

Forests may lose ability to protect against extremes of climate change, study finds

June 30 2018



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Forests, one of the most dominate ecosystems on Earth, harbor significant biodiversity. Scientists have become increasingly interested in how this diversity is enhanced by the sheltering microclimates produced

by trees.

A recent University of Montana study suggests that a warming climate in the Pacific Northwest would lessen the capacity of many forest microclimates to moderate climate extremes in the future.

The study was published in *Ecography: A Journal of Space and Time in Ecology*.

"Forest canopies produce microclimates that are less variable and more stable than similar settings without [forest](#) cover," said Kimberley Davis, a UM postdoctoral research associate and the lead author of the study. "Our work shows that the ability of forests to buffer climate extremes is dependent on canopy cover and local moisture availability—both of which are expected to change as the Earth warms."

She said many plants and animals that live in the understory of forests rely on the stable climate conditions found there. The study suggests some forests will lose their capacity to buffer [climate](#) extremes as water becomes limited at many sites.

"Changes in water balance, combined with accelerating canopy losses due to increases in the frequency and severity of disturbance, will create many changes in the [microclimate](#) conditions of western U.S. forests," Davis said.

More information: Kimberley Davis et al. Microclimatic buffering in forests of the future: The role of local water balance, *Ecography* (2018). [DOI: 10.1111/ecog.03836](https://doi.org/10.1111/ecog.03836)

Provided by University of Montana

Citation: Forests may lose ability to protect against extremes of climate change, study finds (2018, June 30) retrieved 25 April 2024 from <https://phys.org/news/2018-06-forests-ability-extremes-climate.html>

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