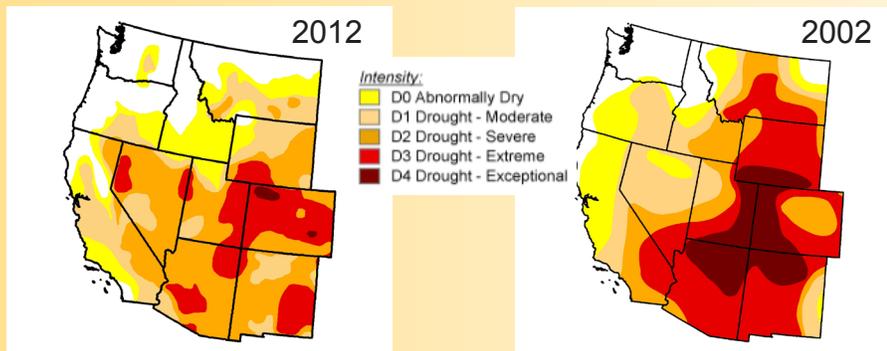


The 2012 Drought in Colorado, Utah and Wyoming

A July 2012 update from the
Western Water Assessment and the National Integrated Drought Information System

Under a second winter of La Niña, drought conditions emerged midway through the 2012 water year, with low snowpacks melting out early during a very dry and warm spring. Spring and early summer runoff over most of the region was well below average, with flows similar to 2002 and other benchmark drought years. Continued dry and hot conditions in June dried out vegetation and led to very large and intense wildfires in all three states, along with widespread rangeland, pasture, and dryland crop losses.

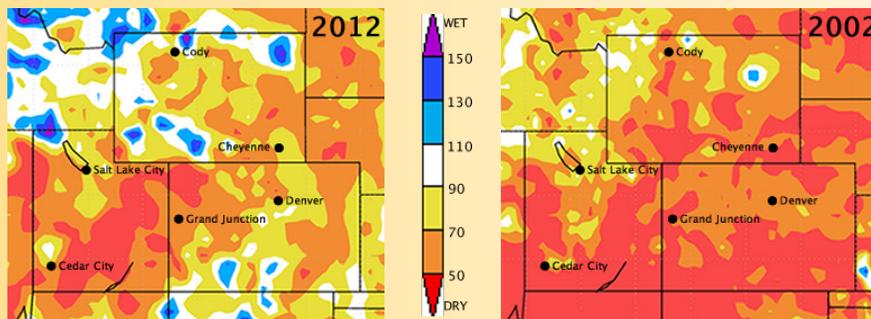
Drought Conditions as of early July



According to the July 10 US Drought Monitor, severe or worse drought conditions cover nearly all of Colorado, most of Utah, and about half of Wyoming. In early July 2002, conditions were generally worse than 2012 across the three-state region, except for north-central Colorado and far northwestern Utah. The severity of the drought classification (D1–D4) is based on hydro-meteorological variables such as precipitation, soil moisture, streamflow and temperature. Note that the Drought Monitor is now based on more detailed spatial input compared to 2002.

US Drought Monitor for July 10, 2012 (left) and July 9, 2002 (right)
(Source: www.droughtmonitor.unl.edu/monitor.html).

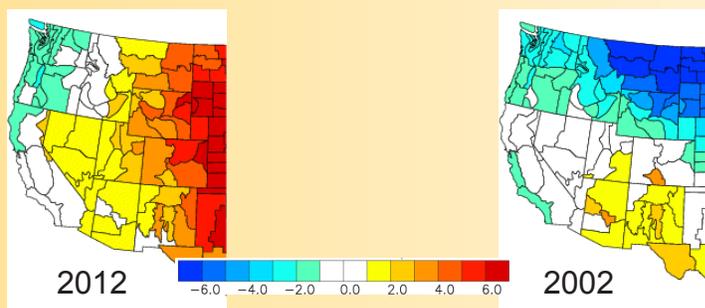
Water Year Precipitation through June



Percent of average (1995-2010) precipitation for the current water year to date, October 2011–June 2012 (left), with October 2001–June 2002 (right) for comparison. (Source: NWS COOP and SNOTEL data; Gary Bates, NOAA ESRL Physical Science Division)

For the water year to date (October 2011 through June 2012), a mixed first five months followed by an extremely dry March–June added up to dry conditions across all of the region, except for pockets in northern and southwest Wyoming, and southern Colorado. The driest areas, with less than 70% of average precipitation, included many of the key mountain headwaters in western and northern Colorado, and in Utah. But as dry as water year 2012 has been, 2002 was drier over the same period in nearly all parts of the region.

Spring and Early Summer Temperatures

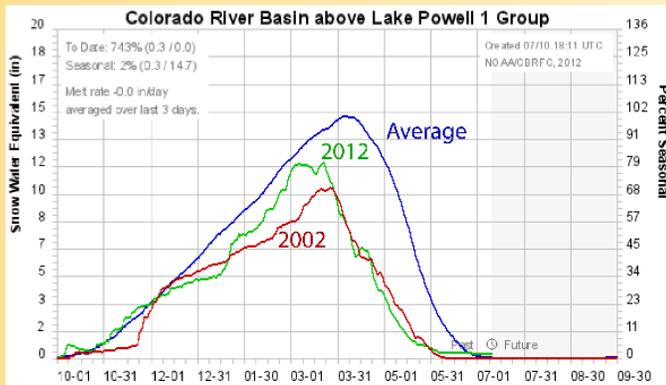


March–May temperatures in 2012 (left) were 2° to 7° F above normal across the 3-state region, much warmer than the same period in 2002 (right). (Source: NOAA ESRL PSD Climate Analysis Branch, plotted from NOAA NCDC divisional data: <http://www.esrl.noaa.gov/psd/data/usclimdivs/>)

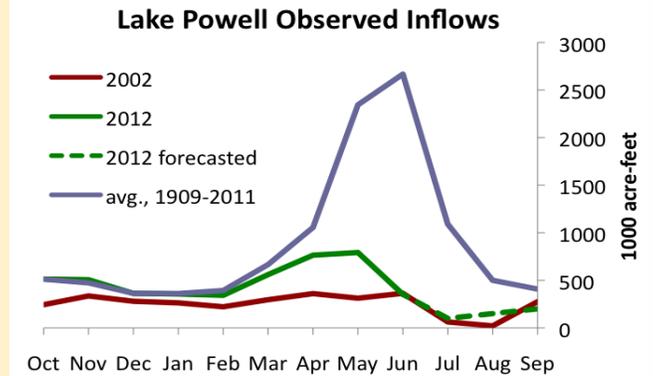
March–May 2012 was the 2nd warmest spring in Colorado in the past 118 years, the 3rd warmest in Wyoming and the 8th warmest in Utah. This extended warmth hastened the early meltout of the already-low snowpack, and caused excessive evapotranspiration from soils and vegetation. June continued the string of warm months, with temperatures 2°–8° F above average across the region. In eastern Colorado, there were many record daily highs in late June and a tie for all-time highest statewide temperature for Colorado (114° F in Las Animas on June 23rd).

For an expanded version of this overview, including additional graphics and text, see the Special Issue of the Western Water Assessment Intermountain West Climate Summary at wwa.colorado.edu/IWCS/2012_July.html

Snowpack and Streamflow



Snow-water equivalent for the Upper Colorado River Basin
(Source: <http://www.cbrfc.noaa.gov/station/swepplot/snowgroup.php>)



Observed monthly inflows to Lake Powell
(Source: <http://wateroutlook.nwrfc.noaa.gov/id/GLDA3/>)

Most basins in the region saw the snowpack peak at near-record-low levels in March, 4-8 weeks ahead of average. The rapid depletion of the snowpack continued in April and May with many sites experiencing their earliest-ever meltout. In the Upper Colorado River Basin (figure, left), the basinwide snowpack in 2012 (green) peaked slightly higher, though earlier, than in 2002 (red), and then followed a very similar path to meltout. With the snowpacks at such low levels, the spring-early summer runoff in 2012 across the region has been well below average, with most basins projected to see 30%–70% of average April–July flows. Inflows to Lake Powell, reflecting runoff from the entire Upper Colorado River Basin (figure, right), were on track to make 2012 (green) the 4th-driest year in the past century, with a projected water-year flow of 46% of average (compared to 24% of average in 2002).

Reservoir Levels at end of June

	2012 % avg	2012 % full	2002 % full		2012 % avg	2012 % full	2002 % full
Dillon	96	92	72	Bear Lake	113	85	44
Turquoise	75	68	60	Lake Powell	77	63	66
Granby	97	78	40	Fontenelle	116	91	71
Blue Mesa	69	58	54	Flaming Gorge	96	83	73
Pueblo	119	81	43	Seminole	90	73	39
Strawberry	135	86	80	Boysen	87	84	40
Jordanelle	97	94	89	Buffalo Bill	115	98	77

Storage at 14 major reservoirs in Colorado, Utah, and Wyoming. All values are as of June 30 of the given year. Blue/yellow = above/below 100% of average; green/yellow = more/less storage in 2012 vs. 2002.
(Sources: US Bureau of Reclamation and NRCS)

With widespread much-below-average inflows this water year, many reservoirs across the region had less storage at the end of June than the average for the date. Of the 14 reservoirs summarized in the table at left, 9 had below-average storage at the end of June 2012. Due to above-average inflows in 2011, however, nearly all reservoirs had more storage than in 2002. Of the 14 reservoirs, only Lake Powell is lower this year than in 2002. With July and August 2012 inflows also expected to be much below average, storage is expected to decline relative to average conditions through the summer.

Wildfire and Agricultural Impacts



Significant fire potential for July 2012 is indicated by red shading
(Source: National Interagency Fire Center, <http://www.nifc.gov/>)

- By mid-June, wildfire danger had reached levels not seen since 2002 in many areas. As of July 10, all three states in the region had experienced multiple wildfires over 10,000 acres, with over 650 homes destroyed in those fires. Homeowner fatalities occurred in both Colorado and Utah.
- Pasture and range conditions were poor or very poor over most of the region by late June. On July 3, a disaster declaration was made by the US Department of Agriculture for 62 of 64 Colorado counties due to observed and projected crop and livestock production losses, following similar declarations in late June for four counties in Wyoming.

Summary & Outlook

The intense 2012 drought in Colorado, Utah, and Wyoming has thus far caused significant impacts: very low streamflows and reduced water supplies, poor range, pasture, and dryland crop conditions, and destructive wildfires. Many drought indicators are showing the worst conditions region-wide since 2002. Rains in early July have reduced the fire danger in some areas but severe drought conditions still persist across the region. The emerging El Niño event would increase the chances for wetter conditions in the next several months, but there is the potential for regional drought conditions persisting into water year 2013.

National Integrated Drought Information System
www.drought.gov
Western Water Assessment
www.colorado.edu/wwa
Colorado Basin River Forecast Center
www.cbrfc.noaa.gov

Colorado Climate Center
ccc.atmos.colostate.edu
Colorado Water Conservation Board
cwcw.state.co.us/Pages/CWCBHome.aspx
Wyoming State Climate Office
www.wrds.uwyo.edu/sco/climate_office.html

