

SAMANTHA HORDYK, M.S.

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RELEVANT PROFESSIONAL EXPERIENCE

Scientific Aid, Office of Information Management and Analysis

California State Water Resources Control Board

July 2026 – Present

- Coordinating with teams working in tribal engagement and water quality. Scoping data projects, identifying available datasets and technical constraints, and developing feasible approaches for analysis and utilization.
- Extending the Tribal Mapping Tool to incorporate more climate and pollution impact metrics and authoring associated public documentation in Quarto.
- Assessing salinity classification gaps for Safe-to-Swim sites by integrating statewide sampling databases with waterbody inventories in Python, informing monitoring priorities and dataset design,
- Building a Power BI dashboard to explore demographic coverage gaps and trends in statewide surface water monitoring (SWAMP).
- Openscapes Champion Program: Trained in reproducible data workflows, documentation, equitable communication, and team project management. Applied these practices by facilitating peer workflow discussions implementing consistent project documentation with the Water Quality Monitoring Council.

Graduate Research Assistant

Stanford University, SIGMA Research Group

September 2022 – December 2024

- Led independent research project investigating multiphase flow instabilities in melting permafrost.
- Executed direct numerical simulations of solid-fluid-gas interactions on high-performance computing clusters. Developed a Python post-processing pipeline using clustering algorithms to analyze large simulation datasets and identify emergent patterns by creating alignment metrics.

Haas Graduate Public Service Fellow

Stanford Haas Center for Public Service

September 2023 – June 2024

- Collaborated with a team of fellows on a year-long project applying principles of ethical community-engaged research, aimed at developing equitable climate solutions and adaptation plans.
- Partnered with local environmental nonprofits, community leaders, and university stakeholders to foster communication and advance engagement initiatives within the Stanford Doerr School of Sustainability.

Environmental Action Intern

MIT Environmental Solutions Initiative, Rapid Response Group

June 2021 – December 2021

- Produced rapid-response products on emerging environmental issues, including co-authoring a white paper on water access and ethical engagement in the Navajo Nation and assisting NRDC in reviewing public comments on the Migratory Bird Treaty Act.

SELECT PROJECTS

Ecosystem Services Valuation, Seattle Urban Heat Islands - Stanford University course, Gretchen Daily

- Modeled urban ecosystem services including cooling, carbon removal, and sediment retention using InVEST software and QGIS. Surveyed financial mechanisms for valuing and financing ecosystem services.
- Evaluated nature-based solutions for mitigating urban heat island effects in Seattle, assessing both efficacy and environmental justice implications.

Seattle Bioconnectivity Model - Independent project

- Built a cost-distance habitat network across 100,000+ urban green patches using ArcGIS and Python, identifying critical corridors and priority sites to reconnect fragmented clusters across urban barriers.

Compound Hazard Model - Stanford Wildfire Hackathon

- Led a team to implement and tune a Random Forest classifier (SciKit-Learn) with k-fold cross-validation and grid search hyperparameter optimization to predict debris flow risk in California, using rainfall intensity and recent fire history. The aim was to improve compound hazard event prediction with public data.

EDUCATION & CERTIFICATES

Stanford University - Master of Science in Geophysics

December 2024

Reed College - Bachelor of Arts in Physics

May 2022

SKILLS

Data & Programming- Python (GeoPandas, SciKit-Learn), Quarto, Git/GitHub, Excel, Power BI, Claude Code

Geospatial Analysis - ArcGIS, QGIS, InVEST, spatial modeling workflows, raster and vector analysis,

Communication - Technical and public writing, community engagement, project management, documentation