

# Flor Vanessa Maciel

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## Education

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### University of California Los Angeles

June 2027

Doctor of Philosophy in Atmospheric and Oceanic Sciences

### San José State University

Aug. 2022

Master of Science in Meteorology

**Thesis:** *"The Influence of Aerosols on Ice and Mixed-phase Clouds Based on In Situ Observations and CAM6 Simulations"*

### University of California, Santa Cruz

June 2019

Earth Sciences BS & Environmental Studies BA

**Senior Project:** *"The Influence of Stratospheric Aerosol Geoengineering on Earth's Climate System"*

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## Research Experience

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### Graduate Student Researcher

Aug. 2022 - Present

**Advisor:** Dr. Jasper Kok, UCLA Aerosol-Climate Interactions Group, Los Angeles, CA

- Creating a compilation of dust concentrations from airborne field campaigns, such as ATom, at cold cloud heights to improve a dust climatology (DustCOMM) for use in global climate models (GCMs).
- Downloading and processing MERRA-2 reanalysis data using NetCDF Climate Operators (NCO) to calculate a correction factor for the model and DustCOMM outputs that accounts for the meteorological differences with the observational data for accurate comparison.
- Using MATLAB to process observational and MERRA-2 dust concentration data, generate particle size distributions and vertical concentration profiles, and compare results with the DustCOMM dataset and five global climate models (CESM, GISS, GOCART, IMPACT, and MONARCH) using linear regression.
- Maintaining detailed documentation of data sources, processing steps, and analysis methods.
- Reading and summarizing relevant scientific literature to stay updated on existing knowledge.
- Writing about my research by synthesizing current literature to demonstrate how my project contributes to and advances the atmospheric sciences.
- Mentoring an undergraduate student and keeping track of their research progress during weekly meetings along with providing advice on data, figures, writing and next steps.

- Participating in an outreach project as the science expert to design a “storyline” unit on climate change that includes content on climate intervention, or geoengineering, with a LAUSD high school teacher under the guidance of a pedagogical expert.

### **Graduate Student Researcher**

**Sept. 2020 - Aug. 2022**

**Advisor:** Dr. Minghui Diao, SJSU Cloud and Aerosol Group, San Jose, CA

- Researched the relationship between cirrus and mixed-phased clouds and aerosols.
- Quality controlled, with hourly-time series and images from 2DC probe, an in-situ dataset composed of 7 NSF flight campaigns.
- Used MATLAB to analyze datasets with plots such as PDFs, particle size distributions and geometric means, among others.
- Wrote a script in MATLAB to differentiate between cirrus cloud evolution phases and mixed-phase cloud transition phases.

### **Berkeley Lab Undergraduate Research Intern**

**June 2020 - Aug. 2020**

**Advisor:** Dr. Christina M. Patricola, Lawrence Berkeley National Lab, Berkeley, CA

- Project aim was to inform the City of San Francisco how storms will change in the future due to climate change.
- 5 past storms were chosen previously to model under their historical climate conditions and under RCP8.5 end-century climate conditions.
- Used Python and NetCDF to organize, map and analyze the data on the National Energy and Research Scientific Computing's supercomputer, Cori.
- Wrote a final paper on the project and presented a poster virtually at the Berkeley Lab summer intern symposium.

### **Undergraduate Student Researcher**

**Oct. 2018 - June 2019**

**Advisor:** Dr. Nicole Feldl, UCSC Climate Dynamics Lab, Santa Cruz, CA

- Developed a senior thesis project that explored the effects of stratospheric sulfate geoengineering on Earth's net shortwave radiation.
- Obtained data from NCAR's Stratospheric Aerosol Geoengineering Large Ensemble Project and organized it on a remote Linux server, which was connected to with PuTTY.
- Used Python to analyze the data with the Approximate Partial Radiative Perturbation method and mapped the results with the Cartopy package.
- Received a \$2000 scholarship from the Koret Foundation for this research and was named a Koret Scholar.
- Wrote a final and comprehensive thesis on the project.
- Presented a poster at AGU 2019 and at the Koret Research Slam.

### **Undergraduate Summer Research Intern**

**June 2018 - Sept. 2018**

**Advisor:** Dr. Geeta Persad, Carnegie Science Department of Global Ecology, Stanford, CA

- Developed an independent research project on how aerosol emissions, from 8 previously identified countries, affect the precipitation rate in Indonesia.
- Read and synthesized academic papers related to research question to inform project.
- Used Python and NetCDF Operators to organize, analyze, and map data previously produced by advisor with NCAR's Community Atmosphere Model 5.
- Gave an oral presentation on the project results to the department.

- Presented a poster at the 2019 American Meteorological Society's student conference.

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## Peer-reviewed Publications

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- **Maciel, F. V.**, Diao, M., & Yang, C. A. (2024). "Partition between supercooled liquid droplets and ice crystals in mixed-phase clouds based on airborne in situ observations." *Atmospheric Measurement Techniques*, 17(16), 4843–4861. <https://doi.org/10.5194/amt-17-4843-2024>.
- **Maciel, F. V.**, Diao, M., & Patnaude, R. (2023). "Examination of aerosol indirect effects during cirrus cloud evolution." *Atmospheric Chemistry and Physics*, <https://doi.org/10.5194/acp-23-1103-2023>.
- Patricola C. M., Wehner, M. F., Bercos-Hickey, E., **Maciel, F. V.**, May, K., Mak, M., Yip, O., Roche, A., & Leal, S. (2021). "Future Changes in Extreme Precipitation over the San Francisco Bay Area: Dependence on Atmospheric River and Extratropical Cyclone Events." *Weather and Climate Extremes*, <https://doi.org/10.1016/j.wace.2022.100440>.

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## Honors & Scholarships

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- **Kuo-Nan Liou Endowed Graduate Fellowship**, Joint Institute for Regional Earth Systems Science and Engineering, Spring 2025
- **Center for Diverse Leadership in Science (CDLS) Fellowship**, UCLA Institute of the Environment and Sustainability, Fall 2023 & Fall 2024
- **Competitive Edge Fellowship**, UCLA Graduate Education, Summer 2022
- **Eugene V. Cota-Robles Fellowship**, UCLA Graduate Education, Summer 2022
- **Walker Scholarship**, SJSU Department of Meteorology and Climate Science, Fall 2020 & Fall 2021
- **Crown College Research Project Fund**, UCSC Crown College, Spring 2019
- **Koret Undergraduate Research Scholarship**, UCSC Honors and Research, Winter 2019
- **HSF Scholar**, Hispanic Scholar Federation, Winter 2019
- **Latinos in Technology Scholarship**, Silicon Valley Community Foundation, Winter 2017

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## Presentations

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- Maciel, F. V., Kok, J. & Froyd, K. (2025, January). *Evaluating size-resolved dust concentrations in the mixed-phase cloud regime*. Oral presentation at the American Meteorological Society Annual Meeting, New Orleans, LA.
- Maciel, F. V., Kok, J. & Froyd, K. (2025, January). *Quantifying size-resolved dust concentrations in the mixed-phase cloud regime*. Poster presentation at the American Meteorological Society Annual Student Conference, New Orleans, LA.
- Maciel, F. V., Kok, J. & Froyd, K. (2024, May). *Quantifying the size-resolved dust concentrations at cirrus-forming heights*. Poster presentation at the UC Dust Symposium.
- Maciel, F. V., Diao, M., & Patnaude, R. (2022, August). *The respective aerosol indirect effects of five cirrus cloud evolution phases*. Oral presentation at the American Meteorological Society Collective Madison Meeting, Virtual.
- Maciel, F. V., Diao, M., Patnaude, R., Yang, C. A., Liu, X., & Zhao, X. (2022, January). *The influence of aerosols on ice and mixed-phase clouds based on in-situ observations and*

CAM6 simulations. Oral presentation at the American Meteorological Society Annual Meeting, Virtual.

- Maciel, F. V., Diao, M., & Patnaude, R. (2021, December). Influence of atmospheric aerosols on cirrus clouds based on in-situ observations. Poster presentation at the American Geophysical Union Fall Meeting, Virtual.
- Maciel, F. V., & Diao, M. (2020, December). *The influence of anthropogenic aerosols on cirrus clouds determined from in-situ observations*. Poster presentation at the American Geophysical Union Fall Meeting, Virtual.
- Maciel, F. V., & Patricola, C. M. (2020, October). *Anthropogenic influences on extreme precipitation events over the San Francisco Bay Area in a high-resolution regional climate model*. Poster presentation at The Society for Advancement of Chicanos/Hispanics and Native Americans in Science Annual Conference, Virtual.
- Maciel, F. V., & Patricola, C. M. (2020, August). *Anthropogenic influences on extreme precipitation events over the San Francisco Bay Area in a high-resolution regional climate model*. Poster presentation at the LBNL Intern Research Symposium, Virtual.
- Maciel, F. V., & Feldl, N. (2019, December). *The shortwave cloud and surface albedo response to stratospheric sulfate aerosol geoengineering*. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA.
- Maciel, F. V., & Feldl, N. (2019, June). *The influence of stratospheric sulfate aerosol geoengineering on Earth's net shortwave radiation*. Poster presentation at the Koret Research Slam, Santa Cruz, CA.
- Maciel, F. V., & Persad, G. (2019, January). *The dependence of Indonesia's precipitation response to anthropogenic aerosols on emission location*. Poster presentation at the American Meteorological Society Annual Student Conference, Phoenix, AZ

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## Work Experience & Outreach

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### Air Pollution (AOS 2) TA

March 2025 - Present

Atmospheric and Oceanic Science Department, Los Angeles, CA

- Creating answer keys for homework assignments and grading submissions.
- Leading hybrid discussion sections where students work in groups to complete the discussion activity collaboratively.
- Holding office hours for students to ask questions on course material or assignments.
- Responding to student questions by email.

### Early Career and Climate Resilience Fellow

Dec. 2024 - Present

Center for Diverse Leadership in Science (CDLS), Los Angeles, CA

- Leading a group of graduate students in mapping air quality during the 2025 LA fires, a project requested by community partner Esperanza Housing.
- Delegating tasks to group members based on project needs and individual strengths.
- Organizing and leading weekly virtual meetings to track progress, take notes, and have team members share updates.
- Assisting team members with questions and troubleshooting data-related challenges.

- Finding, downloading, and processing ground-based and satellite data for common wildfire air pollutants such as carbon monoxide, nitrogen dioxide, and particulate matter.
- Visualizing air quality data in ArcGIS with an emphasis on clarity for community use.

### **Social Media Chair**

**Sept. 2023 - Present**

UCLA AOS Graduate Chi Epsilon Pi (XEP), Los Angeles, CA

- Creating flyers on community events.
- Posting updates and stories about upcoming community events on Instagram account.
- Sharing employment opportunities and field-specific news on a new LinkedIn group for current AOS graduate students, undergraduate students, and alumni.
- Designed two logos for the organization and held a vote to select the most popular one.

### **Intro. to Undergraduate Research (AOS 90) TA**

**March 2024 - June 2024**

Atmospheric and Oceanic Science Department, Los Angeles, CA

- Graded homework assignments based on rubric provided by the Professor.
- Attended lecture during the week and prepared review slides based on material covered.
- Led discussion section where students work in groups to work on their weekly assignment.
- Held a weekly 2-hour "Homework Party" each Friday afternoon to help students having any trouble.
- Answered student questions during office hours and through Piazza.

### **Math Learning Skills Advisor**

**Sept. 2019 - Aug. 2020**

UCSC Academic Excellence Program, Santa Cruz, CA

- Prepared curriculum and led ACE problem-solving sessions for lower-division calculus courses.
- Fostered a safe space for students to learn and facilitated collaborative learning between students.
- Served as a mentor to students that needed guidance in navigating the university resources.

### **Library Aerial Photo GIS Project Assistant**

**Oct. 2018 - Sept. 2019**

UCSC Mchenry Library, Santa Cruz, CA

- Used ArcGIS to georectify the library's aerial photo indexes collection.
- Updated the indexes to be modern and easy to read.
- Assisted on instruction manual on the georectification process for future employees.

### **Learning Support Services Tutor**

**Oct. 2017 - Aug. 2019**

UCSC Learning Support Services, Santa Cruz, CA

- Facilitated a collaborative learning environment during weekly sessions where students could interact with their peers and learn the course material together.
- Served as a peer mentor and role model for college success at UCSC.

- Past positions include Climate Statistics, Biostatistics, Introductory Chemistry I, and Introductory Physics II.

### **Crown & Merrill Student Sustainability Advisor**

**Sept. 2017 - June 2018**

UCSC Sustainability Office, Santa Cruz, CA

- Created and implemented sustainability themed programs for housing residents of Crown and Merrill.
- Created flyers with Canva and share them across the residential housing area.
- Researched energy star appliances in campus housing to implement explicit policy on their procurement.

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### **Professional Memberships & Societies**

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- UCLA AOS XEP, 2023 - present
- CDLS, 2023 – present
- American Meteorological Society, 2018 - present
- American Geophysical Union, 2019 - present