Dr. Paige E. Martin

Climate Data Scientist | Open Science Enthusiast

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CURRENT POSITION

Postdoctoral Research Scientist (dual affiliation)
Lamont-Doherty Earth Observatory, Columbia University, New York City, NY, USA
Australian National University, Canberra, Australia
Sep. 2020 – present
Advisor: Prof. Ryan Abernathey, Lamont-Doherty Earth Observatory, Columbia University, New York City, NY, USA
I work at the intersection of climate science and data science, using and developing open-source tools to analyze climate model data to better understand the physical mechanisms driving our climate system.

EDUCATION

University of Michigan, Department of Physics, Ann Arbor, MI, USA
Ph.D., Aug. 2019, **M.S.**, Dec. 2017
Advisor: Prof. Brian Arbic (Dept. of Earth and Environmental Science)
Thesis: Diagnosing Energy Transfer in an Idealized Ocean-Atmosphere Model: A Frequency-Domain Approach

Humboldt Universität, Physics Department, Berlin/**Potsdam Institute for Climate Impact Research**, Germany
Sep. 2011 – Aug. 2012
Advisor: Prof. Dr. Dr. h.c. Jürgen Kurths
Research focus: Climate network analysis to study the spatiotemporal evolution of rainfall in the Indian monsoon

Harvard University, Cambridge, MA, USA
A.B. with cum laude honors in Physics, minor in French, May 2011

Université Pierre et Marie Curie, Paris, France, Sep. 2009 – Jan. 2010, through Hamilton College Junior Year in France

PREVIOUS RESEARCH POSITIONS

Research Assistant, University of Michigan, Earth and Environmental Sciences Department, Ann Arbor, MI — Jun. 2019 – Jul. 2020

Graduate Student Research Assistant, University of Michigan, Earth and Environmental Sciences Department, Ann Arbor, MI — May 2013 – May 2019

FELLOWSHIPS

National Science Foundation Graduate Research Fellowship (NSF GRFP) — 2013 - 2018

Graduate Opportunities Worldwide, part of the NSF GRFP, awarded for research at the Australian National University, Canberra, Australia — Feb. – Jun. 2017

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

DAAD Study/Research Graduate Scholarship in Germany, Potsdam Institute for Climate Impact Research, Humboldt University-Berlin — 2011-2012

PUBLICATIONS

Light, C. X., Arbic, B. K., **Martin, P. E.**, *et al. (in press)* Effects of grid spacing on high-frequency precipitation variance in coupled high-resolution global ocean-atmosphere models, *Climate Dynamics*

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

OUTREACH & CAPACITY BUILDING

Co-organizer and lead computing instructor of the Coastal Ocean and Environment Summer School in Ghana (https://coessing.org) — 2018-present

Co-organizer and mentor at Ocean Hack Week (https://oceanhackweek.github.io) — Jun. – Aug. 2021

Scientific advisor for non-profit Plastic Punch, Accra, Ghana (https://plasticpunchngo.org) — Aug. 2019 – present

SERVICE

Elected Student/Early Career Council Member of the American Geophysical Union (AGU) — Jan. 2019 – present

Co-organizer of Pangeo Oceania, a regional branch of Pangeo (https://pangeo.io) — Jun. 2021 - present

Co-organizer of the Student Conference at the 2016 AGU Fall Meeting — Dec. 2016

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

Journal reviewer: *Journal of Climate, Journal of Geophysical Research: Oceans*

Conference session convener:

- 2022 Ocean Sciences Meeting: *"Open Ocean Science"*
- 2021 AGU Fall Meeting: *"Open Science in Action"*
- 2021 Dask Distributed Summit: *"Pangeo Workshop"*

Affiliations: American Geophysical Union, The Oceanography Society

AWARDS AND 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 AND OTHER WORK EXPERIENCE

August 2020/January 2021 **Instructor and Co-organizer** of the Coastal Ocean Environment Summer School in Ghana
Online
Python instructor: created Jupyter notebook and video tutorials, and hosted live tutorials on scientific Python
Provided general Python support for other topics and instructors at the school

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

Fall 2018 **Graduate Student Instructor** (and converted the class from Matlab to Python)
University of Michigan
Introduction to Physical Oceanography

August 2018 **Instructor** at the Coastal Ocean Environment Summer School in Ghana
University of Ghana - Legon, Accra, Ghana
Introduction to Python

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

Fall 2012 – Spring 2013 **Graduate Student Instructor**
University of Michigan
Physics 141: Elementary Lab 1
Physics 136: Life Sciences Lab 1

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

2008-2010 **Peer tutor** (physics, math, French)
Harvard College Bureau of Study Counsel

PRESENTATIONS

Dec. 2021 AGU Fall Meeting, virtual
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

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

Jun. 2021 Earthcube 2021, virtual
Frequency-Domain Analysis of Large Datasets

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

Sep. 2020 Ocean and Climate Physics Seminar, Lamont-Doherty Earth Observatory (joint presentation)
Diversifying Oceanography: The Coastal Ocean and Environment Summer School in Ghana

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

Dec. 2019 AGU Fall Meeting, San Francisco, CA:
Poster: *Diagnosing Energy Transfer in an Idealized, North Atlantic, Ocean-Atmosphere Model*
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*

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

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

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

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

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

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,* CLIVAR Open Science Conference, Qingdao, China

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

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

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

Dec. 2014 *Topology and Seasonal Evolution of the Network of Extreme Precipitation over the Indian Subcontinent and Sri Lanka,* AGU Fall Meeting, San Francisco, CA

RESEARCH CRUISE

1-8 Dec. 2019 R/V Sally Ride: Mode 2 internal waves near the Mendocino Ridge

OTHER INTERESTS

Singing, dancing, musical theater, partner acrobatics, gymnastics, aerial silks, acroyoga, hand balancing, pole vaulting, speaking in French and German, spotting Australian birds