

G. Aaron Alexander

Email: galexander@ucdavis.edu
Phone: 1 (775) 388-4622
Citizenship: U.S.

Research Interests:

Land-atmosphere interactions, atmospheric modeling through use of high-performance computing, interaction between complex terrain and atmospheric flows, and the application of data science techniques to geophysical problems.

Education:

University of California, Davis

August 2017 – Present

Ph.D. Student in Water Resources Engineering, GPA: 3.95

Advisor: Dr. Holly J. Oldroyd

Emphasis in Micrometeorology/Land-Surface Interactions/Earth Systems Modeling

University of Nevada, Reno

August 2013–May 2017

B.S. in Physics and Atmospheric Sciences, GPA: 3.97

Honors:

Magna Cum Laude

Westfall Scholar, Department of Physics 2017

University of Nevada, Reno Outstanding Senior Award 2017

NSF Nevada EPSCoR Grant Recipient 2016

University of Nevada, Reno Undergraduate Research Scholarship Recipient 2016

John W. James Scholarship Recipient 2016

Dean's List Fall 2013–Spring 2017

Research Experience:

Graduate Research Assistant

August 2017 – Present

University of California, Davis

- Investigating the impacts of soil moisture and irrigation on land-surface characteristics and atmospheric boundary layer dynamics.
- Utilizing the Weather Research and Forecasting Model, in-situ observations, and satellite remote sensing data.
- Simulation of atmospheric dynamics of the Central Valley to close the ozone and surface energy budgets, and examine the relationship between entrainment and land-surface processes
- Time series data analysis for projects ranging from evapotranspiration characterization in the Central Valley to quantification of the Turbulent Kinetic Energy budget in Corvallis, OR.

Undergraduate Researcher
University of Nevada, Reno

February 2016 – May 2017

- Advised by Dr. Heather Holmes as part of the Atmospheric Turbulence and Air Quality Laboratory.
- Studied how atmospheric variables impacted solar panel efficiency in the semi-arid climate of Nevada utilizing in-situ observations and the Weather Research and Forecasting Model.

Atmospheric Science REU
Texas A&M University

Summer 2015

- Studied the growth of secondary aerosols at the WG Jones State Forest outside of Houston Texas and aided in the fabrication of the mobile Captive Aerosol Growth and Evolution environmental chambers.
- Participated in a field experiment investigating the Land-Sea Breeze in Galveston Texas.

Teaching Experience:

Teaching Assistant

Winter Quarter 2019 & Fall Quarter 2017

Introductory Fluid Mechanics

- Organized laboratory lectures and demonstrations for junior level fluid mechanics course. Aided in proctoring examinations, grading laboratory reports, and aiding in creation of final laboratory video projects.

Undergraduate Weather Workshop

May/October 2018

- Developed and taught a five-hour workshop for undergraduate civil and environmental engineering students as a 'Crash Course' on the theory behind atmospheric observation.
- Students interacted in groups to develop communication skills and generate a measurement campaign given a real-world scenario.

Atmospheric Boundary Layer Dynamics Guest Lecture

November 2018

- Taught graduate level lecture on atmospheric boundary layer modeling focusing on techniques used in current numerical weather prediction models

Teaching Assistant

Winter Quarter 2018

Engineering Hydraulics

- Led lab lecture and demonstration covering topics such as pipe flow and open channel flows. Aided in grading laboratory reports, grading midterm exams, and responding to student questions on course content.

Professional Service:

American Meteorological Society Student Conference

February 2017 – Present

- Helped organize AMS Student Conference in Austin Texas (2018) and Phoenix Arizona (2019)
- Corresponded with national partners for conference session suggestions, coordinated speakers, and planned interactive workshops for students to attend.

Sessions Planned:

The Social Sphere: Public Policy in the Weather Sector 2019

Graduate Student Panel 2019

Interactive Resume Workshop 2019 & 2018

Academia Breakout Session 2018

Meteorology and Climate - Modeling for Air Quality

August 2017–September 2017

- Volunteered to help plan National Conference for Meteorology, Climate, and Air Quality. Worked to finalize details pertaining to food, organization, and enforced time restrictions for entire conference.

Conference Presentations:

- **Alexander G. A.**, H. A. Holmes, J. Trousdell, I. Faloona, and H. J. Oldroyd: The Influence of Irrigated Soil Moisture on Modeled Land-Atmosphere Interactions and Simulated Flows in the San Joaquin Valley, California. *33rd Conference on Hydrology*, Phoenix, AZ, Amer. Meteor. Soc.
- Faloona, I., D. Caputi, J. Smoot, N. Falk, S. A. Conley, **G. A. Alexander**, H. J. Oldroyd: Synoptic Controls on Entrainment Mixing, Shear, and The Three-Layer Atmosphere Above the San Joaquin Valley of California. *23rd Symposium on Boundary Layers and Turbulence*, Norman, OK, Amer. Meteor. Soc.
- **Alexander, G. A.**, H. A. Holmes, W. P. Arnott, J. C. Barnard, A. Rollings: Determining Atmospheric Conditions That Impact Solar Energy Potential in Nevada. *Eighth Conference on Weather, Climate, Water and the New Energy Economy hosted at Annual AMS National Conference 2018*, Seattle, WA, Amer. Meteor. Soc.
- **Alexander, G. A.**, D. Collins, M. Salgado: Direct Measurement of the Impact of Atmospheric Processing on the Size and Properties of Sub- and Super-micron Aerosol Particles. *15th Annual AMS Student Conference*, New Orleans, LA, Amer. Meteor. Soc.