



UNIVERSITY
OF WYOMING
Wyoming State Climate Office
Dept 3943, 1000 E. University Ave.
Laramie, Wyoming 82071
Phone: (307) 766-6651
Email: stateclim@wrds.uwo.edu

Wyoming Climate: November 2010

November 2010 was marked by a series of strong snowstorms that brought significant precipitation to many high-elevation locations across Wyoming. Heavy snowfall totals were especially prominent in the northwestern corner of the state, but the Sierra Madre and Medicine Bow Mountains along the southeastern border of Wyoming also received significant precipitation. Much of this snowfall resulted from storms in the last two weeks of the month, and precipitation was often accompanied by high winds and frigid temperatures. Over the period from November 19 through 21, for example, multiple locations in Park and Teton counties in northwestern Wyoming received > 10 inches of snow. Locations in Yellowstone National Park were particularly hard hit on these days, with some stations reporting >20" accumulations. Snowfall continued through Thanksgiving, with locations around Jackson and Afton seeing an additional 15-20" by the 25th. In the southeastern mountains, some end-of-month precipitation totals exceeded 200% of historical average for the month.

Based on reports from NRCS-SNOTEL sites, most drainages in Wyoming were at or above historical average snowpack for this time of year. Of particular note was the Bear River basin in southwestern Wyoming, which reported >160% of historical average snowpack for end of November. A handful of SNOTEL sites in or near the Bear River basin reported snow water equivalent (SWE) values in the top 95th percentile of all historical observations. Similarly, two SNOTEL sites in the North Platte drainage fell within the top 95th percentile for end-of-month SWE. On the dry end of the spectrum, the Belle Fourche basin in the northeastern corner of the state showed only 73% of average snowpack. However, a shortage of monitoring sites and the relatively low elevations of its associated mountain ranges makes tracking early-season snowpack especially difficult in the Belle Fourche.

In contrast, many low-elevation sites experienced precipitation deficits for the month. Locations in southwestern Wyoming's Green River Basin generally reported < 60 % of historical average precipitation for November. Likewise, the Powder and Tongue River basins in the northeast corner of the state were relatively dry for the month. While this lowland dryness calls for vigilance, it should also be noted that historically November tends to be one of the driest months in many basin and valley locations. At the same time, large snowfall totals this early in the water year (i.e., October through September) are relatively poor predictors of spring and summer runoff.

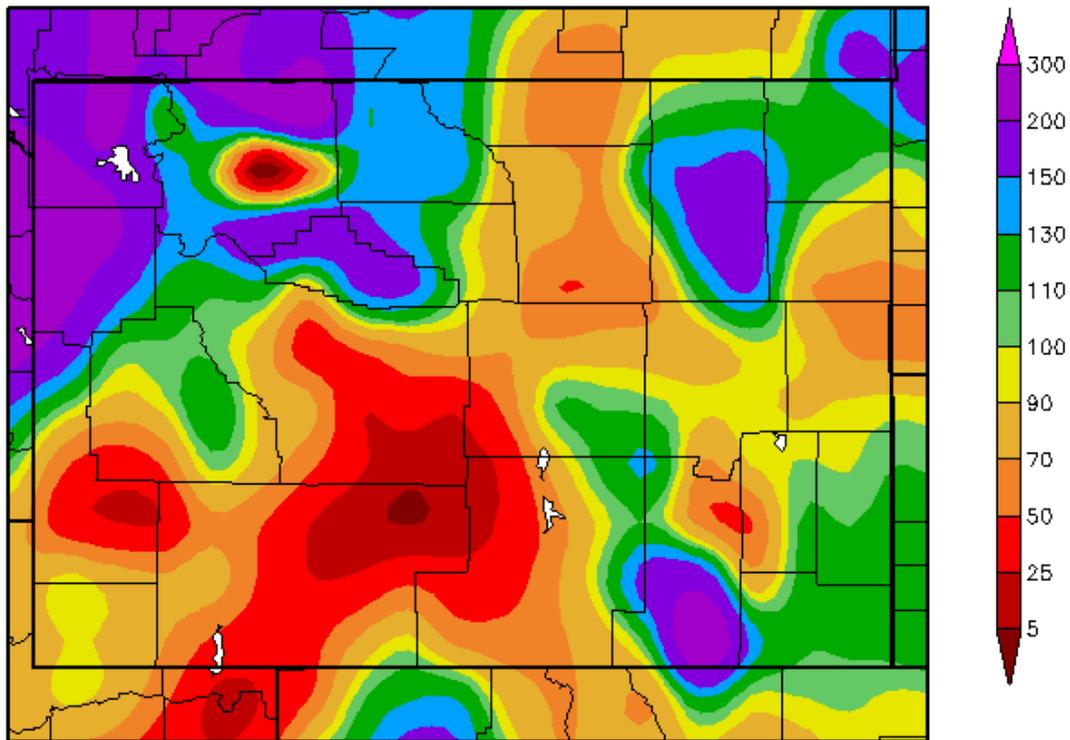
In terms of temperatures averaged across the entire month, November brought conditions near historical norms. However, the first and second halves of the month were marked by very different temperature patterns. Early November was often warm, with several days being unusually so. Cheyenne, for example, experienced a record high of 73° F on November 6. The

last two weeks of the month featured bitter cold in some cases, with average daily temperatures generally 5-10° F below historical values.

Finally, in its 3-month seasonal outlooks, the NOAA Climate Prediction Center is reporting an elevated probability of wetter-than-average conditions to continue in northwestern Wyoming (<http://www.cpc.noaa.gov/index.php>). This outlook is predicated on the presence of strong La Niña conditions in the Tropical Pacific. Such unusually cold waters along the equator have often brought greater-than-average snowpack to western Wyoming mountains. The connection between activity in Tropical Pacific and winter conditions becomes more tenuous heading into eastern and southern portions of the state, but La Niña may also bring warm and dry conditions to other Wyoming mountain ranges. In any case, the state's runoff picture for the coming year may depend, in large part, on the strength and persistence of the present La Niña event.

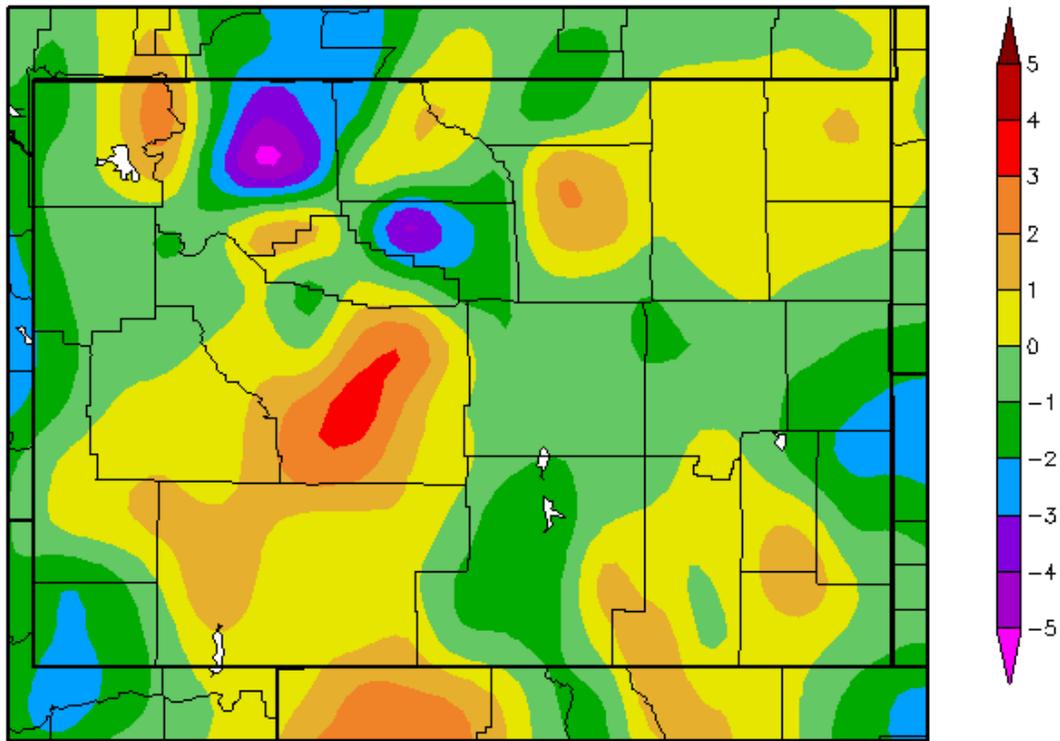
This report was prepared by the Wyoming State Climate Office, which is a division of the Wyoming Water Resources Data System at the University of Wyoming. More information can be found at: <http://www.wrds.uwyo.edu> and http://www.wrds.uwyo.edu/sco/climate_office.html. Special thanks to the National Weather Service's Cheyenne and Riverton Offices for supplying data used in this report.

Percent of Normal Precipitation (%) 11/1/2010 – 11/30/2010



Map showing November 2010 precipitation as a percentage of historical averages (vs. 1971-2000 “normal period) for Wyoming. Courtesy of the High Plains Regional Climate Center.

Departure from Normal Temperature (F)
11/1/2010 – 11/30/2010



Generated 12/2/2010 at HPRCC using provisional data.

Regional Climate Centers

Map showing mean November 2010 temperatures as departures from historical averages (vs. 1971-2000 “normal period) for Wyoming. Courtesy of the High Plains Regional Climate Center.