Kylene Cooley

cooleyky@oregonstate.edu | 707-843-6163
https://cooleyky.github.io | LinkedIn

EDUCATION

M.S. Ocean, Earth, and Atmospheric Sciences, Dec. 2021
Oregon State University (OSU), Corvallis, OR
College of Earth, Ocean, and Atmospheric Sciences (CEOAS). GPA: 3.77

Honors B.S. Physics, Earth Sciences Minor, June 2019
University of California—Santa Barbara (UCSB), Santa Barbara, CA
College of Letters and Sciences. Dean's List. Cumulative GPA: 3.62

SKILLS

Field & Oceanographic: A-frame operation for CTD profiles and trawls · ADCPs · CastAway-CTD · Transect lines · Geologic identification · Geologic surveying ·

Computational: Python, MATLAB, Bash, PostScript · Linux systems · Windows OS · Remote desktops and servers · LaTeX · Microsoft word processing, presentations, and spreadsheets · Digital signal processing · Reanalysis big data · Statistical analysis · Spectral analysis · GitHub ·

Interpersonal: Public speaking · Team leadership · Teaching · Project management · Mentoring · Customer service ·

DATA ANALYSIS EXPERIENCE

Faculty Research Assistant, CEOAS, OSU (Feb. 2022 – July 2022)

- Managed writing timelines and expectation of co-authors during one major and one minor round of revisions.
- Translated analytic results into plain language summary.
- Presented lightning-talk style 5-minute summary during Ocean Sciences Meeting conference in February 2022.
- Worked with journal editorial staff on completion of publication tasks.

Physical Oceanography Graduate Research Assistant, CEOAS, OSU (Sept. 2019 – Dec. 2021)
Advisors: Melanie Fewings and Jim Lerczak

Project 1: Air-sea surface heat flux off Central California:

- Researched past usage and approaches to mixed-layer heat budget in the scientific literature.
- Identified data sets necessary to estimate air-sea surface heat flux from the TOGA-COARE Bulk (material) Air-Sea Flux Algorithm.
- Retrieved marine and atmospheric datasets from National Oceanic and Atmospheric Administration National Buoy Data Center online database for specific buoys or near substitutes.

Project 2: Marine heat waves in mid-latitude regions (NASA Ocean Vector Winds Science Team):

- Analyzed marine and atmospheric data from climate reanalysis, satellite L2B products, and Argo floats for the southeastern Pacific Ocean.

- Synthesized proposed societal impact of research from current applications of similar scientific studies.
- Created maps and plots to illustrate results of analysis of discrete events in SST anomaly record over 40 years.
- Developed reusable routines to perform data filtering, manipulating, statistical analysis, and transforming large 40-year geophysical coastal and ocean datasets into graphical representations.

Gap-free SST Project Contributor, OceanHackWeek (Aug. 2020)

- Exercised teamwork with student and early career scientists from other institutions in international oceanography community with a senior scientist mentor.
- Wrote code to produce gapless SST prototype with kriging interpolation technique.
- Communicated and followed continuous integration to GitHub repository for source control.
- Co-wrote tutorial on data formats and extracting satellite data from a cloud-based source.
- Coded with open-source Python data science stack including: numpy, pandas, matplotlib, xarray, and scipy.
- Supported open science by posting Jupyter notebooks with prototype and tutorial codes to publicly accessible GitHub repository here: https://github.com/oceanhackweek/ohw20-proj-gapfree-sst

Physical Oceanography NSF Research Experiences for Undergraduates (REU) Intern, Marine Science Institute and Earth Research Institute Research Groups, UC Santa Barbra (June 2018 – Sept. 2018)

- Contributed to physical oceanography research for interdisciplinary group with Santa Barbara Channel NSF Long-Term Ecological Research project.
- Compared kelp location data with observed acoustic doppler current profiler (ADCP) wave pressure data and modeled paths of wave transport from kelp forests to beaches.
- Edited locations from flagged citizen scientist-contributed data and project scientists' data with GPS coordinates.
- Formatted geospatial data of tagged kelp on map with alongshore colormap.
- Communicated usage of Matlab scripts and dependencies in a README and ensured that self-contained unit was functional.

Marine Physical Laboratory (MPL) Intern, Scripps Institution of Oceanography, UCSD (June 2017 – Sept. 2017)

- Used digital signal processing techniques from ocean acoustics and electrical engineering.
- Analyzed frequency content of acoustic hydrophone data from air cannon tests and data from KRAKEN acoustic ray-tracing model output with spectral analysis in Matlab.
- Wrote input environment file with water, sediment, and bedrock layers for KRAKEN model.
- Presented slide about results and methods of research to MPL and Scripps personnel.

Summer Institute in Mathematics and Science Intern, Center for Science and Engineering Partnerships, California NanoSystems Institute, UCSB (Aug. 2015)

- Assisted in materials science research with applications to solid state drive memory.
- Worked with 3 other incoming physics and engineering undergraduate students.
- Interpreted results of x-ray diffraction data to determine that iron germanium (FeGe) with a cubic lattice molecular structure was present in 1 out of the 4 trials.
- Presented results of 4 trials performed over 2 weeks with research group to SIMS personnel and research mentors with presentation available here: https://sims-csep.cnsi.ucsb.edu/interns/cooley

---

TEACHING AND ADVISING EXPERIENCE

Graduate Teaching Assistant, CEOAS, OSU (Sept. 2021 – Dec. 2021)

Introduction to Oceanography:

- Taught weekly computer and oceanographic lab exercises for 10 weeks.
- Communicated background information within 10 minutes to 20 undergrads of varying scientific backgrounds.
- Collected and applied student feedback during academic term to provide additional information or resources on concepts.
- Communicated guidelines for effective scientific figure captions and describing trends observed in the data.

GRAD 550: Online Course Development, Graduate School, OSU (Sept. 2021 – Dec. 2021)

- Created active learning exercises to develop typesetting skills with LaTeX code.
- Prioritized promoting student-to-student interactions (connectivism) in course design and execution.
- Assembled deliverables in a teaching portfolio to explain vision for course here: https://cooleyky.github.io/TeachingPortfolio.html

Undergraduate Peer Advisor, Physics Department, UCSB (Sept. 2018 – June 2019)

- Improved efficiency of petition processing and compiling information for physics advising office staff.
- Directed undergraduate students of all majors to resources best-suited to individual issues.
- Updated student database with graduation, continuing, and new student info for department advising team (staff and faculty).

SELECT PUBLICATIONS

Cooley, K. M., Fewings, M. R., Lerczak, J. A., O'Neill, L. W., & Brown, K. S. (2022). Role of sea surface physical processes in mixed-layer temperature changes during summer marine heat waves in the Chile-Peru Current System. Journal of Geophysical Research: Oceans, 127, e2021JC018338. https://doi.org/10.1029/2021JC018338

SERVICE AND OUTREACH

Volunteer, Salmon Bowl (2020 & 2021)

2020:

- Supported mission of encouraging high school students to explore the depth and breadth of the ocean sciences at regional qualifier for National Ocean Science Bowl hosted at Oregon State University.

2021:

- Anonymized submitted team files before transferring to Google drive for graders.
- Coordinated with graders to ensure all questions were graded on schedule.
- Reported graded results for the original teams to Zoom room hosts.

AWARDS

College of Letters and Science Honors Program, 2017

- Discussed geometric problem-solving methods for problems involving Lorentz transformations and Minkowski Space-Time.
- Analyzed seismological data from underground nuclear bomb testing with Matlab.
- Researched climate change mitigation strategies and how they interact with the economy for Honors Seminar discussions.
- Volunteered with Cheadle Center for Biodiversity and Ecological Restoration for salt marsh restoration project that raised nearby neighborhoods out of the 100-year floodplain.