

Precipitation declines in Pacific Northwest mountains

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Recent Forest Service studies on high-elevation climate trends in the Pacific Northwest United States show that streamflow declines tie directly to decreases and changes in winter winds that bring precipitation across the region. Scientists believe the driving factors behind this finding relates to natural climate variations and man-made climate change.

Research Hydrologist Charlie Luce, with the Rocky Mountain Research Station's Aquatic Sciences Laboratory in Boise, Idaho, along with cooperators at the University of Idaho and the US Forest Service Northern Region, reflect on the decline of precipitation in the region's mountains for 60 years. Increasing wildfire area and earlier and lower streamflows have generally been attributed to warming temperatures.

"Our research," says Luce, "suggests that an alternative mechanism – decreases in winter winds leading to decreased precipitation – may compound the changes expected from warming alone. This is important because mountains are a primary [water](#) source for the region. Less precipitation leads to reduced runoff for communities, industry and agriculture. Decreased precipitation also exacerbates early snowmelt tied to warming temperatures.

Acknowledging the effects of decreasing precipitation requires changes in how resource specialists approach [climate change](#) adaptation for water resources and forest management compared to preparing for increased temperature alone," he said. According to Luce, this may present

important implications for changes in mountain [precipitation](#) and future water availability for other areas as well.

The American Association for the Advancement of Science is publishing the study, *The Missing Mountain Water; Slower Westerlies Decrease Orographic Enhancement in the Pacific Northwest USA*, in their *Science* journal, [available](#) on Nov. 28, 2013.

Provided by USDA Forest Service

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