

**DR. SYLVIA G. DEE | CURRICULUM VITAE | July 1st, 2018**

**RESEARCH:** climate variability, water isotope physics, climate & proxy system modeling.

**PROFESSIONAL APPOINTMENTS:**

- 8/2018-present: *Assistant Professor*, Rice University  
Department of Earth, Environmental, and Planetary Sciences.
- 10/2017-8/2018: *Postdoctoral Fellow*, *Institute for Geophysics*  
University of Texas at Austin, Jackson School of Geosciences.
- 9/2015-9/2017: *Voss Postdoctoral Fellow*, *Institute at Brown for Environment and Society*.  
Brown University, Department of Earth, Environmental and Planetary Science.

**EDUCATION:**

- 2010-2015: University of Southern California, College Doctoral Fellow. (Los Angeles, CA).
  - Department of Earth Sciences, Climate Dynamics
  - Ph.D. defended May 7th, 2015. Doctoral degree conferred: August 15th, 2015.
- 2006-2010: Princeton University, Bachelor of Science and Engineering. (Princeton, NJ)
  - Major: Civil and Environmental Engineering (Focus Track: Geological Engineering)
  - Minors: Environmental Studies, Geosciences

**PUBLICATIONS:** (  $\diamond$  denotes *Ph.D students and postdocs mentored*)

- submitted Zhu, F., Emile-Geay, J., Ault, T.R., McKay, N. Khider, D., Steig, E., **Dee, S.G.**, and Kirchner, J. “Climate models can correctly simulate the continuum of temperature variability.” *PNAS*.
- in press **Dee, S.G.**, Nusbaumer, J., Bailey, A. R., Russell, J. M., Lee, J.E., Konecky, B., Buenning, N., and Noone, D. “Tracking the Strength of the Walker Circulation with Stable Isotopes in Water Vapor.” *Journal of Geophysical Research, Atmospheres*.
- in revision **Dee S.G.**, Russell J.M., Morrill, C., Chen, Z. “PRYSM v2.0: A Proxy System Model for Lacustrine Archives.” *Paleoceanography & Paleoclimatology*.
- in revision  $\diamond$ Vachula R.S., Huang Y., Longo W.M., **Dee S.G.**, Daniels W.C., Russell J.M. Evidence of Ice Age humans in eastern Beringia suggests early migration to North America.” *Science Advances*.
- in revision Jones, M.D. and **Dee, S.G.**, “Global-Scale Proxy System Modeling of Oxygen Isotopes in Lacustrine Carbonates: new insights from data-model comparison.” *Quaternary Science Reviews*.
- in revision  $\diamond$ Vachula, R.S., **Dee, S.G.**, Russell, J. M., Huang, Y. Suborbital solar pacing of Holocene terrestrial climate and carbon dynamics in the western Arctic.
- 2017 **Dee, S.G.**, Parsons, L.A., Loope, G., Ault, T.R., Emile-Geay, J. and Overpeck, J. “Improved spectral comparisons of paleoclimate models and observations via proxy system modeling: Implications for multi-decadal variability.” *Earth and Planetary Science Letters*, 476 (2017): 34-46.
- 2017 Smerdon, J. E. and Hydro2k Consortium (including **S.G. Dee**). “Comparing proxy and model estimates of hydroclimate variability and change over the Common Era.” *Climate of the Past*, doi: <https://doi.org/10.5194/cp-13-1-2017>.
- 2017 Munoz, S. E. and **Dee, S.G.** (2017), “El Niño increases the risk of lower Mississippi River flooding,” *Scientific Reports* 7, Article number: 1772. doi:10.1038/s41598-017-01919-6
- 2017 Steiger N.J., E.J. Steig, **S.G. Dee**, G.H. Roe, and G.J. Hakim: Climate reconstruction using data assimilation of water-isotope ratios from ice cores, *J. Geophys. Res.*, 122, doi:10.1002/2016JD026011
- 2016 **Dee, S.G.**, N.J. Steiger, J. Emile-Geay, and G.J. Hakim: On the utility of proxy system modeling for estimating climate states over the Common Era. *Journal of Advances in Modeling Earth Systems*. doi:10.1002/2016MS000677, with Commentary by Hugues Goosse: An additional step toward comprehensive paleoclimate reanalyses. (<http://onlinelibrary.wiley.com/doi/10.1002/2016MS000739/full>)

- 2016 Jones, M. D., S. Dee, L. Anderson, A. Baker, G. Bowen, and D. C. Noone: Water isotope systematics: improving our palaeoclimate interpretations. *Quaternary Science Reviews* 131: 243-249.
- 2015 Dee et al., PRYSM: An open-source framework for PRoxY System Modeling, with applications to oxygen-isotope systems. *Journal of Advances in Modeling Earth Systems*. DOI: 10.1002/2015MS000447
- 2015 Dee, S., Noone, D., Buenning, N., Emile-Geay, J., Zhou, Y.: SPEEDY-IER: A Fast Atmospheric GCM with Water Isotope Physics. *Journal of Geophysical Research Atmospheres*. DOI: 10.1002/2014JD022194

#### FUNDING:

- NOAA Ocean Observing and Monitoring Funding Call: "Assessing the Predictability of ENSO Teleconnections using Paleoclimate Data from the Last Millennium." Submitted 08/14/2017. Funded 6/1/2018.
- Postdoctoral Fellowship, University of Texas Institute for Geophysics. Recipient: March, 2017 (through 09/2019). University of Texas at Austin.
- Voss Postdoctoral Fellowship, Institute at Brown for Environmental and Society. Recipient: January, 2015 (through 9/2017). Brown University.
- College Doctoral Fellowship, Recipient: 2010-2015. University of Southern California.

#### AWARDS & HONORS

- NSF Expert Witness Training Academy Fellow, Mitchell Hamline School of Law, August, 2017
- 2016 Editors' Citation for Excellence in Refereeing - Geophysical Research Letters
- Earth Science Department Teaching Assistant Award, Fall 2012.
- Sigma Xi, Princeton University Department Civil and Environmental Engineering, 2010.

#### SERVICE & OUTREACH:

- Current reviewer for Nature, Earth & Planetary Science Letters, JGR-Atmospheres, Geophysical Research Letters, *Geochimica et Cosmochimica Acta*, JAMES, Climate of the Past, P<sup>3</sup>, TREES, Biogeosciences.
- Convener & Chair:
  - Water Isotope Systematics: Improving Modern & Paleoclimate Interpretations. AGU 2017.
  - Quantitative Approaches to Paleoclimate Data, Models, and their Intercomparison. AGU 2016.
  - Water Isotope Systematics: Improving Paleoclimate Interpretations. AGU 2015.
  - Water Isotope Systematics: Improving Paleoclimate Interpretations. AGU 2013.
- Skype a Scientist (K-12 outreach, regular participant)
- Climate Voices Speaker
  - Austin TOWN (Outdoor Womens' Network), 5/22/18
  - Congregation Beth Elohim, 4/26/17
- Keynote Speaker, United Methodist Women Climate Justice Conference (10/22/16)
- Girl Scout Senior Leadership Conference (March 2016, March 2018): Workshop leader, "The Science of Climate Change."
- Brown University Graduate Women in Science and Engineering (GWISE) (2015-2017)
- Paleoenvironmental Seminar Coordinator (2014-2015) (Earth Sciences Department, weekly seminar). Scheduled speakers, organized travel.
- USC Water Conservation Task Force (2014-2015)

- Graduate Student Senator, USC Earth Sciences Department, Social Committee (2013-2014)
- Drafted Climate Change Risks Letter for California Congressman Henry Waxman; co-author, precipitation, water scarcity, sea-level rise (2013)
- Society of Women Engineers: Member (2010-2012)
- Department Graduate Student Representative (2011-2012): Organized Earth Sciences Department Seminars for 1 academic year and led incoming graduate student field trip.
- Taught elementary school teachers basics for teaching weather and climate at the K-12 level (2011)

#### TEACHING & MENTORING:

- Lecturer, Brown International Advanced Research Institute (BIARI): Climate Change and Its Impacts 2017, Connecting Local Variability and Knowledge in a Global System
- Workshop/Practicum Leader: Demonstration of PRYSM (climate proxy system modeling tools in Python). PAGES Proxy System modelling and data assimilation in paleosciences, May, 2017, UCL, Louvain-la-Neuve, Belgium.
- Guest Lecturer: Brown University Geosciences Department.
  - The Global Water Cycle (Dr. Jung-Eun Lee): Water Isotopes and the Hydrological Cycle
  - Weather and Climate (Dr. Meredith Hastings): Lightning, Thunderstorms and Tornadoes
  - Atmospheric Physics (Dr. Amanda Lynch): Balanced Flows, Departures from Balance
- Teaching Assistant and Lab Instructor: Climate Change, GEOL 150 (University of Southern California), 4 semesters. Professors: Dr. Julien Emile-Geay and Dr. Lowell Stott. Assisted with lab curriculum development. Departmental TA Award, Fall 2012.
- TA Training: Instructor, Fall 2012, Fall 2014.
- Students Mentored:
  - Natallia Piatrunia (UT Austin Geosciences), Ph.D. candidate, 2018-present.
  - Hima Hassenruck-Gudipati (UT Austin Geosciences), Ph.D. candidate, 2017-present.
  - Richard Vachula (Brown U. Geosciences), Ph.D. candidate, 2015-present.
  - Zihan Chen (Brown U. Geosciences), Undergraduate Research Assistant. January 2017-present. UTRA Recipient, Summer, 2017.
  - Rod Hasbun (Brown U. Computer Science), Undergraduate Research Assistant. 2015-2017.
  - Yuxin Zhou, (USC Earth Sciences), Undergraduate Research Asst. (2012-2014).

#### INVITED TALKS & SEMINARS:

- Rice University, March 23rd, 2018. “What’s Past is Prologue: Atmospheric Variability from 2000B.C. to 2100A.D.”
- Louisiana State University, March 14th, 2018. *ibid.*
- Vanderbilt University, February 21st, 2018. *ibid.*
- James Madison University, February 5th, 2018. *ibid.*
- Dartmouth College, June 3rd, 2017. Seminar: “A Lingua Franca for the Climate System: Linking Models and Data to Characterize Decadal Climate Variability.”
- Massachusetts Institute of Technology, April 26th, 2017. Atmospheric Sciences Seminar. *ibid.*
- University of California, Riverside, April 11th, 2017. *ibid*
- Rowan University, March 8th, 2017. *ibid*
- NASA Goddard Institute for Space Studies, February 16th, 2017, Seminar. *ibid*
- Lamont-Doherty Earth Observatory, Columbia University. February 17th, 2017, Oceans and Climate Seminar.

- Boston College, January 30th, 2017. Seminar: “A Lingua Franca for the Climate System: Using Models and Data to Characterize Decadal Climate Variability.”
- Woods Hole Oceanographic Institute, November 17th, 2016. Seminar: ”Characterizing Decadal Variability in a Fickle Climate: new methods in high-resolution paleoclimatology.”
- University of Texas at Austin, Institute for Geophysics, October 14th, 2016. Seminar: ”Characterizing Decadal Variability in a Fickle Climate: new methods in high-resolution paleoclimatology.”

#### CONFERENCE PRESENTATIONS AND WORKSHOPS:

- American Geophysical Union (AGU) Fall Meeting, Dec 2017, New Orleans, LA. Talk: How Hot was Africa during the Mid-Holocene? Reexamining Africa’s Thermal History via integrated Climate and Proxy System Modeling, in Session PP22A: Integrating Data and Models in Paleoclimatology and Paleoecology: Current Approaches, Emerging Challenges, and Next Steps
- PAGES Proxy System modelling and data assimilation in paleosciences, May, 2017, UCL, Louvain-la-Neuve, Belgium. Keynote Speaker: Proxy system (data) models in paleoclimatology. Workshop/Practicum Leader: Demonstration of PRYSM (climate proxy system modeling tools in Python).
- PAGES KR8: The Karst Record. May 2017, Austin, TX. Workshop leader: Connecting climate models and paleo records. Poster: Improved Spectral Comparisons Of Paleoclimate Models And Speleothem Observations Via Proxy System Modeling: Implications For Multi-Decadal Variability
- PAGES Open Science Meeting, May 2017, Zaragoza, Spain. Talk: Reconstructing African Hydroclimate since the Last Glacial Maximum via integrated Climate and Proxy System Modeling.
- American Geophysical Union (AGU) Fall Meeting, Dec 2016, San Francisco, CA.  
Talk: Partitioning the effects of Global Warming on the Hydrological Cycle with Stable Isotopes in Water Vapor  
Talk: Last Millennium External Forcing Undetectable in Coral Records of Central Pacific Climate  
Convener: Quantitative Approaches to Paleoclimate Data, Models, and Their Intercomparison
- Goldschmidt Annual Geochemistry Meeting, June-July 2016, Yokohama, Japan. Talk: Reexamining Disagreement between Simulated and Observed Climate Variability with Water Isotope Physics and Proxy System Models, in Session 16b: Reconstructing Warm and Cold Climates: Insights from Data and Models.
- PAGES2k/PMIP3 Hydroclimate Workshop, June 2016, Lamont-Doherty Earth Observatory, Columbia University, New York, NY. Talk: An Update on Proxy System Modeling and Data Model Comparison: Progress, Applications, and Challenges.
- American Geophysical Union (AGU) Fall Meeting, Dec 2015, San Francisco, CA. Talk: It might take three: proxy system models as the missing link between proxies and climate models, and their potential for paleoclimate data assimilation, in Session PP41D-04: It Takes Two: Using Paleodata and Climate Models to Understand Climate Dynamics I Primary Convener and Chair, PP34B: Water Isotope Systematics: Improving Paleoclimate Interpretations
- American Geophysical Union (AGU) Fall Meeting, Dec 2014, San Francisco, CA. Talk: A proxy system modeling toolbox for comparing water isotope observations to simulations, in Session PP34B: Water Isotope Systematics: Improving Paleoclimate Interpretations
- PAGES Workshop: Holocene Climate as Context for Future Climate Change, October 13-16, 2014, Mt. Hood, Oregon, USA. Talk: Climate-Proxy System Modeling: A New Paradigm for Paleodata-Model Intercomparison
- European Geosciences Union (EGU), General Assembly, April 2014, Vienna, Austria. Talk: Comparing Apples to Apples: Paleoclimate Model-Data comparison via Proxy System Modeling
- American Geophysical Union (AGU) Fall Meeting, Dec 2013, San Francisco, CA. Session Convener: PP031 Water Isotope Systematics: Improving our Paleoclimate Interpretations. Poster presented: Refining the Interpretation of Hydroclimate Paleodata via the Integration of an Isotope-Enabled AGCM and Proxy System Models
- NCCR Climate Summer School, September 2013, Grindelwald, Switzerland. Participant and Presentation: Poster; Integrated climate-proxy modeling using the isotope-enabled SPEEDY-IER with a focus on tropical climate.

- Urbino Summer School in Paleoclimatology, July 2013, Urbino, Italy. Participant and Presentation: Poster; Integrated climate-proxy modeling using the isotope-enabled SPEEDY-IER.
- University of Utah Stable Isotope Mapping Short Course, June 2013, Salt Lake City, Utah. Participant.
- PAGES Young Scientist Meeting, Feb 2013, Goa, India. Talk: Integrated climate-proxy modeling using the isotope-enabled SPEEDY-IER with a focus on tropical climate, and PAGES Open Science Meeting, Feb 2013, Goa, India. Poster: (same as talk).
- AGU Fall Meeting, Dec 2012, San Francisco, CA. Poster: SPEEDY-IER: Development and Validation of a Simplified Atmospheric GCM with Water Isotope Physics
- AGU Science Policy Meeting, Apr 2012, Washington, D.C. Poster: The Application of Multi-Variable Geospatial Analysis to an Environmentally Sustainable Reconstruction of Afghanistan.
- AGU Fall Meeting, Dec 2011, San Francisco, CA. Poster: SPEEDY-IER: development of a simplified atmospheric GCM with isotope physics

#### COMPUTATIONAL PROFICIENCY:

- GitHub Repository, PRYSM Proxy System Modeling: <https://github.com/sylvia-dee/>
- Climate Modeling: SPEEDY-IER developer, Post Processing for CCSM4/CESM, IsoGSM, CAM5, ECHAM5
- Programming: Python, Matlab, Fortran, ArcGIS, LaTeX

#### AFFILIATIONS:

- American Geophysical Union
- PAGES - Past Global Changes

#### WORK EXPERIENCE & PROFESSIONAL DEVELOPMENT:

- Environmental Business Intern: NRG Energy, Inc. (Princeton, NJ; Houston, TX) July 2009-August 2010
  - Developed and populated greenhouse gas and emissions inventory for company power plants
  - Promoted company sustainability policies through monthly newsletters to employees, the econrg program, and presentations on the economic benefits of office sustainability
  - Researched climate change disclosure in 10-K filings to the SEC by competing energy providers
  - Analyzed climate change legislation and summarized rulings affecting the company
  - Reported on EPA data involving power plants owned by NRG (within the EPAs ECHO database)
  - Visited power plants to learn about electricity production and reduce thermal pollution
- Post Doctoral Research Assistant: to Bethany Bradley (Woodrow Wilson School of Public Policy and International Affairs, Princeton University), December 2008-July 2009.
  - Used ArcGIS to digitize spatial maps of 12 invasive plants west of the Mississippi River
  - Contacted all county council officials who participated; sent letters of recognition and thanks
  - Utilized Excel and ArcGIS mapping programs to complete project maps are being used to model the effects of climate change on invasive species cover in the United States
- Land Stewardship Intern: D&R Greenway Land Trust, June 2007-August 2007 Full time (40 hours/week) for duration of internship.
  - Maintained and monitored conservation easements (checked for signs of illegal activities such as hunting or foresting) and built new trails, removed invasive species from land preserves
  - Prepared for Land Trust benefits and other media events
  - Extensive training in New Jersey ecosystem and wildlife protection