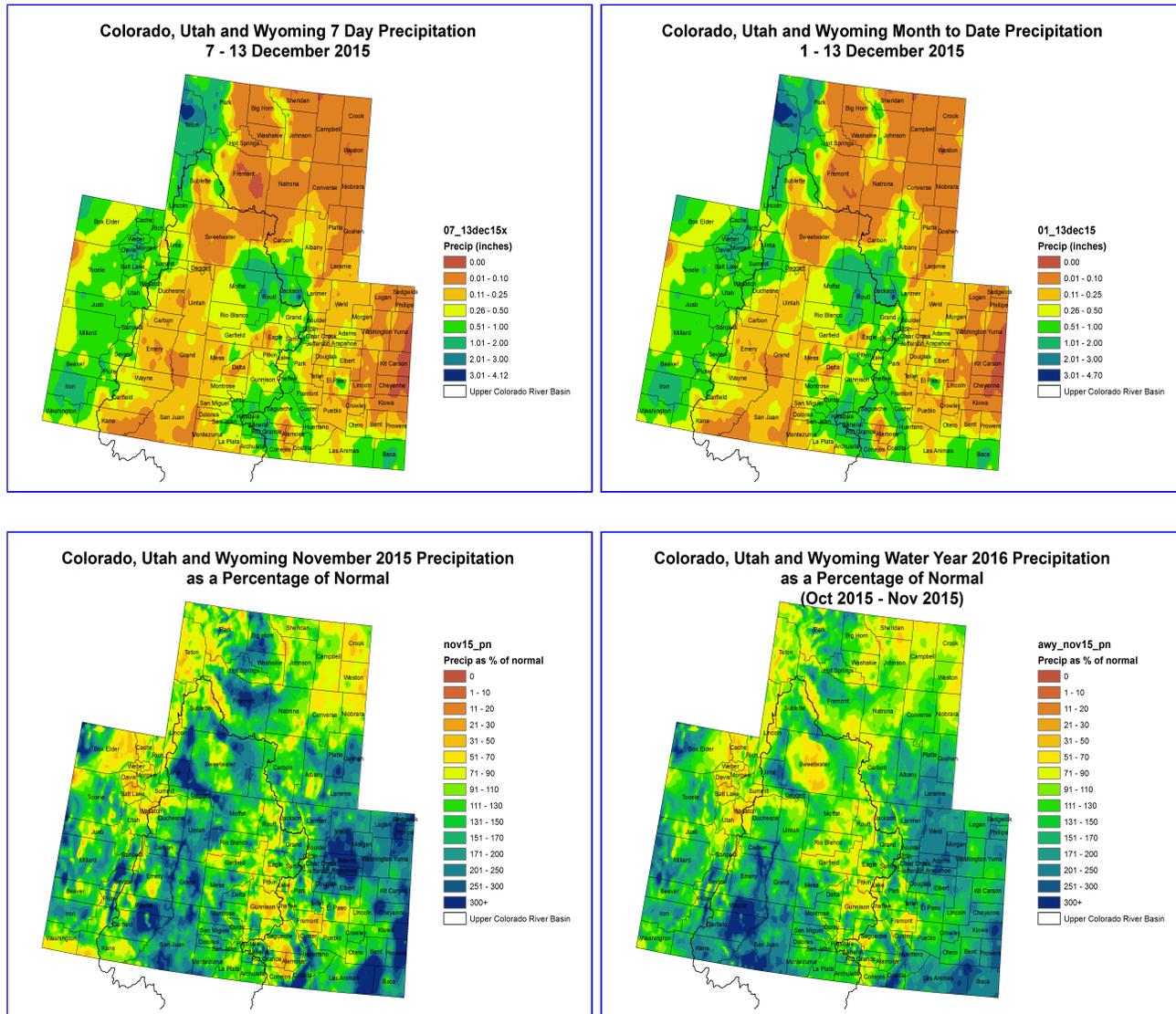


PRECIPITATION



The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average; water-year-to-date precipitation as a percent of average.

Last Week Precipitation:

- Precipitation over the UCRB was very spotty over the past week, with most areas seeing less than 0.50 inches of liquid.
- The Upper Green Basin, especially in Sweetwater and Sublette counties saw less than 0.10 inch across most of the area. Parts of Lincoln and Uinta counties did see up to 1.00".
- All of eastern Utah saw less than 0.25 inches.
- Western Colorado saw the bulk of the precipitation last week. Moffat, Routt and Rio Blanco counties received between 0.50 and 2.00 inches of liquid precipitation. Parts of the San Juan range and

into the Rio Grande basin also received between 0.50 to 2.00 inches. Much of the rest of western Colorado received up to 0.50 inches.

- East of the Divide, the Front Range of Colorado saw a weekend snow storm that amounted to 0.25 inches of liquid or less, with some areas seeing up to 0.50 inches of precipitation. Chaffee, and the higher elevations of Fremont, Custer and Huerfano counties received up to 1.00 inches last week.
- Baca and eastern Las Animas counties saw the most precipitation of the plains, with between 0.50 and 1.00 inches.
- Not shown on the map is the snow storm that began late Monday. At 7:00 AM Mountain Standard Time, the Colorado River Headwaters along with Routt, Eagle and Garfield counties has received between 0.30 inches up to 0.75 inches according to CoCoRaHS and Coop reports. The Four Corners area in Las Animas and Montezuma counties has also see around 0.50 inches of precipitation.
- Eastern Utah and southwestern Wyoming have up to 0.50 inches.
- The Front Range of Colorado from Larimer County to El Paso County has seen between 0.25 inches and 0.75 inches. The plains have received less than 0.25 inches of liquid in most gauges.

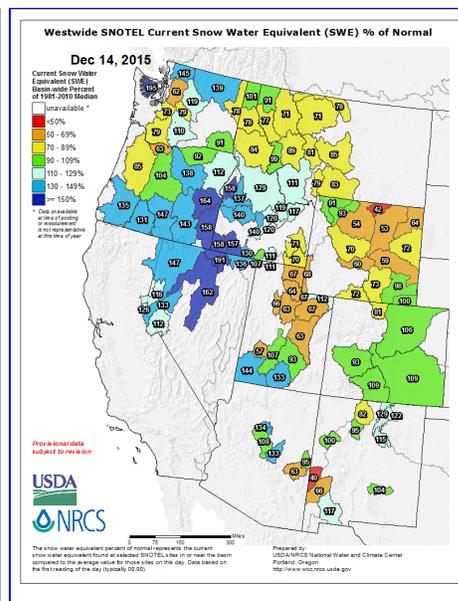
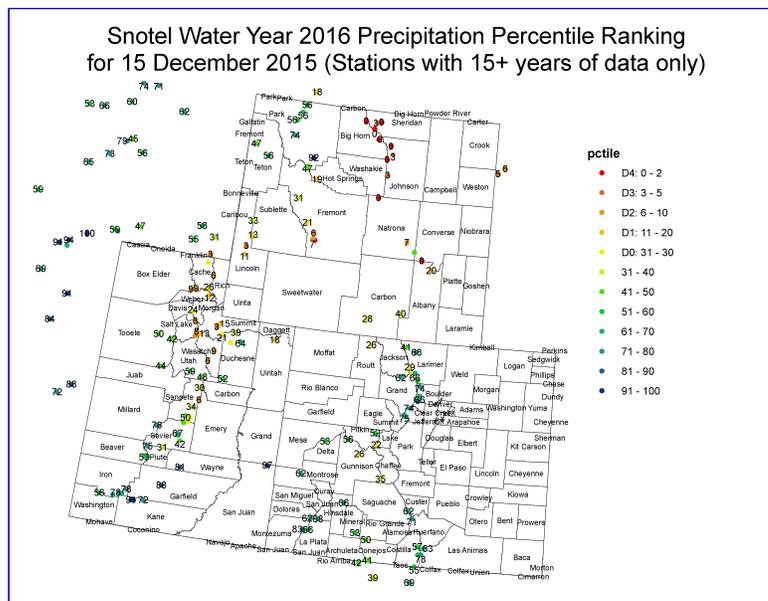
November Precipitation:

- November for the Upper Colorado River Basin was a bit on the dry side in the headwaters area, generally between 50 to 100% of normal. Further downstream in Mesa County and into Utah, however, precipitation totals spiked up, all over 100% and in many places near 200% or more of normal.
- The Green River Basin in Wyoming saw plenty of beneficial precipitation in November. Uinta, eastern Lincoln, and parts of Sweetwater counties fared especially good, with these locations seeing 300+% of normal precip.
- The Yampa, White, and Duchesne river basins were all for the most part at or above normal for the month of November. Some spots in northern Routt County saw precip only at about 50% of normal, but these areas were small.
- The San Juan and Dolores river basins in southwestern Colorado both saw precipitation that was generally 150% or greater than normal for the month, while the Rio Grande Basin did not fare as well. Areas in Rio Grande, Alamosa, and Conejos counties were substantially low at less than 50% of average.
- Eastern Colorado saw plenty of precipitation for November. The South Platte River Basin in particular was hit with plenty of moisture and saw greater than 300% of normal precipitation over a large area. The Arkansas River Basin also recieved plenty of precipitation in many places, such as Las Animas, Baca, southern Bent, and eastern Kiowa and Prowers counties. Further upstream in Fremont, El Paso, and eastern Pueblo counties, however, were below normal for November.

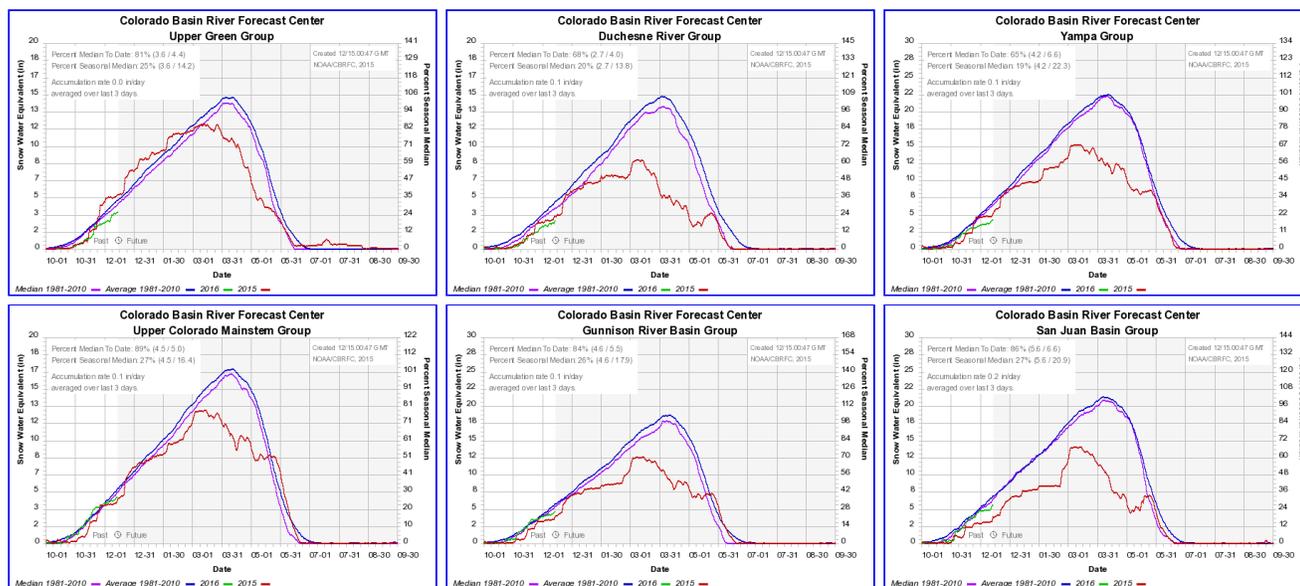
Water Year 2015 Precipitation (Oct-Sep):

- As a result of a very wet Spring, Colorado east of the divide is still above average across the board for the water year to date with a few small exceptions. Isolated areas of Custer and Huerfano Counties are showing below 100% of average.
- The UCRB is mostly close to, but a little below normal for the water year to date.
- Most of the Upper Green River Basin is between 50 and 90% of normal for the water year to date. Central Sweetwater County is in great shape at over 110% of normal.
- Northeastern Utah is mostly between 75 and 100% of normal for the water year to date. Farther to the west over higher terrain percentages are a little lower at between 50 and 75%.
- Southeastern Utah has balanced out to a fairly typical water year to date. The area is between 75 and 125% of normal.
- AHAPS indicates a very dry band in Conejos, Rio Grande, Mineral, and southwest Saguache Counties. Here precipitation is less than 50% of average for the water year to date. Radar does tend to struggle in this area, so it may be worth taking another look at when our precipitation figures update. Most of western Colorado is just slightly dry. The area is between 75 and 110% of normal for the water year to date.
- The Rio Grande Basin is now showing a mixed bag of above and below normal water year to date conditions. Southern Costilla County is doing very well at over 150% of normal for the water year to date.

SNOTEL AND SNOWPACK



The top left image shows the Natural Resources Conservation Service's SNOTEL water-year-to-date precipitation percentile rankings. The top right image shows sub-basin averaged snow water equivalent accumulations as a percent of average. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).



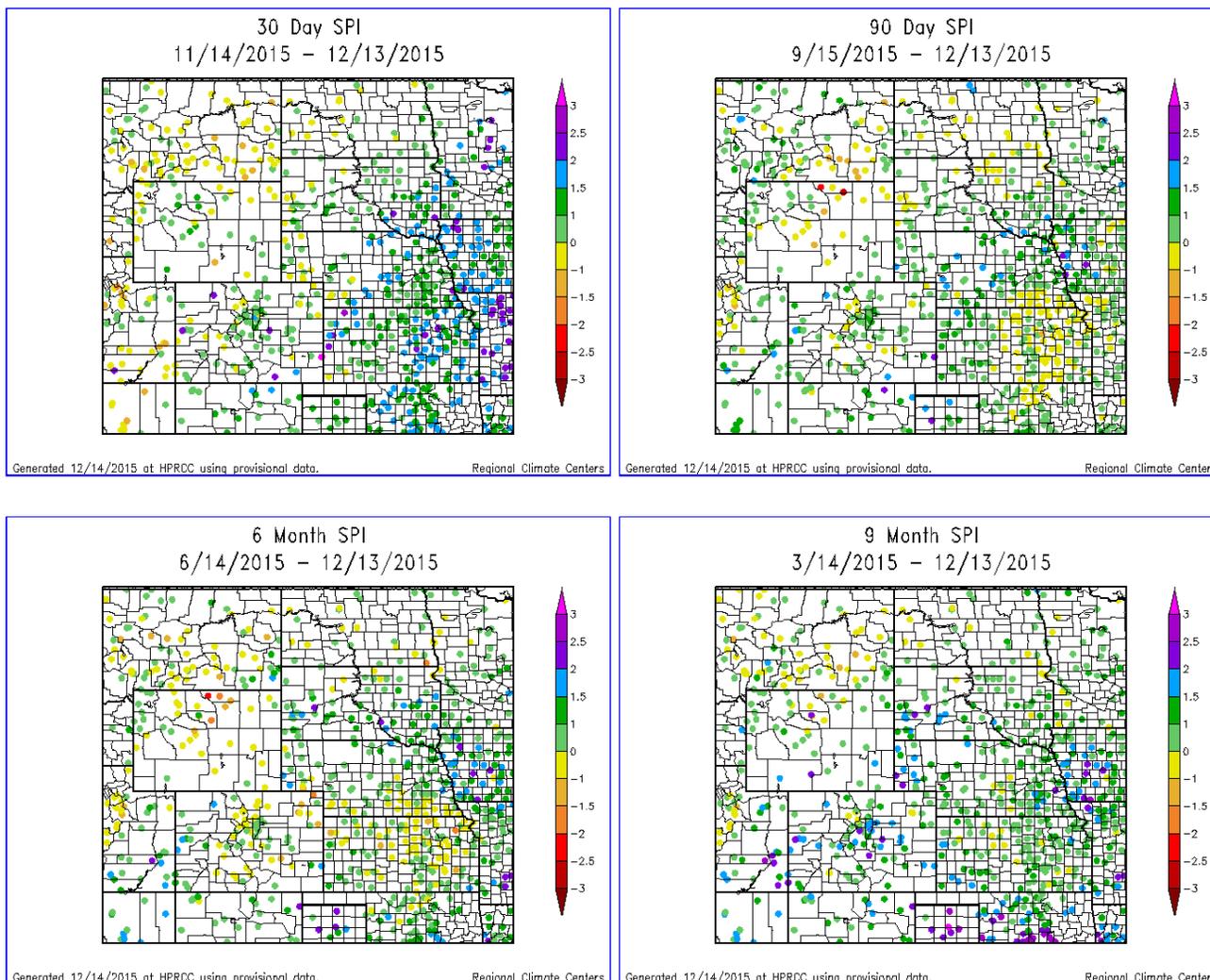
SNOTEL Precipitation Percentiles:

- SNOTEL Water Year precipitation percentiles in the Upper Green Basin are mostly below normal, ranging from the 6th to the 33rd percentile.
- In Utah, the Uintah range is mostly below normal, ranging from the teens to the 64th percentile.
- Western Colorado is showing most snotel percentiles are in the normal range (30th - 70th percentile), however there are quite a few percentiles missing from this weeks map.
- Stations along the Divide are mostly above the median percentile (50th percentile).

SWE Timeseries Graphs:

- All basins saw an increase in snowpack, however there wasn't enough snow to keep up with the normal increase, so percent of normal have fallen across most basins. Percent of normal may increase after the current snowstorm across the basins.
- The Upper Green Basin is at 81% of median snowpack for the season to date.
- The Duchesne is at 68% of median snowpack for the season to date.
- The Yampa River Basin is at 65% of median snowpack for the season to date.
- The Upper Colorado River Mainstem is at 89% of median snowpack for the season to date.
- The Gunnison Basin is at 84% of median snowpack for the season to date.
- The San Juan Basin is at 86% of median snowpack for the season to date.

STANDARDIZED PRECIPITATION INDEX



Standardized Precipitation Index standardizes precipitation accumulations for a specified time period into percentile rankings. -1.0 to -1.5 is equivalent to a D1 to D2. -1.5 to -2.0 is equivalent to a D2 to D3. -2.0 and worse is equivalent to a D3 to D4. 30- and 60-day SPIs focus on short-term conditions while 6- and 9-month SPIs focus on long-term conditions. SPI data provided by High Plains Regional Climate Center.

Short Term (30-day):

- The UCRB has SPIs generally in the normal range, between -1 and +1.
- The Green River Basin is in the normal range in the short term.
- Northeastern Utah is showing SPIs mostly in the 0 to +1 range, with one SPI in Duchesne County down to -1.
- In the southwest portion of Utah, there is quite a bit of dryness in SPIs, with most SPIs between 0 and -1.5. The driest in Grand County, Utah.
- Western Colorado continues to show short term SPIs in the normal range, with SPIs between -1 and +1. The drier stations show up in Grand, Delta and Gunnison counties. A station in Routt County and one in Mesa County are up to +2.5.
- Eastern Colorado is mostly on the wetter side of the SPI scale, between 0 and +2. A few SPIs in northeastern Colorado are dry, in the 0 to -1 range. Stations in northern El Paso County and Las

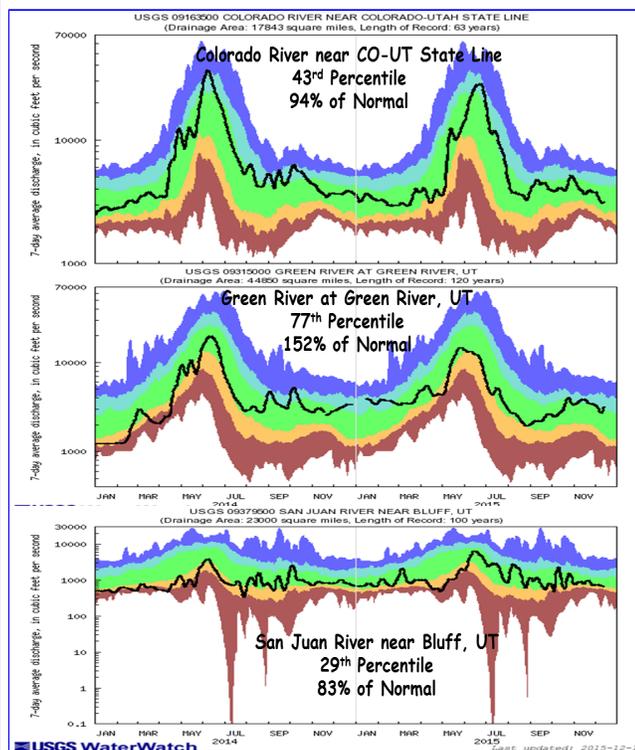
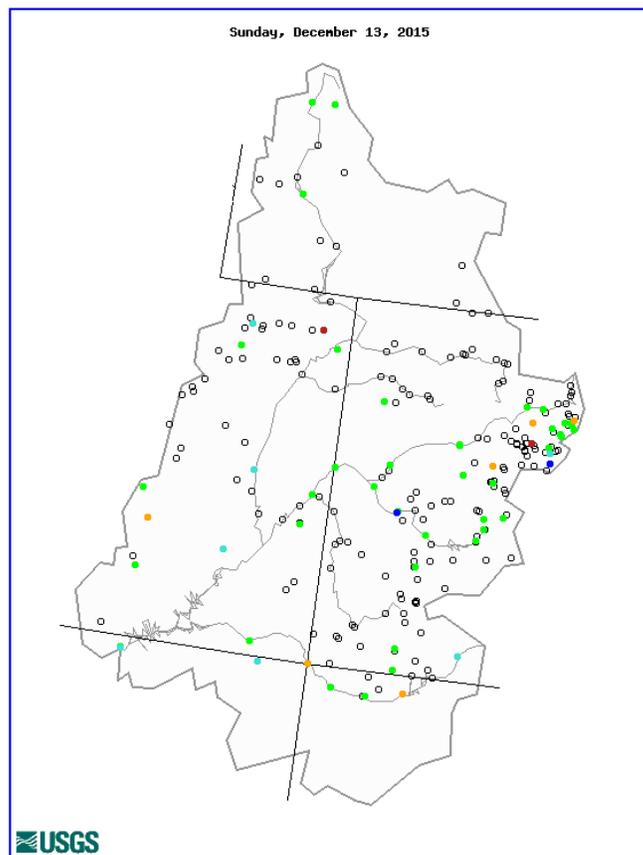
Animas County are up to +2.5.

- The Rio Grande Basin is in the near normal range.

Long Term (6-month):

- The UCRB is still in the normal range between -1 and +1 SPI, with the driest stations up in the headwaters region and through Gunnison County. Mesa County and into Utah in Grand, Wayne, and San Juan counties, SPIs increase, up to +2.5 SPI.
- The Upper Green River basin is also still in the normal range, as is much of northeastern Utah. SPIs dry out into the Wasatch Range, however.
- Southwest Colorado is still holding on to wet SPIs in the long term, especially far southwest in Montezuma County.
- 6-month SPIs in eastern Colorado are continuing to dry out. This is especially noticeable in northeast Colorado, with a station in Sedgwick County reporting down to -2 SPI, while surrounding stations report at least -1. Southeast Colorado is faring better, with SPIs in the normal to slightly above normal range.

STREAMFLOW



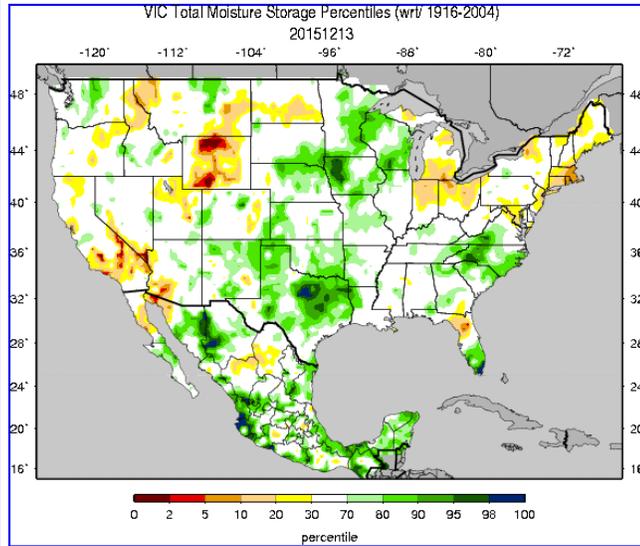
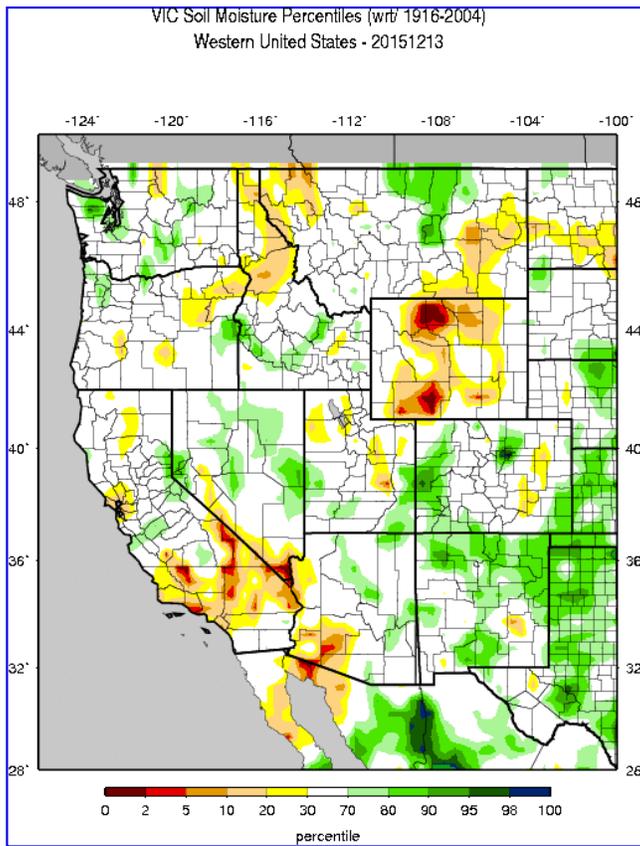
Explanation - Percentile classes							
							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff, UT. All streamflow data provided by United States Geological Survey.

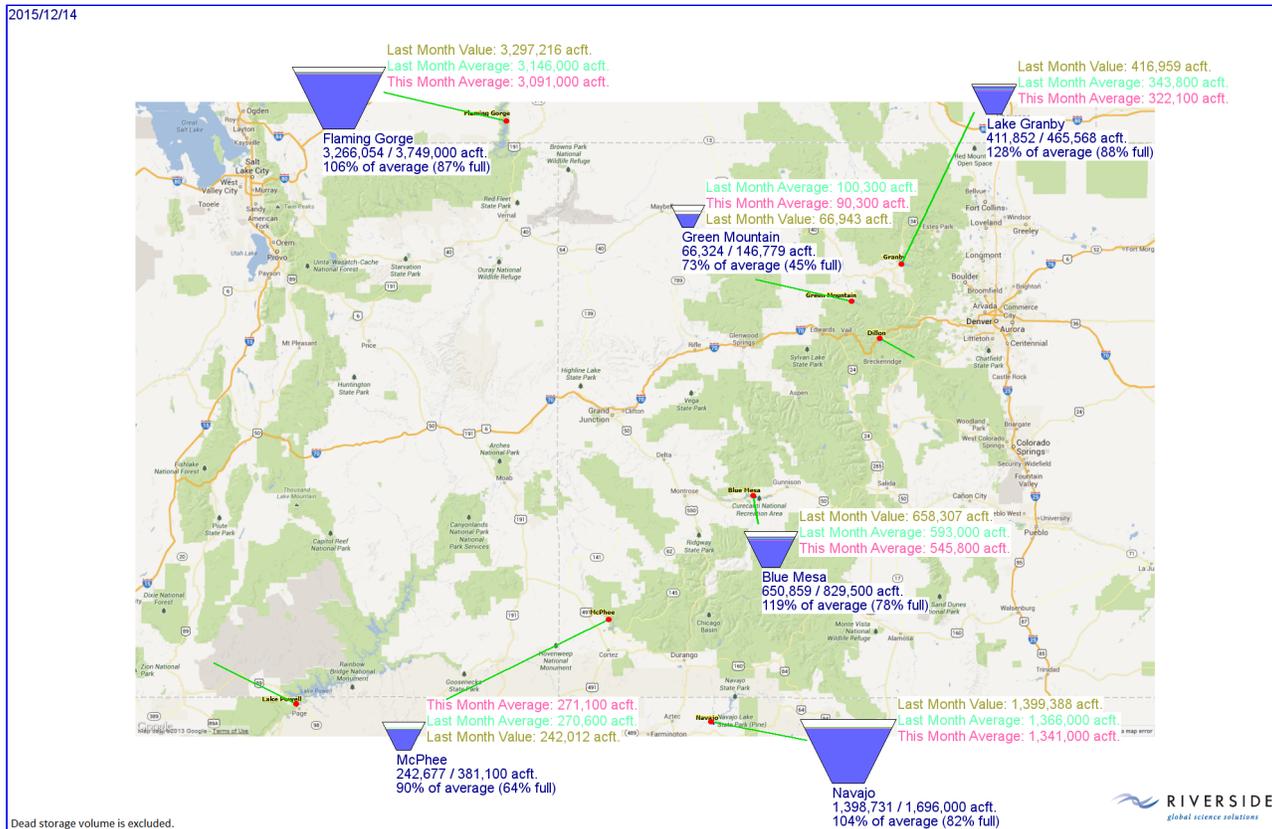
Streamflow Statistics:

- There are 58 stream gages in the UCRB that are still reporting, not ice affected) out of 140 gages.
- 86% of gages are reporting in the normal to much above normal range for the 7-day average streamflow.
- 13% of gages are below (10%) to much below (3%) normal.
- The Colorado River at the CO-UT state line is at 94% of normal and in the 43rd percentile.
- The Green River near Green River, UT is at 152% of normal and in the 77th percentile.
- The San Juan River near Bluff has been up and down for much of the late summer and fall, but has steadied. It is now reporting at 83% of average, which corresponds to the 29th percentile.

SURFACE WATER



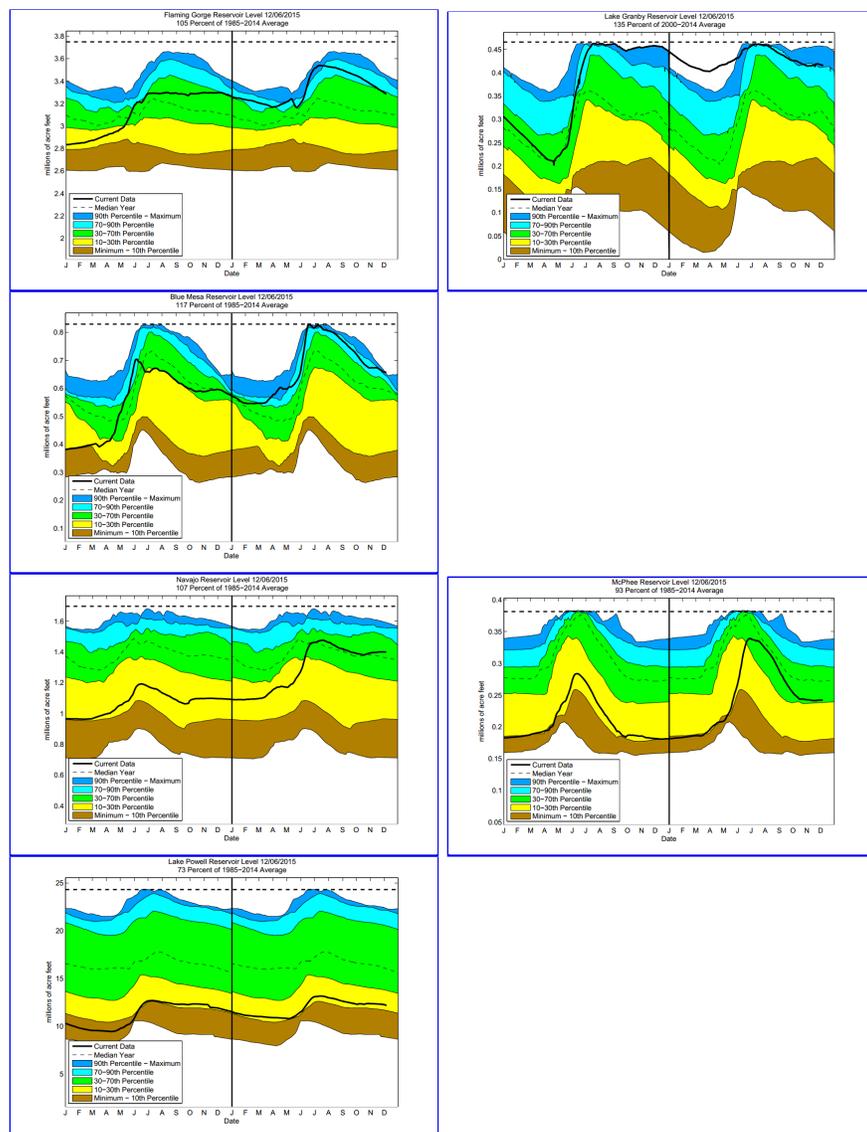
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows VIC+SWE.



The above image shows last month's and this month's current volumes of the major reservoirs in the UCRB, with percent of average and percent of capacity.

The graphs shown belo are plots of reservoir volumes over the past full year and current

year to date (black). The dashed line at the top of each graphic indicates the reservoir's capacity, and the background color-coded shading provides context for the range of reservoir levels observed over the past 30 years. The data are obtained from the Bureau of Reclamation. Some of the reservoir percentiles don't line up at the new year due to differences in reservoir levels at the beginning of 1985 and the end of 2014. Dead storage has been subtracted. Note: Lake Granby data are obtained from the Colorado Division of Water Resources, and only goes back to the year 2000.



VIC:

- The Green River Basin in Wyoming continues to be much below normal in Sweetwater County, below the 2nd percentile in the eastern portion of the county. Dry soils, in the 10th to 30th range, are also starting to show up in Sublette and Uintah Counties. The area dries out even more when snowpack is added in.
- The Yampa, White, and Duchesne Basins are mostly in the normal range with some drier soils (20-30th percentile) in the Duchesne Basin, and some wetter soils (70-80th percentile) in the White Basin.
- The Colorado River Basin is in the normal range or above normal range. Soils are as wet as the 90th to 95th percentile in western

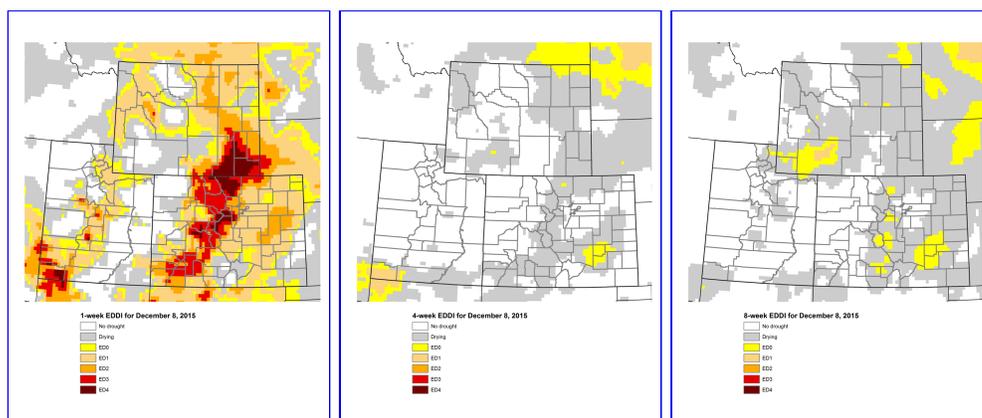
Mesa County, and continues to stay at or above normal further downstream in Utah.

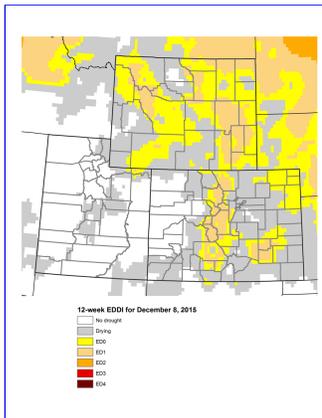
- The San Juan Basin is showing mostly wet soils between the 70th and 90th percentile.
- Soils in the Upper Rio Grande part of Colorado are mostly in the normal range with some wetter soils near the Colorado-New Mexico border.
- Soils in eastern Colorado are mostly in the normal range. Jefferson, Broomfield, Adams, Boulder, and southern Weld Counties are showing wet soils up to the 95th percentile. Southeastern Colorado in Baca, Prowers and eastern Kiowa counties are also showing wet soils, up to the 90th percentile. Some dry soils remain in eastern Pueblo, southeast El Paso, Otero, Crowley, Lincoln and Morgan Counties. Here Soil moisture is in the 5th-30th percentile range.

Reservoirs:

- Flaming Gorge is at 106% of the December average.
- Lake Granby is at 128% of the December average.
- Green Mountain is now at 73% of the December average and 45% full.
- Blue Mesa is at 119% of December average and 79% full.
- Navajo is at 104% of December average, 82% full.
- McPhee is at 90% of the December average and 64% full.
- Lake Powell percent of average is missing, but is 50% full.

EVAPOTRANSPIRATION



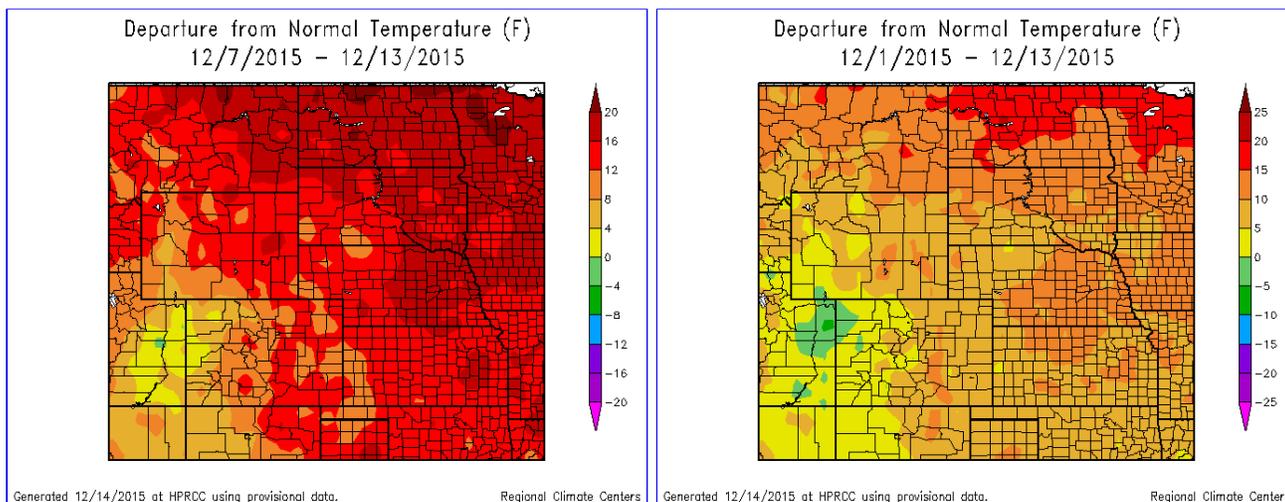


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are in line with the US Drought Monitor's Percentile Ranking Scheme <http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>. Data used to generate these maps come from the North American Land Data Assimilation System Phase-2 (NLDAS-2) project, which assimilates observations of temperature, wind speed, radiation, and vapor pressure deficit. The date indicates the last day of the period of record, and the week number indicates the window size for the period of record..

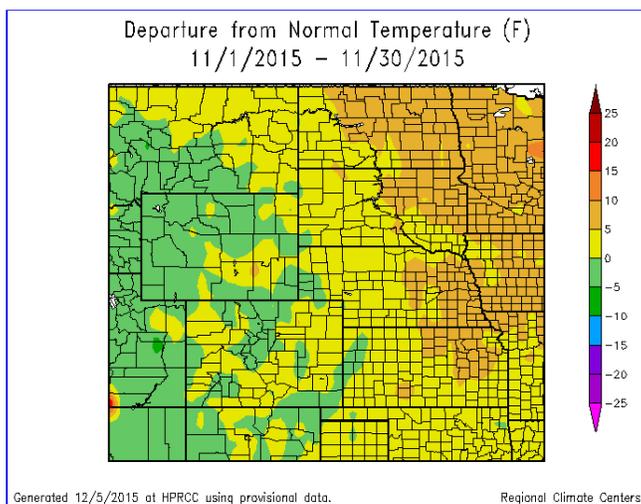
Reference Evapotranspiration:

- Olathe finished the growing season with cumulative ETs below the previous all-time low year of 1999.
- Cortez saw ETs following roughly the low year of 1995, if not a little above, since summer, and has ended well below normal.
- Center began seeing an increase in ET since mid-July, but has still ended the growing season below average.
- Avondale tracked along a normal rate for the growing season, save for a dip from early to late May, and thus has ended slightly below normal.
- Idalia ET was tracking at roughly the low year of 2009 for almost the entire growing season until late August, when ETs started to increase substantially. Cumulatively, however, Idalia has ended below normal.
- Holyoke ET started around normal and dropped below normal since the second week of May. It continued to track at a normal rate through the growing season.
- Lucerne had been tracking lower than the previous record low year in 2009 since the second week of May. It has completed the growing season at nearly the same cumulative ET as 2009.

TEMPERATURE



All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



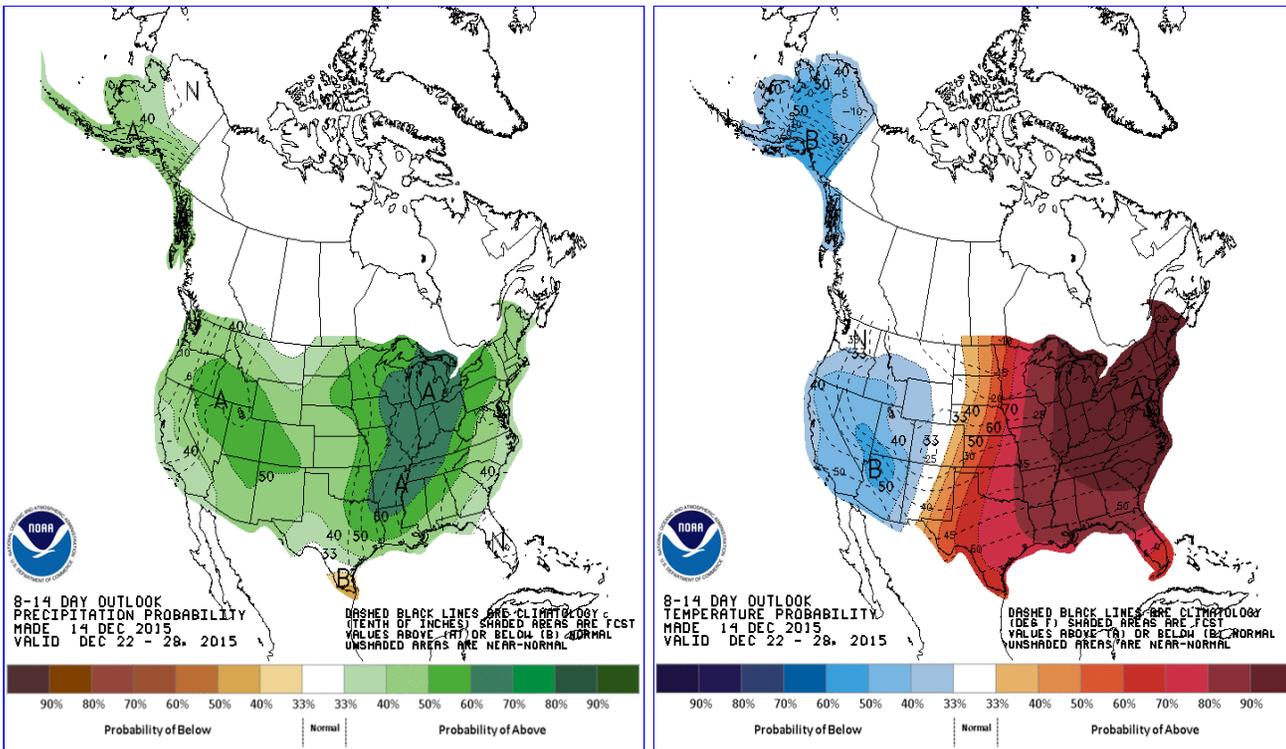
Last Week Temperatures:

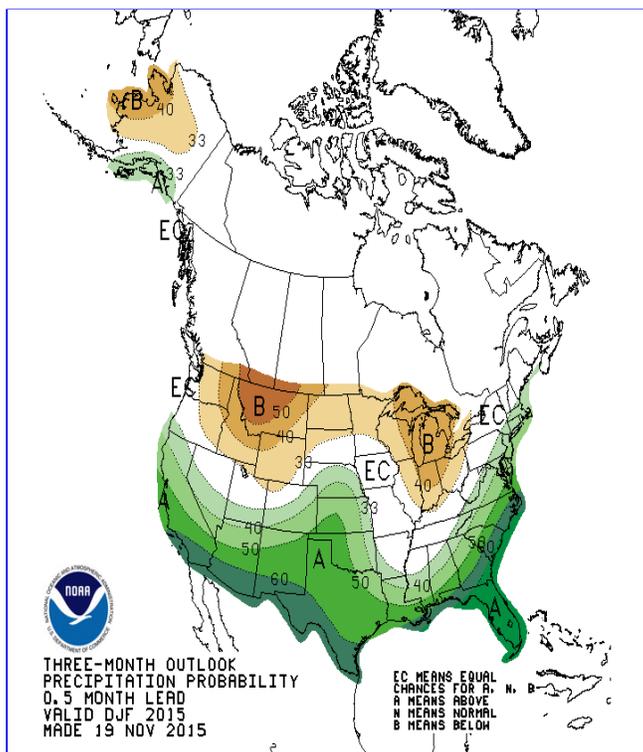
- The UCRB had above normal temperatures last week.
- The Upper Green River Basin in Wyoming saw mostly 8 to 12 degrees warmer than normal, with a small ribbon in Sublette and western Sweetwater 4 to 8 degrees above normal.
- Eastern Utah was 0 to 4 degrees above normal, with the exception of Duchesne and parts of San Juan counties, seeing 4 to 8 degrees warmer than normal.
- Western Colorado was 4 to 12 degrees above normal. The warmest was closer to the Divide. Mesa County was 0 to 4 degrees above normal.
- Eastern Colorado also saw above normal temperatures, although the departure from normal was quite a bit higher. Much of the area was 12 to 16 degrees warmer than normal, with a few areas 8 to 12 degrees warmer than normal.

November Temperatures:

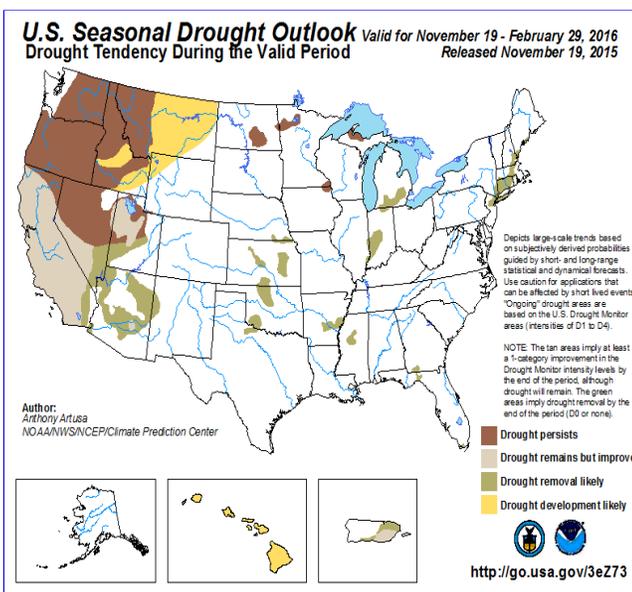
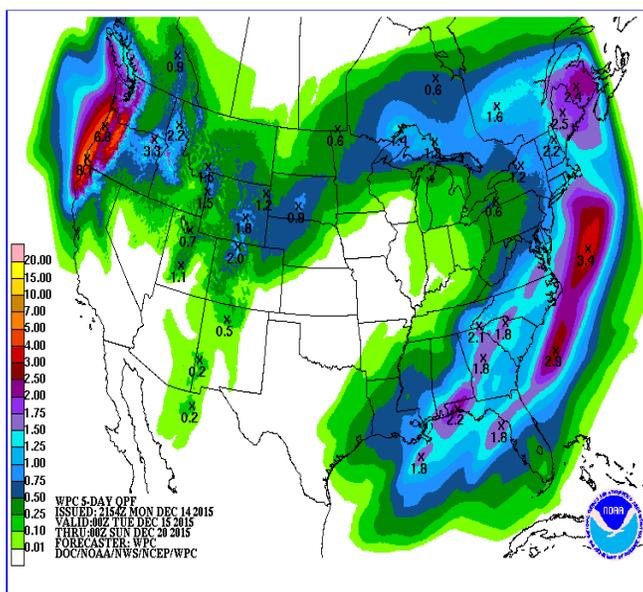
- The UCRB and the entire state of Colorado saw temperatures between -5 to +5 degrees of normal for the month of November. The Rocky Mountains generally maintained a cooler than average temperature, while the western slopes, down to the Gunnison and the San Luis Valley area, and up northeast into the high plains experienced the slightly above normal temperatures.
- The Green River Basin in Wyoming was mostly 5 degrees below normal.
- Eastern Utah was in the slightly below normal range as well for November. The only exceptions being in Duchesne and Uintah counties (5 above normal), and a pocket in northeast Emery and southern Carbon counties showing temperatures down to -10 degrees below normal.

FORECAST AND OUTLOOK





The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the 3 months Precipitation outlook. The bottom left image shows the Hydrologic Prediction Center's Quantitative Precipitation Forecast accumulation for the five days between Tuesday 12Z and ending Sunday 12Z. The bottom right image shows the Climate Prediction Center's most recent release of the U.S. Seasonal Drought Outlook.



Short Term: (12/15)

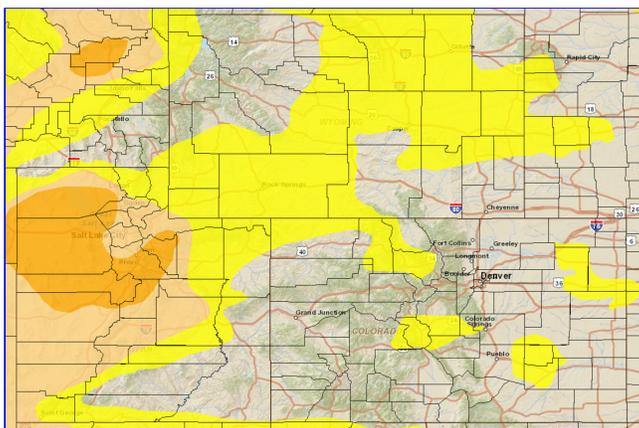
- A winter storm will continue today, ending late for most of the mountains, earlier in eastern Colorado.
- Another weak disturbance will come through on Thursday, bringing another chance for snowfall and cooler temperatures.
- The system will clear out by the weekend bringing partly sunny

skies and warmer temperatures.

Longer Term:

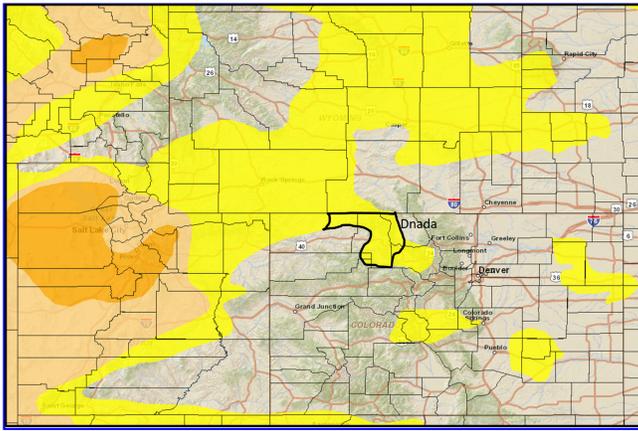
- The 8-14 day precipitation outlook shows increase chances for above average precipitation for the Upper Colorado River Basin. Eastern Colorado also has increased chances for precipitation.
- The 8-14 day temperature outlook shows increased chances for below average temperature for the entirety of the UCRB, with equal chances along the Divide. These chances maximize towards the southwest end of the basin. East of the divide equal chances of above and below average temperatures are forecast for the Divide and northeastern Colorado, with increased chances for above normal precipitation farther south.
- The Climate Prediction Center December through February precipitation outlook shows increased chances for above average precipitation the south end of the UCRB. In the Upper Green River Basin and the northern portion of the Yampa River Basin precipitation is expected to be below normal. Most of Colorado east of the divide is forecast increased chances of above average precipitation, particularly towards the southeast corner of the state. The northern Front Range is forecast equal chances of above and below normal precipitation.
- The seasonal drought outlook for December through February indicates that drought improvement and removal are likely for the southwest portion of the UCRB by the end of January, but drought is likely to persist or intensify where it exists in the northern Wasatch and Uintah Ranges.

U.S. DROUGHT MONITOR



Drought – Exceptional	0 to 2 (D4)
Drought – Extreme	2 to 5 (D3)
Drought – Severe	5 to 10 (D2)
Drought – Moderate	10 to 20 (D1)
Abnormally Dry	20 to 30 (D0)

Above is the most recent release of the U.S. Drought Monitor map for the UCRB region. Below shows the proposed changes for this week, with supporting text.



Summary: December 15, 2015

Last week, the Upper Colorado River Basin saw some precipitation and new snowfall to help out the snowpack. However, with much above normal temperatures, snowpack percent of normal for most basins didn't increase. Routt and Jackson counties in northern Colorado were the winners last week in terms of precipitation. SPIs for all time scales in Routt County are in the much above normal range prompting some improvements.

East of the Divide, a weekend snowstorm brought precipitation mainly focused along the Front Range of Colorado. Beneficial precipitation also fell in southeast Colorado. Temperatures were above normal, with eastern Colorado seeing the highest departure from normal. Areas that are currently in D0 saw some precipitation, but missed out on enough this week to be beneficial. Hopefully with the snow falling on Tuesday and some snow possible later in the week, improvements can be recommended next week.

Recommendations:

UCRB: The D0 in Routt, Jackson and eastern Moffat counties can be erased. This area saw some precipitation totals over an inch and the SPI in Routt County is currently at +2 to +2.5 on the 30-day time and is positive on all other timescales. Hopefully more improvements will come next week after the latest round of snow.

Eastern Colorado: Status quo. It was drier in areas that are currently in D0.