Dr. Paige E. Martin

Open Science Expert |Climate Data Scientist

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paigem

ACHIEVEMENTS

Open science community leadership

Pangeo Steering Council member, OpenSource.Science Steering Council member, Former AGU Steering Council member, Former Steering Council member and co-organizer of OceanHackWeek, Leader of the Big Data group for the Australian Climate Data Guide

Open science strategy

Program officer for open science solicitation in NASA's Office of the Chief Science Data Officer (OCSDO), Experience running proposal review panels for NASA OCSDO, Concept contributor to the White House Office of Science and Technology Policy Open Science Recognition Challenge, NASA lead for an Earth visualization open science competition in collaboration with the State Department, Invited speaker and session convener on open science strategy at numerous scientific conferences and seminars

Expertise in scientific computing, large datasets, and software development

Years of experience using community-developed scientific software (including Jupyter, Xarray, and Dask) to analyze large ocean and climate model datasets, Skilled user of high performance computing and commercial cloud (e.g. Google Cloud) infrastructure for scientific data analysis, Contributor to open-source tools (aerobulk-python, xrft), Understanding of data storage tools (e.g. Zarr, intake catalogs) and user data needs for scholarly research, Proficiency in git and GitHub

Open source education and curriculum development

Instructor and co-developer of NASA's introductory open science curriculum (Open Science 101), Developer and leader of Python computing curriculum at the Coastal Ocean Environment Summer School, Former mentor at OceanHackWeek events, Co-supervisor of a summer undergraduate student project at Columbia University

POSITIONS

Support Scientist — Nov. 2022 – present
Office of the Chief Science Data Officer — *Remote from NY*
NASA Headquarters
Senior Principal Research Scientist, Contractor to NASA HQ
ASRC Federal

Postdoctoral Research Scientist, Advisor: Ryan Abernathey — May 2022 – Nov. 2022
Lamont-Doherty Earth Observatory, Columbia University — *NY*

Postdoctoral Research Scientist (dual affiliation)
Research School of Earth Science, Australian National University — Feb. 2021 – Apr. 2022 — *Australia*
Advisor: Andy Hogg
Lamont-Doherty Earth Observatory, Columbia University — Apr. 2021 – Feb. 2022 — *NY*
Advisor: Ryan Abernathey

Research Assistant, *Advisor:* Brian Arbic — Jun. 2019 – Jul. 2020
University of Michigan, Earth and Environmental Sciences Dept. — *MI*

Graduate Student Research Assistant, *Advisor:* Brian Arbic — May 2013 – May 2019

University of Michigan, Earth and Environmental Sciences Dept. *MI*

Graduate Student Instructor Sep. 2012 – May 2013
University of Michigan, Physics Dept. *MI*

EDUCATION

University of Michigan, Dept. of Physics, Advisor: Brian Arbic *MI*
Ph.D. in Physics & Physical Oceanography Aug. 2019
M.S. in Physics Dec. 2017

Potsdam Institute for Climate Impact Research / Humboldt Universität, Physics Dept., *Advisor: Jürgen Kurths* Sep. 2011 – Aug. 2012 *Germany*
One-year fellowship (non degree-seeking)

Harvard University May 2011
A.B. (cum laude honors) in Physics, minor in French *MA*

Université Pierre et Marie Curie Sep. 2009 – Jan. 2010
Junior year abroad (through Hamilton College) *France*

FELLOWSHIPS

National Science Foundation Graduate Research Fellowship 2013 - 2018

Graduate Opportunities Worldwide (through NSF GRFP) Feb. – Jun. 2017
Awarded for research at the Australian National University, Canberra *Australia*

Fellow at the Geophysical Fluid Dynamics Program Jun. – Aug. 2014
Woods Hole Oceanographic Institute *MA*

DAAD Study/Research Graduate Scholarship in Germany 2011 - 2012
Potsdam Institute for Climate Impact Research/Humboldt Universität *Germany*

OUTREACH & CAPACITY DEVELOPMENT

Co-organizer and lead computing instructor of the Coastal Ocean and Environment Summer School in Nigeria and Ghana 2017 – present
An international collaboration aimed at advancing ocean science in West Africa

Co-organizer and mentor at OceanHackWeek 2021 – 2022
A collaborative learning experience aimed at exploring, creating and promoting effective computation and analysis workflows for large and complex oceanographic data.

Co-lead for Global Ocean Corps and Conveyor 2021 – present
A framework to facilitate capacity building around the world in ocean science

Scientific advisor for non-profit Plastic Punch (Accra, Ghana) 2019 – present
An NGO based in Ghana promoting circular economy and environmental preservation

SERVICE

Member of Open Source Science (joint NumFocus-IBM initiative) A community that brings together scientists and technology developers to drive a new open era of progress	Nov. 2022 – present
Member of the Pangeo Steering Council A community that develops and promotes open tools to enable big data geoscience	Feb. 2022 – present
Member of the OceanHackWeek Steering Council A collaborative learning experience aimed at exploring, creating and promoting effective computation and analysis workflows for large and complex oceanographic data.	Feb. 2022 – Nov. 2022
Co-organizer of Pangeo Oceania, a regional branch of Pangeo	Jun. 2021 – May 2022
Leader of "Working with Big and Challenging Data Collections" working group, part of the community-driven Australian Climate Data Guide	Feb. 2021 – present
Elected Early Career Council Member of the American Geophysical Union (AGU)	Jan. 2019 – Dec. 2022
Co-organizer of the Student/Early Career Conference at the AGU Fall Meeting	2016, 2020, 2021
Member of the AGU On-Demand Advisory Group for the 2016 AGU Fall Meeting	July – Sep. 2016
Student Member of the AGU Ocean Sciences Executive Committee	Feb. 2014 – Feb. 2016
Student Organizer for the 2016 Ocean Sciences Meeting	2014 – 2016
Conference session convener and chair: IGARSS 2023: *Open Science in Action* AGU Fall Meeting: *"Open Science Practices and Success Stories Across the Earth, Space, and Environmental Sciences"* Ocean Sciences Meeting: *"Open Ocean Science"* AGU Fall Meeting: *"Open Science in Action"* Dask Distributed Summit: *"Pangeo Workshop"*	 2023 2023 2022 2021 2021
Journal reviewer: *Journal of Climate, Journal of Geophysical Research: Oceans, npj Ocean Sustainability*	
Affiliations: American Geophysical Union, The Oceanography Society	

PUBLICATIONS

Light, C.X., Arbic, B.K., **Martin, P.E.** *et al.* (2022) Effects of grid spacing on high-frequency precipitation variance in coupled high-resolution global ocean-atmosphere models, *Climate Dynamics,* https://doi.org/10.1007/s00382-022-06257-6

Loose, N., Abernathey, R., Grooms, I., Busecke, J., Guillaumin, A.P., Yankovsky, E., Marques, G., Steinberg, J.M., Ross, A.S., Khatri, H., Bachman, S.D., Zanna, L., **Martin, P.** (2022). GCM-Filters: A Python Package for Diffusion-based Spatial Filtering of Gridded Data, *Journal of Open Source Software*. doi: 10.21105/joss.03947.

Martin, P. E., Arbic, B. K., & Hogg, A. M. (2021). Drivers of Atmospheric and Oceanic Surface Temperature Variance: A Frequency Domain Approach, *Journal of Climate*, *34*(10), 3975-3990. https://doi.org/10.1175/JCLI-D-20-0557.1

Nyadjro, E.S., Arbic, B.K., Buckingham, C.E., **Martin, P.E.** *et al.* (2021) Enhancing Satellite Oceanography-Driven Research in West Africa: a Case Study of Capacity Development in an Underserved Region. *Remote Sens Earth Syst Sci.* https://doi.org/10.1007/s41976-021-00051-4

Martin, P. E., Arbic, B. K., McC. Hogg, A., Kiss, A. E., Munroe, J. R., & Blundell, J. R. (2020). Frequency-Domain Analysis of the Energy Budget in an Idealized Coupled Ocean–Atmosphere Model, *Journal of Climate*, *33*(2), 707-726. https://doi.org/10.1175/JCLI-D-19-0118.1

Stolbova, V., **Martin, P.**, Bookhagen, B., Marwan, N., and Kurths, J. (2014). Topology and seasonal evolution of the network of extreme precipitation over the Indian subcontinent and Sri Lanka, Nonlin. Processes Geophys., 21, 901–917, https://doi.org/10.5194/npg-21-901-2014

Martin, P., 2014: A Study of Heat Transport and the Runaway Greenhouse Effect using an Idealized Model, *Proceedings of the 2014 Summer Program in Geophysical Fluid Dynamics*, Woods Hole, MA, Woods Hole Oceanographic Institute

AWARDS & HONORS

Outstanding Student Presentation Award, AGU Fall Meeting	2018
Invited participant at Physical Oceanography Dissertation Symposium (PODS), Kona, Hawaii	2018
Best talk, Student Conference, Research School of Earth Sciences, Australian National University	2017
Certificate of Achievement for "The Helping Hand: This is someone who has gone out of their way to help you or others," Rackham Graduate School, University of Michigan	2017

TEACHING & OTHER WORK EXPERIENCE

Instructor and Lead co-organizer of the Coastal Ocean Environment Summer School in Nigeria and Ghana, *University of Ghana* — Aug. 2023, *Ghana and Online*

- Computing lead: led a team of 6 scientific computing instructors
- Computing instructor: developed my own and curated community-supported Jupyter notebook tutorials from Project Pythia, hosted live virtual tutorials on scientific Python (including Intro to git/GitHub, Python en français, and Make a personal website with GitHub), and ran a cloud-based JupyterHub via 2i2c for participants

- Co-organizer of online school and co-lead organizer of the in-person school: co-developed the structure, organization, and schedule
- Project lead for the Python computing project group: led ~20 participants and 5 other instructors with the goal of increasing Python and scientific literacy and sharing knowledge for how to access NASA data
- Website maintainer (https://coessing.org)

Instructor of NASA's Open Science Curriculum: Open Science 101 2023

Taught at numerous conferences and events:

- American Meteorological Society's (AMS) Annual Meeting *Denver, CO*
- American Association for the Advancement of Science (AAAS) Annual Meeting *Washington, DC*
- NASA HQ workshop *Washington, DC*
- Lunar and Planetary Science Conference (LPSC) *Woodlands, TX*
- International Geoscience and Remote Sensing Symposium (IGARSS) *Pasadena, CA*
- American Society for Gravitational and Space Research (ASGSR) *Washington, DC*

Instructor and Lead co-organizer of the Coastal Ocean Environment Summer School in Nigeria and Ghana Aug. 2022/ Aug. 2021/ Aug. 2020/ Jan. 2020 *Online*

- Computing lead: led a team of 5 scientific computing instructors
- Computing instructor: created Jupyter notebook and video tutorials, hosted live tutorials on scientific Python, helped run a cloud-based JupyterHub for participants
- Lead co-organizer of online school: developed the structure and hosted the online school
- Provided general Python support for other topics and instructors at the school
- Website maintainer (https://coessing.org)

Teaching Assistant for Python for Atmosphere and Ocean Science workshop ICSHMO 2022 Feb. 2022 *Online*

Helped teach content from Data Carpentry lessons

Instructor and Co-organizer of the Coastal Ocean Environment Summer School in Ghana, *Regional Maritime University, Accra* Aug. 2019 *Ghana*

- Intro. to Python and Jupyter for Ocean Sciences
- Applied Python (laboratory course)
- "Roaming Python Expert": converted all school materials from Matlab to Python and provided Python support

Graduate Student Instructor, *University of Michigan* Fall 2018 *MI*

- Introduction to Physical Oceanography
- Converted all class materials from Matlab to Python

Instructor at the Coastal Ocean Environment Summer School in Ghana, *University of Ghana - Legon, Accra* Aug. 2018 *Ghana*

- Introduction to Python

Teaching Assistant at the Coastal Ocean Environment Summer School in Ghana, *Regional Maritime University, Accra* Aug. 2017 *Ghana*

Graduate Student Instructor, *University of Michigan* Fall 2012 – Spring 2013

- Physics 141: Elementary Lab 1

- Physics 136: Life Sciences Lab 1 — *MI*

Information Technology Coordinator and Co-teacher of course Physics and Go-Karts, *Exploration Summer Program* — Summer 2011, *MA*

Peer tutor, *Harvard College Bureau of Study Counsel* — 2008 – 2010, *MA*
- Physics, Math, French

PRESENTATIONS

Free and Open-Source Software for Geospatial - North America (FOSS4GNA) — Oct. 2023, *Baltimore, MD*
- *Invited keynote panelist*

National Cancer Institute's Open Data Symposium — Oct. 2023, *Bethesda, MD*
- *Invited plenary panelist*

Coalition for Academic Scientific Computation — Oct. 2023, *Online*
- *Invited talk: The Open Science Landscape at NASA and Beyond: Perspectives on Funding and Infrastructure*

University of California Open Source Symposium — Sep. 2023, *Santa Cruz, CA*
- *Keynote speaker: Challenges and opportunities of open science: NASA's open initiatives, open science communities, and the changing landscape of how we do science*

Texas Open Science Summit — Sep. 2023, *Online*
- *NASA's Transform to Open Science Initiative*

West Africa Marine Science Symposium — Aug. 2023, *Accra, Ghana*
- *Transforming to Open Science: NASA's Open Data for the West African Community*

Python Ghana event: Python in Industry: Open Science, Healthcare, and More — Aug. 2023, *Accra, Ghana*
- *Perspectives on Open Science*

Invited seminar speaker at NCAR (National Center for Atmospheric Research): Computational and Information Systems Lab (CISL) Seminar — Aug. 2023, *Boulder, CO*
- *Transforming to Open Science: Perspectives on How to Best Support Open Science*

IGARSS: International Geoscience and Remote Sensing Symposium — Jul. 2023, *Pasadena, CA*
- *Invited panelist: Towards Developing a Framework for Continuity of Satellite Observations of Earth's Climate and for Supporting Societal Resilience*
- *NASA Hyperwall talk: 2023 NASA's Year of Open Science*

SciPy 2023 — Jul. 2023, *Austin, TX*
- *Co-led townhall event: Funding Open Source Software*

IEEE Services: Symposium on Open Source Science — Jul. 2023, *Chicago, IL*
- *Invited plenary panelist: Open Source in Science and Enterprise*
- *Talk: To Be or Not To Be Open: A Scientist's Perspective*

"Diversifying Oceanography: The Coastal Ocean Environment Summer School in Ghana" / "Towards a Truly Global Ocean Science — *Online*

Enterprise: Ocean Corps and the Coastal Ocean Environment Summer School in Ghana", *a* series of seminars on the same topic, given jointly with collaborators:

- Harte Seminar, Texas A&M University-Corpus Christi
- Earth Science Seminar, *Jet Propulsion Lab* — Apr. 2023
- Environmental Science and Engineering Seminar, *Caltech* — Jun. 2022
- Research School of Earth Sciences School Seminar, *Australian National University* — Jan. 2022 / Jun. 2021
- Centre for Marine and Coastal Studies Seminar, *Universiti Sains Malaysia* — Apr. 2021
- Department of Earth, Environmental and Planetary Sciences Colloquium, *Brown University* — Jan. 2021
- Ocean and Climate Physics Seminar, Lamont-Doherty Earth Observatory, *Columbia University* — Sep. 2020

FOGSS (Future of Greenland Ice Sheet Science) — Mar. 2023
- *Keynote talk: NASA effort to transform to open science* — *Online*

IBM Climate Network Summit — Jan. 2023
- *Invited panelist: open-source software in the climate sciences* — *Yorktown Hts, NY*

AMS (American Meteorological Society) Annual Meeting — Jan. 2023 — *Denver, CO*
- *Quantifying the influence of mesoscale-driven air-sea fluxes on a global scale*
- *Aerobulk Python: Climate model air-sea fluxes in Python*

AGU Fall Meeting — Dec. 2022 — *Chicago, IL*
- *Quantifying the influence of mesoscale-driven air-sea fluxes on a global scale*
- *How does AGU's strategic plan affect me?*

Ocean Sciences Meeting — Feb. 2022 — *Online*
- *Diagnosing air-sea interaction via ocean surface temperature variance across time scales*
- *Ocean Corps: Inspiring sustained, long-term ocean science education and research collaborations between nations*

AGU Fall Meeting — Dec. 2021 — *Online*
- *A Catch-All Approach to Ocean Capacity Building in West Africa*
- *The Pangeo Community [invited speaker]*
- *Social Responsibility in the Earth and Space Sciences: An Early-Career Perspective*

CLEX Annual Workshop (Australian Research Council's Centre of Excellence in Climate Extremes) — Nov. 2021 — *Online*
Drivers of SST Variance Across Timescales and Model Resolution

Earthcube 2021 — Jun. 2021 — *Online*
Frequency-Domain Analysis of Large Datasets

AGU Fall Meeting — Dec. 2020 — *Online*
- *Drivers of Atmospheric and Oceanic Surface Temperature Variance*
- *Python and Open-Source Software for Developing Countries: A Catalyst for Change*

Ocean Sciences Meeting Feb. 2020
- *Spectral Energy Budget Analysis in the Frequency Domain* *San Diego, CA*
- *Python and Open-Source Software for Developing Countries: A Catalyst for Change*

AGU Fall Meeting Dec. 2019
- Poster: *Diagnosing Energy Transfer in an Idealized, North Atlantic, Ocean-Atmosphere Model* *San Francisco, CA*
- Invited e-Lightning talk: *Frequency-Domain Analysis of the Energy Budget in an Idealized, Coupled, Ocean-Atmosphere Model*
- Centennial Stage talk: *Enhancing research in developing countries: the power of open source software*

AGU Fall Meeting Dec. 2018
- *Diagnosing Energy Transfer in an Idealized, North Atlantic, Ocean-Atmosphere Model* *Washington, DC*

Physical Oceanography Dissertation Symposium (PODS) Oct. 2018
- *Diagnosing Energy Transfer in an Idealized, Ocean-Atmosphere Model: A Frequency-Domain Approach* *Kona, HI*

Annual COSIMA Workshop May 2018
- *Frequency-Domain Analysis of Energy Transfer in an Idealized Ocean-Atmosphere Model* *Canberra, Australia*

Ocean Sciences Meeting Feb. 2018
- *Frequency-Domain Analysis of Energy Transfer in an Idealized Ocean-Atmosphere Model* *Portland, OR*

DRAKKAR Annual Workshop Jan. 2018
- *Frequency-Domain Analysis of Energy Transfer in an Idealized Ocean-Atmosphere Model* *Grenoble, France*

CLIVAR Open Science Conference Sep. 2016
- *Extratropical Frontal- and Meso-scale Air-Sea Interaction: Diagnosing Forced Versus Intrinsic Low-Frequency Variability in an Idealized North Atlantic Ocean-Atmosphere Model* *Qingdao, China*

Ocean Sciences Meeting Feb. 2016
- *The Ocean or the Atmosphere: Diagnosing Forced Versus Intrinsic Low-Frequency Variability in an Idealized North Atlantic Coupled Ocean-Atmosphere Model* *New Orleans, LA*

AGU Fall Meeting Dec. 2015
- *Network Analysis of Atmospheric Rossby Wave Patterns in the Northern Midlatitudes* *San Francisco, CA*

EGU General Assembly Apr. 2015
- Oral PICO (“Presenting Interactive Content”) Student Pop-up Talk: *Networks and Climate: Are they a Good Match?* *Vienna, Austria*
- Poster: *Frequency Domain Analysis of Forced Versus Intrinsic Variability in a Quasi-Geostrophic Coupled Ocean Atmosphere Model*

AGU Fall Meeting Dec. 2014
San Francisco, CA

- *Topology and Seasonal Evolution of the Network of Extreme Precipitation over the Indian Subcontinent and Sri Lanka*

RESEARCH CRUISE

Research Vessel Sally Ride: Mode 2 internal waves near the Mendocino Ridge — Dec. 2019

Pacific Ocean

OTHER INTERESTS

Performing in musical theater (professional performer), singing, tap dancing, partner acrobatics, gymnastics, aerial silks, hand balancing, pole vaulting, speaking in French and German, birding