberg et al (1993: 7-26)	Yen (1961: 338-348)
W15: 4/22	Climate Change – Pacific Island Vulnerability	Keener, et al (2012: 65-87)	Aalbersberg et al (1993: 33-46)
W15: 4/24	Activity/Experience – How to open a Coconut with a rock!		
W16: 4/27	Sea Level Rise – Impacts & Mitigation in Pacific	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 4/29	Sea Level Rise – Impacts & Mitigation in Hawaii	IPCC (2014: 1616-1626)	Aalbersberg et al (1993: 53-57)
W16: 5/1	Activity/Experience – Saving the World from Climate Change		
W17: 5/4	**PRRESENTATIONS**		
W17: 5/6	**PRESENTATIONS – TURN IN FINAL PAPER DURING LAST CLASS**		

Reading Materials for Course

References: Native Hawaiian Voice

Alameida, R. K. (1997) *Stories of Old Hawaii*, The Bess Press, Inc., Honolulu: 118 pp.

Aloikeanu, D. A. K. (1866) *"Na Makani", Ke Au Okoa,* 7 May. (*Hawaiian Newspaper Clipping)

Ami (1860) He Mele no ka Haku Hawai*. Ka Hae Hawaii*, 25 July. (*Chant about Thunder for Prince Albert Kalanikauikeaoul, printed in Hawaiian Language Newspaper)

Andrade, Carlos (2008) *Through the Eyes of the Ancestors,* University of Hawai'i Press, Honolulu: 158 pp.

Clark, J. R. K. (2001) *Hawaiian Surfing: Traditions from the Past*, University of Hawai'i Press, Honolulu: 495 pp.

Finney, B. R. (1959) Surfing in ancient Hawaii, *The Journal of the Polynesian* Society, **68**, No. 4, pp. 327-347.

Finney, B. R. (1960) The development and diffusion of modern Hawaiian surfing, *The Journal of the Polynesian* Society, **69**, No. 4, pp. 314-331.

Hairama, D. U. (1871) *Ka Nupepa Kuokoa*, 26 August (*Letter to Hawaiian Language Newspaper about Hail)

Holt, J. D. (1997) *The Art of Featherwork in Old Hawai'i*, Ku Pa'a Pub; 2nd edition (June 1997): 176 pp.

Ho'omanawanui, K. (2014) *Voices of Fire: Reweaving the Literary Lei of Pele and Hi'iaka (First Peoples: New Directions in Indigenous Studies)*, University of Minnesota Press: 312 pp.

Imada, A.L., (2013) *"Aloha 'Oe": Settler-Colonial Nostalgia and the Genealogy of a Love Song*, American Indian Culture and Research Journal, 37:2.

Kamae, E. (2005) *Words, Earth & Aloha*, DVD, Hawaiian Legacy Foundation, 60 Min.

Kanahele, G. S. (2012) *Hawaiian Music and Musicians: An Encyclopedic History*, Mutual Pub Co; Rev Upd edition: 1040 pp.

Kane, H. K. (1976) *Voyage: The Discovery of Hawaii*, Island Heritage Limited: 117 pp.

Kane, H. K. (1996) *Pele Goddess of Hawai'i's Volcanoes*, The Kawainui Press, Captain Cook: 71 pp.

Kane, H. K. (1997) *Ancient Hawai'i*, The Kawainui Press, Captain Cook: 111 pp.

Ka Nupepa Kuokoa. 18 December 1869, pg. 3. (*Hawaiian Newspaper Clipping)

Ka Nupepa Kuokoa. 4 April 1971, pg. 2. (*Hawaiian Newspaper Clipping – stormy weather)

Ke Koo o Hawaii. 29 August 1883, pg. 5. (*Hawaiian Newspaper Clipping)

Keawe, Lia O'Neill, (2014) *Ike Ulana Lau Hala (Hawai'inuiakea)*, Univeristy of Hawai'i Press, Honolulu: 133 pp.

Kirch, P. V. ed. (2010) *Roots of Conflict: Soils, Agriculture, and Sociopolitical Complexity in Ancient Hawai'i*, School for Advanced Research Press, Santa Fe, New Mexico: 199 pp.

Kuapu'u, S. K. (1902) *Home Rula Repubalik*, 15 March 1902, pg.1. (*Hawaiian Newspaper Clipping)

Lili'oukalani, Queen (1878) *Alhoa 'Oe Lyrics*

Malo, D. (translated by N. B. Emerson) (1898/1951) *Hawaiian Antiquities*, Bishop Museum Press, Honolulu, Hawaii: 278 pp.

Maikunu, J. H. (1862) *Ka Nupepa Kuokoa*, 22 February. (*Hawaiian Newspaper Clipping)
Nakuina, M. K. (2005) *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Kuapaka'a*, Translated by Esther T. Mookini and Sara Nakoa, Revised edition, Kalamaku Press, Honolulu: 144 pp.
Oliveira, K.-A. R (2014) *Ancestral Places: Understanding Kanaka Geographies*, Oregon State University Press, Corvallis, 216 pp.
O'Malley, A. E. and Radke E. (1993) *Miracle of Iniki: Stories of Alha from the heart of Kaua'i,* Bess Press, Honolulu, 62 pp.
Poliwela, D. W. (1862) "Na Makani", *Ka Hoku o ka Pakipika*, 1 May. (*Hawaiian Newspaper Clipping)
Pukui, M. K. (1983) *'Olelo No'Eau Hawaiian Proverbs & Poetical Sayings*, Bishop Museum Press, Honolulu: 351 pp.
Pukui, M. K. & L. C. S. Green (1995) *Folktales of Hawaii: He mau Kaao Hawaii*, Bishop Museum Press, Honolulu: 160 pp.

Guest UH Manoa Faculty Speakers - Native Hawaiian Voice, Science, & Culture (Planned, May be Modified)

Ka'eo (Thomas) Duarte – Hydrology and Water Management

Rick Kaponowaiwaiola Barboza from Hui Ku Maoli Ola – Botany and Native Plants and Agriculture

References: Asian and Pacific Island Voice

Fanshawe, D. (2011) *World Music – Spirit of Micronesia*, Saydisc/Allegro Label, 37 tracks.
Kauraka, K. (1987) *Dreams of a Rainbow*, Mana Publications, Raotonga, Cook Islands: 82 pp.
Talu, Sister A. II, *et al.* (1979) *Kiribati: Aspects of History*, IPS: Extension Services, USP; Tarawa: 146 pp.
Yen, D. E. (1961) The adaptation of Kumara by the New Zealand Maori, *The Journal of the Polynesian Society*, **70**, No. 3, 338-348.

References: Intersection of Native Hawaiian, Asian and Pacific Island Cultures **

Finney, B. R. (1994) *Voyage of Rediscovery: A Cultural Odyssey through Polynesia*, University of California Press, Berkeley: pp. 401.
Hiroa, T. R. (1924) The evolution of Maori Clothing, *The Journal of the Polynesian Society*, **33**, No.129, pp. 24-47.
Hiroa, T. R. (1944) The local evolution of Hawaiian feather capes and cloaks, *The Journal of the Polynesian Society*, **53**, No. 1, pp. 1-16.
Maynard, M., *ed.* (2010) *Australia, New Zealand, and the Pacific Islands, Encyclopedia of World Dress and Fashion: Volume 7*, Oxford University Press, Oxford: 548 pp.

* Hawaiian language newspaper clippings are obtained through the outstanding effort of the Hawaiian Language Newspaper Translation Project, UH Sea Grant, http:seagrant.soest.hawaii.edu/Hawaiian-language-newspaper-translation-project. Also, the majority of newspaper clippings are taken from coursework lesson plans produced by Steven Businger, Sara DaSilva, Kapōmaika'i Stone, Iasona Ellinwood, Pauline W. U. Chiin available through Kahua A'o (http://manoa.hawaii.edu/kahuaao/atmospheric_sciences.html)

** Note that "Intersection" Readings as annotated here are ones that meet the intersection requirement by themselves. Throughout the course, the combination of readings covering similar topics in Hawaiian, Asian, and Pacific Cultures provide the "Intersection" required by the HAP focus.

Atmospheric and Environmental Science References

Aalbersberg, W, et al. eds. (1993) *Climate and Agriculture in the Pacific Islands: Future Perspectives*, Institute of Pacific Studies, Suva: 80 pp.
Aguado, E. and J. E. Burt (2013) *Understanding Weather and Climate*, 6th ed., Pearson, Boston, MA: 552 pp.
Ahrens, C. D. (2015) *Essentials of Meteorology: An Invitation to the Atmosphere*, 7th ed., Cengage, Australia: 525 pp.
Ackerman, S. A. and J. A. Knox (2012) *Meteorology: Understanding the Atmosphere*, 3rd ed., Jones & Bartlett Learning, LLC, Sudbury, MA: 578 pp.
Bohren, C. F. (2001) *Clouds in a Glass of Beer: Simple Experiments in Atmospheric Physics*, Dover Publications, Inc., Mineola, NY: 195 pp.
Borg, J. (1992) *Hurricane Iniki*, Mutual Publishing, Honoulu: 95 pp.

Caviedes, C. N. (2001) *El Niño in history: Storming Through the Ages*, University Press of Florida, Gainsville: 279 pp.
Davey, C. A., K.T. Redmond, and D. B. Simeral (2006) *Weather and Climate Inventory National Park Service Pacific Island Network*, US Department of the Interior, National Parks Service, Natural Resource Program Center, Colorado, Fort Collins: 99 pp.
IPCC, (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.) (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for The 2012 Pacific Islands Regional Climate Assessment*. Island Press, Washington, DC, 170 pp.
Kirch, P. V. (2000) *On the Road of the Winds: An archaeological History of the Pacific Islands before European Contact*, University of California Press, Berkeley, 424 pp.
Longshore, D. (2008) *Encyclopedia of Hurricanes, Typhoons, and Cyclones* , Facts on File Science Library, New York: 468 pp.
Lutgens, F. K. & E. J. Tarbuck (2013) *The Atmosphere: An Introduction to Meteorology*, Pearson, 12th ed., Boston: 506 pp.
Menard, H .W. (1987) *Islands*, W. H. Freeman & Co., Scientific American Books, New York: 230 pp.
MetEd Modules (2014) https://www.meted.ucar.edu/index.php , University Corporation for Atmospheric Research.
Moran, J. M. and M. D. Morgan (1997) *Meteorology: The Atmosphere and Science of Weather*, Prentice Hall, Upper Saddle River, NJ: 530 pp.
Haraguchi, P. (1979) *Weather in Hawaiian Waters*, Pacific Weather, Inc., Honolulu, 107 pp.
Press, F. and R. Siever, (1999) *Understanding Earth*, 2nd ed., W.H. Freeman and Company, New York: 682 pp.
Thompson, V. (1988) *Hawaiian Myths of Earth, Sea, and Sky*, University of Hawai'i Press, Honolulu: 83 pp.
Vog Measurement and Prediction (2014) http://weather.hawaii.edu/vmap/, Atmospheric Sciences Department, University of Hawaii at Manoa.
Withgott, J. and S. Brennan (2009) *Essential Environment*, 3rd ed., Pearson, San Francisco: 438 pp.
WW2010 (2010) Module on Fronts, http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/af/home.rxml, Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Hurricanes, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Mid-latitude Cyclones http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/cyc/home.rxml , Atmospheric Science Department, University of Illinois.
WW2010 (2010) Module on Atmospheric Optics and Light, http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/opt/home.rxml , Atmospheric Science Department, University of Illinois.