Kelsey Malloy

kelsey.malloy@rsmas.miami.edu
https://kelseymalloy.github.io/

PUBLICATIONS

Malloy, K.M. and Kirtman, B.P. (2021). East Asian monsoon forcing and North Atlantic subtropical high modulation of summer Great Plains low-level jet. *Climate Dynamics*, submitted.

Malloy, K.M. and Kirtman, B.P. (2021). The summer Asia-North America teleconnection and its modulation by ENSO in Community Atmosphere Model, version 5 (CAM5). *Climate Dynamics*, in revision, 10.21203/rs.3.rs-1062059/v1.

Malloy, K.M. and Kirtman, B.P. (2020). Predictability of Midsummer Great Plains Low-Level Jet and Associated Precipitation. *Wea. Forecasting*, 35, 215–235, https://doi.org/10.1175/WAF-D-19-0103.1.

Mahoney, K., Swales, D., Mueller, M.J., Alexander, M., Hughes, M., and Malloy, K. (2018). An Examination of an Inland-Penetrating Atmospheric River Flood Event under Potential Future Thermodynamic Conditions. *J. Climate*, 31, 6281–6297, https://doi.org/10.1175/JCLI-D-18-0118.1.

EDUCATION

University of Miami Rosenstiel School of Marine & Atmospheric Science — Expected defense: May 2022
Ph.D. Thesis: Predictability of U.S. Summer Hydroclimate via Extratropical Teleconnections
Advisor: Ben Kirtman

Bachelor of Science: University of Maryland - College Park, Honors College — 2017
Atmospheric & Oceanic Science, Departmental Honors — GPA: 3.82
Minor: Geography-Remote Sensing of Environmental Change

RESEARCH EXPERIENCE

Graduate Research Assistant, Univ. Miami Rosenstiel School — Fall 2017-Present
Ph.D. Committee: Drs. Ben Kirtman, Amy Clement, Emily Becker, Brian Mapes, Hosmay Lopez

- Predictability of summer U.S. hydroclimate on S2S and interannual timescales via understanding of large-scale circulation responses and and interactions between teleconnections
- Using Python and creating Jupyter notebooks for reading and visualizing data
- High-level spatiotemporal data analysis on:
    - Reanalysis and observational datasets (ERA5, MERRA-2, ERSST, NCEP/NCAR, etc.)
    - Community Climate System Model, v4 (CCSM4) forecast output
    - Dry nonlinear baroclinic atmospheric model output
    - Community Atmospheric Model, v5 (CAM5) output
- Community Earth System Model (CESM1.2) and CAM5 setup, build, & conducted four different prescribed SST experiments, and mentored other graduate students on CESM process
- Setup, write code for monsoon forcing, developed, and conducted idealized forcing experiments with a dry nonlinear baroclinic AGCM; created documentation, and mentored other graduate students; created scripts/functions for reading model output used by other graduate students
- Build linear QG model that generates an upper-level mid-latitude response given a mean state (jet stream climatology) and forcing

- Accepted oral presentation for 2022 AMS annual meeting
- 1-hour Seminar for Dept. of Atmospheric Science at Rosenstiel School in November 2021
- Oral presentation at 2021 AMS annual meeting
- Oral presentation at Rosenstiel School Student Seminar series in 2019, 2020, 2021
- Invited presentation at North American Multi-Model Ensemble (NMME) monthly meeting (Feb 2020)
- Poster presentation at 2020 AMS annual meeting

Collaborator, PyWR, Weather Typing and S2S Sources of Predictability Summer 2021-Present
Projects Leads: Ángel Muñoz and Andrew Robertson

- Project in collaboration with participants of NCAR Advanced Study Program *The Science of S2S Predictions* PyWR and Weather Typing group and International Research Institute/Lamont-Doherty Earth Observatory (IRI/LDEO) scientists
- Applying weather typing via *k*-means clustering to explore summertime predictability of North Atlantic circulation and associated precipitation
    - Primary contribution – boreal summer intraseasonal oscillation and East Asian monsoon as a source of predictability for summer weather types
- Accepted poster presentation for 2022 AMS annual meeting

Intern, NOAA Climate and Weather Prediction Center, Ocean Prediction Center Fall 2016-Spring 2017

- Building case study analysis of stratospheric air intrusion events and improving hurricane-force wind forecasts of extratropical cyclones in Atlantic Ocean using satellite imagery
- Give presentations or instructional kits to Alaskan Weather Forecast Offices and Ocean and Weather Prediction Centers
- Research defended for senior thesis:
    - oral prospectus defense in Fall 2016
    - poster presentation in Spring 2017
- Poster presentation at 2017 AMS Annual Meeting
- Invited presentation at Ocean Prediction Center in July 2017

Intern, NOAA Earth System Research Lab Physical Sciences Division (ESRL/PSD) Summer 2016

- Diagnosed case study of atmospheric river event by comparing "present-day" precipitation and moisture transport over western US with simulated "future" case using pseudo-global warming approach
    - Work with Weather and Research Forecasting (WRF) output to compare control (present-day) run with pseudo-global warming (future) run
- Oral presentation at NOAA Hollings Research Symposium
- Poster presentation at 2017 AMS Annual Meeting

Intern, UC San Diego Scripps Undergraduate Research Fellowship (SURF) Summer 2015

- Compared vertical profiles of Feb. 6th 2015 atmospheric river event using NCEP/NCAR Final Reanalysis model and dropsonde data
- Poster presentation at SIO SURF Student Symposium
- Poster presentation at 2016 AMS Annual Meeting

RELEVENT GRADUATE EXTRACURRICULARS

Founder, Writer, Editor, *Seasoned Chaos* blog about subseasonal-to-seasonal forecasting Present

- https://seasonedchaos.github.io

Lead Coordinator, Students for Students Outreach Present
Mentor, Rosenstiel School Graduate-Undergraduate Mentoring program Present

Rosenstiel School Climate Group — Present
Rosenstiel School Marine Science Graduate Student Organization's Sustainability Initiative — 2020-2021
Rosenstiel School Marine Science Graduate Student Organization's Earth Week Committee — 2020-2021
Creator, Rosenstiel School Seas by Degrees Video Seminar Series — March 2021
- On YouTube as *Opening a Climate Scientist's Toolbox: What is a Climate Model?*

Rosenstiel School Student Seminar Committee — 2019-2020
Presenter/Collaborator, Rosenstiel School *Lunch Bytes* Seminar Series — Spring 2019
Rosenstiel School Atmospheric Science Dept. Student Ambassador — 2018-2019

TEACHING EXPERIENCE

Tutor for high school students, mostly math and science — Present
Teaching Assistant for Data Analysis Methods (graduate course) — Spring 2020
Teaching Assistant for Weather Forecasting — Spring 2019
Teaching Assistant for Large-scale Atmospheric & Oceanic Dynamics — Spring 2017
Teaching Assistant for Atmospheric Thermodynamics — Fall 2016

SKILLS & AWARDS

- Excellent writing skills and overall science communication skills (by medium of oral presentations, writing, video-making, interviews)
- Involvement in many extracurricular and community organizations, including taking on leadership positions
- Tutoring and teaching experience from middle school to graduate level
- Participated and attended the 2021 NCAR Advanced Summer Program "The Science of Subseasonal-to-Seasonal Predictions" Colloquium and Workshop
- Runner-up for 2020-2021 Rosenstiel School Student Seminar *Best Presentation Skills* award
- Programming Languages: Python, Matlab, Shell, Git Bash, Fortran, Markdown/HTML, NCAR Command Language (NCL), C
- Software/Operating Systems: Linux/Unix, Git Bash, Microsoft Office (Word, Excel, Powerpoint, etc.)
- Involved in Machine Learning/Artificial Intelligence literature reading group with some experience in applying to climate data
- Accepted into 2020 Swiss Climate Summer School (canceled because of COVID-19)
- Participated in Summer 2018 Weather and Climate Extremes NCAR Tutorial/Workshop
- 2017 University of Maryland Undergraduate Researcher of the Year
- 2017 University of Maryland Philip Merrill Presidential Scholar
- 2017 Richard Jordan Scholar (for atmospheric & oceanic science senior thesis presentations)
- 2015-2016 NOAA Ernest F. Hollings Scholar

RELEVANT GRADUATE-LEVEL COURSES

Univ. Miami. (30 credits)
Intro to ATM, Climate Change, Geophysical Fluid Dynamics I & II, General Circulation of Atmosphere, Data Analysis Methods, Advanced Weather Forecasting, Predictability, ENSO Dynamics, Computational Fluid Dynamics

Univ. Maryland (6 credits)
Physical Oceanography
Analysis Methods in Atmospheric & Oceanic Sciences