



## Dams protected Columbia River from negative impacts of climate change

This is a study that anti-dam organizations won't tell you about. Because it weakens most of their critics portraying dams as powerful agents of river destruction.

That study suggests on the contrary that large dams provide "ecological and engineering resilience" to climate change in the Columbia River basin.

The Canadian journal *Atmosphere-Ocean*<sup>1</sup> published a special issue on the Columbia River Basin. One of the articles looked at the effects of climate warming on stream flow in the headwaters and downstream reaches of seven sub-basins of the Columbia River from 1950 to 2010. Climate change is widely expected to alter stream flow and potentially disrupt water management systems.



*The Army Corps of Engineers Bonneville Dam contributed to protect Columbia River from the effects of climate change*

They found that the peak of the annual snowmelt runoff has shifted to a few days earlier, but the downstream impacts were negligible because reservoir management counteracts these effects. They conclude that : "to date, climate-warming effects on streamflow have been limited to headwaters, and flow regulation has obscured the expression of climate change on streamflow below dams in the Columbia River basin."

"The dams are doing what they are supposed to do, which is to use engineering and management to buffer us from climate variability and climate warming," said Julia Jones, an Oregon State University hydrologist and co-author on the study. "The climate change signals that people have expected in stream flow haven't been evident in the Columbia River basin because of the dams and reservoir management. That may not be the case elsewhere, however."

Jones said the net effect of reservoir management is to reduce amplitude of water flow variance by containing water upstream during peak flows for flood control, or augmenting low flows in late summer. While authorized primarily for flood control, reservoir management also considers water release strategies for fish migration, hydropower, ship navigation and recreation.

These social forces, as well as climate change impacts, have the potential to create more variability in river flow, but the decades-long hydrograph chart of the Columbia River is stable because of the dams, said Jones, who is on the faculty of the College of Earth, Ocean, and Atmospheric Sciences at OSU.

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1. *Atmosphere-Ocean* [Volume 51, Issue 4](#), 2013 Special Issue: From Icefield to Estuary: The Columbia Basin -- Climate and Streamflow Trends in the Columbia River Basin: Evidence for Ecological and Engineering Resilience to Climate Change by [Kendra L. Hatcher](#)<sup>a</sup> & [Julia A. Jones](#)<sup>a\*</sup>