Robert C. Jnglin Wills

Assistant Professor of Climate Dynamics
Institute for Atmospheric and Climate Science, ETH Zurich
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RESEARCH INTERESTS

Climate dynamics, climate variability and prediction, climate feedbacks and climate change, climate model analysis, high-resolution earth system modeling, idealized modeling, large-scale circulation of the atmosphere and oceans, atmosphere-ocean interactions, weather-climate interactions, spatiotemporal data analysis, hydrological cycle, climate extremes

EDUCATION

Ph.D., California Institute of Technology, Environmental Science and Engineering 2016
- Thesis: *Stationary eddies and zonal variations of the global hydrological cycle in a changing climate*, advised by Prof. Tapio Schneider

M.S., California Institute of Technology, Environmental Science and Engineering 2013

B.S., University of California Berkeley, Engineering Physics, Highest Honors 2011

ACADEMIC APPOINTMENTS

ETH Zurich, Zurich, Switzerland
- Assistant Professor, Institute for Atmospheric and Climate Science 04.2023 – present

National Center for Atmospheric Research, Boulder, CO
- Affiliate Scientist, Climate Analysis Section 02.2022 – present

University of Washington, Seattle, WA
- Research Scientist, Department of Atmospheric Sciences 01.2021 – 03.2023
- Data Science Postdoctoral Fellow, eScience Institute 10.2019 – 01.2021
- Postdoctoral Researcher, Department of Atmospheric Sciences 01.2017 – 01.2021

ETH Zurich, Zurich, Switzerland
- Postdoctoral Researcher, Department of Earth Sciences 02.2016 – 07.2016
- Visiting Graduate Student, Department of Earth Sciences 07.2013 – 01.2016

California Institute of Technology, Pasadena, CA
- Graduate Research Assistant, Department of Environmental Science & Engineering 09.2012 – 01.2016
- Graduate Research Assistant, Applied Physics 09.2011 – 09.2012

GRANTS

Constraining Future Changes in the Large-Scale Atmospheric Circulation to Improve Projections of Regional Climate Impacts, SNSF Eccellenza Professorial Fellowship
- PI: Robert Jnglin Wills; Award: CHF 1,890,400; 04.2023 – 03.2028

Remote Hydroclimate Impacts of Realistic Afforestation Scenarios, ETH Grant
- PI: Robert Jnglin Wills; Award: CHF 228,400; 08.2024 – 08.2027

Forced Component Estimation Statistical Methods Intercomparison Project (ForceSMIP) Hackathon, Swiss National Science Foundation (SNSF) Scientific Exchanges

- PI: Robert Jnglin Wills; Award: CHF 14,980; 07.2023 – 09.2023

Identifying Climate Model Biases in the Pattern of Ocean Warming and their Influence on Regional Climate Change

- U.S. National Science Foundation, Climate & Large-Scale Dynamics AGS-2203543
- PI: Robert Jnglin Wills (stepped down in 03.2023 upon moving to Switzerland); Co-PIs: David Battisti, Kyle Armour; Award: $479,132, 08.2022 – 07.2025

Variable Resolution Modeling of the Large-Scale Atmospheric Circulation Response to North Atlantic SST Anomalies

- U.S. National Science Foundation, Climate & Large-Scale Dynamics AGS-2128409
- PI: Robert Jnglin Wills (stepped down in 03.2023 upon moving to Switzerland); Co-PI: David Battisti; Award: $341,245; 11.2021 – 10.2024

Variability in the Rate and Pattern of Global Warming: Forced and Unforced Components

- U.S. National Science Foundation, Climate & Large-Scale Dynamics AGS-1929775
- PI: David Battisti; Award: $282,370; 09.2019 – 08.2022
- I wrote the proposal but was ineligible to be a PI at the time of submission to NSF.

HONORS AND AWARDS

AGU Editor's Spotlight: *Resolving Weather Fronts Increases the Large-Scale Circulation Response to Gulf Stream SST Anomalies in Variable-Resolution CESM2 Simulations*, 2024

AGU 2022 Outstanding Reviewer Citation, *Geophysical Research Letters*, 2023

AGU 2021 Outstanding Reviewer Citation, *Paleoceanography and Paleoclimatology*, 2022

Swiss National Science Foundation Eccellenza Professorial Fellowship (see Grants), 2021

Data Science Postdoctoral Fellowship, UW eScience Institute ($2,000), 2019

Travel Award, CLIVAR Large Ensembles Workshop, 2019

UW College of the Environment Travel Fund Award ($750), 2019

Travel Award, Advanced Climate Dynamics Course 10-Year Anniversary Conference (NOK 5000), 2019

Science Editor's Spotlight: *Disentangling global warming, multidecadal variability, and El Niño in Pacific temperatures*, 2018

Travel Award, International Workshop on Climate Informatics ($1000), 2017

AGU Editor's Spotlight: *Thermodynamic and dynamic controls on changes in the zonally anomalous hydrological* cycle, 2016

Robert and Diane Lang Graduate Fellowship (1 year, 100% support), 2012

Caltech Engineering & Applied Science Division Fellowship (9 mo., 100% support), 2011

Outstanding Student Poster Award, APS Division of Plasma Physics Meeting, 2010

National Undergraduate Fellowship in Plasma Physics and Fusion Energy Sciences (3 mo., 100% support), 2010

PEER-REVIEWED PUBLICATIONS

ORCID: 0000-0002-7776-2076 Google Scholar

33. Deser, C., W.M. Kim, **R.C.J. Wills**, I.R. Simpson, S. Yeager, G. Danabasoglu, K.B. Rodgers, and N. Rosenbloom, 2025: *Effects of macro vs. micro initialization and ocean*

initial-condition memory on the evolution of ensemble spread in the CESM2 Large Ensemble, Climate Dynamics, 63, 62.

32. **Wills, R.C.J.**, A.R. Herrington, I.R. Simpson, D.S. Battisti, 2024: *Resolving weather fronts increases the large-scale circulation response to Gulf Stream SST anomalies in variable-resolution CESM2 simulations*. Journal of Advances in Modeling Earth Systems, 16, e2023MS004123.

31. Schneider, T., L.R. Leung, and **R.C.J. Wills**, 2024: *Opinion: Optimizing climate models with process-knowledge, resolution, and AI*. Atmospheric Chemistry and Physics (ACP), 24, 7041–7062.

30. Bonan, D.B., J.S. Dörr, **R.C.J. Wills**, A.F. Thompson, and M. Årthun, 2024: *Sources of low-frequency variability in observed Antarctic sea ice*. The Cryosphere, 18, 2141–2159.

29. Armour, K.C., C. Proistosescu, Y. Dong, L.C. Hahn, E. Blanchard-Wrigglesworth, A.G. Pauling, **R.C. Jnglin Wills**, T. Andrews, M.F. Stuecker, S. Po-Chedley, I. Mitevski, P.M. Forster, and J.M. Gregory, 2024: *Sea-surface temperature pattern effects have slowed global warming and biased warming-based constraints on climate sensitivity*. Proceedings of the National Academy of Science, 121 (12) e231209312.

28. Rugenstein, M., S. Dhame, D. Olonscheck, **R. Jnglin Wills**, M. Watanabe, and R. Seager: *Connecting the SST pattern problem and the hot model problem*, 2023. Geophysical Research Letters, 50, e2023GL105488.

27. Dörr, J.S., D.B. Bonan, M. Årthun, L. Svendsen, and **R.C.J. Wills**, 2023: *Forced and internal components of observed Arctic sea-ice changes*. The Cryosphere, 17, 4133–4153.

26. Gray, W.R., C. deLavergne, **R.C. Jnglin Wills**, L. Menviel, P. Spence, M. Holzer, M. Kageyama, and E. Michel. 2023, *Poleward shift in the Southern Hemisphere westerly winds synchronous with the deglacial rise in CO_2*. Paleoceanography and Paleoclimatology, 38, e2023PA004666.

25. Maher, N., **R.C. Jnglin Wills**, P. DiNezio, J. Klavans, S. Milinski, S.C. Sanchez, S. Stevenson, M.F. Stuecker, and X. Wu, 2023: *The future of the El Niño-Southern Oscillation: Using large ensembles to illuminate time-varying responses and inter-model differences*. Earth System Dynamics, 14, 413–431.

24. **Wills, R.C.J.**, Y. Dong, C. Proistosescu, K.C. Armour, and D.S. Battisti, 2022: *Systematic climate model biases in the large-scale patterns of recent sea-surface temperature and sea-level pressure change*. Geophysical Research Letters, 49, e2022GL100011.

23. Shi, H., F.-F. Jin, **R.C.J. Wills**, M.G. Jacox, B.A. Black, D.J. Amaya, R. R. Rykaczewski, S.J. Bograd, M. García-Reyes, and W.J. Sydeman, 2022, *Global decline in ocean memory over the 21st century*. Science Advances, 8, eabm4368.

22. Oldenburg, D., **R.C.J. Wills**, K.C. Armour, L. Thompson, 2022: *Resolution dependence of atmosphere-ocean interactions and water-mass transformation in the North Atlantic*. Journal of Geophysical Research: Oceans, 127, e2021JC018102.

21. **Wills, R.C.J.**, K.C. Armour, D.S. Battisti, C. Proistosescu, and L.A. Parsons, 2021: *Slow modes of global temperature variability and their impact on climate sensitivity estimates*. Journal of Climate, 34, 8717–8738.

20. Bonan, D.B., T. Schneider, I. Eisenman, and **R.C.J. Wills**, 2021: *Constraining the date of a seasonally ice-free Arctic using a simple model*. Geophysical Research Letters, 48, e2021GL094309.

19. Oldenburg, D., **R.C.J. Wills**, K.C. Armour, L. Thompson, and L.C. Jackson, 2021: *Mechanisms of low-frequency variability in Atlantic northward ocean heat transport and AMOC*. Journal of Climate, 34, 4733–4755.

18. Årthun, M, **R.C.J. Wills**, H. Johnson, L. Chafik, and H.R. Langehaug, 2021: *Mechanisms of decadal North Atlantic climate variability and implications for the recent cold anomaly*. Journal of Climate, 34, 3421–3439.

17. Nilsson, J., D. Ferreira, T. Schneider, and **R.C.J. Wills**, 2021: *Is the surface salinity difference between the Atlantic and Indo-Pacific a signature of the Atlantic Meridional Overturning Circulation?* Journal of Physical Oceanography, 51, 769–787.

16. Rae, J.W.B., W.R Gray, **R.C.J. Wills**, I. Eisenman, B. Fitzhugh, E.F.M. Littley, P. Rafter, R. Rees-Owen, A. Ridgwell, B. Taylor, A. Burke, 2020: *Overturning circulation, nutrient limitation, and warming in the glacial North Pacific*. Science Advances, 6, eabd1654.

15. **Wills, R.C.J.**, D.S. Battisti, K.C. Armour, T. Schneider, and C. Deser, 2020: *Pattern recognition methods to separate forced responses from internal variability in climate model ensembles and observations*. Journal of Climate, 33, 8693–8719.

14. Parsons, L.A., M.K. Brennan, **R.C.J. Wills**, and C. Proistosescu, 2020: *Magnitudes and spatial patterns of interdecadal temperature variability in CMIP6*. Geophysical Research Letters, 47, e2019GL086588.

13. Gray, W.R., **R.C.J. Wills**, J.W.B Rae, A. Burke, R. Ivanovic, W.H.G. Roberts, D. Ferreira, and P.J. Valdes, 2020: *Wind-driven evolution of the North Pacific subpolar gyre over the last deglaciation*. Geophysical Research Letters, 47, e2019GL086328.

12. **Wills, R.C.J.**, R.H. White, and X.J. Levine, 2019: *Northern Hemisphere stationary waves in a changing climate*. Current Climate Change Reports, 5, 372–389.

11. **Wills, R.C.J.**, D.S. Battisti, C. Proistosescu, L. Thompson, D.L. Hartmann, and K.C. Armour, 2019: *Ocean circulation signatures of North Pacific decadal variability*. Geophysical Research Letters, 46, 1690–1701.

10. **Wills, R.C.J.**, K.C. Armour, D.S. Battisti, and D.L. Hartmann, 2019: *Ocean-atmosphere dynamical coupling fundamental to the Atlantic Multidecadal Oscillation*. Journal of Climate, 32, 251–272.

9. **Wills, R.C.J.** and T. Schneider, 2018: *Mechanisms setting the strength of orographic Rossby waves across a wide range of climates in a moist idealized GCM*. Journal of Climate, 31, 7679–7700.

8. Gray, W.R., J.W.B. Rae, **R.C.J. Wills**, A.E. Shevenell, G.L. Foster, C.H. Lear, and B. Taylor, 2018: *Deglacial upwelling, productivity and CO2 in the North Pacific Ocean*. Nature Geoscience, 30, 340–344.

7. Ferreira, D., P. Cessi, H. Coxall, A. de Boer, H.A. Dijkstra, S.S. Drijfhout, T. Eldevik, N. Harnik, J.F. McManus, D.P. Marshall, J. Nilsson, F. Roquet, T. Schneider, and **R.C. Wills**, 2018: *Atlantic-Pacific asymmetry in deep water formation*. Annual Reviews of Earth and Planetary Sciences, 46, 327–352.

6. **Wills, R.C.**, T. Schneider, J.M. Wallace, D.S. Battisti, and D.L. Hartmann, 2018: *Disentangling global warming, multidecadal variability, and El Niño in Pacific temperatures*. Geophysical Research Letters, 45, 2487–2496.

5. **Wills, R.C.**, D.S. Battisti, D.L. Hartmann, and T. Schneider, 2017: *Extracting modes of variability and change from climate model ensembles*. Proceedings of the 7th

International Workshop on Climate Informatics: CI 2017, V. Lyubchich, N.C. Oza, A. Rhines, and E. Szekely, Eds., NCAR Technical Note NCAR/TN-536+PROC, 25-28.

4. **Wills, R.C.**, X.J. Levine, and T. Schneider, 2017: *Local energetic constraints on Walker circulation strength*. Journal of the Atmospheric Sciences, 74, 1907-1922.

3. **Wills, R.C.**, M.P. Byrne, and T. Schneider, 2016: *Thermodynamic and dynamic controls on changes in the zonally anomalous hydrological cycle*. Geophysical Research Letters, 43, 4640–4649.

2. **Wills, R.C.** and T. Schneider, 2016: *How stationary eddies shape changes in the hydrological cycle: Zonally asymmetric experiments in an idealized GCM*. Journal of Climate, 29, 3161–3179.

1. **Wills, R.C.** and T. Schneider, 2015: *Stationary eddies and the zonal asymmetry of net precipitation and ocean freshwater forcing*. Journal of Climate, 28, 5115–5133.

OTHER PUBLICATIONS

Wills, R.C.J., S. Sippel, and E.A. Barnes, 2020: *Separating forced and unforced components of climate change: The utility of pattern recognition methods in large ensembles and observations*. US CLIVAR Variations, 18.2, 1–10.

Wills, R.C. 2016: *Stationary eddies and zonal variations of the global hydrological cycle in a changing climate*. Ph.D. Thesis, California Institute of Technology.

Wills, R.C., M. Davis, P.P. Woskov, D.T. Garnier, J. Kesner, and M.E. Mauel, 2010. *Density Profile Measurements in LDX using Microwave Reflectometry*. APS DPP JP9.00068. MIT PSFC Research Report. PSFC/RR-10-9.

MENTORING

Current Advisees

- Postdocs: Clarissa Kroll
- Ph.D. Students: Nora Fahrenbach, Joas Müller, Zhenghe Xuan
- M.Sc. Students: Muxin Hu, Erisa Ismaili, Tat Chi Wong

Ph.D. Theses

- (co-advisor) Dylan Oldenburg, Ph.D. 2021, Oceanography, University of Washington

M.Sc. and B.Sc. Theses

- Jonathan Fornera, B.Sc. 2024, Computational Science and Engineering, ETH Zurich
- Ikonija Stanimirovic, B.Sc. 2024, Atmospheric and Climate Science, ETH Zurich
- Maren Höver, M.Sc. 2024, Atmospheric and Climate Science, ETH Zurich

Informal Student Mentoring

- David Bonan, Ph.D. Student, California Institute of Technology, 2019 – 2022
- He Huang, Visiting Undergraduate Researcher at Univ. of Washington, 2020 – 2021

TEACHING

ETH Zürich, Zurich, Switzerland

- Instructor, 701-1258, *Global Atmospheric Circulation and Climate* 2024, 2025
- Lecturer, 701-1253, *Analysis of Weather and Climate Data* 2024

University of Washington, Seattle, WA

- Instructor, ATM S 442, *Atmospheric Motions II* 2022
- Instructor, ATM S 341, *Atmospheric Radiative Transfer* 2021

- Guest lecturer, Departments of Atmospheric Sciences & Oceanography 2017 – 2021
    - *Fundamentals of Climate Change, Objective Analysis, Physics & Chemistry of the Atmosphere, Ocean Circulation & Climate, Current Questions in Climate Research, Exploring the Atmospheric Sciences*

ETH Zürich, Zurich, Switzerland

- Teaching assistant, 651-2124, *Atmospheric General Circulation Dynamics* 2015
- Guest lecturer, 651-2124, *Atmospheric General Circulation Dynamics* 2014
- Teaching assistant, 651-4911, *Climate & Global Atmospheric Circulation* 2013

California Institute of Technology, Pasadena, CA

- Teaching assistant, CNS 107, *Writing about Scientific Research* 2013

University of California, Berkeley, CA

- Teaching assistant, Physics 7a, *Physics for Scientists and Engineers* 2010
- Physics tutor, Student Learning Center 2009 – 2011

DEPARTMENT SEMINARS

2024 University of Reading, National Centre for Atmospheric Science Seminar Series

University of Bern, Colloquium in Climatology, Climate Impact, Remote Sensing and Geocomputation

2023 Laboratoire d'Océanographie et du Climat (LOCEAN)

Laboratoire des Sciences du Climat et de l'Environnement (LSCE)

University of Lausanne, IDYST/ISTE Seminar

ETH Zurich, Institute for Atmospheric and Climate Sciences Colloquium

NOAA Physical Sciences Laboratory

University of Washington, Atmospheric and Climate Dynamics Seminar

2022 George Mason University, Atmospheric, Oceanic, and Earth Sciences

Colorado State University, Climate Dynamics Seminar

2021 Oregon State, College of Earth, Ocean, and Atmospheric Sciences

Caltech, Climate Modeling Alliance Seminar

Durham University, Department of Earth Sciences

NYU, Courant Center for Atmosphere Ocean Science Colloquium

2020 National Center for Atmospheric Research, Climate and Global Dynamics Seminar

Duke University, Nicholas School of the Environment Seminar

Purdue University, Earth, Atmospheric, and Planetary Sciences Colloquium

University of California Irvine, Earth System Science Department Seminar

University of Oxford, Atmospheric, Oceanic and Planetary Physics Seminar (x2)

University of Reading, Meteorology Department Seminar

University of Maryland Baltimore County, Physics Colloquium

University of Washington, eScience Institute

2019 Max Plank Institute for Meteorology, Oceans in the Earth System Seminar

University of Washington, Atmospheric and Climate Dynamics Seminar

ETH Zurich, Institute for Atmospheric and Climate Science Seminar

National Center for Atmospheric Research, Climate and Global Dynamics Seminar

MIT Department of Earth, Atmospheric and Planetary Sciences, Lunch Seminar

University of Toronto, Department of Physics

2018 Cornell University, Earth and Atmospheric Sciences Seminar

2017 University of Washington, Atmospheric and Climate Dynamics Seminar

University of Washington, Department of Atmospheric Sciences Colloquium

2016 NOAA Geophysical Fluid Dynamics Laboratory (GFDL)

Stockholm University, Department of Meteorology

2015 Caltech, Environmental Science and Engineering (Dissertation Defense)

ETH Zurich, Department of Earth Sciences

2013 Scripps Institute of Oceanography, CASPO Department Seminar

Caltech, Environmental Science and Society Seminar

INVITED CONFERENCE PRESENTATIONS

2025 European Eddy-Rich ESMs (EERIE) General Assembly (Invited Talk): *Investigating the up-scale influence of mesoscale processes on large-scale climate dynamics: Will increased model resolution improve climate projections?*

2024 TROPICS Workshop (Invited Talk): *Historical SST trends, tropical mean-state biases, and their dependence on resolution*

ECS & Cloud Feedback Virtual Symposium (Invited Talk): *The recent tropical SST trend pattern is (partially) forced*

EGU General Assembly (Invited Talk): *Forced Component Estimation Statistical Method Intercomparison Project (ForceSMIP): First results*

Swiss Global Change Day (Keynote Talk): *From global change to regional weather and climate impacts: What we know and remaining uncertainties*

2023 ICTP Meeting on Atlantic Variability and Tropical Basin Interactions at Interannual to Multi-Decadal Time Scales (Invited Talk): *The Fingerprint of Ocean Processes on Atlantic Multi-decadal Variability*

2022 SMILE Webinar Series on Large Ensembles (Invited Talk): *Large ensembles reveal systematic climate model biases in the large-scale pattern of recent sea-surface temperature and sea-level pressure change*

2021 Max Planck Research Group Selection Symposium, Chemistry, Physics, and Technology Section (Invited Talk): *Novel data science and modeling approaches to improve process understanding and prediction of a noisy climate system*

WCRP-CLIVAR Workshop on Climate Interactions Among the Tropical Basins (Invited Poster): *Pattern recognition methods to separate forced and unforced components of SST pattern changes*

2020 AGU Fall Meeting (Invited Talk): *Mechanisms of stationary Rossby wave change in comprehensive and idealized GCMs*

US CLIVAR Variations Webinar (Invited Talk): *Separating forced & unforced components of climate change: The utility of pattern recognition methods in large ensembles and observations*

European Geophysical Union (EGU) General Assembly (Invited Talk): *Separating climate variability and climate change with fewer ensemble members using pattern recognition*

2019 Climate and Wave Dynamics Workshop, Eilat, Israel (Invited Talk): *Reduced midlatitude SST variability in warmer climates: Atmospheric and oceanic mechanisms*

2016 GEWEX Hydro-Climate Sensitivity Workshop (Invited Talk): *The sensitivity of the zonally anomalous hydrological cycle: Dynamic and thermodynamic mechanisms*

PROFESSIONAL LEADERSHIP

Scientific organizing committee for CLIVAR Climate Dynamics Panel Workshop on Weather and Climate Interactions – Observations, Theory, and Modelling, Feb. 2025

Scientific organizing committee for US CLIVAR Workshop on "Confronting Earth System Model Trends with Observations: The Good, the Bad and the Ugly", Mar. 2024

Lead organizer of the Forced Component Estimation Statistical Methods Intercomparison Project (ForceSMIP) Hackathon in Zurich, Switzerland and Boulder, CO, Aug. 2023

Organizer of the Workshop and Hackathon on ENSO Projections in Large Ensembles, Boulder, CO, Aug. 2021

Organizer of a University of Washington Department of Atmospheric Sciences Workshop on Active and Inclusive Learning, Aug. 2020

- Motivated by research showing active learning improves student learning outcomes, with the largest benefit for underrepresented students, I organized a workshop on the benefits of active learning and methods for incorporating active learning in the classroom.

Lead organizer of the University of Washington node of the CMIP6 Python Hackathon, planned in conjunction with the National Center for Atmospheric Research and Lamont-Doherty Earth Observatory, Oct. 2019

Organizer of a University of Washington Program on Climate Change Mini-Symposium: *Using past observations to constrain future climate variability and change*, Feb. 2018

Postdoc liaison, U. Washington Department of Atmospheric Sciences, 2019 – 2021

Primary convener for sessions at the AGU Fall Meeting:

- *Large-scale atmosphere-ocean dynamics of climate variability and climate change*, 2020
- *Mechanisms of low-frequency ocean-atmosphere variability and implications for Earth's energy budget*, 2018
- *Atmospheric circulations and their role in the hydrological cycle: Monsoons, storm tracks, and the ITCZ*, 2015

Primary convener for session at the AMS Annual Meeting: *Large-scale atmospheric dynamics and climate: Jet streams, storm tracks, stationary waves, and monsoons*, 2023

Primary convener for session at the AGU Ocean Sciences Meeting: *The role of ocean-atmosphere dynamics in global climate*, 2022

Convener for session at the EGU General Assembly: *The dynamics of the large-scale atmospheric circulation in past, present and future climates*, 2025

Convener for session at the AGU Fall Meeting: *Decadal to Multi-Decadal Climate Variability – Mechanisms, Predictability, and Impacts*, 2019

PROFESSIONAL SERVICE

Editor for Journal of Climate, 2022 – present

Member of the International CLIVAR Climate Dynamics Panel, 2023 – present

Member of the CLIVAR-CFMIP Tropical Pacific SST Warming Patterns (TROPICS) Working Group, 2023 – present

External examiner and/or thesis reviewer for 3 PhD dissertations/theses

Committee member for AGU Honors Spilhaus Award, 2015 – 2017

Proposal reviewer for the US National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA), and Israel Ministry of Science, Technology and Space

Reviewer for Journal of Climate, Geophysical Research Letters, Nature, Nature Geoscience, Weather & Climate Dynamics, Climate Dynamics, Journal of the Atmospheric Sciences, Science Advances, Journal of Geophysical Research: Atmospheres, Journal of Geophysical Research: Oceans, Quarterly Journal of the Royal Meteorological Society, Paleoceanography and Paleoclimatology, Journal of Advances in Modeling Earth Systems, Climate of the Past, Tellus A: Dynamic Meteorology and Oceanography, Nature Communications, Scientific Reports, Environmental Research Climate, and Progress in Oceanography

Volunteer judge for AGU Outstanding Student Presentation Awards, 2017 – 2020 and EGU Outstanding Student and PhD Candidate Presentation Awards, 2023 – 2024

PROFESSIONAL TRAINING

2024 ETH Zurich pedagogical course, *Teaching at ETH*

2020 Workshop on Active and Inclusive Learning, University of Washington Department of Atmospheric Sciences ***(Organizer)***

2019 Science Communications Training, University of Washington College of Environment

2014 WCRP Summer School on Detection and Attribution of Extreme Events, International Centre for Theoretical Physics, Trieste, Italy

2012 Advanced Climate Dynamics Course: *Landscapes and Climate*. Snøheim, Norway ***(Including outreach event on weather and climate for Norwegian high school students)***

2010 UC Berkely Pedagogical course, *Instruction Techniques in Astronomy & Physics*

COMPUTATIONAL SKILLS

Programming and Data Processing: MATLAB, Python, Fortran, CDO, bash

Dynamical Models:

- Community Earth System Model (CESM): Significant experience running on national supercomputers (e.g., Cheyenne, Derecho), including development of new model grids and input datasets
- Geophysical Fluid Dynamics Laboratory (GFDL) Flexible Modeling System (FMS): Significant experience running the atmospheric model in idealized configurations on university supercomputers, including extensive modification of source code, input parameters, and output variables

Other: LaTeX, Adobe Illustrator, Open Broadcaster Software