

Wilder weather means tricky times for reservoir operators

April 13 2016, by By Keith Ridler

Wilder swings in weather patterns in the past decade are making it trickier to keep reservoirs filled for irrigation and power generation while also avoiding the risk of flooding homes downstream, some Pacific Northwest reservoir operators say.

Reservoir management plans that dictate how much water is stored or released are based on decades of weather and snowmelt information. Conditions far outside the norm—such as early snowmelt due to warmth or rain instead of snow during winter—can skew calculations that are used to make water predictions.

"We're struggling at this point with weather patterns," said Joel Fenolio, U.S. Army Corps of Engineers senior water manager for the Upper Columbia, which includes eastern Washington, northern Idaho, western Montana and British Columbia.

Still, "I'm not convinced that the correlations are completely breaking down yet," Fenolio said. "Maybe in five years we'll have a better idea."

On the eastern side of the Continental Divide, nine of the 10 highest runoff years in the Missouri River Basin have occurred since 1970, said Jody Farhat, the corps' northwestern water management division chief for the basin.

That includes an unusual combination of weather events in 2011 that overwhelmed the system leading to widespread flooding. That was

followed the next year by what the agency calls a "flash drought" due to lack of water. Farhat makes decisions about water releases on six dams on the Missouri River in Montana, North Dakota, South Dakota and Nebraska.

"These wild swings between wet and dry with no advance warning seems to be more common than at any time in the past if you look at the historic record," Farhat said.

She said the National Oceanic and Atmospheric Administration is working on a study, due out late this year, trying to better understand the reasons for the [weather events](#) and variability, and how they might factor into future decisions.

April and the months surrounding it are crunch time for reservoir managers trying to fill reservoirs so farmers can get enough water to grow crops through the summer, yet leave enough room so an unexpected rapid snowmelt won't force large releases that would surpass flood stage levels downstream.

The formula guiding managers includes snowpack and reservoir levels, which are known, but how much new precipitation might arrive and in what form with spring storms is hard to predict.

One noticeable change in [weather patterns](#) is that snowmelt due to warmer weather is occurring earlier in the year, said Jay Breidenbach, a Boise-based National Weather Service meteorologist who works with reservoir managers.

"The peak stream flow seems to be earlier than it was 20, 30 years ago," Breidenbach said.

In 2015 in much of the Northwest, peak stream flows occurred in

February, a month early.

"We got so much more rain than snow," said Tim Merrick, a spokesman for the U.S. Geological Survey in Idaho. "That seems to be the trend throughout the West."

When summer arrived in 2015, the lack of snowpack in Idaho led to many streams in the state recording record low flows on specific days of the year. But with a good snowpack this year, gauges on some Idaho rivers in April have been recording record high flows for specific days.

In the Columbia River Basin that includes large portions of Washington state, Oregon, Idaho, Montana and British Columbia, last year's low snowpack and early melt led to low summer flows and warm water that killed 90 percent of the returning sockeye salmon despite attempts to cool the river with releases from northern Idaho's Dworshak Reservoir.

Reservoirs on the Boise River above Boise look good, said Brian Sauer of the U.S. Bureau of Reclamation, which works with irrigators. In fact, Lucky Peak Reservoir is so full, the Army Corps recently took over management and started releasing water to make room for additional [water](#) expected to enter the reservoir.

Flows through Boise have risen to the point where portions of a popular walking and biking trail that parallels the river through the city have been inundated.

"If the system was strictly built for flood control, we could empty the reservoirs every fall and have room," Sauer said. "If you want to end the (runoff) season with full reservoirs, that makes it a little more challenging."

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