

SAMUEL SMITH

Curriculum Vitae

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EDUCATION

- 2017-2023 PhD, Atmospheric Science; Scientific Computing Minor
 Advisor: Paul Staten
 Indiana University, Bloomington, IN
 Dissertation: *Scale Interactions between Local Moist Phenomena and Shifts of the Global Atmospheric Circulation*
- 2011-2015 B.A., cum laude, Music with High Honors and Physics with Honors
 Advisor: Gonzalo Ordonez
 Butler University, Indianapolis, IN

EMPLOYMENT

- 2023-present Postdoctoral Scholar
 Supervisor: Noboru Nakamura
 University of Chicago, Chicago, IL

PUBLICATIONS

Sarro, G., J. Kang, **S. Smith**, A. T. Chaudri, E. Mischell, and N. Nakamura, 2025: Non-monotonic Response of Blocking Dynamics with Increased Precipitation in an Idealized 2-Layer QG model. Submitted.

Smith, S., P. Staten, and J. Lu, 2025: The Subseasonal North Atlantic Oscillation is a Quasi-semiannual Propagating Disturbance. Submitted. doi: 10.31223/X5S432

Kamnani, D., T. O'Brien, **S. Smith**, P. Staten, and C. Shields, 2025: Regional and Temporal Variability of Atmospheric River Seasonality: Influences of Detection Algorithms and Moisture Transport Dynamics. *Journal of Geophysical Research: Atmospheres*. Accepted. doi: 10.22541/essoar.171900796.61669939/v2

Lu, J., B. Harrop, S. Lubis, **S. Smith**, G. Chen, and R. Leung, 2024: The Role of Cloud Radiative Effects in the Propagating Southern Annular Mode. *Journal of Geophysical Research: Atmospheres*. doi: 10.1029/2023JD04042

Smith, S., J. Lu, and P. Staten, 2024a: Diabatic Eddy Forcing Increases Persistence and Opposes Propagation of the Southern Annular Mode in MERRA2. *Journal of Atmospheric Science*. doi: 10.1175/JAS-D-23-0019.1.

Smith, S., P. Staten, and J. Lu, 2021: How Moist and Dry Intrusions Control the Local Hydrologic Cycle in Present and Future Climates. *Journal of Climate*. doi: 10.1175/JCLI-D-20-0780.1

GRANTS

Future Investigators in NASA Earth and Space Science and Technology (FINESST). 2021-2022. *Determining the Dynamical Drivers of Present and Future Changes in the Atmospheric Water Cycle*. Smith, S. (FI) and Staten, P.W. (PI). \$51,975.

RESEARCH EXPERIENCE

- 2021-2023 FINESST Fellow. Indiana University. Bloomington, IN.
PI: Paul Staten, Associate Professor of Atmospheric Science.
- 2018-2020 Research Assistantship. Indiana University. Bloomington, IN.
Advisor: Paul Staten, Associate Professor of Atmospheric Science.
- 2013-2014 Undergraduate Student Research Program. Butler University.
Advisor: Gonzalo Ordonez, Professor of Physics & Astronomy.

CONFERENCES AND PRESENTATIONS

Invited Presentations

- 2021 “The Wavy Rain: How the “Local Hydrologic Cycle” Diagnoses the Dynamical Drivers of Wet (and Dry) Anomalies.” Purdue University “Storm Snacks” Seminar (virtual).

Oral Presentations

- 2024 “The Intraseasonal North Atlantic Oscillation as a Quasi-semiannual Propagating Disturbance.” Climate Dynamics Seminar. Chicago, IL.
- 2024 “The Intraseasonal North Atlantic Oscillation as a Quasi-semiannual Propagating Disturbance.” American Meteorological Society Conference on Atmospheric and Oceanic Fluid Dynamics. Burlington, VT.

- 2024 “Diabatic Eddy Forcing Increases Persistence and Assists Propagation of the Intraseasonal Southern Annular Mode.” Climate Dynamics Seminar. Chicago, IL.

- 2022 “Diabatic Eddy Forcing Increases Persistence and Assists Propagation of the Intraseasonal Southern Annular Mode.” Fall Meeting of the American Geophysical Union. Chicago, IL.

- 2022 “Revisiting the Role of Diabatic Eddy Generation in the Persistence of the Southern Annular Mode.” Crossroads Conference. Indiana University, Bloomington, IN.

- 2020 “How Moist and Dry Intrusions Control the Local Hydrologic Cycle in Present and Future Climates.” Fall Meeting of the American Geophysical Union (virtual).

- 2019 “Anthropogenic Impacts on Hydrologic Cycle Extremes Mediated by Large-Scale Atmospheric Turbulence.” Crossroads Conference. Indiana University. Bloomington, IN.

Poster Presentations

- 2024 “The Intraseasonal North Atlantic Oscillation as a Quasi-semiannual Propagating Disturbance.” Fall Meeting of the American Geophysical Union. Washington, DC.

- 2024 “Barotropic Regulation of Baroclinic Instability: Lessons from a Traffic Jam Model of the North Pacific Midwinter Suppression.” Fall Meeting of the American Geophysical Union. Washington, DC.

- 2023 “The Intraseasonal North Atlantic Oscillation as a Quasi-semiannual Propagating Disturbance.” Fall Meeting of the American Geophysical Union. San Francisco, CA.

- 2022 “How Internal and External Processes Control Variability in the Location of the Southern Hemisphere Jetstream.” Midwest Climate Workshop. Purdue University, West Lafayette, IN.

- 2022 “Diabatic Heating Increases Southern Annular Mode Persistence in MERRA2 by Modifying Anticyclonic Wave Breaking.” American Meteorological Society Conference on Atmospheric and Ocean Fluid Dynamics. Breckenridge, CO.

- 2021 “How Do the Dominant Modes of Jet Variability Respond to Diabatic Heat Sources?” Fall Meeting of the American Geophysical Union. New Orleans, LA.
- 2019 “How much will a changing meridional surface temperature gradient affect the midlatitudes?” Fall Meeting of the American Geophysical Union. San Francisco, CA.
- 2019 “Dynamics Behind Forced Wet and Dry Extremes in CESM LENS.” American Meteorological Society Conference on Atmospheric and Ocean Fluid Dynamics. Portland, ME.
- 2018 “Zonal-mean Zonal Wind Response to Surface Heat Fluxes over the North Atlantic: a Wave Activity Approach.” Fall Meeting of the American Geophysical Union. Washington, DC.
- 2018 “Response of Hydrologic Cycle Extremes over the U.S to Climate Change in CESM LENS.” Midwest Student Conference on Atmospheric Research. University of Illinois. Urbana-Champaign, IL.
- 2018 “Local Finite-Amplitude Wave Activity and the Extreme Weather of 1936.” Crossroads Conference. Indiana University. Bloomington, IN.

TEACHING EXPERIENCE

- 2024-2025 Section Lead. Stanford University.
Code in Place 2024, 2025
- Spring 2021 Teaching Assistant. Indiana University, Bloomington.
Records of Global Climate Change
- 2014-2016 Highlands Latin School, Indianapolis, IN.
Upper School Faculty. Developed and taught Introductory Physics, Advanced Physics, Earth Science, Music History, and Honors Algebra 2

SEMINARS, WORKSHOPS, AND OTHER EXPERIENCES

- 2021 Machine Learning Workshop. Co-host. Department of Earth & Atmospheric Science, Indiana University Bloomington. Bloomington, IN.

- 2020-2021 Unlearning Racism in Geoscience. Participant, IU Earth & Atmospheric Sciences Pod.
- 2019 Community Earth System Model (CESM) Tutorial. Participant. Boulder, CO.

HONORS AND AWARDS

- 2017 Indiana University Atmospheric Science Fellowship
- 2014 Robert O. Whitesell Award for Excellence in Physics
- 2013 H. Marshall Dixon Award for Excellence in Physics
- 2012 Segal AmeriCorps Education Award

PROFESSIONAL MEMBERSHIPS

- 2017-present American Geophysical Union
- 2017-present American Meteorological Society
- 2014-2015 Sigma Pi Sigma Honorary Physics Fraternity
- 2014-2015 American Physical Society
- 2013-2015 Pi Kappa Lambda Honorary Music Fraternity

OTHER EMPLOYMENT

- 2016-2017 Software Trainer/Release Coordinator. Eskenazi Health Services. Indianapolis, IN.
- 2014-2016 Upper School Faculty. Highlands Latin School. Indianapolis, IN.

SERVICE

- 2024 South Side Science Festival. Climate Group Organizer. Chicago, IL.
- 2024 AMS Conference on Atmosphere and Ocean Fluid Dynamics. Student Presentation Award Judge. Burlington, VT.
- 2021 “The Dynamics of Large-Scale Atmospheric Circulation in Present and Future Climates: Jet Streams, Storm Tracks, Stationary Waves, and Monsoons.” Co-chair and Outstanding Student Presentations Award

(OSPA) co-coordinator and judge. Fall Meeting of the American Geophysical Union. New Orleans, LA.

- 2021 Holland Research Initiative in STEM Education. Co-presenter. Bloomington, IN.
- 2019 Wonderlab Summer Science Institute - Educating for Environmental Change. Teaching Assistant. Bloomington, IN.
- 2015 Volunteer Income Tax Assistance (VITA) Program. Volunteer. Indianapolis, IN.