

Wildfire Research at Stanford

Stanford researchers are focused on new systems and solutions to prevent catastrophic wildfire and guide communities to improve health and safety.

Decades of fire suppression, climate change, and the development of homes and businesses next to dense forests and wild areas called the “wildland urban interface” have made California’s forests a matchbox. In recent years, wildfires have killed over 150 people, destroyed over 35,000 homes, and caused more than \$125 billion in societal losses. Diverse and disadvantaged populations, including Native Americans and migrant worker communities, are among the most vulnerable to wildfire and smoke exposure, which can have grave public health impacts. Fighting wildfires costs billions, and current practices are allowing the risks to grow.

Fighting Fire with FIRE



With expertise in engineering, ecology, climate science, social science, public health, and policy, the Stanford Woods Institute for the Environment delivers a practical system focused on fuels, ignitions, relocation, and extensive and intensive health impacts (FIRE). The FIRE approach strategically targets dangerous areas, reduces the risk of catastrophic wildfires in a cost-effective way, and provides guidance for communities, including on smoke exposure and planning for relocation. The FIRE project is designed to benefit Californians while serving as a policy model for other areas under threat from wildfires around the globe.

More information: woods.stanford.edu/FIRE/approach

Prevention Treatment



Ninety-five percent of wildfires are started by humans. A preventive treatment developed by Stanford researchers led by Eric Appel involving an environmentally safe gel-like retardant provides season-long protection against wildfire ignitions. By stopping fires from starting, such treatments can be more effective and less expensive than current firefighting methods.

More information: bit.ly/AppelFireTreatment

Zombie Forests



California’s “zombie forests” — once-thriving ecosystems now struggling to adapt to climate change — represent a critical, and as yet unaccounted for, high risk factor for catastrophic wildfire. Stanford researchers led by Chris Field, in partnership with the Sierra Nevada Alliance and iNaturalist, a joint effort of the California Academy of Sciences and the National Geographic Society, are working to identify and map zombie forests in the Sierra and co-design adaptive management solutions with community members.

California's Catastrophic Wildfire Cost and Recovery Commission



Michael Wara, Director of the Climate and Energy Policy Program at the Stanford Woods Institute for the Environment, serves on the state's Catastrophic Wildfire Cost and Recovery Commission which released a report in June of 2019 finding that utilities played a major role causing recent catastrophic wildfires in the state. Wara is actively engaged in research and discussions to forward effective wildfire-related policies in California.

Health Impacts



Kari Nadeau, Director of the Sean N. Parker Center for Allergy and Asthma Research at Stanford, is one of the nation's foremost experts in adult and pediatric allergy and asthma. Nadeau has active research projects in Fresno, California, which is inordinately impacted by smoke from wildfire and prescribed burns, to study the health impacts of smoke exposure on children and adults.



FOR MORE INFORMATION

More Stanford experts on wildfires, wildfire prevention, and impacts can be found here: bit.ly/WoodsFIRE

For more information on Stanford's wildfire projects, visit: woods.stanford.edu

Email us: environment@stanford.edu

Wildfire Research and Prevention Experts

The Stanford Woods Institute for the Environment is Stanford's hub for interdisciplinary environmental research and solutions. Its researchers bring real-world experience and cutting-edge innovations to the challenge of preventing catastrophic wildfire.



Ecology – Chris Field

Field is the Perry L. McCarty Director of the Stanford Woods Institute for the Environment and Melvin and Joan Lane Professor for Interdisciplinary Environmental Studies at Stanford University. Field's research focuses on global climate change and ecology.



Health & Medicine – Kari Nadeau

Nadeau is the Director of the Sean N. Parker Center for Allergy and Asthma Research at Stanford University, Section Chief of Allergy and Asthma at the Stanford School of Medicine, and the Naddisy Foundation Professor of Pediatric Food Allergy, Immunology, and Asthma at Stanford University.



Law & Policy – Michael Wara

Wara is the Director of the Climate and Energy Policy Program, a senior research scholar at the Stanford Woods Institute for the Environment, and a commissioner on California's Catastrophic Wildfire Cost and Recovery Commission. He is a lawyer and scholar focused on climate, energy, and California law and policy concerning wildfires and the utility industry.



Climate – Noah Diffenbaugh

Diffenbaugh is the Kara J Foundation Professor and Kimmelman Family Senior Fellow at Stanford University. He is a climate scientist and expert on the future of California's climate and extreme events.



Engineering – Eric Appel

Appel is an Assistant Professor of Materials Science & Engineering at Stanford University. A material scientist and engineer, he worked with state and local agencies to develop and test a long-lasting, environmentally benign fire-retarding material.



Human Behavior – Gabrielle Wong-Parodi

Wong-Parodi is an Assistant Professor of Earth System Science and Center Fellow at the Stanford Woods Institute for the Environment at Stanford University. She is a behavioral psychologist focused on human impacts of environmental disasters, such as wildfires.