



Stanford Experts on Winter Weather Extremes

Click on names for more info. For assistance in locating these faculty members, contact

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Climate and Extreme Weather

[Noah Diffenbaugh](#)

Diffenbaugh studies the climate system, including the processes by which climate change could increase extreme weather and impact agriculture, water resources, and human health. He has served as a lead author for Working Group II of the IPCC and has provided testimony and scientific expertise to the White House, the Governor of California, and U.S. congressional offices. Diffenbaugh is the Kara J Foundation Professor of Earth System Science and Kimmelman Family Senior Fellow at the Stanford Doerr School Sustainability.

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Expertise: The climate system, including the processes by which climate change could impact agriculture, water resources, extreme weather events, and human health.

Coastal Flooding and Flood Protection

[Jenny Suckale](#)

Suckale focuses on understanding disaster risk and resilience by exploring the processes that govern extreme events in different natural systems and working with private and public partners to increase community resilience. Suckale is an assistant professor of geophysics at the Stanford Doerr School of Sustainability; assistant professor, by courtesy, of civil and environmental engineering; and center fellow at the Stanford Woods Institute for the Environment.

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Expertise: Climate hazards, urban flooding, community impacts and resilience, physical processes of extreme events.

[Lisa Mandle](#)

Mandle's research sheds light on how the environmental impacts of land management and infrastructure development affect ecosystem services, including flood risk reduction; social equity; and human health. Mandle works with governments, multi-lateral development banks, and non-governmental organizations to incorporate this understanding into development decisions, particularly in Latin America and Asia. She is also lead editor of the book *Green*

Growth That Works, a practical guide to policy and finance mechanisms for securing benefits from nature. Mandle is a lead scientist with the Natural Capital Project and a senior research scientist at the Stanford Woods Institute for the Environment.

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Expertise: Ecosystem services, social equity.

Damages, Financial Risk, and Insurance

Michael Wara

Wara's research focuses on climate policy and regulation, both domestically and internationally. His current scholarship addresses the performance of the emerging global market for greenhouse gasses and mechanisms for reducing emissions, especially in developing countries after the expiration of the Kyoto Protocol. Wara is the director of the Climate and Energy Research Program and senior research scholar at the Stanford Woods Institute for the Environment; a research fellow at the Program in Energy and Sustainable Development in Stanford's Freeman Spogli Institute for International Studies; and a research fellow at the Steyer-Taylor Center for Energy Policy and Finance.

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Expertise: Environmental and energy law and policy.

Stormwater and Sewage/Sanitation

Richard Luthy

Luthy focuses on environmental engineering and water quality with applications to water reuse, stormwater use, and systems-level analysis of urban water challenges. His research addresses management of persistent organic contaminants and contaminants of emerging concern in natural systems that are engineered to improve water quality and protect the environment and human health. Luthy is the Silas H. Palmer Professor of Civil and Environmental Engineering and an affiliate at the Stanford Woods Institute for the Environment.

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Expertise: Water quality, urban water management, sanitation engineering.

Groundwater Recharge and Dams

Rosemary Knight

Knight is a geophysicist and expert on groundwater evaluation and management, remote sensing and hydrology. Knight works in partnership with groundwater managers in the western U.S. using laboratory and field experiments and computer modeling to develop new methods for acquiring, processing and interpreting groundwater data. Knight is the George L. Harrington Professor in the Stanford Doerr School of Sustainability and a senior fellow of the Stanford Woods Institute for the Environment.

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Expertise: Hydrogeophysics, sustainable groundwater management and recharge, water issues in the western U.S.

Sarah Fletcher

Fletcher's research aims to advance water resources management to promote resilient and equitable responses to a changing world. She studies water resources and climate change adaptation from a socio-technical systems perspective. Her research integrates methods from hydrology, policy analysis, and data science to inform decision-making around critical environmental challenges. Fletcher is an assistant professor of civil and environmental engineering and a center fellow at the Stanford Woods Institute for the Environment.

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Expertise: Water infrastructure planning under uncertainty, resilient and sustainable drought planning, integrated climate mitigation and adaptation planning, equity and justice in water resource systems analysis.

Khalid Osman

Osman's research spans the use of mixed quantitative-qualitative methods to assess public perceptions of water infrastructure, water conservation efforts, and the management of existing infrastructure systems to meet the needs of those being served by the systems. Osman is an assistant professor of civil and environmental engineering and a center fellow, by courtesy, at the Stanford Woods Institute for the Environment.

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Expertise: Equity in water sector infrastructure, water affordability, stakeholder-community engagement in sustainable civil infrastructure systems for achieving environmental justice.

Jet Streams and the Polar Vortex

Aditi Sheshadri

Sheshadri's research focuses on fundamental questions in atmospheric dynamics, which she addresses using a combination of theory, observations, and both idealized and comprehensive numerical experiments. Current areas of focus include the dynamics, variability, and change of the mid-latitude jets and storm tracks and the stratospheric polar vortex. Sheshadri is an assistant professor of Earth System Science at the Stanford Doerr School of Sustainability and a senior fellow at the Stanford Woods Institute for the Environment.

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Expertise: Climate, stratospheric polar vortex, atmospheric dynamics, jet streams.

Landslides, Natural Hazards, Hillslope Erosion

George Hilley

Hilley studies the landscape's response to active faulting and folding of the Earth's crust. His research spans a broad range of time and spatial scales, from the development of mountain ranges over millions of years through the development of small landforms and watersheds over tens to hundreds to thousands of years. Hilley studies large, slow-moving landslides in urbanized areas – and the hazards they pose – using remote sensing methods such as Synthetic Aperture Radar Interferometry. Hilley is a professor of Earth and planetary sciences at the Stanford Doerr School of Sustainability.

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Expertise: Landslides and urban hazards, erosion processes.

Additional Stanford climate experts can be found at
<https://news.stanford.edu/expertise/climate-change/>