

ABBY G. FRAZIER

Curriculum Vitae

Assistant Professor
Graduate School of Geography
Clark University
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EDUCATION

- Ph.D., University of Hawai‘i at Mānoa, Geography. 2016
Dissertation Title: “The influence of large-scale modes of climate variability on spatiotemporal rainfall patterns and vegetation response in Hawai‘i”.
- M.A., University of Hawai‘i at Mānoa, Geography. 2012
- B.S. (cum laude), University of Vermont, Mathematics. 2008
- B.A. (magna cum laude), University of Vermont, Geography. Phi Beta Kappa. 2008

PROFESSIONAL EXPERIENCE

Assistant Professor, Clark University, Graduate School of Geography 2021 – present

Research Fellow, East-West Center, Research Program, Honolulu, HI 2018 – 2021

- Design and implement research projects on climate variability and extremes in the Asia-Pacific region. Lead interdisciplinary teams, including social scientists, agronomists, economists, and climate modelers. Contribute to NASA-funded rice project in Southeast Asia.
- Supervise post-doctoral researcher in Drought Knowledge Exchange project, Pacific Islands. Collaborate with local stakeholders and partners. Host workshops to assess stakeholder needs. Interview resource managers, develop outreach tools and data visualizations. Write grant proposals. Disseminate findings through peer-reviewed publications, reports, book chapters, and fact sheets.

Post-doctoral Research Geographer, USDA Forest Service, 2016 – 2018
Institute of Pacific Islands Forestry, Pacific Southwest Research Station, Hilo, HI

- Write synthesis report on drought in Hawai‘i. Lead geospatial analysis of new gridded drought index product. Contribute to national drought reports. Supervise undergraduate intern.
- Extensive outreach presentations at local and national conferences. Work with stakeholder groups to develop useful management tools. Write grant proposals to expand scope of work.

Graduate Research Assistant, University of Hawai‘i at Mānoa, 2009 – 2016
Department of Geography, Honolulu, HI

- Rainfall Atlas & Evapotranspiration Projects: Produce mean monthly rainfall grids and generate GIS layers of over 40 climate variables. Compile data and perform quality control, update rain gauge coordinates, learn VBA and R programming, present for funding agencies, write reports, format final maps, edit and help design website and interactive map, perform GIS analysis for new station locations. Supervise undergraduate students to perform coding and GIS tasks (python, R, and VBA).
- Forest Line Project: Hike up to 16 miles per day in rough terrain. Plan logistics for trips, coordinate with Haleakalā National Park on back-country protocols, and complete A-100 helicopter safety training. Collect GPS data; analyze and quality check sensor data; maintain climate stations and analyze data; aid in building sap flow sensors. Supervise undergraduate intern in invasive species field project.

GIS Analyst, Schlosser Geographic Systems, Inc., Seattle, WA **2008 – 2009**

- Learn MapInfo Professional GIS software, update and create map layers, work in customer service.
- Perform end-user testing of software.

GIS Technician, Vermont Forest, Parks and Recreation and University of Vermont **2008**
Transportation Research Center, Burlington, VT

- Work independently to digitize land parcels using orthophotos and scanned images, input attribute data, georeference scanned parcels, work with Regional Planning Commission to integrate existing database, train County Forester in digitizing procedure, troubleshoot coordinate problems and overlap issues.
- Perform spatial analysis functions for various transportation research projects. Independently learn TransCAD GIS software.

TEACHING, MENTORING, AND SUPERVISING EXPERIENCE

Lecturer – University of Hawai‘i at Mānoa, Dept. of Geography & Environment **2021**
- Sole instructor for GEO 600, online graduate level “Seminar in Climatology.”

Post-doctoral Supervisor – Research Fellow, East-West Center **2019 – 2021**
- Mentor and guide post-doc researcher in project development, writing grant proposals, and career advancement. Oversee project goals and ensure deliverables are met.

Affiliate Graduate Faculty – University of Hawai‘i at Mānoa, **2018 – present**
Department of Geography & Environment; Department of Earth Sciences
- Serve on master’s thesis committees for Kristen Sanfilippo and Theodore Brennis.
Bring in funding proposals as Lead Principal Investigator. Mentor students.
Participate in semester lecture series.

Lecturer – University of Hawai‘i at Mānoa, Department of Geography **2012-2013**
- Sole Instructor for Geography 101, “The Natural Environment.”
- Develop course content, prepare all lecture materials, assignments and exams.
- Grade all work and mentor students.

Guest Lecturer – University of Hawai‘i at Mānoa, various departments **2012 – present**
- Invited to give over 16 lectures in courses ranging from 100-level undergraduate to 600-level graduate seminars. Departments include: Geography, Botany, Maui College, Tropical Plant and Soil Science, Earth Sciences, and Natural Resources and Environmental Management.

Undergraduate Intern Supervisor

- 1 female student, University of British Columbia, *NCAR Daily Climate Maps* **2017, 2018**
- 1 female student, St. Olaf College, *Forest Line, Haleakalā National Park, Maui* **2015**
- 1 female student, University of Hawai‘i at Mānoa, *Rainfall Atlas update* **2013**
- 1 male student, University of Hawai‘i at Mānoa, *Evapotranspiration Project* **2013**

Peer Mentor for incoming graduate students, University of Hawai‘i at Mānoa, **2013-2016**
Department of Geography

Tutor – University of Hawai‘i at Mānoa, Department of Biology **2013-2014**
- Zoology 631, “Biometry” – graduate level statistics.

Teaching Assistant - University of Vermont, Burlington, VT,
- Geography Department: Geography 040, “Weather, Climate & Landscapes.” **2007-2008**
- Physics Department: Astronomy 005, “Exploring the Cosmos.” **2005-2008**

PUBLICATIONS
Peer-Reviewed

19. Cheng, C.L., Izuka, S., Kennedy, J.J., **Frazier, A.G.**, and Giambelluca, T.W. (2021). Water-Resource Management Monitoring Needs, State of Hawai‘i. *U.S. Geological Survey Scientific Investigations Report* 2020-5115, 114. <https://doi.org/10.3133/sir20205115>
18. Luo, X., Wang B., **Frazier A.G.**, and Giambelluca T.W. (2020). Distinguishing variability regimes of Hawaiian summer rainfall: Quasi-Biennial and interdecadal oscillations. *Geophysical Research Letters* 47, e2020GL091260. <https://doi.org/10.1029/2020GL091260>
17. Lucas, M.P., Trauernicht C., **Frazier A.G.**, and Miura T. (2020). Long-Term, Gridded Standardized Precipitation Index for Hawai‘i. *Data* 5(4), 109. <https://doi.org/10.3390/data5040109>
16. Grecni, Z., Miles, W., King, R., **Frazier, A.G.**, and Keener, V. (2020). Climate Change in Guam: Indicators and Considerations for Key Sectors. *Report for the Pacific Islands Regional Climate Assessment*. Honolulu, HI: East-West Center, <http://www.eastwestcenter.org/PIRCA-Guam>, doi: 10.5281/zenodo.4037481
15. Crausbay, S.D., Betancourt J., Bradford J., Cartwright J., Dennison W.C., Dunham J., Enquist C.A.F., **Frazier A.G.**, Hall K.R., Littell J.S., Luce C.H., Palmer R., Ramirez A.R., Rangwala I., Thompson L., Walsh B.M., and Carter S. (2020). Unfamiliar territory: emerging themes for ecological drought research and management. *One Earth* 3(3), 337-353. <https://doi.org/10.1016/j.oneear.2020.08.019>
14. **Frazier, A.G.**, Deenik J.L., Fujii N.D., Funderburk G.R., Giambelluca T.W., Giardina C.P., Helweg D.A., Keener V.W., Mair A., Marra J.J., McDaniel S., Ohye L.N., Oki D.S., Parsons E.W., Strauch A.M., and Trauernicht C. (2019). Managing Effects of Drought in Hawai‘i and U.S.-Affiliated Pacific Islands. *In*: Vose, J.M.; Peterson D.L.; Luce C.H.; Patel-Weynand T., eds. *Effects of Drought on Forests and Rangelands in the United States: Translating Science into Management Responses*. **Gen. Tech. Rep.** WO-98. Washington, DC: **U.S. Department of Agriculture Forest Service**, Washington Office. 95-121. Chapter 5. <https://www.fs.usda.gov/treearch/pubs/59164>
13. Longman, R.J., **Frazier A.G.**, Newman A.J., Giambelluca T.W., Schanzenbach D., Kagawa-Viviani A.K., Needham H.L., Arnold J.R., and Clark M.P. (2019). High-resolution gridded daily rainfall and temperature for the Hawaiian Islands (1990-2014). *Journal of Hydrometeorology* 20, 489-508. <https://doi.org/10.1175/JHM-D-18-0112.1>
12. Frauendorf, T.C., MacKenzie R.A., Tingley R.W., **Frazier A.G.**, Riney M.H., and El-Sabaawi R.W. (2019). Evaluating ecosystem effects of climate change on tropical island streams using high spatial and temporal sampling regimes. *Global Change Biology* 25(4), 1344-1357. <https://doi.org/10.1111/gcb.14584>
11. Mora, C., Spirandelli D., Franklin E.C., Lynham J., Kantar M.B., Miles W., Smith C.Z., Freil K., Moy J., Louis L.V., Barba E.W., Bettinger K., **Frazier A.G.**, Colburn IX J.F., Hanasaki N., Hawkins E., Hirabayashi Y., Knorr W., Little C.M., Emanuel K., Sheffield J., Patz J.A., and Hunter C.L. (2018). Broad threat to humanity from cumulative climate hazards intensified by greenhouse gas emissions. *Nature Climate Change* 8, 1062-1071. <https://doi.org/10.1038/s41558-018-0315-6>. (August 2021 citations from Google Scholar: 191)

10. Longman, R.J., Giambelluca T.W., Nullet M.A., **Frazier A.G.**, Kodama K., Crausbay S.D., Krushelnycky P.D., Cordell S., Clark M.P., Newman A.J., and Arnold J.R. (2018). Compilation of climate data from heterogeneous networks across the Hawaiian Islands. *Scientific Data* 5(180012). <https://doi.org/10.1175/JHM-D-18-0112.1>
9. **Frazier A.G.**, Elison Timm O., Giambelluca T.W., and Diaz H.F. (2018). The influence of ENSO, PDO and PNA on secular rainfall variations in Hawai'i. *Climate Dynamics* 51(5-6), 2127-2140. <https://doi.org/10.1007/s00382-017-4003-4>
8. **Frazier A.G.**, and Giambelluca T.W. (2017). Spatial trend analysis of Hawaiian rainfall from 1920 to 2012. *International Journal of Climatology* 37(5), 2522–2531. <https://doi.org/10.1002/joc.4862>
7. Krushelnycky, P.D., Starr F., Starr K., Longman R.J., **Frazier A.G.**, Loope L.L., and Giambelluca T.W. (2016). Change in trade wind inversion frequency implicated in the decline of an alpine plant. *Climate Change Responses* 3(1). <https://doi.org/10.1186/s40665-016-0015-2>
6. **Frazier A.G.**, Giambelluca T.W., Diaz H.F., and Needham H.L. (2016). Comparison of Geostatistical Methods to Spatially Interpolate Month-Year Rainfall for the Hawaiian Islands. *International Journal of Climatology* 36(3), 1459-1470. <https://doi.org/10.1002/joc.4437>
5. Mora C., **Frazier A.G.**, Longman R.J., Dacks R.S., Walton M.M., Tong E.J., Sanchez J.J., Kaiser L.R., Stender Y.O., Anderson J.M., Ambrosino C.M., Fernandez-Silva I., Giuseffi L.M., and Giambelluca T.W. (2014). Mora *et al.* reply. *Nature* 511, E5-E6. <https://doi.org/10.1038/nature13524>
4. Crausbay S.D., **Frazier A.G.**, Giambelluca T.W., Longman R.J., and Hotchkiss S.C. (2014). Moisture status during a strong El Niño explains a tropical montane cloud forest's upper limit. *Oecologia* 175, 273-284. <https://doi.org/10.1007/s00442-014-2888-8>
3. *Mora C., **Frazier A.G.**, Longman R.J., Dacks R.S., Walton M.M., Tong E.J., Sanchez J.J., Kaiser L.R., Stender Y.O., Anderson J.M., Ambrosino C.M., Fernandez-Silva I., Giuseffi L.M., and Giambelluca T.W. (2013). The projected timing of climate departure from recent variability. *Nature* 502, 183-187. <https://doi.org/10.1038/nature12540>
*Media coverage by *New York Times*, *Washington Post*, *LA Times*, *Global News*, *The Globe and Mail*, *Sydney Morning Herald*, *Scientific American*, *Wall Street Journal*, *Huffington Post*, and others. (August 2021 citations from Google Scholar: 646)
2. Giambelluca, T.W., Chen Q., **Frazier A.G.**, Price J.P., Chen Y.L., Chu P.S., Eischeid J.K., and Delparte D.M. (2013). Online Rainfall Atlas of Hawai'i. *Bulletin of the American Meteorological Society* 94, 313-316. <https://doi.org/10.1175/BAMS-D-11-00228.1> (August 2021 citations from Google Scholar: 713)
1. Longman R.J., Giambelluca T.W., and **Frazier A.G.** (2012). Modeling clear-sky solar radiation across a range of elevations in Hawai'i: Comparing the use of input parameters at different temporal resolutions. *Journal of Geophysical Research* 117, D02201. <https://doi.org/10.1029/2011JD016388>

Published Reports and Book Chapters

2. **Frazier, A.G.**, and Brewington L. Current changes in alpine ecosystems of Pacific Islands. (2020). In: Goldstein, M.I., DellaSala, D.A. (Eds.), **Encyclopedia of the World's Biomes**, vol. 1. Elsevier, pp. 607–619. <https://doi.org/10.1016/B978-0-12-409548-9.11881-0>

1. Giambelluca, T.W., Shuai X., Barnes M.L., Alliss R.J., Longman R.J., Miura T., Chen Q., **Frazier A.G.**, Mudd R.G., Cuo L., and Businger A.D. (2014). Evapotranspiration of Hawai‘i. Final report submitted to the US Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawai‘i. <http://evapotranspiration.geography.hawaii.edu/downloads.html>

Manuscripts in Review or Final Preparation

- Longman, R.J., Peterson, C.L., Baroli, M., **Frazier, A.G.**, Cook, Z., Parsons, E.W., Dinan, M., Kamelamela, K.L., Steele, C., Burnett, R., Swanston, C., and Giardina, C.P. Climate adaptation for tropical island land stewardship: Adapting a workshop planning process to Hawai‘i. *In Review*.
- Frazier, A.G.**, Giardina, C.P., Giambelluca, T.W., Brewington, L.B., Chen, Y.-L., Chu, P.-S., Fortini, L.B., Helweg, D.A., Keener, V.W., Lucas, M.P., Mair, A., Oki, D.S., Reyes, J.J., Yelenik, S.G., and Trauernicht, C. A century of spatial and temporal patterns of drought in Hawai‘i across hydrological, ecological, and socioeconomic scales. *In preparation*.
- Frazier, A.G.**, Yen, B.T., Stuecker, M.F., Nelson, K., Sander, B.O., Fox, J., Kantar, M.B., and Wang, D. Historical Climate Variability and Rice Production in Mainland Southeast Asia. *In preparation*.
- Selmants, P.C., Sleeter, B.M., Liu, J., Wilson, T.S., Trauernicht, C., **Frazier, A.G.**, and Asner, G.P. Ecosystem carbon balance in the Hawaiian Islands under different scenarios of future climate and land use change. *In preparation*.
- Lucas, M.P., Longman, R.J., Giambelluca, T.W., **Frazier, A.G.**, Mclean, J., Cleveland, S.B., and Lee, J.H. An automated kriging approach to spatially interpolate 30-years of monthly rainfall data in Hawai‘i. *In preparation*.
- Fortini, L.B., Kaiser, L.R., **Frazier, A.G.**, and Giambelluca, T.W. Evaluating and bias-correcting globally downscaled GCM climate projections for Hawai‘i climate impact studies. *In preparation*.

GRANTS, SCHOLARSHIPS, & FELLOWSHIPS:

- 2021 NOAA Climate Program Office, Regional Integrated Sciences and Assessments (RISA) program FY2021 proposal, February 2021, \$4,335,000 (pending). Principal Investigators: V. Keener, L. Brewington, M. Burkett, **A.G. Frazier**, et al. “*The Pacific RISA Phase IV: Building equitable and just climate solutions for Pacific Island resilience to compounding disasters and extreme events*”
- 2021 National Science Foundation (NSF) Major Research Instrumentation (MRI) proposal, January 2021, \$1,800,277 (pending). Principal Investigators: T. Giambelluca, A. Nugent, Y.-P. Tsang, **A.G. Frazier**, and D. Beilman. “*Acquisition of a Hawai‘i Statewide Mesonet*”
- 2021 NOAA National Weather Service proposal, January 2021, \$94,771 (funded). Principal Investigators: **A.G. Frazier**, T. Giambelluca, H. Diaz, R. Longman, and J. Marra. “*Routine Monitoring of Climate in the State of Hawai‘i: Establishment of State Climate Divisions*”
- 2020 UNEP Green Climate Fund proposal, November 2020, \$1,155,971 (funded). Principal Investigators: L. Brewington, J. Marra, J. Potemra, **A.G. Frazier**, and V. Keener.

- “Develop and implement climate early warning systems for health and drought in Palau and RMI”*
- 2020 Alaska – Pacific Islands Climate Adaptation Science Center proposal, August 2020, \$148,846 (funded). Principal Investigators: R. Lader, **A.G. Frazier**, and T. Giambelluca. *“Translating existing model results to aid in resource management planning for future precipitation extremes in Hawai‘i and Southeast Alaska”*
- 2020 Pacific Islands Climate Adaptation Science Center proposal, May 2020, \$173,697 (funded). Principal Investigators: **A.G. Frazier** and C.P. Giardina. *“Scaling up the Hawai‘i Drought Knowledge Exchange”*
- 2020 National Integrated Drought Information System (NIDIS) proposal, May 2020, \$137,629 (funded). Principal Investigators: **A.G. Frazier**, J. Marra, J. Potemra. *“NIDIS in Hawaii and the U.S. Affiliated Pacific Islands - Connecting with and Enhancing Existing Linkages to Support the Delivery of Drought and Freshwater-related Products and Services”*
- 2019 Pacific Islands Climate Adaptation Science Center proposal, April 2019, \$202,040 (funded). Principal Investigators: **A.G. Frazier**, C. Trauernicht, C.P. Giardina, and S. Cordell. *“Climate Change, Variability, and Drought in the U.S.-Affiliated Pacific Islands – Working with Managers to Mitigate the Impacts of Drought and Wildfire”*
- 2018 Pacific Islands Climate Adaptation Science Center proposal, May 2018, \$285,293 (funded). Principal Investigators: C.P. Giardina and **A.G. Frazier**. *“Co-production of drought analyses with managers of National Park and US Fish and Wildlife Service natural resources in Hawai‘i”*
- 2018 USDA Climate Hub proposal, April 2017, \$40,000 (not funded). Principal Investigators: C.P. Giardina, **A.G. Frazier**, and T.W. Giambelluca. *“Management co-production of drought products in Hawaii: A pilot project”*
- 2018 USDA Forest Service, Western Wildlands Environmental Threat Assessment Center, March 2018, \$120,000 (not funded). Principal Investigators: **A.G. Frazier**, C.P. Giardina, and T.W. Giambelluca. *“Ecological Vulnerability to Drought in Hawaii”*
- 2017 USDA Climate Hub proposal, April 2017, \$40,000 (funded). Principal Investigators: C.P. Giardina, **A.G. Frazier**, and T.W. Giambelluca. *“Ecological Vulnerability to Drought and Wildfire – a Retrospective Analysis”*
- 2017 Strategic Environmental Research and Development Program (SERDP) pre-proposal, January 2017, \$1,196,000 (not funded). Principal Investigators: **A.G. Frazier** and C.P. Giardina. *“An Ecosystem Management Decision Support Tool to Assess and Manage Wildfire Vulnerability and Water Resources under Climate Variability and Change”*
- 2015 Great Lakes National Scholarship for STEM students (\$2,500)
- 2014-15 Graduate Student Organization of University of Hawai‘i at Mānoa Travel Awards
- 2013 Hawai‘i Geographic Information Coordinating Council (HIGICC) Mark Lierman Memorial Scholarship (\$1,000)
- 2013 U.S. Geospatial Intelligence Foundation (USGIF) Scholarship (\$5,000)

AWARDS & HONORS

- 2016 Best Presentation at the Geography Symposium, University of Hawai‘i at Mānoa
- 2015 American Geophysical Union (AGU) Outstanding Student Paper Award (OSPA) Winner – Hydrology Section, Fall Meeting 2015
- 2014 Award for Best Graduate Student Publication, UH Mānoa Department of Geography
- 2012 H. J. Wiens Memorial Award for a graduating MA or PhD student, University of Hawai‘i at Mānoa Department of Geography

PROFESSIONAL PRESENTATIONS

Conferences & Meetings

2021. **Frazier, A.G.**, Giardina, C.P., and Longman, R.J. The Pacific Drought Knowledge Exchange. International Tropical Islands Water Conference, April 12-15, *virtual*.
2021. **Frazier, A.G.**, and Giardina, C.P. A century of spatial and temporal patterns of drought in Hawai‘i across hydrological, ecological, and socioeconomic scales. American Association of Geographers (AAG) Annual Meeting. April 7-11, *virtual*.
2021. **Frazier, A.G.** Longman, R.J., Giardina, C.P., Parsons, E., McDaniel, S., Kunz, M., Keener, V.W., Brewington, L., and Johnson, M.V. The Hawai‘i Drought Knowledge Exchange: Co-Producing Site-Specific Climate and Drought Portfolios with Resource Managers. American Meteorological Society (AMS) Annual Meeting. Jan. 11, *virtual*.
2020. **Frazier, A.G.** Stuecker, M.F., Nelson, K., Yen, B.T., Sander, B.O., Fox, J.M., Promkhambut, A., Kantar, M.B., and Wang, D.R. Climate Variability and Rice Production in Mainland Southeast Asia. American Geophysical Union (AGU) Fall Meeting. Dec. 11, *virtual*.
2020. (*invited*) **Frazier, A.G.** Drought Knowledge Exchange in the Pacific Islands. Pacific Islands Climate Adaptation Science Summit. November 17-18, *virtual*.
2020. **Frazier, A.G.** Geospatial Climatology. UH Mānoa Water Resources Research Center / ‘Ike Wai Freshwater Stakeholder Workshop. February 20.
2019. **Frazier, A.G.** and Brewington, L. Current Changes in Alpine Ecosystems of Pacific Islands. American Geophysical Union (AGU) Fall Meeting. Dec. 12, San Francisco, CA.
2019. **Frazier, A.G.** Processing and Transforming Downscaled Climate Projections for Users in Hawai‘i. American Geophysical Union (AGU) Fall Meeting. Dec. 11, San Francisco, CA.
2019. (*invited*) **Frazier, A.G.** Drought and Climate Variability: Impacts on Nearshore Environments in the Pacific Islands. Jon Van Dyke Institute – Korea Institute of Ocean Science and Technology Conference on Ocean Science, Ocean Policy and Sustainability in the Pacific and East Asia. Sept. 20, Honolulu, HI.
2019. **Frazier, A.G.** Drought and Rainfall in the Pacific Islands. Pacific Islands Forestry Professionals Workshop. April 19, Honolulu, HI.
2019. **Frazier, A.G.** Historical rainfall trends and future projections for Hawai‘i. Pacific Water Conference. February 20, Honolulu, HI.
2018. **Frazier, A.G.** and Giardina, C.P. Drought Impacts and Management in Hawai‘i and the U.S.-Affiliated Pacific Islands: A Multi-Sector Synthesis. American Geophysical Union (AGU) Fall Meeting. Dec. 13, Washington D.C.
2018. **Frazier, A.G.** Climate Variability in the Pacific: Temporal & Spatial Considerations for Drought. Pacific Islands Climate Adaptation Science Center Workshop on Drought in the USAPI - Impacts, Resilience, and Management. August 15, Honolulu, HI.

2018. **Frazier, A.G.**, Giardina, C., Helweg, D., Giambelluca, T., Lucas, M., Trauernicht, C., and Miura, T. Hawaii Drought Synthesis. Hawaii Conservation Conference. July 26, Honolulu, HI.
2018. **Frazier, A.G.** Ecological Drought Workshop and Upcoming Drought Products for Hawai'i. Hawai'i Ecosystems Meeting. June 26, Hilo, HI.
2017. **Frazier, A.G.**, Lucas, M., Giardina, C., Giambelluca, T., Trauernicht, C., and Miura, T. Analysis of Gridded SPI in Hawai'i from 1920 to 2012 and Management Responses to Drought. American Geophysical Union (AGU) **Fall Meeting**. Dec. 13, New Orleans, LA.
2017. (*invited*) **Frazier, A.G.** Rainfall Variability and Drought in the Hawaiian Islands. National Climate Change and Wildlife Science Center Ecological Drought, **USGS Webinar Series**. Sept. 19.
2017. (*invited*) **Frazier, A.G.** Geospatial Climate products for Hawai'i. National Oceanic and Atmospheric Administration (NOAA) GIS mini-symposium. Sept. 6, Honolulu, HI.
2017. **Frazier, A.G.** Analyzing gridded SPI in Hawai'i from 1920 to 2012: A comprehensive drought synthesis. Hawai'i Ecosystems Meeting. June 30, Hilo, HI.
2017. **Frazier, A.G.** Drought in the Hawaiian Islands. Forest Service Seminar. June 19, Washington D.C.
2017. **Frazier, A.G.** Drought in Hawai'i: State of the Science and Current Efforts. Workshop on Using High Resolution Paleoclimate Reconstructions Since AD 1500 in Support of Research on Environmental/Societal Change in Hawai'i. June 1, Honolulu, HI.
2017. (*invited*) **Frazier, A.G.** Drought in Hawai'i: State of the Science. National Climate Change and Wildlife Science Center (NCCWSC) / Climate Science Center (CSC) Workshop "Ecological Drought in the main Hawaiian Islands". March 7, Honolulu, HI.
- 2016*. **Frazier, A.G.**, Crausbay, S., Brewington, L., and Giambelluca, T. Characterizing Drought and Vegetation Response at the Forest Line in Hawai'i. Presented at:
 -American Geophysical Union (AGU) **Fall Meeting**. Dec. 13, San Francisco, CA.
 -Pacific Islands Climate Science Center Symposium. May 10, Honolulu, HI.
 -*University of Hawai'i at Mānoa Department of Geography Symposium. May 6.
 ***Winner – Best Presentation**
- 2015*. **Frazier, A.G.** and Giambelluca, T. Rainfall Trends through Time: A Running Trend Analysis of Hawaiian Rainfall. Presented at:
 -American Geophysical Union (AGU) **Fall Meeting**. Dec.15, San Francisco, CA.
 ***Winner – AGU Outstanding Student Paper Award**
 -Hawai'i Ecosystems Meeting. July 9, Hilo, HI.
 -University of Hawai'i at Mānoa Department of Geography Inaugural Symposium. May 7.
2015. Crausbay, S., **Frazier, A.G.**, Miyazawa, Y., and Giambelluca, T. Does drought determine the upper limit of cloud forest? Pacific Islands Climate Science Center (PICSC) Climate Science Symposium. February 26, Honolulu, HI.
2014. **Frazier, A.G.**, Elison Timm, O., and Giambelluca, T. The influence of ENSO and PDO on secular rainfall variations in Hawai'i. American Geophysical Union (AGU) **Fall Meeting**. Dec. 18, San Francisco, CA.
2014. (*invited*) **Frazier, A.G.**, Mora, C., and others. The projected timing of climate departure from recent variability. **Sonoma Technology, Inc. (STi) Webinar**. Sept. 11.
2014. (*invited*) **Frazier, A.G.** Mapping Hawaiian Rainfall Trends since 1920. Pacific Islands Climate Change Cooperative (PICCC) **Webinar Series**, August 21.
2013. **Frazier, A.G.** and Giambelluca, T. Mapping Hawaiian Rainfall Trends. Presented at:
 -Hawai'i Ecosystems Meeting. June 26, 2014, Hilo, HI.
 -American Geophysical Union (AGU) **Fall Meeting**. Dec. 12, San Francisco, CA.
 -Association of American Geographers (AAG) **Annual Meeting**. April 9, Los Angeles, CA.

2012. **Frazier, A.G.**, Giambelluca, T., and Diaz, H. Spatial rainfall patterns of ENSO and PDO in Hawai‘i. American Geophysical Union (AGU) **Fall Meeting**. Dec. 3, San Francisco, CA.
2012. **Frazier, A.G.**, Giambelluca, T., Chen, Q., Delparte, D., and Price, J. Online Rainfall Atlas of Hawai‘i. Hawai‘i Pacific GIS Conference. March 5, Honolulu, HI.
2011. **Frazier, A.G.** Rainfall in Hawai‘i: Month-year maps and trend analysis from 1920-2007. American Geophysical Union (AGU) **Fall Meeting**. Dec. 6, San Francisco, CA.
2011. **Frazier, A.G.** Rainfall Atlas of Hawai‘i. Hawai‘i Ecosystems Meeting. June 30, Hilo, HI.
2010. **Frazier, A.G.**, Giambelluca, T., and Diaz, H. Month-Year Rainfall Maps of the Hawaiian Islands.
-American Geophysical Union (AGU) **Fall Meeting**. Dec. 17, San Francisco, CA.
-Hawai‘i Ecosystems Meeting. July 8, Hilo, HI.

Local or Departmental Talks

2021. (*invited*) **Frazier, A.G.** Geospatial Climatology: Supporting Climate Change Decision Making Across Scales. North Carolina State University, State Climate Office Seminar. January 25.
2021. (*invited*) **Frazier, A.G.** Geospatial Climatology: Supporting Climate Change Decision Making Across Scales. Clark University, Department of Geography Seminar. January 14.
2020. (*invited*) **Frazier, A.G.** Climate and Drought in Hawai‘i. Windward Community College TRiO Upward Bound STEM Program for high school students. June 9, *virtual*.
2020. **Frazier, A.G.**, Giardina, C.P., and Longman, R.J. Drought Knowledge Exchange in Hawai‘i. Presented at:
-Drought & Carbon Stakeholder Meeting, Division of Forestry and Wildlife, Oct. 29, *virtual*.
-Drought Stakeholder Meeting, Mauna Kahālāwai Watershed Partnership, July 14, *virtual*.
-Drought Stakeholder Meeting, Haleakalā National Park, May 21, *virtual*.
-Drought Stakeholder Meeting, Kamehameha Schools, Apr. 23, *virtual*.
-Drought Stakeholder Meeting, Pu‘u Wa‘awa‘a Forest Reserve, Feb. 27, Kailua-Kona, HI.
-Drought Stakeholder Meeting, Hawai‘i Volcanoes National Park, Feb. 26, Volcano, HI.
-Envisioning a Regional Drought Learning Network Meeting, USDA Southwest Climate Hub, Feb. 11, Las Cruces, NM.
2020. **Frazier, A.G.** Drought & Climate Variability in the Pacific Islands. Pacific Islands Development Program (PIDP) Assessment, East-West Center. February 28.
2020. (*invited*) **Frazier, A.G.** Geospatial Climatology: Supporting Climate Change Decision Making Across Scales. Syracuse University, Department of Geography Seminar. February 7.
2019. **Frazier, A.G.** Using GIS in Climate Data Analysis. UH Mānoa Hamilton Library GIS Day, November 11.
2019. **Frazier, A.G.** Supporting Climate Change Decision Making: Data Transformation and Knowledge Exchange with Resource Managers in the Pacific Islands. UH Mānoa ‘Ike Wai – Water Resources Research Center (WRRC) Seminar. October 8.
2019. **Frazier, A.G.** Drought Knowledge Exchange in Hawai‘i and the U.S.-Affiliated Pacific Islands. UH Mānoa Department of Natural Resources and Environmental Management Seminar. September 11.
2019. (*invited*) **Frazier, A.G.** Climate Change in Hawai‘i: Trends and Impacts. Department of Defense (DoD) Natural Resource Compliance course. June 20, Marine Corps Base Hawai‘i.
2019. **Frazier, A.G.** Geospatial Analysis of Climate Variability in the Pacific: Drought Impacts and Management. East-West Center Noon Seminar. March 19, Honolulu, HI.
2018. **Frazier, A.G.** Drought Impacts and Management in Hawai‘i and the U.S.-Affiliated Pacific Islands: A Multi-Sector Synthesis. UH Mānoa Department of Geography and Environment Seminar. Nov. 1.

2018. **Frazier, A.G.** Spatiotemporal rainfall patterns in Hawai‘i and the influence of large-scale modes of climate variability. UH Mānoa Department of Atmospheric Sciences Seminar. Oct. 3.
2018. (*invited*) **Frazier, A.G.** SeaGrant’s Voice of the Sea TV, Season 5 Episode 8: “Climate from the Mountains to the Past.” June 13. https://www.youtube.com/watch?v=VZW5E_zLzHs
2017. (*invited*) **Frazier, A.G.** Climate Change Impacts in Hawai‘i. Keynote Speaker, Environment Hawai‘i Annual Dinner. October 20, Hilo, HI.
2017. (*invited*) **Frazier, A.G.** Rainfall Variability and Drought in the Hawaiian Islands. Hawai‘i Drought Council Meeting. October 16, Honolulu, HI.
2017. **Frazier, A.G.** Climate of Hawaii. Hawaii Extension Climate Forum. June 7, Honolulu, HI.
2017. (*invited*) **Frazier, A.G.** Climate Change in Hawai‘i. Department of Defense (DoD) Natural Resource Compliance course. May 5, Marine Corps Base Hawai‘i.
2016. (*invited*) **Frazier, A.G.** Climate Change Impacts in Hawai‘i. West Hawai‘i Forum: Hawai‘i’s Climate Change Challenge, November 17, Kailua-Kona, HI.
2016. **Frazier, A.G.**, Crausbay, S., Brewington, L., and Giambelluca, T.W. Characterizing Drought and Vegetation Response at the Forest Line. USDA Forest Service Institute of Pacific Islands Forestry Seminar, November 16, Hilo, HI.
2014. (*invited*) **Frazier, A.G.** Mapping Hawai‘i’s Water Resources – Hawai‘i’s new Evapotranspiration, Solar, and Climate websites. ThinkTech Hawaii TV, July 7, Honolulu, HI.
2013. Mora, C., **Frazier, A.G.**, Dacks, R., Walton, M., and Kaiser, L. The projected timing of climate departure from recent variability. Presented at:
 -Joint Institute for Marine and Atmospheric Research Symposium, Nov. 19, Honolulu, HI.
 -University of Hawai‘i Leeward Community College Seminar. Oct. 24, Pearl City, HI.
 -University of Hawai‘i at Mānoa Department of Biology Seminar Series. Oct. 11.
2013. **Frazier, A.G.** Spatial rainfall patterns of ENSO and PDO in Hawai‘i. US-Japan Joint Seminar on Catchment Hydrology and Forest Biogeochemistry. March 5, Honolulu, HI.
2013. **Frazier, A.G.** The Changing Spatial Patterns of Hawaiian Rainfall: Identifying the fingerprints of ENSO, PDO, and Climate Change. University of Hawai‘i at Mānoa Department of Meteorology Seminar Series. February 27.
2012. **Frazier, A.G.** Rainfall in Hawai‘i: Month-year maps and trend analysis from 1920-2007. University of Hawai‘i at Mānoa Department of Geography Lecture Series. April 12.

SERVICE & MEETINGS

Chapter Lead Author, 5 th National Climate Assessment, USGCRP	2021 – present
Serve on dissertation committee, Department of Geography and Environment, University of Hawai‘i at Mānoa.	2021 – present
Serve on master’s thesis committee, Department of Earth Sciences, University of Hawai‘i at Mānoa.	2020 – present
Technical Contributor, Pacific Islands Regional Climate Assessment (PIRCA).	2020 – present
Serve on USDA Southwest Climate Hub advisory committee.	2019 – present
Abstract Reviewer, East-West Center Graduate Student Conference.	2019 – present
Serve on Pacific Strategy Group advisory team, East-West Center.	2019 – present
Serve on master’s thesis committee, Department of Geography and Environment, University of Hawai‘i at Mānoa.	2019 – present

- Reviewer: *IPCC AR6, International Journal of Climatology, Water, Nature, Journal of Hydrometeorology, Remote Sensing, Physical Geography, Nature Scientific Reports, EcoAdapt, Journal of Environmental Informatics Letters, USGS, Journal of Hydrology, Journal of Applied Meteorology & Climatology.* 2016 – present
- 4th National Climate Assessment Technical Contributor, Pacific Islands Chapter. 2017
- Technical Team for Climate Change Monitoring Network proposal, Pacific Islands Climate Change Cooperative (PICCC). 2016 – 2017
- Provide GIS support for USDA Forest Service Stewardship Mapping project. 2016 – 2017
- Student representative to Graduate Admissions Committee, UHM Geography. 2012
- Maintain Rainfall Atlas of Hawai‘i & ET websites; respond to email inquiries. 2011 – present
- Volunteer: 2012 – 2014
 Regional Climate Change and Environmental Response in Hawai‘i Workshop, 2014; HaleNet Climate Network 25th Anniversary Meeting, 2013; Pacific Island Regional Climate Assessment (PIRCA) Forum, 2012; Hawai‘i Pacific GIS conference, 2012.
- Graduate Student Organization (GSO) representative for UHM Geography. 2010-2011

Conference Sessions and Workshops Organized/Chaired

2021. American Association of Geographers (AAG) Annual Meeting. Title: “Drought: Multi-Sector Dynamics, Impacts, and Adaptation.” Organizers: A.G. Frazier and R.J. Longman. April 7-11, *virtual*.
2020. Writing an Effective Conference Abstract & Non-Technical Summary. Workshop hosted by the 2021 International Graduate Student Conference at the East-West Center. Workshop Instructor: A.G. Frazier. September 9, *virtual*.
2020. Two Workshops, Titled: “Drought Monitoring / Drought Knowledge Exchange”, Kahului, Maui, April 7-8, 2020*; Hilo, Hawai‘i Island, April 9-10, 2020*. Co-Sponsors: National Drought Mitigation Center (NDMC), and USDA Southwest Climate Hub. Conveners: B. Fuchs, E. Elias, C. Giardina, A.G. Frazier, C. Trauernicht, C. Steele, and T. Bernadt. **Postponed due to COVID-19*
2019. Workshop Title: “Drought Stories from Hawai‘i: A Workshop on Drought Recovery”, Honolulu, HI; July 23, 2019. Co-Sponsors: NOAA NCEI (National Centers for Environmental Information) and NIDIS (National Integrated Drought Information System). Conveners: M. Kruk, A.G. Frazier, J.J. Marra, and R. Heim.
2019. Workshop Title: “Pacific Islands Forestry Professionals Workshop”, Honolulu, HI; April 15-18, 2019. Session Title: “Drought and Fire: Learning from Pacific Fire Exchange”. Co-Sponsors: USDA Forest Service, Council of Western State Foresters. Conveners: C. Trauernicht, A.G. Frazier, S. Cordell, M. Kunz, and C.P. Giardina.
2018. Workshop Title: “Drought in the USAPI - Impacts, Resilience, and Management”, Honolulu, HI, August 14-15, 2018. Co-Sponsors: U.S. Geological Survey National Climate Adaptation Science Center, the Department of the Interior Pacific Islands Climate Adaptation Science Center, and the USDA Institute of Pacific Islands Forestry.
2018. Hawai‘i Conservation Conference Symposium, Honolulu, HI. Title: “Drought in Hawai‘i: State of the Science and Management across Sectors”. Primary Convener: A.G. Frazier.

2017. American Geophysical Union (AGU) Fall Meeting, New Orleans, LA. Title: "H34D: Tropical Drought, Floodplains and Ecological Sustainability". Primary Convener: A.G. Frazier. Co-Conveners: T. Giambelluca, and T. Sinha.

Invited Meeting Participant: Serve as an expert panelist and participant in working group discussions and workshops.

2019 **Juneau, AK.** Alaska & Pacific Islands Climate Adaptation Science Centers, Collaboration Meeting. Oct. 22-23. Discussion and planning of a summer student exchange.

2019 **Honolulu, HI.** Australian-American Leadership Dialogue. Oct. 9. A private diplomatic initiative which brings together Australian and American leaders to help review and refine the parameters of the Australian-American bilateral relationship.

2018 **Honolulu, HI.** Meeting with Delegates from Republic of the Marshall Islands. Oct. 24. Discussion of pressing issues and future collaborations.

2018 **Bangkok, Thailand.** NASA Rice project meeting and fieldwork. July 16-23. Meet with project collaborators and conduct social science interviews in the Central Plain, Thailand.

2018 **San Juan, PR.** USGS Caribbean Drought Workshop. May 30-31. Participate in workshop discussions and development of fact sheets for public-sector audiences.

2018 **Hilo, HI.** Department of Hawaiian Homelands (DHHL) Water Planning Meeting. May 18. Expert panelists brought together to discuss water resources on DHHL lands for new permits.

2017 **Honolulu, HI.** Hawai'i Stream Conservation Meeting. Aug. 1. Participate in workshop discussions and discuss future collaborations.

2017 **Annapolis, MD.** USGS Climate Science Center Workshop, National Socioenvironmental Synthesis Center (SESYNC). June 13-15. Group writing workshop to draft manuscript on "Emerging Trends in Ecological Drought" with representatives from each region in the US.

2017 **Honolulu, HI.** Hawai'i Downscaling Workshop. April 11-12. Participate in workshop to discuss how to communicate uncertainty in future projections with stakeholders.

2017 **Honolulu, HI.** University of Hawai'i Climate Center Meeting. April 3. Participate in workshop to discuss and plan a new climate center at the University.

2017 **San Antonio, TX.** National Forest Service Drought Meeting. March 21-23. Workshop to discuss new national drought report with representatives from each region in the US.

2017 **Honolulu, HI.** 4th National Climate Assessment Regional Workshop. March 6. Workshop of experts to shape the content of the Pacific Islands regional chapter of the NCA report.

ADDITIONAL TRAINING

2018 Insights for ArcGIS Workshop, ESRI. October 19.

2018 Google Earth Engine Training, USDA Forest Service. February 7.

2013 Press & Science Communication and Outreach Training with COMPASS.

2012 Climate Science Center summer program at the International Arctic Research Center in Fairbanks, AK. Climate downscaling and stakeholder communication. July 16-28.

PROFESSIONAL AFFILIATIONS

American Geophysical Union, American Association of Geographers, Ecological Society of America, Earth Science Women's Network, American Meteorological Society

SKILLS AND PROFICIENCIES

Language: English (native), French (moderate).

Computer: ArcGIS, R, Matlab, Python, VBA, QGIS, Google Earth Engine, ENVI, MapInfo.

Field: A-100 helicopter safety training.