

Dr. Pascal Polonik

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Education

Ph.D. Earth Sciences Scripps Institution of Oceanography, University of California, San Diego	2018 – 2023
M.S. Meteorology Ludwig Maximilian University of Munich	2015 - 2018
B.A. Atmospheric Science B.S. Environmental Sciences Minor in Energy and Resources University of California, Berkeley	2011 - 2015

Publications

Polonik, P., Ricke, K., Burney, J., Spatiotemporal climate emulation of greenhouse gas and aerosol emissions from high-income and developing nations. *Submitted*.

Polonik, P., Ricke, K., Burney, J., 2025. Estimating the impacts of climate change: reconciling disconnects between physical climate and statistical models. *Climatic Change*.
<https://doi.org/10.1007/s10584-025-03868-w>

Polonik, P., Ricke, K., Reese, S., Burney, J., 2023. Air Quality Equity in U.S. Climate Policy. *PNAS*.
<https://www.pnas.org/doi/10.1073/pnas.2217124120>

Bluhm, R*, **Polonik, P.***, Hemes, S.K.*, Sanford, C.S.*, Benz, A.B.*, Levy, C.M*, Ricke, K., Burney, A.B. 2022. Disparate air pollution reductions during California’s COVID-19 economic shutdown. *Nature Sustainability*. <https://doi.org/10.1038/s41893-022-00856-1>

* equally contributing

Polonik, P., Ricke, K., Burney, J., 2021. Paris Agreement’s ambiguity about aerosols drives uncertain health and climate outcomes. *AGU Earth’s Future*. <https://doi.org/10.1029/2020EF001787>

Polonik, P., Knote, C., Zinner, T., Ewald, F., Kölling, T., Mayer, B, et al.: The challenge of simulating the sensitivity of the Amazonian cloud microstructure to cloud condensation nuclei number concentrations, *Atmos. Chem. Phys.*, 20, 1591–1605, <https://doi.org/10.5194/acp-20-1591-2020>, 2020.

Polonik, P., Chan, W.S., Billesbach, D.P., Burba, G., Li, J., Nottrott, A., Bogoev, I., Conrad, B. and Biraud, S.C., 2019. Comparison of gas analyzers for eddy covariance: Effects of analyzer type and spectral corrections on fluxes. *Agricultural and Forest Meteorology*, 272, pp.128-142. doi: <https://doi.org/10.1016/j.agrformet.2019.02.010>

Academic Positions

Postdoctoral Scholar Stanford University, Doerr School of Sustainability	July 2025 – Present
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Postdoctoral Scholar UC San Diego, Global School of Policy and Strategy & Scripps Institution of Oceanography	July 2023 – Jun 2025
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Graduate Student Researcher UC San Diego, Scripps Institution of Oceanography <i>Aerosols, Air Quality Equity, and Climate Impacts: Idealized Modeling to Inform Climate Policy</i>	Sept 2018 – June 2023
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Masters Student Researcher

Oct 2016 – Feb 2018

LMU Munich, Meteorological Institute

*Comparison of modeled and measured aerosol-cloud interactions***Graduate Student Researcher**

Apr 2016 – Jun 2019

Lawrence Berkeley National Lab, Earth Science Division, AmeriFlux

Intercomparison of eddy covariance instruments and spectral corrections

Teaching & Mentorship

Instructor - CCS101 - Carbon Neutrality at UCSD

Fall 2022, 2023, 2024

Teaching Assistant - SIO90 - Experiences in Oceanic and Atmospheric Sciences

Fall 2021

Undergrad Student Instructor - ESPM 100ES - Intro to Methods of Environmental Science

Spring 2015

Undergraduate mentor - Claire Avenoso (Climate change studies minor project, 2024), Katya Sumwalt (TRELS intern, 2024), Sean Reese (Summer Intern + Research assistant, 2021-2022), Amaya Singleton (Summer REU + Bachelor thesis at U of Arizona, 2021-2022), Marshall Dean (Summer REU, 2020)

Service

Reviewer for: Science Advances, PNAS, Nature Communications Earth & Environment, One Earth, Environmental Science & Technology, Geoscientific Model Development, PLOS Climate, Global Environmental Change

Graduate Student Representative and/or Committee Member for:

Scripps Sustainability Committee (ex-officio), Marine Sciences Physical Planning Committee (SIO), Transportation Advisory Committee to the Vice Chancellor (UCSD), Climate Action and Policy Committee (UCSD Grad Student Association), Department Curriculum Review (Climate Science, SIO), Joint SIO/HDSI faculty hire, AGAGE faculty hire (SIO), Grad Student Council (Climate Science, SIO)

Other Qualifications**Honors and Awards:**

Jean Fort Dissertation Prize (UC San Diego)	2023
Emerging Scholars Award for Excellence in Research and Public Policy (UC Sacramento Center)	2023
Presentation Award (Scripps Student Symposium)	2022
Student Presentation Award (AGU OSPA)	2020
Kenneth L. Babcock Prize in Environmental Science (UC Berkeley, CNR)	2015

Computing

Research: Python, MATLAB, R

Summer school: CESM Tutorial (2020)

Coursework: ArcGIS, C

Workshops/Conferences

Climate Change, Green Backlash, and Democracy (UC San Diego, 2025); Composition Air quality Climate inTeractions Initiative (CACTI, UC San Diego, 2024); Marine Geoengineering Workshop (UC San Diego, 2023); Conference of Parties (COP27, Egypt); Workshop on Climate and Energy Decision Making (Carnegie Mellon, 2022); AGU Fall Meeting (2016, 2019-2024)

Languages

English, German

Talks

- 2025: *Modeling Environmental Systems: Environmental Racism in San Diego County* (GPAA 460)
- 2024: *Wealth Transfers and Climate Mitigation: Impacts on Global Temperature and Economic Inequality* (AGU)
Air Quality Equity in California and in U.S. Climate Policy (GPAA 464)
Regional Aerosol Representation for a Coupled Human-Climate Model (CACTI workshop)
Climate Change, Air Pollution, and Public Health (FMPH 130)
Climate Impacts, Air Quality, and Environmental Equity (ESYS 102)
Climate and Air Pollution - Local and Global Health Impacts (Panelist, Triton Leaders Conference)
Climate Change, Air Pollution, and Public Health (FMPH 191)
- 2023: *Uncertainties and Tradeoffs from Aerosol Changes Under Climate Policy* (invited, AGU Fall Meeting)
Air Quality Equity in U.S. Climate Policy (SIO 90)
Air Quality Equity in U.S. Climate Policy (Stanford ECHO lab)
Air Quality Equity in U.S. Climate Policy (invited, UC Sacramento Center)
- 2022: *The Importance of Precipitation in Climate Impact Models* (AGU Fall Meeting)
Air Quality Equity in American Climate Policy (Workshop on Climate and Energy Decision Making, Carnegie Mellon)
Air Quality Equity in U.S. Climate Policy (Scripps Student Symposium)
- 2021: *Air Quality Equity in American Climate Policy* (AGU Fall meeting)
COVID-10, Air Quality Equity, and US Climate Policy (invited, AGU Fall Meeting)
From Paris to California: co-benefits of emission reduction (invited, AGU GeoHealth Early Career Webinar)
From Paris to California: co-benefits of air pollution reduction (Scripps Earth Month event)
Paris Agreement's ambiguity about aerosols drives uncertain health and climate outcomes (UCSD-Kyushu University Webinar Series on SDGs)
- 2020: *Environmental injustice in California revealed by the COVID-19 economic shutdown* (AGU Fall Meeting)
What the COVID-19 shock has taught us about environmental policy bias in California (AGU Fall Meeting)
The challenge of simulating the sensitivity of the Amazonian cloud microstructure to cloud condensation nuclei number concentrations (SIOC 217A)

Posters

- AGU 2023: **Polonik P.**, Ricke K., Burney J. Physical Climate Influences on Statistical Climate Impact Models.
- AGU 2021: Wan, J., Ricke K., Khanna G., Lin M., Lawless V., **Polonik P.**, Kadokura K. *Global Migration Response to Climate Trend and Variability*.
Light, T., McIntosh E., Cooper A., Ferrer E., Lana S., McKie T., **Polonik P.**, Sloan P. *The UCSD Climate Action and Policy Committee: A Blueprint for Graduate Student Climate Action on University Campuses*.
- AGU 2019: **Polonik P.**, Ricke K., Burney J. *Many Roads to Paris: The Uncertain Aerosol Emissions Implied by National Greenhouse Gas Reduction Targets*.
- AGU 2017: Biraud S., Chan S., Dengel S., **Polonik P.**, Hanson C.V., Billesbach P., Torn M.S. *Updates from the AmeriFlux Management Project Tech Team*
- AGU 2016: **Polonik P.**, W. Stephen Chan, Sebastien Biraud, David P. Billesbach, Ivan Bogoev, Benjamin Conrad, Anders Nottrott, George G. Burba, Jiahong Li. *Comparison of Gas Analyzers for Eddy Covariance: Effects of Analyzer Type and Spectral Corrections on Fluxes*.
Chan S., Billesbach D.P, Hanson C.V., Dengel S., **Polonik P.**, Biraud S. *The value of redundant measurements-highlights from AmeriFlux site visits using a portable eddy covariance system*.
- AGU 2015: Chan S., Biraud S., **Polonik P.**, Billesbach D., Hanson C.V., Bogoev I., Conrad B., Alstad K.P., Burba G.G., Li J. *Comparison of gas analyzers for quantifying eddy covariance fluxes – results from an irrigated alfalfa field in Davis, CA*.