KERRIE L. GEIL, APPLIED CLIMATE SCIENTIST

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HIGHLIGHTS OF QUALIFICATIONS

- Earth system and applied climate science researcher, experienced in climate model evaluation, climate/weather simulation, and high-performance computing
- Statistical and geospatial analysis of large datasets in many formats
- Experienced in designing and teaching hands-on computational workshops
- Federal government science policy writing experience
- Excellent leadership, teaching, and teamwork skills from interdisciplinary research, science outreach, and policy work
- Environmental consulting, 5+ years experience in natural resources impact assessment (wetlands, streams, forests), field work, data collection, cartography, mitigation design, permitting

EDUCATION

PhD in Atmospheric Sciences, minor: Remote Sensing, University of Arizona, Tucson, AZ — Jan 2017
Dissertation: Assessing the 20th Century Performance of Global Climate Models and Application to Climate Change Adaptation Planning

MS in Atmospheric Sciences, University of Arizona, Tucson, AZ — Dec 2012

BS in Environmental Science, University of Delaware, Newark, DE — Feb 2004

WORK HISTORY

Postdoctoral Research Fellow, USDA Agricultural Research Service, Las Cruces, NM — **July 2020-present**

- Scientific computing (Python) on high-performance computing (HPC) systems
- Evaluated climate model performance (35+ global models) using observed meteorological data
- Collaborating with Google to develop a deep learning architecture for predicting the spatiotemporal spread of the livestock disease vesicular stomatitis
- Documenting cross-platform scientific research computing workflows (local, HPC, Google Cloud Platform, Google Earth Engine)
- Assisted with six deep learning image processing workshops and built workshop website https://kerriegeil.github.io/NMSU-USDA-ARS-AI-Workshops/

AAAS Science & Technology Policy Fellow, AAAS, Washington DC — **Sep 2018-July 2020**
USDA Agricultural Research Service (ARS), Beltsville, MD

- Created the USDA high performance computing website https://scinet.usda.gov/
- Designed and taught workshops around agricultural data and high-performance computing
- Built websites for workshops https://kerriegeil.github.io/SCINET-GEOSPATIAL-RESEARCH-WG/
- Evaluated the effectiveness and impact of computational workshops, trainings, and webinars
- Created the first two USDA SCINet high performance computing newsletters: https://content.govdelivery.com/accounts/USDAARS/bulletins/26f910e, https://scinet.usda.gov/assets/pdf/newsletters/SCINET-Newsletter-April-2020.pdf
- Developed USDA Public Access Policy for Digital Scientific Research Data (internal pub June 2019), requiring consensus building with 20 different USDA Agencies and Offices
- Developed USDA ARS Policies and Procedures 630.0: Data Management & Public Access Requirements for ARS (internal pub Sep 2020), requiring consensus building with many ARS Offices and scientists

Project Scientist & Editor, Studio30k, Asheville, NC — **Apr 2018-June 2019**

- Co-authored an advisory report on applied climate assessment
- Coordinated and managed the progress of expert author teams

- Manuscript writing, editing, and coordinating responses to peer reviews
- Science communication

Research Fellow, Oak Ridge Institute for Science and Education (ORISE), Oak Ridge, TN **Jan 2017-Apr 2018**
Department of Housing and Urban Development (HUD), Washington, DC

- Led research development and execution to meet HUD's Climate Change Adaptation Plan needs
- Produced data-informed recommendations of the geographical areas that should be targeted first for human resilience efforts with respect to extreme temperatures
- Researched availability and quality of nationwide climate data for severe weather, winter weather, tropical storms, precipitation, flooding, sea level rise, drought, wildfire, and extreme temperature
- Communicated complex scientific analysis to HUD policy makers and staff of diverse backgrounds
- Scientific computing using the NCAR Command Language (NCL), Python, and ArcGIS
- Functioned as a climate science researcher and in-house consultant across multiple HUD offices

Research Assistant, University of Arizona, Tucson, AZ **Jan 2011-Dec 2016**
Climate Assessment for the Southwest (CLIMAS, a NOAA RISA program) (2015-2016)
Department of Hydrology and Atmospheric Sciences (2011-2015)

- Designed and conducted independent, collaborative, and stakeholder-involved research
- Evaluated climate model performance (40+ global models) using observed hydrologic and meteorological data in many formats, including very large (terabyte scale) geospatial datasets
- Ran weather and climate simulations (model development and dynamical downscaling)
- Assessed climate change vulnerability of a corporate electricity utility
- Presented research at major science conferences
- Published in peer-reviewed science journals (6 published articles, 2 in preparation)
- Wrote research proposals
- Scientific computing (NCL, Fortran, Perl, shell scripting) on Linux (local system and high-performance parallel computing), Windows, and Mac operating systems

Teaching Assistant, University of Arizona, Tucson, AZ **Aug 2010-Dec 2010**

- ATMO336 "Weather, Climate, & Society", mentored students, led study groups, graded assignments

Environmental Scientist, Whitman, Requardt & Associates, Baltimore, MD **Aug 2007-Jul 2010**

- Project management, training/supervision of junior scientist
- Wetland/forest stand delineations, technical reporting, cartography (AutoCAD, Microstation, ArcGIS)
- Tidal/nontidal wetland mitigation, restoration, monitoring (of groundwater and vegetation)
- Field data collection (hydrology, soils, vegetation)
- Environmental compliance, permitting, and federal/state agency field meetings/coordination
- Rare/threatened/endangered species field surveys

Environmental Specialist, The RBA Group, Columbia, MD **Mar 2005- Aug 2007**

- Wetland and forest stand delineations, technical reporting, cartography
- Environmental and land development permitting, development feasibility research
- Sediment control plan design, residential site plan design

HONORS

Service Award, College of Science, University of Arizona (financial award for excellent service) Apr 2016
Summer Policy Colloquium Participant, American Meteorological Society, Washington, DC Jun 2015

- engaging scientists and decision makers to promote the inclusion of scientific knowledge in policy choices

Green Fund Committee Member, University of Arizona 2014-2015

- managed $400,000 for sustainability projects- monitored projects, reviewed proposals, awarded grants

Advanced Study Program Grant from the National Center for Atmospheric Research May-Aug 2013

- to live in Boulder, CO and conduct model development research with NCAR scientists

Galileo Circle Scholar, University of Arizona College of Science (cash award to top science scholars) 2012

SERVICE, OUTREACH, & VOLUNTEERING

Founder, President, and Volunteer for Green Keepers at the University of Arizona 2013-2015

- an organization that connected students to environmental volunteering events, approx. 75 members

Volunteer Leader and Outreach Coordinator for Biosphere 2 Weather Weekend Apr 2014

- teaching basic science principles to visitors through fun "weather experiments"

Committee Chair for Departmental Graduate Research Conference 2011-2014

Activity Presenter for University of Arizona's Earth Sciences Saturday Academy Nov 2010

- promoting science/math to minority, low income, and first-generation college-bound grade 6-12 students

Atmospheric Sciences Tutor for the Blind, University of Arizona Disabilities Resources Center 2010

PEER REVIEWED PUBLICATIONS

Geil, K.L., N.D. Burruss, and D.P.C. Peters, 2022: Selecting downscaled climate projections based on CMIP5 earth system model performance metrics: A disease ecology application, *Climate Services*, **in preparation**.

Burrus, N.D. and **co-authors**, 2021: Forecasting the geographic range of an invasive disease across the continental US under current and future climate conditions, *Climate*, **in review**.

Hudson, A.R and **co-authors**, 2021: Cross-site comparisons of climate change on drylands in the US LTER network, *BioScience*, **in review**.

Moss, R.H. and **co-authors**, 2019: A framework for sustained climate assessment in the United States, *BAMS*, 100(5), 897-907, https://doi.org/10.1175/BAMS-D-19-0130.1

Moss, R.H. and **co-authors**, 2019: Evaluating knowledge to support climate action: A framework for sustained assessment. Report of an independent advisory committee on applied climate assessment, *Wea. Climate Soc.*, 11(3), 465-487, https://doi.org/10.1175/WCAS-D-18-0134.1.

Serra, Y.L. and **K.L Geil**, 2017: Historical and projected Eastern Pacific and Intra-Americas Sea TD-wave activity in a selection of IPCC AR5 models, *J. Climate*, 30, 2269-2294.

Zeng, X. and **K.L. Geil**, 2016: Global warming projection in the 21st century based on an observational data-driven model, *Geophys. Res. Lett.*, 43, 947-954.

Geil, K.L. and X. Zeng, 2015: Quantitative Characterization of Spurious Numerical Oscillations in 48 CMIP5 Models, *Geophys. Res. Lett.*, 42, 5066-5073.

Maloney, E. and **co-authors**, 2014: North American Climate in CMIP5 Experiments. Part III: Assessment of 21st Century Projections, *J. Climate*, 27(6), 2230-2270.

Sheffield, J. and **co-authors**, 2013: North American Climate in CMIP5 Experiments. Part I: Evaluation of 20th Century Continental and Regional Climatology, *J. Climate*, 26 (23), 9209-9245.

Geil, K.L., Y.L. Serra, and X. Zeng, 2013: Assessment of CMIP5 model simulation of the North American Monsoon System, *J. Climate*, 26 (22), 8787-8801.

CONFERENCE PRESENTATIONS

Geil, K.L, N.D. Burruss, and D.P.C. Peters, 2021: "Selecting downscaled climate projections based on ESM performance metrics: A disease ecology application", Ecological Society of America Annual Meeting, 2-6 August 2021, virtual.

Meyer, RM, R Pandya, KL Geil, R Kreutter, RH Moss, 2019: "How can citizen and community science support the goals of a sustained national climate assessment?", Citizen Science Association Biennial Meeting, 13-17 March 2019, Raleigh, NC.

Meyer, RM, R Pandya, R Kreutter, KL Geil, 2018: "How can citizen and community science support the goals of a sustained national climate assessment?", AGU Fall Meeting, 10-14 December 2018, Washington, DC.

Jones, AD, KL Geil, KA Jagannathan, 2018: "Assessing climate information in use context", AGU Fall Meeting, 10-14 December 2018, Washington, DC.

Geil, KL, 2016: "An Atmospheric Scientist Beginning a Career at the Science-Policy Interface", **Invited Speaker/Participant**, Aspen Global Change Institute Workshop "Expanding the Science-Policy Interface to Confront Global Change", 9-14 October 2016, Aspen, CO.

Geil, KL, X Zeng, B McMahon, D Ferguson, 2015: “Analysis of Extreme Heat in Historical and Projected Climate Simulations for Regional Climate Planning Purposes in the U.S.”. AGU Fall Meeting, 14-18 December 2015, San Francisco, CA.

Geil, KL and X Zeng, 2015: “Quantitative characterization of spurious Gibbs oscillations in 48 CMIP5 models”. Atmospheric and Interdisciplinary Research (AIR) Graduate Student Conference, March 2015, University of Arizona, Tucson, AZ.

Geil, KL and X Zeng, 2014: “Quantitative characterization of spurious Gibbs oscillations in 45 CMIP5 models”. AGU Fall Meeting, 15-19 December 2014, San Francisco, CA.

Geil, KL and X Zeng, 2013: “Regional climate simulations over North America with WRF-NMM/Noah and WRF-NMM/NoahUA”. Noah Teleconference, 30 October 2013.

Geil, KL and YS Serra, 2013: “Assessment of CMIP5 model simulation of the North American Monsoon System”. Atmospheric and Interdisciplinary Research (AIR) Graduate Student Conference, March 2013, University of Arizona, Tucson, AZ.

Geil, KL and YS Serra, 2012: "Assessment of CMIP5 model simulation of the North American Monsoon System". AGU Fall Meeting, 3-7 December 2012, San Francisco, CA.

Geil, KL and YS Serra, 2012: “Dynamical downscaling of CMIP5 global model output using the WRF regional model”. Atmospheric and Interdisciplinary Research (AIR) Graduate Student Conference, March 2012, University of Arizona, Tucson, AZ.

Geil, KL and YS Serra, 2012: "Evaluation of Precipitation Patterns in Dynamically Downscaled HadGEM2-ES Over the Intra-Americas Sea". AMS Annual Meeting, 22-26 January 2012, New Orleans, LA.

Geil, KL and YS Serra, 2011: "Evaluation of Spatial & Temporal Precipitation Patterns in Select AR5 Global Climate Models and Reanalyses Over the Intra-Americas Sea and North American Monsoon Regions". World Climate Research Programme Open Science Conference, 24-28 October 2011, Denver, CO.