

Land Letter



8. WATER: Low January snowpack portends a dry spring in Colo.

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Scott Streater, E&E reporter

An unusually dry January has lowered snowpack levels on mountain ranges across southern Colorado, raising concerns about water shortages later this year unless more snow falls in the next two months.

The dry conditions in southern Colorado and across the Southwest have also raised concerns that 2011 could be a bad year for the spring dust storms that coat snow with a thick layer of dirt. Besides being unsightly, the dust blanket absorbs heat from the sun, accelerating the rate of melting snow.

Mountain snowmelt provides 80 percent of Colorado's surface water supply, and diminished or quick-melting snow can stretch already short water supplies during the warmest months of the year, experts say.

Such issues were highlighted in a recent report by the Agriculture Department's Natural Resources Conservation Service, which forecast declines in southern Colorado water supplies due to reduced snowpack, particularly in the Rio Grande Basin on the state's southwest side.



A dry winter in Arizona and New Mexico could result in bad dust storms in southern Colorado this spring. Such storms are known to exacerbate rapid snow melt at higher elevations, creating potential water shortages for both irrigators and communities. Photo courtesy of USGS.

Nevertheless, state water managers remain confident that enough snow will fall in the next two months to reach normal snowpack levels and provide sufficient spring and summer supply. "It's pretty early in the season," said Mike Sullivan, deputy state engineer for the Colorado Division of Water Resources. "A couple of good snowstorms and we could kick things back to normal."

But that optimism is tempered by a persistent La Niña weather pattern that is expected to result in below-average precipitation from February through April in southern Colorado, Arizona and New Mexico, according to the National Weather Service's Climate Prediction Center.

And in the Rio Grande Basin -- which is fed in part by the Sangre de Cristo Mountains where the NRCS found the lowest snowpack levels in Colorado -- the state lacks large reservoirs and cannot store water for the dry summer months, said Craig Cotten, division engineer in the

Water Resources Division's regional office in Alamosa, Colo.

"We are really dependant on the snowpack," Cotten said. "About the only thing we can do is get the word out that we are looking at a below-average year and to let the farmers know so they can make some possible changes in the crops they are planning on growing. Other than that, there's really no preparation we can do."

Dusty spring?

Meanwhile, dry conditions in northern Arizona and New Mexico have raised fears that windy springtime conditions will kick up dust storms that transport parched and loosened soils hundreds of miles across the southern Rockies.

The dark-colored dust absorbs sunlight more than white snow, accelerating the pace of melting by as much as 50 days in the spring and early summer. That means less available surface water during July and August, which are typically the hottest months of the year.

"I can understand their concern because the snowpack is supposed to be like water in the bank," said Margaret Hiza, a U.S. Geological Survey scientist in Flagstaff, Ariz., who is working to determine the origin of the dust that coats the southern Rockies. "But it's likely we will have a dusty spring because we are having another dry winter."

Eight major dust storms occurred in the region in 2010, the same number as in 2008 and 2009.

But researchers last year measured a record amount of dust coating the mountain snowpack across the Intermountain West, said Jayne Belnap, a USGS research ecologist in Moab, Utah, who studies the dust storms.

Researchers do not know why so much dust is falling at high elevations, but Belnap said one possible answer could be ground disturbances from energy development, road building, grazing and off-highway vehicle (OHV) use.

If the trend continues, and snowpack continues to melt earlier each year, land managers will have to address the dust problem, Belnap said.

"We are going to have to make tough decisions on some significant sociological and cultural value issues," she said. "Which is more important: driving around in your OHV in Arizona, or having enough water for residents in southern Colorado? It's really going to be a very, very difficult discussion. This is not going to be simple."

But the problem of diminished snowpack this winter is more complicated than just dust.



A series of monitors measures both snowpack and melt rates at a high-elevation site. Courtesy of the Natural Resources Conservation Service.

A main contributing factor is La Niña, a weather phenomenon that is marked by cooler water temperatures in the Pacific Ocean and warmer and drier winter conditions across the Southwest states.

"The statistical forecast for a La Niña event would not favor much of a spring bonus as far as increased snowpack for the southern mountains," said Chris Landry, executive director of the Center for Snow and Avalanche Studies in Silverton, Colo.

Monitoring continues

NRCS has a 30-year data baseline showing average snowfall across the state, as well as 110 monitors that provide daily snowfall readings, said Michael Gillespie, who supervises the NRCS Snow Survey Program in Denver.

Those monitors showed that in January only about a quarter of the normal snow volume fell on mountain ranges across the south and southwest side of the state. The situation would have been more worrisome if not for some major snowstorms in late 2010, said Allen Green, an NRCS state conservationist.

"Without those big storms back in December, most of the state would be well below average right now," Green said.

As a result, snowpack levels in the South Platte River Basin, which supplies billions of gallons of water a year to the Denver metropolitan area and across the Front Range, is only slightly below average levels, according to the NRCS report.

Less fortunate are the river basins in south and southwest Colorado.

In addition to the Rio Grande Basin, January snowpack levels were low in the Gunnison, San Juan, Animas, Dolores and San Miguel river basins.

Unless snowfall returns to normal levels over the next two months, there will be a lot less water flowing into the Rio Grande and Arkansas River basins, according to researchers at NRCS and the National Weather Service river forecast centers.

"It's a little disturbing to see how dry it was in January in the southern portion of the state," Gillespie said. "If this pattern continues, and there's no indication it won't ... then we're looking at a potentially critical situation by spring."

Streater writes from Colorado Springs, Colo.

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