# KEVIN SCHWARZWALD

Email: kevin.schwarzwald@columbia.edu • Phone: +1 310 961 6126 • ORCID • GitHub: ks905383 • Website • Scholar

**Interdisciplinary climate researcher helping inform climate impacts projections and decision-making under uncertainty**

## EDUCATION

**Columbia University** — New York, NY
PhD candidate, Earth and Environmental Sciences — September 2019 – 2024 (*expected*)
Master of Philosophy, Earth and Environmental Sciences — October 2023
Master of Arts, Earth and Environmental Sciences — May 2021
*Research Areas*: climate variability, uncertainty in projections of climate and climate impacts, precipitation in East Africa, tropical convection, climate model evaluation, the use of climate projections in policy and adaptation efforts
*Advisors*: Lisa Goddard (†2022), Richard Seager; *Committee Members*: Mingfang Ting, Kate Marvel, Radley Horton
- PhD thesis (intended): *The Present and Future of the Horn of Africa Rains*

**Peking University, Yenching Academy (北京大学燕京学堂)** — Beijing, China
Master of Law in China Studies (concentration in Politics and International Relations) — July 2017
*Honors*: Awards for Outstanding Academic Achievement and Outstanding Contributions to the Academy
- Master's thesis: *The Relationship between Fiscal Systems and Inefficient Urban Expansion in the PRC: An Empirical Look at Prefecture-Level Urbanization*

**The University of Chicago** — Chicago, IL
Bachelor of the Arts (A.B.) in Physics; Public Policy (concentration in Economics) — June 2015
*Honors*: Graduated with General Honors, Dean's List 2011-2013, 2015, Departmental Honors in Public Policy
- Senior Thesis (Public Policy): *"The Wrong Folks Kept Winning": Protectionism and America's Trains*
- Study Abroad: Paris, France

## ACADEMIC RESEARCH EXPERIENCE

**International Research Institute for Climate and Society (IRI), Lamont-Doherty Earth Observatory (LDEO)** — September 2019 – present
*Graduate Research Assistant* — New York, NY
- Current projects include: the present and future of rainfall dynamics in East Africa, understanding the sources of climate uncertainty in projections of the societal impacts (agriculture, mortality, etc.) of climate change, and building tutorials and python tools to make climate data more accessible to end users

**Energy Policy Institute at the University of Chicago (EPIC)** — September 2017 – July 2019
*Pre-Doctoral Fellow (joint with RDCEP)* — Chicago, IL and remotely from New York, NY as GISS Visiting Researcher
- Conducted interdisciplinary research on how climate variability will impact society (agricultural yields, mortality, energy consumption) and how to improve weather projections used in climate impacts studies, with Prof. Amir Jina
- Adapted latest downscaling and bias-correction methods to impacts studies, sensitivity tested common economic damage functions to climate variability changes, quantified effect of internal climate uncertainty on climate damages
- Advised on the use of climate model and observational data in economics and policy applications

**Center for Robust Decision-Making on Climate and Energy Policy (RDCEP)** — April 2015 – July 2019
*Pre-Doctoral Fellow (joint with EPIC 2017-2019)* — Chicago, IL and remotely from New York, NY, and Beijing, China
- Researched changes in precipitation and temperature variability from synoptic to inter-decadal timescales in global climate models in Prof. Elisabeth Moyer's climate statistics group
- Co-organized a weekly interdisciplinary speaker series on energy and environmental themes attended by ~25 young researchers and students to foster collaboration across geophysics and economics research communities

## PUBLICATIONS

Rising, James A., Azhar Hussain, **Kevin Schwarzwald**, and Ana Trisovic. 2024. "A Practical Guide to Climate Econometrics: Navigating Key Decision Points in Weather and Climate Data Analysis." *Journal of Open Source Education*. 7 (75): 90 Link.

**Schwarzwald, Kevin**, Richard Seager, Mingfang Ting, and Alessandra Giannini. 2023. "Large-Scale Stability and the Greater Horn of Africa Long and Short Rains." *Journal of Climate* 36 (20): 7297–7317. Link.

Anderson, Weston, Benjamin I. Cook, Kim Slinski, **Kevin Schwarzwald**, Amy McNally, and Chris Funk. 2023. "Multiyear La Niña Events and Multiseason Drought in the Horn of Africa." *Journal of Hydrometeorology* 24 (1): 119–31. Link.

**Schwarzwald, Kevin**, and Nathan Lenssen. 2022. "The Importance of Internal Climate Variability in Climate Impact Projections." *Proceedings of the National Academy of Sciences* 119 (42). Link.

**Schwarzwald, Kevin**, Lisa Goddard, Richard Seager, Mingfang Ting, and Kate Marvel. 2022. "Understanding CMIP6 Biases in the Representation of the Greater Horn of Africa Long and Short Rains." *Climate Dynamics* 61 (3): 1229–55. Link.

**Schwarzwald, Kevin**, Andrew Poppick, Maria Rugenstein, Jonah Bloch-Johnson, Jiali Wang, David McInerney, and Elisabeth J. Moyer. 2021. "Changes in Future Precipitation Mean and Variability across Scales." *Journal of Climate* 34 (7): 2741–58. Link.

**Schwarzwald, Kevin**, Richard Seager. 2024. "Revisiting the 'East African Paradox': CMIP6 models also struggle to reproduce strong observed MAM drying trends." *Under review at Journal of Climate.*

## AWARDS, GRANTS, COMPETITIVE PROGRAMS

- CATER School on Transdisciplinary Climate Risk Adaptation and Action (Naivasha, Kenya; fully funded, including travel) — November 2023
- ASciNA Young Scientist Award, **$7500** — 2023
- Outstanding Oral Presentation Award, 103rd AMS Annual Meeting — 2023
- Center for Science and Society Seed Grants, **$3975** total (to NENSIC, co-PI) — 2021, 2022, 2023
- ICTP Summer School on Theory, Mechanisms and Hierarchical Modeling of Climate Dynamics (Trieste, Italy; fully funded) — 2022
- Yenching Academy Dean's Research Grant, **¥5000** — 2016

## OTHER EXPERIENCE

**Eparque Urban Strategies** — March 2019 – July 2019
*Independent Consultant (part-time)* — New York, NY

**Yenching Global Symposium (全球青年中国论坛)** — October 2015 – April 2016
*Associate Director, Logistics* — Beijing, China

**Technology Policy Institute** — July 2014 – August 2014
*Google Policy Fellow* — Washington, DC

**Paris Center for Cosmological Physics** — January 2014 – March 2014
*Lab Intern* — Paris, France

**alpS GmbH** — August 2013 – September 2013
*Management Intern, Consulting Group* — Innsbruck, Austria

**Moser/Jaritz** — August 2013 – September 2013
*Research Intern* — Gmunden, Austria

## INVITED AND CONTRIBUTED PRESENTATIONS

**2024**: WCRP EPESC Science Meeting, JPL Science Understanding through Data Science (SUDS) Seminar, European Geosciences Union (EGU)'s General Assembly
**2023:** American Meteorological Association (AMS)'s Annual Meeting; EGU General Assembly; University of California Santa Barbara (UCSB) Climate Hazards Center; ECS Symposium; WCRP Open Science Conference; American Geophysical Union (AGU) Fall Meeting (**invited talk**)
**2022**: AGU Fall Meeting; Institute for Mathematical and Statistical Innovation (IMSI); NASA Goddard Institute for Space Studies (GISS); ICTP Summer School on Theory, Mechanisms and Hierarchical Modeling of Climate Dynamics; Interdisciplinary PhD Student Workshop in Sustainable Development (IPWSD); Columbia Student Climate Symposium
**2021**: AGU Fall Meeting; University of Chicago Environmental Data Science Lunch
**2019**: US CLIVAR Large Ensembles Workshop
**2018**: AGU Fall Meeting

## DATA TOOLS AND TUTORIALS

**Weather Panel Tutorial** — climateestimate.net

- In an inter-disciplinary team, co-developed a tutorial designed to introduce climate economists to working with observational climate data using python (xarray), R, or MATLAB

**xagg** github.com/ks905383/xagg

- Lead developer and maintainer of **xagg**, a python package for aggregating raster data (such as gridded weather data) onto polygons (such as administrative shapefiles), using area-averaging based on the overlap between pixels, polygons

**quantproj** github.com/ks905383/quantproj

- Developer of **quantproj**, an R package for projecting weather data by using downscaled fine-scaled distributional changes in Large Ensembles and the delta method; based on the methodology of Haugen et al., 2018

## SKILLS

*Computer (Analysis)*: advanced proficiency in python (xarray, dask), MATLAB, R, and Excel; basic proficiency in GIS (QGIS) and Stata; experience with high-performance computing (code optimization, parallel processing, batch scheduling, etc.), bash scripting; experience with climate (NetCDF, nco, CMIP, etc.) and satellite data analysis (DMSP/OLS, VIIRS, etc.)
*Computer (Modeling)*: experience in running SPEEDY, an intermediate-complexity global climate model (GCM)
*Computer (Communication/Design)*: advanced proficiency in LaTeX, PowerPoint, Keynote, inkscape; basic proficiency in Adobe Illustrator
*Language*: native in German, professionally fluent in French, basic communication skills in Mandarin Chinese

## PROFESSIONAL NETWORKS

- American Geophysical Union (AGU)
- European Geosciences Union (EGU)
- Austrian Scientists & Scholars in North America (ASciNA)