

Alison D. Nugent, PhD

Assistant Professor of Atmospheric Science
University of Hawai'i at Mānoa

808 - 956 - 2878
anugent@hawaii.edu

PROFESSIONAL EXPERIENCE

University of Hawai'i at Mānoa, School of Ocean and Earth Science and Tech. 2017 - Present
Tenure - track assistant professor in the Department of Atmospheric Sciences

National Science Foundation (NSF) Atmospheric Geospace Science (AGS) Postdoctoral Research Fellowship (PRF) at the National Center for Atmospheric Research 2014 - 2016
Title: Aerosols in Shallow Tropical Convection: Impact on Cloud Microphysics and Precipitation

EDUCATION

Yale University, M.Phil. and Ph.D. Geology & Geophysics 2009 - 2015
Thesis Title: Orographic Convection and Precipitation in the Tropics

Harvard University, B.S. Earth and Planetary Science, Minor in Portuguese 2005 - 2009
Senior Thesis: The Existence of Cold Cores above Large Atmospheric Disturbances

AWARDS

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| UH Board of Regents Medal for Excellence in Teaching | 2020 |
| NSF PRECIP Award AGS #1854443 for the Prediction of Rainfall Extremes, \$336,587 | 2019 |
| Open Educational Resource (OER) for Intro. Atmo. Course Material, \$4,960 | 2019 |
| NSF EAGER Award #1762166 to develop a mini-GNI, \$135,961 | 2018 |
| Professor of the Week, University of Hawaii Athletics | 2018 |
| Open Educational Resource (OER) for Intro. Atmo. Course Material, \$4,900 | 2017 |
| NSF AGS Postdoctoral Research Fellowship, \$172,000 | 2014 |
| Estwing Hammer Prize (exceptional performance as a Yale geology graduate student) | 2013 |
| AMS Conference on Mountain Meteorology – 2 nd Place Oral Presentation Award | 2012 |
| AMS Conference on Mesoscale Processes – 1 st Place Oral Presentation Award | 2011 |

Current Research Projects & Interests

Extreme precipitation in the tropics; an atmospheric ingredient-based approach, and building resilience in the community

Quantifying the sea salt aerosol size distribution and coastal sources on the windward coastline of O'ahu using kite-, drone-, and UAS-based observations with newly developed instruments and platforms

Vog impacts on Big Island precipitation

PEER REVIEWED PUBLICATIONS

In Review:

Benoit, L., M. Lucas, H. Tseng, Y.-F. Huang, Y.-P. Tsang, **A. D. Nugent**, T. Giambelluca, G. Mariethoz: High resolution observation of extreme orographic rain gradients in a Pacific island catchment. *Frontiers in Earth Sci. Hydrosphere*

Published:

Nugent, A. D., R. Longman, C. Trauernicht, H. Diaz, M. Lucas, T. Giambelluca: Fire and Rain: The Legacy of Hurricane Lane in Hawai‘i. *Bull. Amer. Meteor. Soc.*
(In Press: <https://doi.org/10.1175/BAMS-D-19-0104.1>)

Albrecht, B., V. Ghate, J. Mohrmann, R. Wood, P. Zuidema, C. Bretherton, C. Schwartz, E. Eloranta, S. Glienke, S. Donaher, M. Sarkar, J. McGibbon, **A. D. Nugent**, R. A. Shaw, J. Fugal, P. Minnis, R. Paliknoda, L. Lussier, J. Jensen, J. Vivekanandan, S. Ellis, P. Tsai, R. Rilling, J. Haggerty, T. Campos, M. Stell, M. Reeves, S. Beaton, J. Allison, G. Stossmeister, S. Hall, and S. Schmidt, 2018: Cloud System Evolution in the Trades—CSET Following the Evolution of Boundary Layer Cloud Systems with the NSF/NCAR GV. *Bull. Amer. Meteor. Soc.* **100**, 93–121.

Nugent, A. D. and R. Rios-Berrios, 2018: Factors leading to extreme precipitation on Dominica from Tropical Storm Erika (2015). *Mon. Wea. Rev.*, **146**, 525-541.

Jensen, J. and **A. D. Nugent**, 2017: Condensational growth of drops formed on giant sea-salt aerosol particles. *J. Atmos. Sci.*, **74**, 679- 697.

Nugent, A. D., R. B. Smith, C. D. Watson, and G. Thompson, 2016: Aerosol impacts on thermally driven orographic convection. *J. Atmos. Sci.* **73**, 3115-3132.

Smith, R. B., **A. D. Nugent**, C. G. Kruse, D. C. Fritts, J. D. Doyle, S. D. Eckermann, M. J. Taylor, A. Doernbrack, M. Uddstrom, W. Cooper, P. Romashkin, J. B. Jensen, S. Beaton, 2016: Stratospheric Gravity Wave Fluxes and Scales during DEEPWAVE. *J. Atmos. Sci.*, **73**, 2851-2869.

Fritts, D. C., R. B. Smith, M. J. Taylor, J. D. Doyle, S. D. Eckermann, A. Dörnbrack, M. Rapp, B. P. Williams, P.-D. Pautet, K. Bossert, N. R. Criddle, C. A. Reynolds, P. A. Reinecke, M. Uddstrom, M. J. Revell, R. Turner, B. Kaifler, J. S. Wagner, T. Mixa, C. G. Kruse, **A. D. Nugent**, C. D. Watson, S. Gisinger, S. M. Smith, R. S. Lieberman, B. Laughman, J. J. Moore, W. O. Brown, J. A. Haggerty, A. Rockwell, G. J. Stossmeister, S. F. Williams, G. Hernandez, D. J. Murphy, A. R. Klekociuk, I. M. Reid, J. Ma, 2015: The Deep Propagating Gravity Wave Experiment (DEEPWAVE): An Airborne and Ground-Based Exploration of Gravity Wave Propagation and Effects from their Sources throughout the Lower and Middle Atmosphere. *Bull. Amer. Met. Soc.*, **97**, 425-453.

Watson, C. D., R. B. Smith, and **A. D. Nugent**, 2015: Processes controlling precipitation in shallow, orographic, trade-wind convection. *J. Atmos. Sci.*, **72**, 3051–3072.

Nugent, A. D., and R. B. Smith, 2014: Initiating convection in an inhomogeneous layer by uniform ascent. *J. Atmos. Sci.*, **71**, 4597–4610.

Nugent, A. D., J. R. Minder, and R. B. Smith, 2014: Wind speed control of tropical orographic convection. *J. Atmos. Sci.*, **71**, 2695-2712.

Minder, J. R., R. B. Smith, and **A. D. Nugent**, 2013: The dynamics of ascent-forced orographic convection in the tropics: results from Dominica. *J. Atmos. Sci.*, **70**, 4067–4088.

Smith, R. B., J. R. Minder, **A. D. Nugent**, T. Storelvmo, D. J. Kirshbaum, R. Warren, N. Lareau, P. Palany, A. James, and J. French, 2012: Orographic Precipitation in the Tropics: The Dominica Experiment. *Bull. Amer. Meteor. Soc.*, **93**, 1567–1579.

OTHER PUBLICATIONS (non-peer reviewed)

Open Educational Resource Textbook for Intro-Level Atmospheric Science

<http://pressbooks-dev.oer.hawaii.edu/atmo/>

A textbook written specifically for ATMO 200. The text is currently 230 pages and growing. It combines an appropriate level of quantitative and descriptive material.

Nugent, A. D. served as the primary author and editor, with additional contributions from C. Karamperidou, J. Griswold, D. Decou, S. Russell, and B. Seifert

Contributions to Massive Science: <https://massivesci.com/people/alison-nugent/>

Can Hawaii’s waterfall-climbing fish survive when mountain rains change?

Tiny computers are transforming weather data collection

Above articles were written for the public by **A. D. Nugent**

Video Blog “808 Weather with Cruz & Nuge”

Written and created by **A. D. Nugent**, co-starring alongside news anchor Justin Cruz

Video blog explores Hawaiian weather phenomenon at a basic level for a general audience

<https://www.khon2.com/cruz-and-nuge/>

INVITED TALKS

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| Sciences & the Sacred, Atmospheric Phenomena on Maunakea, Honolulu, HI | 2019 |
| Waikiki Aquarium Marine Educator’s Night, Honolulu, HI | 2019 |
| Hanauma Bay Education Program Outreach Presentation, Hawaii Kai, HI | 2019 |
| Arcadia, Honolulu, HI | 2019 |
| Honolulu Science Cafe, Honolulu, HI | 2019 |
| University of Hawaii Science Communications Club, Honolulu, HI | 2018 |
| Kahala Nui, Honolulu, HI | 2018 |
| NTU, Dept. of Atmospheric Sciences, Taipei, Taiwan | 2018 |
| CMA and NUIST, Beijing and Nanjing, China | 2018 |
| University of Hawaii Science Communications Club, Honolulu, HI | 2017 |
| University of Hawai’i at Manoa, NREM Department, Honolulu, HI | 2017 |
| University of Hawai’i at Manoa, Geography Department, Honolulu, HI | 2017 |
| University of Wyoming, Dept. of Atmospheric Science, Laramie, WY | 2016 |
| McGill University, Dept. of Atmospheric and Oceanic Science, Montreal, QC | 2016 |
| Colorado State University, Department of Atmospheric Science, Fort Collins, CO | 2015 |
| University of Miami, Rosenstiel School of Marine and Atmospheric Science, Miami, FL | 2015 |
| University of Utah, Dept. of Atmospheric Science, Salt Lake City, UT | 2015 |
| NCAR, Climate and Global Dynamics Division, Boulder, CO | 2015 |
| Monash University, School of Earth, Atmosphere & Environment, VIC, Australia | 2014 |
| University of Wyoming, Dept. of Atmospheric Science, Laramie, WY | 2013 |

FIELD EXPERIENCE

Kite research with small instrumentation and the mini-GNI (Giant Nucleus Impactor) 2017-now
Role: Develop methodology and supervise students with data collection using a kite based platform

CSET (Cloud System Evolution in the Trades, measuring the stratocumulus to cumulus transition) 2015
Role: Process in-situ aircraft data, assist with instrumentation, performed initial analysis to create research flight leg table, instrument trouble shooting

DEEPWAVE (Deep propagating gravity waves over New Zealand with the NSF/NCAR GV) 2014
Role: Forecast for gravity wave events, flight plan, run and monitor instruments in flight, process in-situ aircraft data, create and maintain quick look website, analyze flux quantities of the gravity waves

DOMEX (Dominica Experiment focused on orographic precipitation with the UWKA) 2011
Role: Install and monitor instrumentation, act as primary flight scientist, forecast for orographic precipitation events, flight plan, process in-situ aircraft data, create and maintain quick look website

TEACHING EXPERIENCE (@UHMānoa if not specified otherwise)

ATMO 752: Mountain Meteorology Spring 2020
Solo, TTh 12:00-1:15, 9 students
An in-depth graduate level study of mountain meteorology, from winds, to clouds and precipitation, and to mountain waves and global influences.

ATMO 200: Atmospheric Processes and Phenomenon Fall 2019
Solo, MWF 11:30-12:20, 22 students
Taught first year atmospheric science majors the basics they need for the major. It is both a broad introduction and heavily uses non-calculus mathematics.

ATMO 305: Atmospheric Processes and Phenomenon Spring 2019
Solo, MW 10:30-11:20, F 10:30-1:30 for lab class, 8 students, writing intensive
Taught students about various ways to measure observables in the atmosphere, for example temperature, humidity, precipitation etc.

ATMO 200: Atmospheric Processes and Phenomenon Fall 2018
Solo, MWF 11:30-12:20, 21 students

ATMO 101: Intro to Weather and Climate Spring 2018
Solo, MWF 10:30-11:20, 16 students
Taught non-majors the basics of atmospheric science.

ATMO 499: Directed Reading on Atmospheric Science Programming Skills Fall 2017
Solo, W 4:30-6:30, 5 students
Worked weekly with students on programming skills.

ATMO 765: Atmospheric Sciences Seminar Fall 2017
Solo, W 3:30-4:30, 4 students
Organized the weekly seminar and instructed students on how to be good presenters.

ATMO 200: Atmospheric Processes and Phenomenon Fall 2017
Solo, MWF 11:30-12:20, 12 students

ATMO 305: Atmospheric Instrumentation and Observation Spring 2017
Solo, MW 10:30-11:20, F 10:30-1:30 for lab class, 9 students, writing intensive

Yale Teaching Fellow (TF) - "Waves, Convection and Vortices" (Head TF) 2013
Role: Lectured and created a lab on the WRF numerical model in addition to helping students use WRF for their final project, and holding office hours to help with problem sets

Yale TF - "Renewable Energy" 2012
Role: Held office hours for students needing additional help

Yale TF - "Climate and Environmental Change" 2010
Role: Held a weekly section reviewing the fundamental ideas of the week and helping with problem sets

Yale TF - "The Atmosphere, Ocean, and the Environment" (Head TF 2010) 2009, 2010
Role: Led weekly 2 hr lab section for 10-12 students, in addition to holding help sessions and office hours

Harvard Bureau of Study Council Tutor - "Environmental Risks and Disasters" 2008-2009
Role: Tutored students one on one needing extra help

University of Melbourne TF - "The Atmosphere and the Ocean" 2007
Role: Led weekly 3 hr lab section for 20 students, also led weekly 1 hr help session for 3 students in my residential college needing additional help. Produced weekly worksheet with main ideas of the course.

SERVICE

Committee Member, AMS Mountain Meteorology Committee Member 2019-Present
Regular contributor to local news station KHON2 2018-Present
Reviewed field campaign proposals on a panel for NSF 2018
Meteorology advisor to local schools (Palolo Elementary, Windward Nazarene etc.) 2017-Present
Thesis committee member for six Masters theses 2017-Present
Thesis committee member for six PhD theses 2017-Present
Thesis advisor for three undergraduate senior thesis projects 2017-Present
NSF proposal reviews 2017-2018
AMS Aerosol-Cloud-Climate Interactions Session Organizer 2016-Present
Reviewed manuscripts for JAS, GRL, JAMC, BAMS, Tellus and JGR and others 2014-Present
Student Member, AMS Mountain Meteorology Committee 2013-2014
Member, Yale Geology and Geophysics Colloquium Committee 2011-2013
Student Helper at >5 AMS meetings (Meso 10 and 12, Tropical 12, MtnMet 11 and 13) 2009-2014
Vice President, Harvard Geological Society 2008-2009

STUDENT COMMITTEES

PhD Committee Chair for:

Tianqi Zuo, ATMO – Prediction of Rainfall Extremes in the Pacific

PhD Committee Member for:

Boyi Lu, ATMO – Rainfall in Hawaii associated with long-term variability

Dillon Dodson, ATMO – Cloud turbulence characteristics

Han Tseng, Geography – Characterizing Cloud Forests in Hawaii

James Jones, Economics – Energy and Temperature Connections across the US

Beth Tillinghast, Library – Open Educational Resources

Masters Committee Chair for:

Katherine Ackerman, ATMO – Quantifying Sea-salt Aerosol sources in the coastal environment

Chung Taing, ATMO – Sampling Sea-salt Aerosol Loading

Kristin Butt, ATMO – Aircraft Observations of Cloud Microphysical Properties

Gavin Shigesato, ATMO – Orographic precipitation on Oahu with operational forecasting application

David DeCou, ATMO – Using kites for meteorological measurement of the marine boundary layer

Masters Committee Member for:

Ashley Heikkila, ATMO – Characterization of Marine Stratocumulus Clouds and ACI during ORACLES

Kayla Yamamoto, ATMO – Aerosol-Cloud Interactions from Hawaii’s Kilauea Volcano

Undergraduate Thesis Advisor:

Erickson Shull, GES – Developing a UAS platform for sea-salt aerosol sampling

Katherine Ackerman, G&G – Sea-salt Aerosol Concentration Changes with Distance Inland

Kiefer Hermann, GES – Rain Gauge Analysis of Precipitation on Oahu

Taylor Anderson, GES – Observing Wind Speed using a Pitot Tube Anemometer

PROFESSIONAL TRAINING

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| Early Career Geoscience Faculty Workshop, College Park, MD | 2017 |
| On the Cutting Edge: Preparing for an academic career in the geosciences, Madison, WI | 2015 |
| EUCLIPSE Clouds and Climate Summer Course, Les Houches, France | 2013 |
| Advanced Study Program Graduate Visiting Fellowship, NCAR Boulder, CO | 2013 |
| Winter WRF Model Tutorial, NCAR Boulder, CO | 2012 |

SELECTED ORAL CONFERENCE PRESENTATIONS (FIRST AUTHOR ONLY)

Nugent, A. D., and J. B. Jensen, C. Taing, and T. Jones (2019): Observing sea-salt aerosol size distribution with a kite based platform. AMS Annual, Phoenix, AZ

Nugent, A. D., and R. Rios-Berrios (2018): Factors leading to extreme precipitation on Dominica from Tropical Storm Erika, mesovortex and terrain interaction. AMS Mountain Meteorology, Santa Fe, NM.

Nugent, A. D., and R. Rios-Berrios (2018): Factors leading to extreme precipitation on Dominica from Tropical Storm Erika. AMS Hurricanes and Tropical Meteorology Meeting, Ponte Vedra, FL.

Nugent, A. D., C. Karamperidou, J. Griswold (2018): Creating and using OER materials in an intro-level atmospheric science class. AMS Annual Meeting, Austin, TX.

Nugent, A. D. (2016): Tropical Storm Erika and the Commonwealth of Dominica. AMS Hurricanes and Tropical Meteorology Meeting, San Juan, PR.

Nugent, A. D., and J. B. Jensen (2016): Cloud droplet distributions in shallow tropical marine clouds: Gamma distributions and field campaign comparison. AMS Annual meeting, New Orleans, LA.

Nugent, A. D., C. D. Watson, G. Thompson, R. B. Smith (2015): The role of aerosols in thermally driven orographic clouds. International Conference on Alpine Meteorology (ICAM), Innsbruck, Austria.

Nugent, A. D., C. D. Watson, G. Thompson, R. B. Smith (2015): Controls on precipitation in thermally driven orographic clouds. AMS Mesoscale Processes Meeting, Boston, MA.

Nugent, A. D., R. B. Smith, C. D. Watson (2014): Aerosols vs. dry air entrainment in thermally driven orographic clouds. AMS Mountain Meteorology Meeting, San Diego, CA.

Nugent, A. D., G. Thompson, T. Eidhammer, R. B. Smith (2013): The role of aerosols in tropical orographic convection and precipitation. AMS Mesoscale Processes Meeting, Portland, OR.

Nugent, A. D., R. B. Smith (2013): Orographic precipitation in the tropics: Experiment on Dominica, Graduate Climate Conference, Woods Hole, MA.

Nugent, A. D., R. B. Smith, J. R. Minder (2012): Orographic initiation of moist convection in the tropics (a theoretical perspective). AMS Hurricanes and Tropical Meteorology Meeting, Ponte Vedra, FL.

Nugent, A. D., R. B. Smith, J. R. Minder (2011): Triggered convection and orographic precipitation in the tropics: control parameters and predictability. AMS Mesoscale Processes Meeting, Los Angeles, CA.

Nugent, A. D., R. B. Smith, (2010): Orographic precipitation in the tropics: understanding the convective environment and rainfall statistics. AMS Mountain Meteorology Meeting, Squaw Valley, CA.

SELECTED POSTER CONFERENCE PRESENTATIONS (FIRST AUTHOR ONLY)

Nugent, A. D., C. Karamperidou, and J. Griswold (2019): A new open educational resource for intro-level atmospheric science. AMS Annual, Phoenix, AZ.

Nugent, A. D., G. Shigesato, and R. Ballard (2018): Orographic precipitation on Oahu with operational forecasting application. AMS Mountain Meteorology, Santa Fe, NM.

Nugent, A. D., and D. Decou (2018): Using kites for meteorological measurement. AMS Annual Meeting, Austin, TX.

Nugent, A. D., and J. B. Jensen (2016): The remarkable condensational growth of cloud droplets grown on giant sea salt aerosols. AMS Annual meeting, New Orleans, LA

Nugent, A. D., R. B. Smith, C. D. Watson, G. Thompson (2015): Environmental vs microphysical impacts on thermally driven orographic clouds. GRC on Radiation & Climate, Lewiston, ME.

Nugent, A. D., R. B. Smith (2011): Understanding the variability of precipitation on tropical islands. Graduate Climate Conference, Woods Hole, MA.

STUDENT PRESENTATIONS

Zuo, Tianqi, and A. D. Nugent (2019) Volcanic Aerosol Impacts on Big Island Precipitation Development. AMS Annual Meeting, Phoenix, AZ

Hermann, K. and A. D. Nugent (2018): Rain Gauge Analysis of Precipitation on Oahu. AMS Annual Meeting, Austin, TX.

Decou, D. and A. D. Nugent (2018): Using kites for meteorological measurement of the marine boundary layer. Asia Oceania Geoscience Society, Honolulu, HI.

Shigesato, G. and A. D. Nugent (2018): Orographic precipitation on Oahu with operational forecasting application. Asia Oceania Geoscience Society, Honolulu, HI.

COMPUTER LITERACY

Fortran and various scripting languages (e.g. BASH and C-Shell)
Matlab and NCL for data processing and visualization
Adobe Illustrator and Photoshop
Weather Research and Forecasting (WRF) Model
LATEX Typesetting package
Mac, Linux, and Windows operating systems

Removed

Nugent, A. D., R. B. Smith, C. D. Watson, G. Thompson (2014): Aerosol and dry air entrainment impacts on thermally driven orographic clouds and the development of precipitation. AGU, San Francisco, CA.