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Select publications:

Hansen, W.D., A. Foster, B. Gaglioti, R. Seidl, and W. Rammer. 2023. **The Permafrost and organic layer module for forest models (POLE-FM) 1.0.** *Geoscientific Model Development*, 16:2011-2023.

Hansen, W.D., M.A. Krawchuk, A.T. Trugman, and A.P. Williams. 2022. **The Dynamics Temperate and Boreal Fire and Forest-Ecosystem Simulator (DYNAFFOREST): Development and evaluation.** *Environmental Modelling and Software*, 156:105473.

Hansen, W.D., R. Fitzsimmons, J. Olnes, and A.P. Williams. 2020. **An alternate vegetation type proves resilient and persists for decades following forest conversion in the North American boreal biome.** *Journal of Ecology*, 109:85-98.

Hansen, W.D., D. Abendroth, W. Rammer, R. Seidl, and M.G. Turner. 2020. **Can wildland fire management alter 21st-century subalpine fire and forests in Grand Teton National Park, Wyoming, USA?** *Ecological Applications*, 30: e02030.

Hansen, W.D., and M.G. Turner. 2019. Origins of abrupt change? **Postfire subalpine conifer regeneration declines nonlinearly with warming and drying.** *Ecological Monographs*, 89: e01340.

Hansen, W.D., K.B. Braziliunas, W. Rammer, R. Seidl, and M.G. Turner. 2018. **It takes a few to tango. Changing climate and fire can cause regeneration failure in two subalpine conifers.** *Ecology*, 99:966-977.

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Winslow D. Hansen, Forest Ecologist

Research mission:

- Determine where and why forests will change over the next century
- Predict where ecosystems and people will be most threatened by wildfire
- Guide forest and fire management

Summary:

Forests influence climate and sustain life globally. Trees sequester carbon emissions that cause climate warming, support much of the planet's biodiversity, and provide essential services such as fuel, food, and clean water and air. Due to climate change, increasing disturbances, and deforestation, many forests are threatened. Winslow Hansen works to understand where and why forests are at risk, and how we can avoid catastrophic losses.

Hansen uses experiments and field observation to reveal how forests are responding to environmental change. He is also developing novel techniques that integrate remote sensing and computer simulations to model forest response – scaling from individual trees up to entire biomes. Together, these complementary approaches paint a picture of current and future forest health across backyards, watersheds, and the planet.

This science is relevant to managers and policy makers tasked with stewarding

forests during a time of profound change. Hansen often brings stakeholders into his research process so that results are immediately injected into decision making. For instance, he worked with managers at Grand Teton National Park to evaluate whether different management strategies might reduce wildfire risk to people and help conserve some of America's last remaining wildlands. Hansen is building on this work to determine where people and forests may be most threatened by fires across the western United States, including California.

Hansen is Director of the Western Fire and Forest Resilience Collaborative, which brings together 10 premier research teams to advance a fire science agenda co-developed with decision makers. By weaving together fieldwork, remote sensing data, and state-of-the-art modeling, the Collaborative will ensure the best science guides fire policy, management, and community adaptation.



Science for environmental solutions