Flor Vanessa Maciel

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Education

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"*

Research Interests

- Aerosol-Cloud Interactions & Aerosol-Radiation Interactions.
- The influence of air pollution, specifically aerosols, on the climate.
- The mechanisms of pyro-cloud formation and their impacts on the climate.
- The effects of climate change on extreme weather and wildfires.

Research Experience

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 to create a dust climatology accurate at cold cloud heights for use in global climate models (GCMs).
- Quantifying changes in dust concentrations in the upper troposphere using aircraft and satellite data to better understand their temporal and spatial variability.
- Comparing observational dust concentrations with those from the DustCOMM dataset and 5 global climate models (CESM, GISS, GOCART, IMPACT, and MONARCH), focusing on regional and seasonal differences.
- Mentoring an undergraduate student investigating Arctic dust concentrations using ice-nucleating particle (INP) data from the Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAic), expanding the scope of my research to include regional studies of dust impacts on cloud microphysics in the Arctic.
- Reading and summarizing relevant scientific literature to stay updated on advancements in aerosol-cloud interactions, climate modeling, and observational techniques.

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.

Peer-reviewed Publications

- **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.

Presentations

- 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 Concentration 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

Honors & Scholarships

- 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

Professional Memberships & Societies

- UCLA AOS XEP, 2023 - present
- CDLS, 2023 – present
- American Meteorological Society, 2018 - present
- American Geophysical Union, 2019 - present
- SACNAS, 2019 - 2020
- GeoLatinas, 2019 - 2020

Work Experience

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.