

Jeremy M. Klavans

Miami, FL
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EDUCATION

- University of Miami Rosenstiel School of Marine and Atmospheric Science** Miami, FL
2015 – 2020
- Ph.D. in Meteorology and Physical Oceanography
 - Thesis: The Principal Role of External Forcing in Multidecadal North Atlantic Climate Variability
 - Committee: Professors Amy C. Clement (advisor), Mark A. Cane, Ben P. Kirtman, M. Susan Lozier, and Brian J. Soden
- University of Chicago Harris School of Public Policy** Chicago, IL
2012 – 2014
- M.S. in Environmental Science and Policy with Honors
 - Thesis: The Influence of Model Resolution on Temperature Variability
 - Advisors: Professors Elisabeth J. Moyer and Robert Rosner
- University of Miami** Coral Gables, FL
2007 – 2011
- B.A., *cum laude*, in Ecosystem Science and Policy & Political Science with Departmental Honors

RESEARCH EXPERIENCE

- University of Miami Rosenstiel School of Marine and Atmospheric Science** Miami, FL
Assistant Scientist 2025 - Present
- Developed cohesive metrics for contextualizing the signal-to-noise problem in climate models
 - Applied climate predictions to impacts on human health and the environment in S. Florida
- University of Colorado, Boulder** Boulder, CO
Postdoctoral Associate 2020 - 2025
- Investigated the influence of external forcing on key modes of Pacific climate variability
 - Appraised forced ENSO responses in new large ensembles of climate models
- University of Miami Rosenstiel School of Marine and Atmospheric Science** Miami, FL
Graduate Researcher 2015 – 2020
- Quantified role of external forcing in North Atlantic climate variability in large ensembles of climate models, observations, and proxy reconstructions
 - Experimented with CESM to identify the influence of ocean model complexity on the AMV
- Center for Robust Decision Making on Climate and Energy Policy** Chicago, IL
Research Assistant 2013 – 2015
- Assessed the influence of model resolution on the statistics of both local and global climate at all timescales
 - Developed decision-maker/citizen support tools focusing on climate and energy policy (e.g. [RPS Calculator](#))
 - Contextualized and clarified scientific and economic models into content for a general audience (e.g. [webDICE](#))
- Bulletin of the Atomic Scientists** Chicago, IL
Research Assistant 2013 – 2015
- Compiled country-level data on the cost of nth-of-a-kind advanced fuel cycle reactors
 - Designed [online tool](#) to model and compare electricity costs of each fuel cycle for each country

SELECTED PROFESSIONAL EXPERIENCE

- Maryland Department of the Environment, Water Management Administration** Baltimore, MD
Compliance and Policy Intern 2012
- Collaborated with Compliance Engineers to ensure adequate drinking water quality
 - Distilled water policy for Marcellus Shale Safe Drilling Initiative and the Interstate Commission on the Potomac River Basin
- Beta Analytic** Miami, FL
Laboratory Technician 2011
- Assisted in the chemical preparation of samples for both the Accelerator Mass Spectrometry and Liquid Scintillation Counting methods of radiocarbon dating

TEACHING AND MENTORSHIP EXPERIENCE

Climate Change (Univ. of Miami) • Guest lecturer	2025
Weather and the Atmosphere (Univ. of Colorado) • Guest lecturer, teaching assistant coordinator	2021-2022
Research Experience for Undergraduates (Univ. of Colorado) • Mentor for multiple undergraduate research projects	2021-2023
Students for Students (Univ. of Miami) - Guest lecturer for middle and high school classes on climate change and impacts in South Florida	2019-2020
IMPACT (Frost Museum of Science and Miami-Dade County Public Schools) • Mentor for students from under-resourced communities on computer and climate sciences	2018-2019
RSMAS Teaching Assistant Training Program (Univ. of Miami) • Lecturer	2018
Climate and Global Change (Univ. of Miami) • Teaching Assistant, guest lecturer, lab coordinator	2017
Department of Meteorology (Univ. of Miami) • Graduate student advisor, floating teaching assistant, and tutor	2016
Decisions and Organizations (Univ. of Chicago) • Teaching Assistant and weekly lecturer for graduate level course	2014
Urban Research (Lindblom Math and Science Academy) • Volunteer lab coach	2014-2015

AWARDS & HONORS

Grant, Fellowship, and Scholarship Awards

- US CLIVAR Meeting Sponsorship for CESM High Resolution Modeling Workshop (2025)
- University of Miami Fellowship (highest award offered by UM Graduate School)
- Academic scholarship at the University of Chicago (M.S.)
- Academic scholarship at the University of Miami (B.A.)
- Travel grants: Held Symposium (2018), Large Ensembles Workshop (2019), PAGES Paleo-Aerosol Workshop (2025)

Honors

- F.G. Walton Smith Prize for outstanding Ph.D. dissertation (2021)
- RSMAS Teaching Assistant Excellence Award (2018)

PEER REVIEWED PUBLICATIONS

15. Chengfei He, Amy C. Clement, Mark A. Cane, Alex Gonzalez, Young-Oh Kwon, Jai-Rui Shi, **Jeremy M. Klavans**, Lisa N. Murphy. "Climate models exaggerate the impact of greenhouse gases on recent interhemispheric temperature contrast and tropical climate." *Nature Communications*. 2026. <https://doi.org/10.1038/s41467-026-69783-5>
14. Clement, Amy C., Mark A. Cane, **Jeremy M. Klavans**, Chengfei He, Lisa N. Murphy. "The Signal-to-Noise Problem in Climate Change." *Journal of Climate*. 2026. <https://doi.org/10.1175/JCLI-D-25-0190.1>
13. **Klavans, Jeremy M.**, Pedro N. DiNezio, Amy C. Clement, Clara Deser, Timothy M. Shanahan, Mark A. Cane. "Human Emissions Drive the Pacific Decadal Oscillation." *Nature*. 2025. <https://doi.org/10.1038/s41586-025-09368-2>
12. Todd, Victoria L., Timothy M. Shanahan, Pedro N. DiNezio, **Jeremy M. Klavans**, Peter J. Fawcett, R. Scott Anderson, Gonzalo Jiménez-Moreno, Allegra N. LeGrande, Francesco S.R. Pausata, Alexander J. Thompson, Jiang Zhu. 2025. "North Pacific response to hemispheric warming forces Holocene drought." *Nature Geosciences*. <https://doi.org/10.1038/s41561-025-01726-z>
11. Kay McMonigal, Sarah M. Larson, Melissa Gervais, **Jeremy M. Klavans**, Chengfei He, Mark A. Cane, Susanna Corti, Katinka

Bellomo. 2025. “Fingerprints of AMOC Decline are Sensitive to External and Mechanistic Forcing.” *Geophysical Research Letters*. <https://doi.org/10.1029/2025GL116307>

10. He, Chengfei, Amy C. Clement, Sydney M. Kramer, Mark A. Cane, **Jeremy M. Klavans**, Tyler M. Fenske, Lisa N. Murphy. “Tropical Atlantic Multidecadal Variability is Dominated by External Forcing.” 2023. *Nature*. <https://doi.org/10.1038/s41586-023-06489-4>

9. Maher, Nicola, Robert C. Jnglin Wills, Pedro N. DiNezio, **Jeremy M. Klavans**, Sebastian Milinski, Sara C. Sanchez, Samantha Stevenson, Malte F. Steucker, and Xian Wu. 2022. “The future of the El Niño-Southern Oscillation: Using large ensembles to illuminate time-varying responses and inter-model differences.” *Earth System Dynamics*. <https://doi.org/10.5194/esd-14-413-2023>

8. He, Chengfei, Amy C. Clement, Mark A. Cane, Lisa N. Murphy, **Jeremy M. Klavans**, Tyler M. Fenske. 2022. “A North Atlantic warming hole without ocean circulation.” *Geophysical Research Letters*. <https://doi.org/10.1029/2022GL100420>

7. **Klavans, Jeremy M.**, Amy C. Clement, Mark A. Cane, Lisa N. Murphy. 2022. “The Evolving Role of External Forcing in North Atlantic SST Variability Over the Last Millennium.” *Journal of Climate*. <https://doi.org/10.1175/JCLI-D-21-0338.1>

6. **Klavans, Jeremy M.**, Mark A. Cane, Amy C. Clement, Lisa N. Murphy. 2021. “NAO Predictability Due to External Forcing.” *npj Climate and Atmospheric Science*. <https://doi.org/10.1038/s41612-021-00177-8>

5. Murphy, Lisa N., **Jeremy M. Klavans**, Amy C. Clement, Mark A. Cane. 2021. “Investigating the Roles of External Forcing and Ocean Circulation on the Atlantic Multidecadal SST Variability in a Large Ensemble Climate Model Hierarchy.” *Journal of Climate*. <https://doi.org/10.1175/JCLI-D-20-0167.1>

4. Waite, Amanda, **Jeremy M. Klavans**, Lisa N. Murphy, Amy C. Clement, Anton Eisenhauer, Volker Liebetrau, Peter K. Swart. 2020. “Observational and Model Evidence for an Important Role in Volcanic Forcing in Driving Atlantic Multidecadal Variability Over the Last 600 years.” *Geophysical Research Letters* 47. <https://doi.org/10.1029/2020GL089428>

3. **Klavans, Jeremy M.**, Amy C. Clement, Lisa N. Murphy, Honghai Zhang. 2020. “Identifying the Externally-forced Atlantic Multidecadal Variability Signal through Florida Rainfall.” *Geophysical Research Letters* 47 (20). <https://doi.org/10.1029/2020GL088361>

2. **Klavans, Jeremy M.**, Amy C. Clement, and Mark A. Cane. 2019. “Variable External Forcing Obscures the Weak Relationship between the NAO and North Atlantic Multidecadal SST Variability.” *Journal of Climate* 32 (13): 3847–64. <https://doi.org/10.1175/JCLI-D-18-0409.1>

1. **Klavans, Jeremy M.**, Andrew Poppick, Shanshan Sun, and Elisabeth J. Moyer. 2017. “The Influence of Model Resolution on Temperature Variability.” *Climate Dynamics* 48 (9–10): 3035–45. [doi:10.1007/s00382-016-3249-6](https://doi.org/10.1007/s00382-016-3249-6)

SUBMITTED MANUSCRIPTS

Mahowald, Natalie, Jordan Abell, Adwoa Aboagye-Okyere, Joe Adabouk Amooli, Samuel Albani, Susanne Bauer, Emilie Beaudon, Hunter Brown, Nathan Chellman, Nicolás Cosentino, Nathali Goodkin, Chris Guiterman, Douglas Hamilton, Stijn Hantson, Chengfei He, Aviva Intveld, Jed Kaplan, **Jeremy M. Klavans**, Jasper Kok, Hannah Liddy, Haobo Liu, Jennifer Marlon, Joe McConnell, David McGee, Zachary McGraw, Keren Mezuman, Ron Miller, Nicholas A. O’Mara, Maria Rosabelle Ong, Gavin Schmidt, Kostas Tsigaridis, Richard Vachula, Gisela Winckler, Lily Wu, Bingqing Zhang, Sally Archibald, Myriam Khodri, Fabrice Lambert, Marie-France Loutre, Michael Sigl. “Characterizing Natural Aerosol Variability and its Uncertainty in the Earth System.” *Submitted to Atmospheric Chemistry and Physics*.

Cuong Sieu San, DiNezio, Pedro N., Clara Deser, Chang Ping, Nan Rosenbloom, Stehen Yeager, Robert Jnglin Wills, Julia Mindlin, Marisol Osman, Carolina Vera, **Jeremy M. Klavans**, Nicola Maher, “High-resolution simulations reconcile observed Pacific climate trends with anthropogenic forcing.” *Submitted to Science*.

MANUSCRIPTS IN PREPARATION

Klavans, Jeremy M., Amy C. Clement, Mark A. Cane, Pedro N. DiNezio, Tim Shanahan. “Emergent Predictability of Western U.S. Precipitation due to Anthropogenic Emissions in a High-Resolution Climate Model”. *In prep*.

Klavans, Jeremy M., and Lorenzo Polvani. “The signal-to-noise paradox in arctic sea ice”. *In prep*.

Klavans, Jeremy M., Amy C. Clement, Mark A. Cane, Lisa N. Murphy, Chengfei He, Charles Ogle, Pedro N. Dinezio. “The Breakup of the North Atlantic Atmosphere and Ocean Due to Human Affairs.” *In prep*.

Savita, Abhishek, Amy C. Clement, Chengfei He, **Jeremy M. Klavans**, Lisa N. Murphy, Mark A. Cane. “Impact of Ocean Processes and External Forcing on Atmospheric Modes of Variability.” *In prep.*

INVITED PRESENTATIONS

Klavans, Jeremy M., Pedro N. DiNezio, Amy C. Clement, Clara Deser, Timothy M. Shanahan. “The Signal-to-Noise Error in Decadal Climate Modes.” Invited presentation at A Session Honoring Mark Cane’s Legacy and Reflecting on the Future of Climate Science, American Meteorological Society Annual Meeting, New Orleans, LA, 2025.

Klavans, Jeremy M., Pedro N. DiNezio, Amy C. Clement, Clara Deser, Timothy M. Shanahan. “The Signal-to-Noise Error in Decadal Climate Modes.” Invited presentation at the US CLIVAR Workshop on Confronting Earth System Model Trends with Observations: the Good, the Bad, and the Ugly, Boulder, CO, 2024.

Klavans, Jeremy M., Pedro N. DiNezio, Amy C. Clement, Clara Deser, Timothy M. Shanahan. “Human Emissions Drive the Pacific Decadal Oscillation”. Invited presentation at Colorado State University, Ft. Collins, CO. 2023.

SELECTED PRESENTATIONS

Klavans, Jeremy M., Pedro N. DiNezio, Amy C. Clement, Clara Deser, Timothy M. Shanahan. “Human Emissions Drive the Pacific Decadal Oscillation”. American Meteorological Society Annual Meeting, Denver, CO, 2023.

Klavans, Jeremy M. and Pedro N. DiNezio. “Human Emissions Drive the Pacific Decadal Oscillation”. CLIVAR Climate Dynamics Panel Annual Workshop. Virtual. 2022.

Klavans, Jeremy M., Mark A. Cane, Amy C. Clement, Lisa N. Murphy, Chengfei He, and Pedro DiNezio. “The Divorce of the North Atlantic Ocean and Atmosphere Attributed to Human Affairs”. US AMOC Team Meeting. Woods Hole, MA, 2022.

Klavans, Jeremy M., Mark A. Cane, Amy C. Clement, Lisa N. Murphy. “NAO Predictability Due to External Forcing”. Multi-annual to Decadal Climate Predictability in the North Atlantic-Arctic Sector. Copenhagen, Denmark, 2021.

Klavans, Jeremy M., Amy C. Clement, Lisa N. Murphy, Mark A. Cane. “The Roles of External Forcing and Ocean Circulation on Atlantic Multidecadal Variability Amplitude”. Ocean Sciences Meeting, San Diego, CA, 2020.

Klavans, Jeremy M., Amy C. Clement, and Lisa N. Murphy. “The Evolving Role of Volcanic Forcing in the AMV”. The Large Ensembles Workshop, Boulder, CO, 2019.

Klavans, Jeremy M., Amy C. Clement, and Lisa N. Murphy. “The AMO and Florida Precipitation”. Development of Unified Rainfall Scenarios for Florida Workshop, Miami, FL, 2019.

Klavans, Jeremy M., Amy C. Clement, and Mark A. Cane. “Variable External Forcing Obscures the Weak Relationship between the NAO and North Atlantic Multi-decadal SST Variability”. Held Symposium, Princeton, NJ, 2018.

Klavans, Jeremy M., Amy C. Clement, and Mark A. Cane. “Variable External Forcing Obscures the Weak Relationship between the NAO and North Atlantic Multi-decadal SST Variability”. 2018 International AMOC Science Meeting, Miami, FL, July 2018.

Klavans, Jeremy M., and Amy C. Clement. “The Contribution of Ocean Dynamics to Interannual North Atlantic Climate Variability.” Model Hierarchy Workshop, Princeton, NJ, 2016.

UNIVERSITY & ACADEMIC SERVICE

Conference Organizing Committee Member

- Broadening Earth System Research Across Scales with High Resolution Modeling Workshop (2026; co-chair)
- Miami Climate Symposium (2020)
- RSMAS Teaching Assistant Training Program (2018)

Session Convener

- AGU Fall Meeting (2023, 2024)
- Miami Climate Symposium (2020)

Peer Reviewer

- NSF Climate and Large-Scale Dynamics Program, NSF Postdoctoral Fellowship, Nature, Science Advances, Geophysical Research Letters, Journal of Climate, Climate Dynamics, Ocean Sciences, npj Climate and Atmospheric Science

Leadership

- Coordinator of RSMAS Climate Research Group (2017 – 2020)
- Meteorology and Physical Oceanography Department Student Representative (2017 – 2020)
- Student Coordinator for prospective graduate student visitation weekend (2018 - 2019)
- Member of Student Seminar Awards Committee (2017 - 2019)
- CaneContact (contact for incoming graduate students, 2016 – 2019)
- Staff writer for the Chicago Policy Review (2012 – 2013)
- Board Member for the Chicago Environmental Policy Association (2013 – 2014)

CIVIC SERVICE & OUTREACH

Science Communication

- Selected print interviews: Yale Climate Connections, New Scientist, The Water Desk
- Selected audio interviews: Southern California Public Radio (KPCC), Jacksonville Public Media (WJCT), Northern Nevada Public Radio (KUNR)
- Science Advisor for PBS's *NOVA* "Prediction by the Numbers"
- Panelist for premier of PBS's *Changing Seas* "The Fate of Carbon"

Civic Engagement

- Contributing Author, "Climate Experts Review of the DOE Climate Working Group Report"
- Selections Committee Member, 100 Great Ideas Incubator
 - Evaluated competitive proposals to fund local resilience projects
- Science Advisor, Radical Partners
 - Advised local non-profit organization focused on civic and community engagement around climate resilience
- Facilitator, Miami-Dade County's "Sea Level Rise Charrette and Open House"
- Coordinator, RSMAS Climate Research Group Outreach
 - Built outreach infrastructure to connect graduate students with teaching opportunities in local schools
- Volunteer at local science education events: ArtSea Ocean Kids, Green Education Fair, Miami Climate Hackathon, Youth Climate Summit, Miami-Dade County Sea Level Rise Workshop

PROFESSIONAL DEVELOPMENT

Training

- CESM Tutorial
- RSMAS Writing Workshop
- "Elevating Inclusion at RSMAS" Workshop
- "Building Professional Relationships that Thrive: Mentoring Actively" Workshop
- "Mentoring: Making it Count" Workshop
- "Mentoring as a Two-way Street: A Workshop for Advancing Mentor-Mentee Relationships"
- RSMAS Teaching Assistant training