

Kristen Guirguis

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Education

Duke University

Department of Civil and Environmental Engineering
Ph.D. in Hydrology and Fluid Dynamics, 2009

University of California, San Diego

Department of Earth Sciences/Scripps Institution of Oceanography
M.S. in Earth Sciences, 1999

University of California, San Diego

Department of Earth Sciences
B.S. in Earth Sciences, June 1998

Research Interests

Climate variability, anthropogenic climate change, links between climate and weather, impacts of weather extremes on human health and society, prediction and predictability of extreme weather

Academic/Professional Appointments

1997	Hydrologic Research Technician, Water Resources Division, San Diego, CA
1998-1999	Graduate Research Assistant, Scripps Institution of Oceanography, La Jolla, CA
2000-2002	Environmental Scientist, US Environmental Protection Agency, San Francisco, CA
2002-2009	Graduate Research Assistant, Department of Civil and Environmental Engineering, Duke University, Durham, NC
2009-2010	Postdoctoral Researcher, CASPO, Scripps Institution of Oceanography, La Jolla, CA
2010-2012	Visiting Scholar/UCAR-PACE Fellowship, CASPO, Scripps Institution of Oceanography, La Jolla, CA
2013-present	Project Scientist, CASPO, Scripps Institution of Oceanography, La Jolla, CA

Fellowships and Awards

- NASA Earth System Science Fellowship 2004-2007
- UCAR Postdocs Applying Climate Expertise (PACE) Fellowship 2010-2012

Professional Memberships

American Geophysical Union
American Meteorological Society

Peer Review

Journal of Hydrometeorology, International Journal of Climatology, Journal of Climate, Geophysical Research Letters, Journal of Geophysical Research, Climate Dynamics, Urban Climate, Environmental Research, Atmospheric Research Letters, International Journal of Environmental Research and Public Health

Publications

- Guirguis, K.**, A. Gershunov, M.J. DeFlorio, T. Shulgina, L. Delle Monache, A.C. Subramanian, T.W. Corringham, and F. M. Ralph, 2020: Four atmospheric circulation regimes over the North Pacific and their relationship to California precipitation on daily to seasonal timescales. *Geophysical Research Letters*, 47, <https://doi.org/10.1029/2020GL087609>
- Schwartz L. B.J. Malig, J. Guzman Morales, **K. Guirguis**, A. Gershunov, R. Basu and T. Benmarhnia, 2020: The health burden of fall, winter and spring heat waves in Southern California and contribution of Santa Ana Winds. *Environmental Research Letters*, 15 054017
- Malig BJ, XM Wu, **K. Guirguis**, A. Gershunov, and R. Basu, 2019 Associations between ambient temperature and hepatobiliary and renal hospitalizations in California, 1999 to 2009. *Environ. Res.*, 10; 177:108566. PMID: 31323396.
- Gershunov, A., T.M. Shulgina, R.E.S. Clemesha, **K. Guirguis**, D.W. Pierce, M.D. Dettinger, D.A. Lavers, D.R. Cayan, S.D. Polade, J. Kalansky and F.M. Ralph, 2019: Precipitation regime change in Western North America: The role of Atmospheric Rivers. *Nature Scientific Reports*, 9:9944, DOI: 10.1038/s41598-019-46169-w. <https://rdcu.be/bJPK0>
- Guirguis, K.**, A. Gershunov, T. Shulgina, R.E.S. Clemesha, and F.M. Ralph, 2019: Atmospheric Rivers impacting Northern California and their modulation by a variable climate. *Clim. Dyn.*, DOI: 10.1007/s00382-018-4532-5
- Guirguis, K.**, A. Gershunov, T. Shulgina, A. Subramanian, R.E.S. Clemesha, F.M. Ralph, 2018: Circulation drivers of Atmospheric Rivers at the North American West Coast. *Geophysical Research Letters*, 45. <https://doi.org/10.1029/2018GL079249>
- Jennings, M. K., D. Cayan, J. Kalansky, A. D. Pairis, D. M. Lawson, A. D. Syphard, U. Abeysekera, R. E. S. Clemesha, A. Gershunov, **K. Guirguis**, J. M. Randall, E. D. Stein, and S. Vanderplank. 2018. San Diego County Ecosystems: Ecological Impacts of Climate Change On A Biodiversity Hotspot. California's Fourth Climate Change Assessment, California Energy Commission. California Energy Commission.
- Guirguis, K.**, R. Basu, W. Al-Delaimy, T. Benmarhnia, R.E.S. Clemesha, I. Corcos, J. Guzman-Morales, B. Hailey, I. Small, A. Tardy, D. Vashishtha, J.G. Zivin, and A. Gershunov, 2018: Heat, disparities, and health outcomes in San Diego County's diverse climate zones, *Geohealth*, DOI: 10.1029/2017GH00127
- Guirguis, K.**, A. Gershunov, D.R. Cayan, and D. Pierce, 2018: Heat wave probability in the changing climate of the Southwest US, *Climate Dynamics*, 50, 3853-3864, DOI: 10.1007/s00382-017-3850-3
- Clemesha, R.E.S., **K. Guirguis**, A. Gershunov, I.J. Small, and A. Tardy, 2018: California Heat Waves: their spatial evolution, variation, and coastal modulation by low clouds, *Climate Dynamics*, 50, 4285-4301, DOI: 10.1007/s00382-017-3875-7
- Vashishtha, D., W. Sieber, B. Hailey, **K. Guirguis**, A. Gershunov, and W. Al-Delaimy, 2018: Outpatient Clinic Visits During Heat Waves: Findings from a Large Family Medicine Clinical Database, *Family Practice*, cmy013, <https://doi.org/10.1093/fampra/cmy013>

- Sherbakov, T., B.J. Malig, **K. Guirguis**, A. Gershunov, R. Basu, 2017: Ambient Temperature and Added Heat Wave Effects on Hospitalizations in California from 1999-2009, *Environmental Research*, 160, 83-90
- Guirguis, K.**, A. Gershunov and D. Cayan, 2015: Interannual variability in associations between seasonal climate, weather and extremes: wintertime temperature over the Southwestern United States. *Environmental Research Letters*, 10, 124023, doi:10.1088/1748-9326/10/12/124023.
- Guirguis, K.**, A. Gershunov, A. Tardy, and R. Basu, 2014: The Impact of Recent Heat Waves on Human Health in California, submitted to *J. Appl. Meteorol. Clim*, **53**, 3-19.
- Gershunov, A., B. Rajagopalan, J. Overpeck, **K. Guirguis**, D. Cayan, M. Hughes, M. Dettinger, C. Castro, R. Schwartz, M. Anderson, A. Ray, J. Barsugli, T. Cavazos, and M. Alexander, 2012: Future Climate: Projected Extremes." In *Assessment of Climate Change in the Southwest United States: A Report Prepared for the National Climate Assessment*, edited by G. Garfin, A. Jardine, R. Merideth, M. Black, and S. LeRoy, 126-147. A Report by the Southwest Climate Alliance. Washington, DC: Island Press.
- Peterson, T.C., R.R. Heim, Jr., R. Hirsch, D.P. Kaiser, H. Brooks, N.S. Diffenbaugh, R.M. Dole, J.P. Giovannetone, **K. Guirguis**, T.R. Karl, R.W. Katz, K.E. Kunkel, D. Lettenmaier, G.J. McCabe, C.J. Paciorek, K.R. Ryberg, S. Schubert, V.B.S. Silva, B.C. Stewart, A.V. Vecchia, G. Villarini, R.S. Vose, J. Walsh, M. Wehner, D. Wolock, K. Wolter, C.A. Woodhouse, and D. Wuebbles, 2013: Monitoring and Understanding Changes in Heat Waves, Cold Waves, Floods and Droughts in the United States: State of Knowledge., *Bull. Amer. Meteor. Soc.*, **94**, 821-834
- Gershunov, A. and **K. Guirguis**, 2012: California heat waves in the present and future, *Geophys. Res. Lett*, doi: **39**, L18710, doi:10.1029/2012GL052979
- Gershunov, A., Z. Johnston, H. Margolis, and **K. Guirguis**, 2011: The California Heat Wave 2006 with Impacts on Statewide Medical Emergency: Space-time analysis. *Geog. Res. Forum*, **31**, 53-69.
- Guirguis, K.**, A. Gershunov, R. Schwartz, and S. Bennett, 2011: Recent warm and cold daily winter temperature extremes in the Northern Hemisphere, *Geophys. Res. Lett*, **38**, L17701, doi:10.1029/2011GL048762.
- Guirguis, K.J.** and R. Avissar, 2008: Precipitation Climatology and Dataset Intercomparison for the Western United States. *J. Hydrometeor.*, **9**, 825-841.
- Guirguis, K.J.** and R. Avissar, 2008: An Analysis of Precipitation Variability, Persistence, and Observational Data Uncertainty in the Western United States. *J. Hydrometeor.*, **9**, 843-865.
- Lane, D.E., **K.J. Goris**, and R.C.J. Somerville, 2002: Radiative Transfer through Broken Clouds: Observations and Model Validation. *J. Climate*, **15**, 2921-2933.