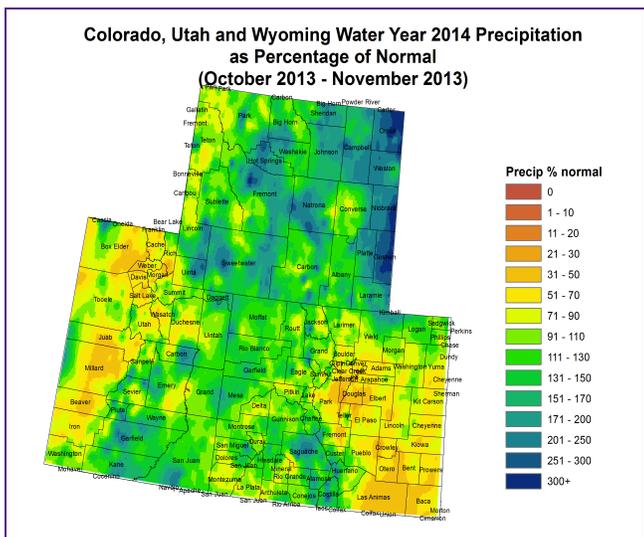
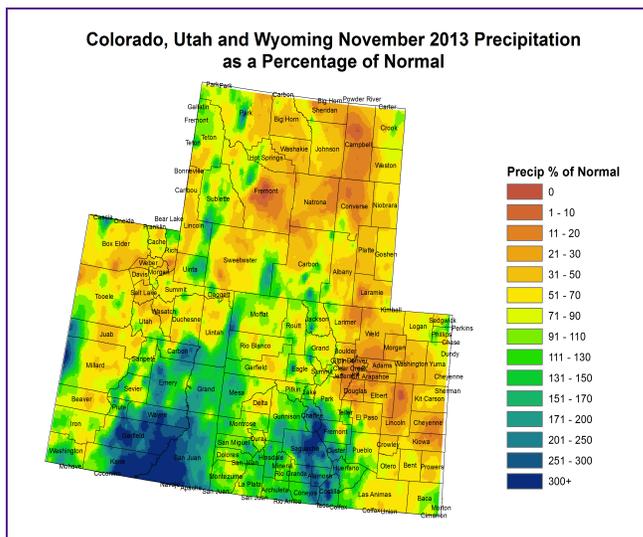
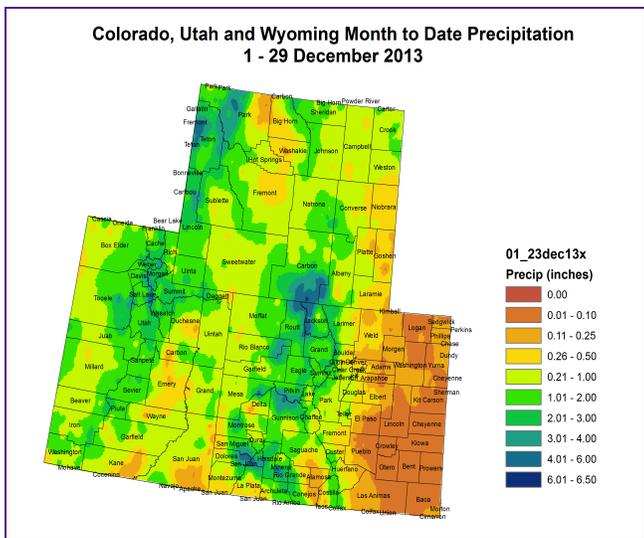
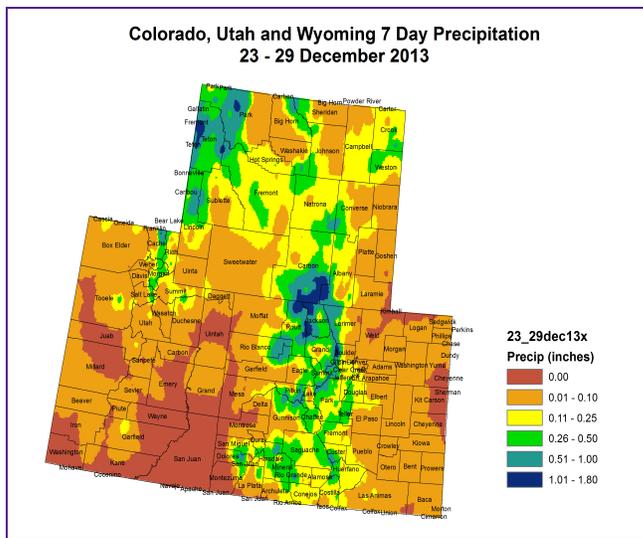


# PRECIPITATION



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:

- The eastern portion of the UCRB along the Continental Divide received some precipitation last week, while most of the lower elevation areas and western portion of the basin remained drier
- The Wasatch mountains in northern UT received between 0.1 and 0.50 inch of precipitation
- The northern portions of the basin in western WY received between

0.10 and 0.5 inches in the higher elevations, with the lower elevations receiving up to 0.25 inches.

- The mountains along the divide in Colorado and in the San Juan Mountains in southern CO received between 0.25 and up to 1.5 inches, the lower elevations receiving less.
- Most of eastern CO and eastern WY received less than 0.10 inches last week.

### **November Precipitation:**

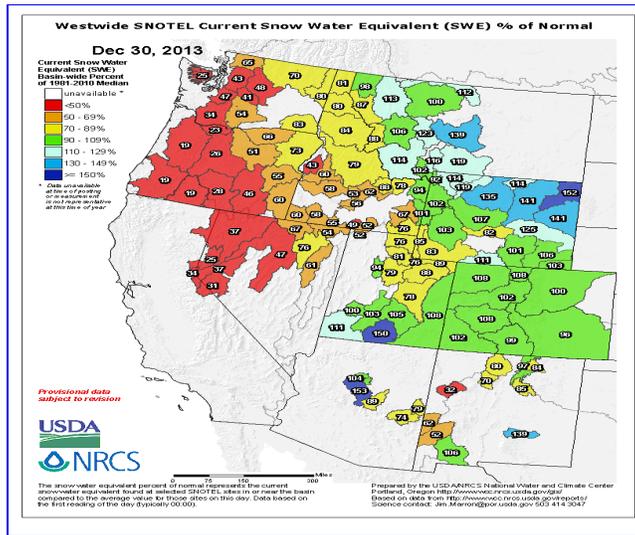
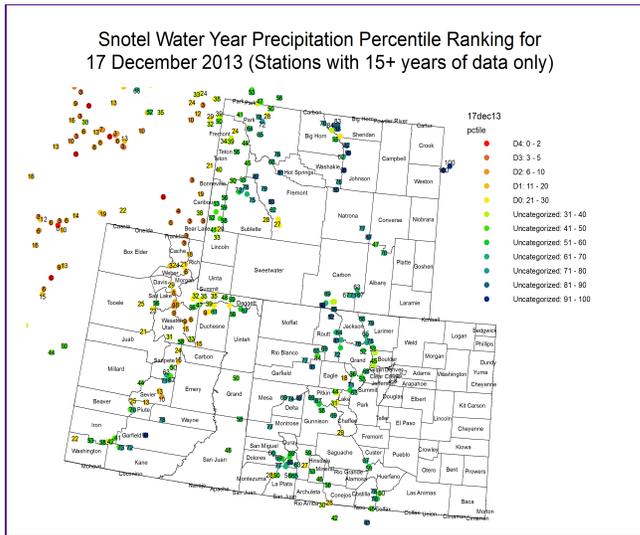
- The majority of the northern half of the UCRB received below average precipitation, between 20 - 70% of average for the month, with some isolated areas near or slightly above average.
- The central portion of the basin in western CO and eastern UT, received between 50% - 130% of average precipitation, the higher amounts along the CO-UT boarder and west.
- Most of the Four Corners region and the CO River valley in southern UT were wetter, receiving between 90% and 200% of average precipitation for the month, with southern UT above 300% of average
- The Wasatch range and other higher elevations in central UT received much below average precipitation
- East of the basin, in eastern CO and WY was drier, receiving between 20% - 70% of average for the month.
- The upper Arkansas basin and the Rio Grande basin in southeast CO saw beneficial precipitation, with above average precipitation, to more than 300% of average.
- Southeastern CO was also drier, between 50% - 90% of average.

### **Water Year Precipitation:**

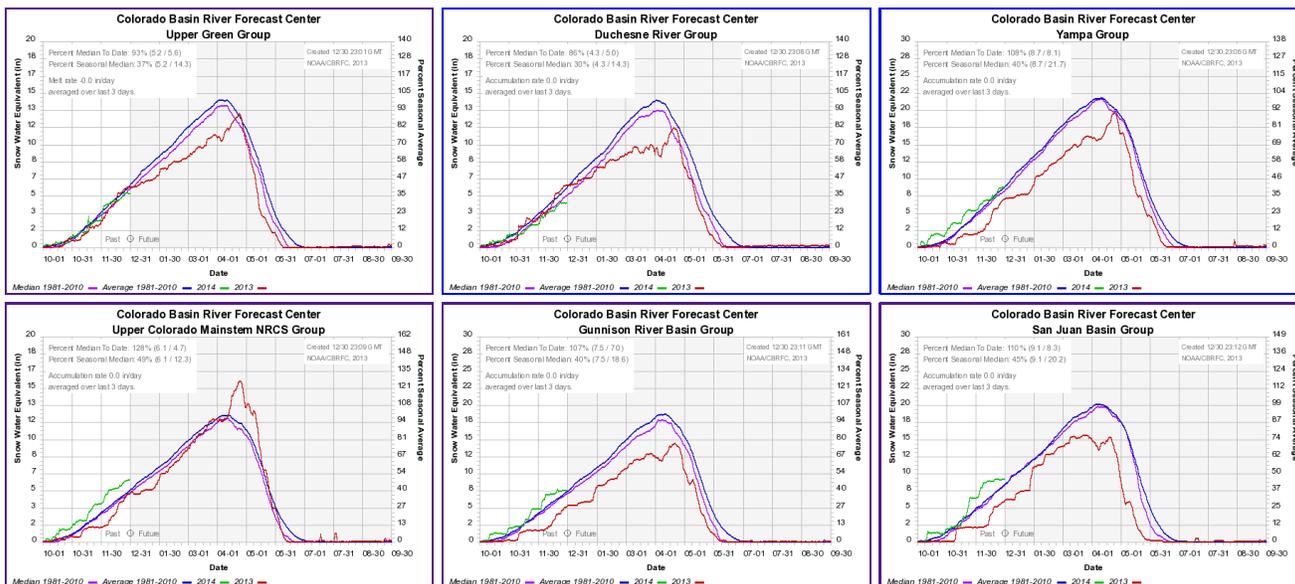
- Much of the UCRB has seen near and above average precipitation through the first two months of WY2014
- The Wasatch and southern Duchesne ranges has been drier with 50% - 90% of average.
- Most areas of eastern UT and western CO received between 90% and 130% of average precipitation for WY2013, with some spotty areas less than 70% of average
- Northeast CO was near average 70% to 130% of average.
- The rest of eastern and southeastern CO has been below average, in the range of 30% to 70% of average, with some areas up to 90% of average.
- The upper Arkansas basin and Rio Grande basin are above average for the start of WY 2014 thanks to an above average November.

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## **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:**

- The northern and eastern parts of the UCRB are seeing percentiles near to above the median while the western part of the basin is seeing drier percentiles
- Percentiles in the Upper Green and northern and central CO mountains mostly range between the 40s and 70s
- San Juan percentiles are mostly between 40 and 60
- The Uintas are a bit drier, with percentiles ranging between the 30s and 50s
- The Wasatch range is much drier, with many percentiles below the 20s

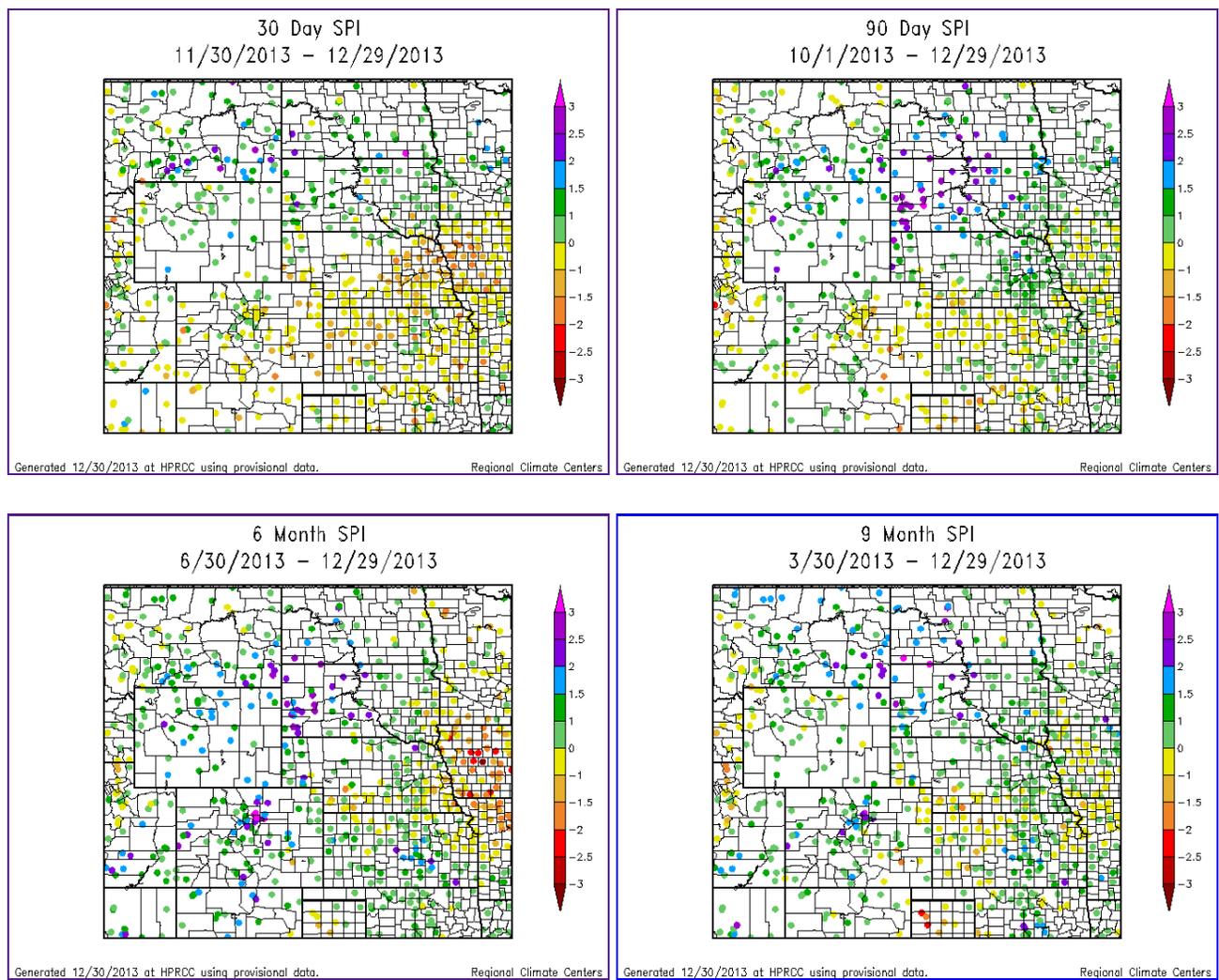
### Basin-wide Snow Water Equivalent Percent of Normal:

- Most of the sub-basins in the UCRB remained near to above normal snowpack, with the exception of southwest WY and northeastern UT
- All of CO and the southern part of the UCRB are showing snowpack above normal. Southern UT and CO are showing the highest percent of normal, many in the southern tier of the basin are above 105% of normal.
- Most sub-basins in northeast UT and southwest WY are below normal, between 75 to 90% of normal

### SWE Timeseries Graphs:

- The northern basins, Duchesne and Upper Green, are showing below median snow water equivalent accumulations
- The rest of the basins, the Yampa-White, Upper Colorado, Gunnison, and San Juan are all well above average for snowpack accumulations
- The last week saw steady snow water equivalent, no increases or decreases to the snowpack, in all basins

## 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.

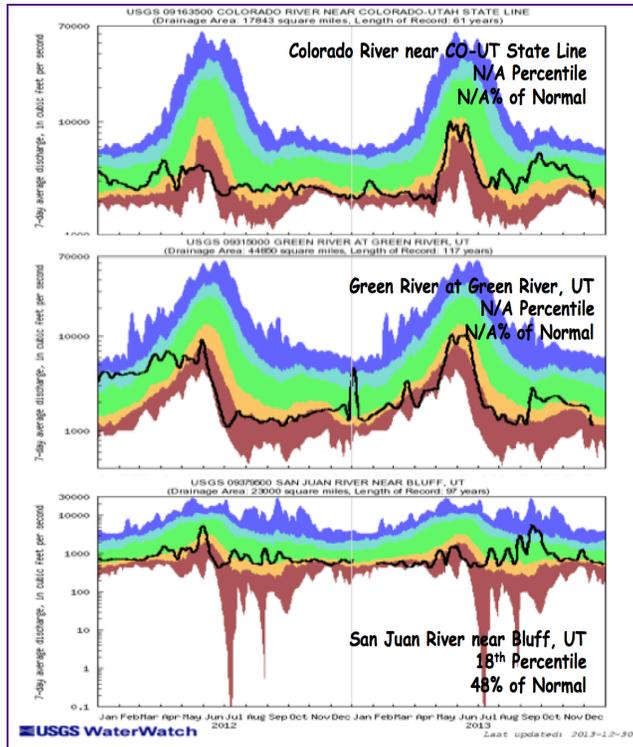
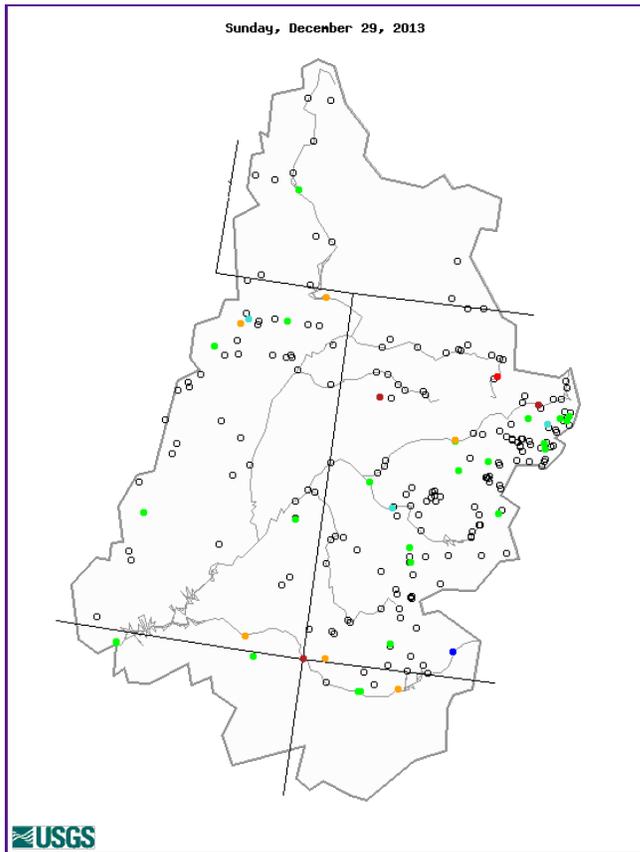
### **Short Term (30-day):**

- Most of the UCRB is showing mixed SPIs, ranging between -1 and +1, with southwestern CO now showing all -1 SPI
- East of the basin, the Front Range Urban corridor is showing mixed SPIs between -1 and +1
- Eastern WY is now showing wet SPI, between 0 and +1
- Eastern CO is drier, with SPIs mainly between 0 and -1.5

### **Long Term (6-month):**

- Northern UT and the Wastach range is the driest area on the 6 month time scale with SPI's ranging from +1 to -1.5.
  - The Green, Yampa, White, Colorado, Gunnison and San Juan basins all show wet SPI values ranging from 0 to +3.
  - Most of CO and WY east of the basin are showing wet indicators, with the exception of parts of southeast CO (0 to -2) and in far northeast CO (0 to -1)
- 

## **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		

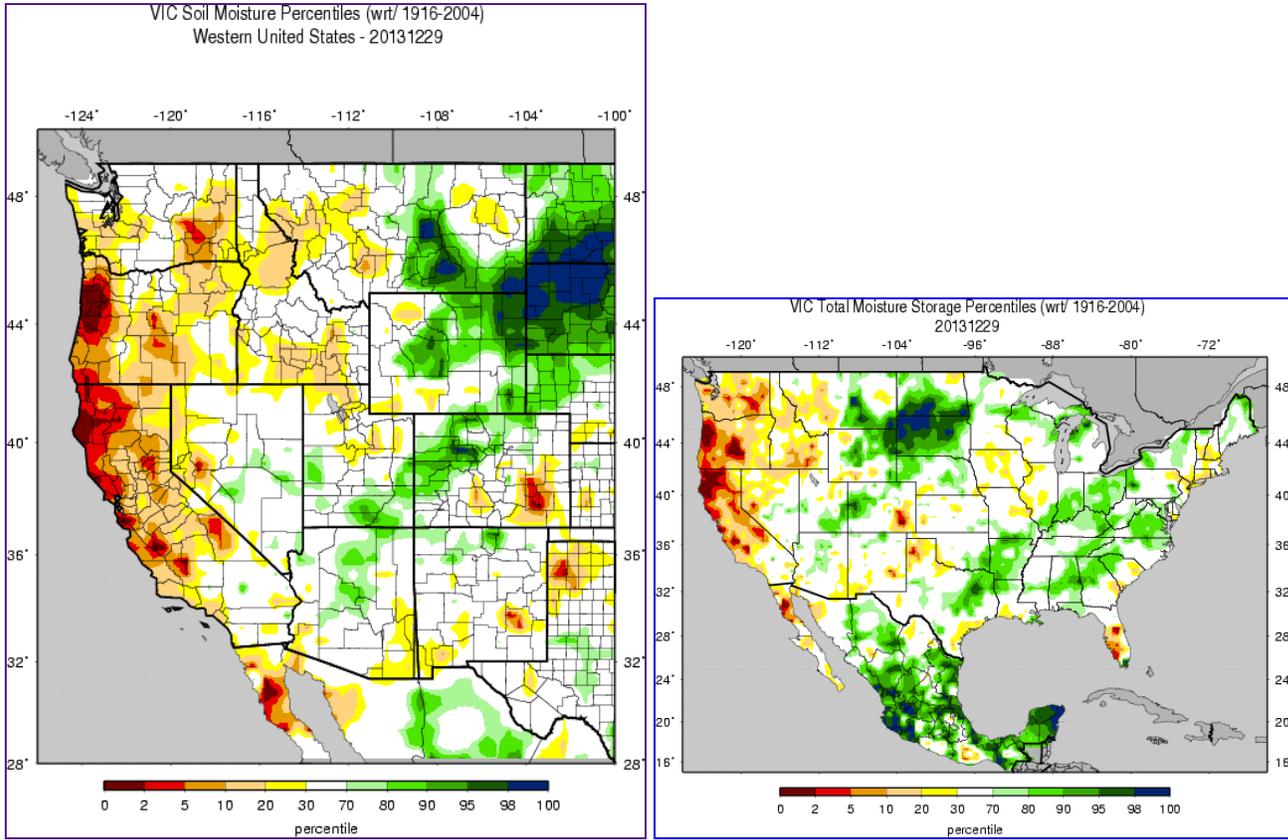
The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

**Streamflow Statistics:**

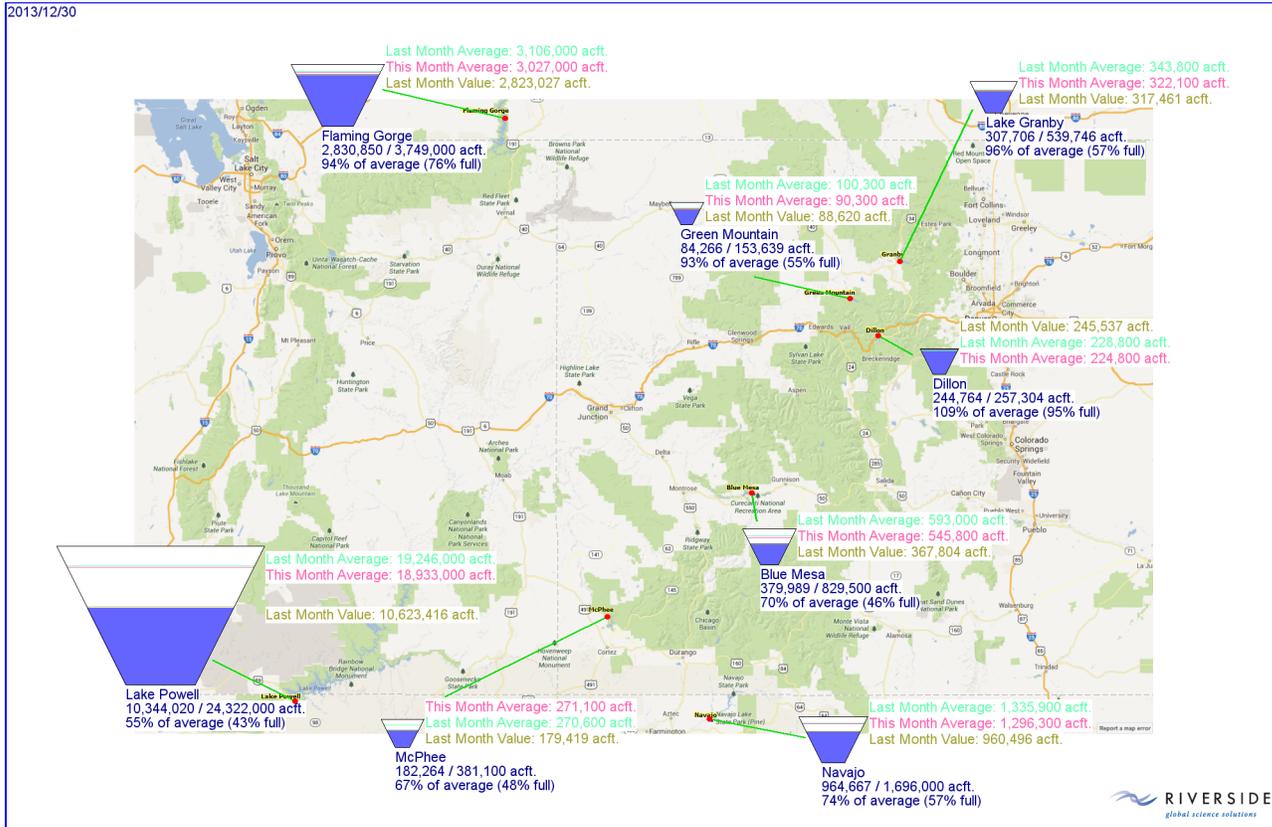
- 74% of gages recording normal or higher 7-day average streamflow
- 24% of the gages are recording below the normal range, with 3% reporting record low flows
- Only 38 gages are reporting (the rest are ice affected), down from 98 gages one month ago
- Both the Colorado River near the CO-UT state line and the Green River at Green River, UT have become ice affected after dropping to below normal flows
- The San Juan river near Bluff is reporting below normal flows at the

18th percentile

# SURFACE WATER



The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).



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.

**VIC (Total storage):**

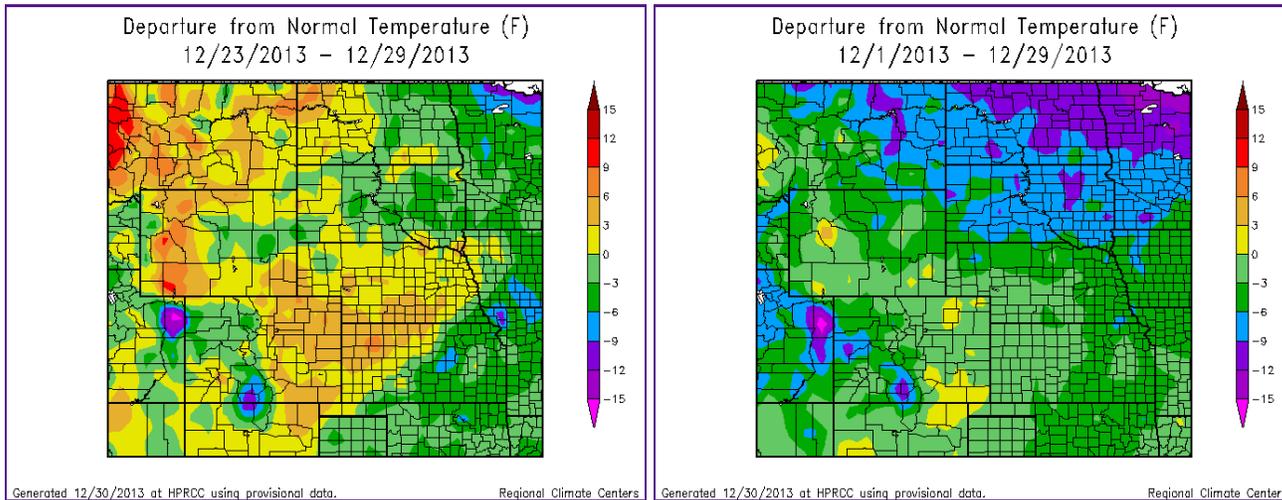
- Majority of the UCRB is showing near normal to wet soil moisture
- Parts of northern UT and southwest WY showing slightly dry soil moisture, with percentiles ranging from the 10th to the 30th.
- Soil moisture conditions are at or above the median percentile throughout western CO and the Four Corners
- Northeastern CO and eastern WY are also showing wet soil moisture conditions
- Southeast CO continues to experience dry soil moisture conditions, with the lower Arkansas basin showing soil moisture percentiles below the 20th percentile and a larger area down to the 2nd percentile.

**Reservoirs:**

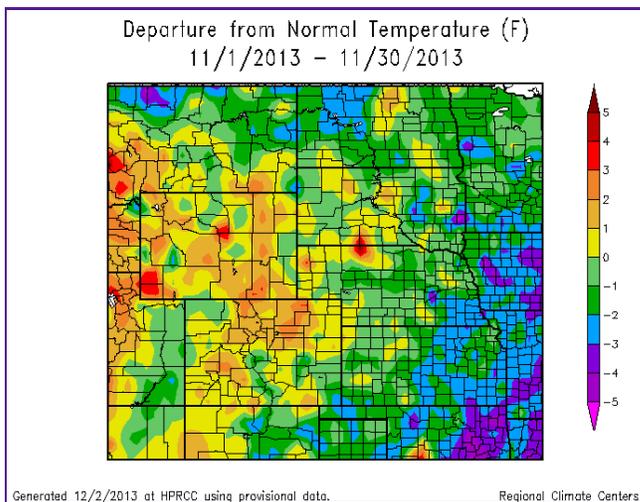
- The northern reservoirs are all near their December averages, ranging from 94% (Flaming Gorge) to 109% (Dillon) of average
- The southern reservoirs are all below December average, though they have seen some improvement over the past couple months. They range from 55% (Lake Powell) to 74% (Navajo) of average for December

- Some of the reservoirs are still showing volume increases (Flaming Gorge, Blue Mesa, Navajo, and McPhee) when decreases are normally expected this time of year
- Decreases at the remaining reservoirs have been very small since the beginning of the month

## 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 saw mixed warmer and cooler than average temperatures last week
- The northern part of the basin in northern WY experienced warmer

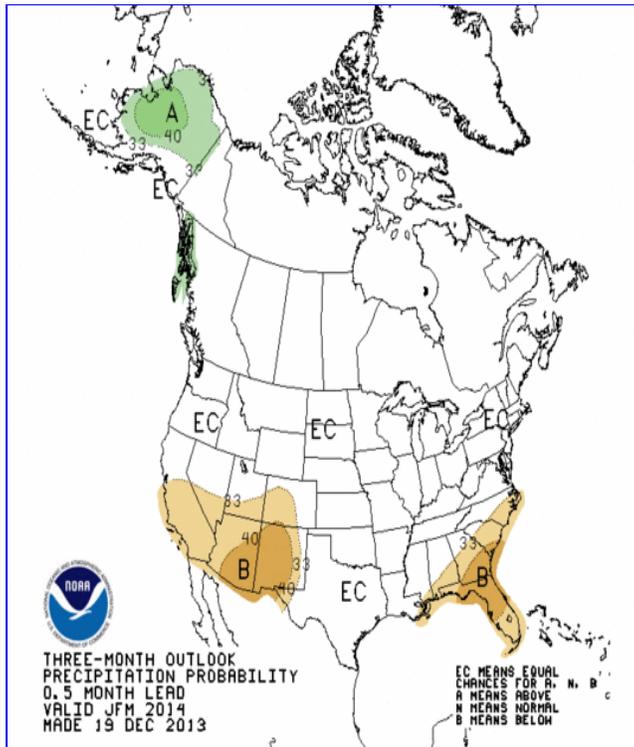
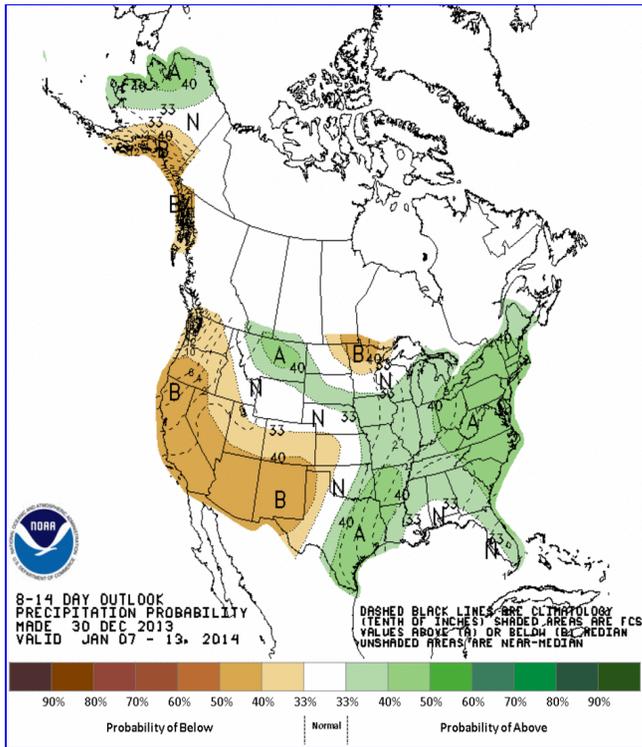
than average temperatures, 3 to 9 degrees warmer than average, with isolated areas up to 12 degrees warmer.

- Most of eastern UT, the western CO, and parts of the San Juans and down in the Rio Grande Basin saw cooler than average temperatures, down to 12 degrees cooler than average in northeastern UT
- Temperatures along the Continental Divide and around the Four Corners were near average
- All of the Front Range and eastern CO saw warmer than average temperatures

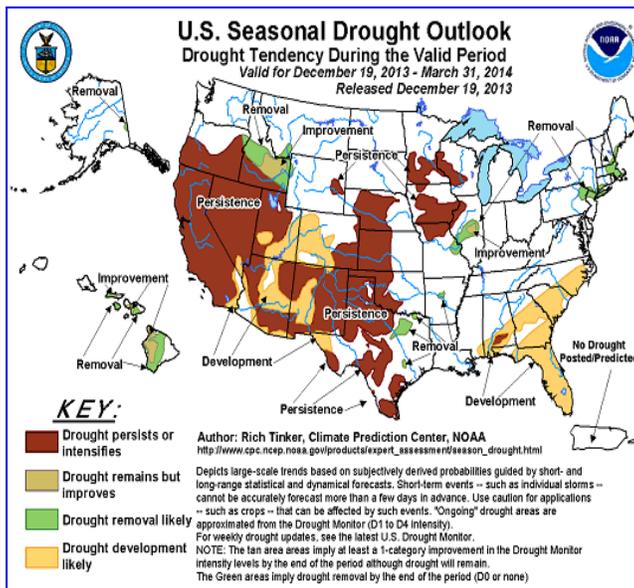
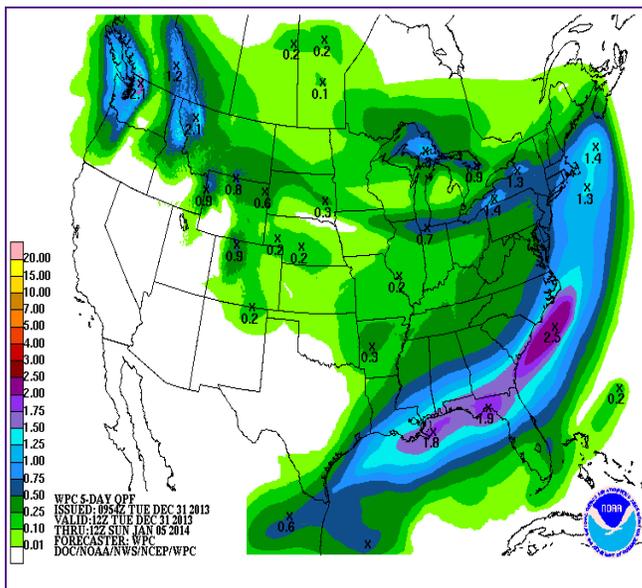
### **Last Month Temperatures:**

- The basin saw a mix of cooler and warmer than average temperatures for the month of November
  - The northern basin saw mostly 0 to 3 degrees warmer than average, with southern Sublette County, WY 0 to 2 degrees cooler than average
  - The eastern and central portions of the basin were 0 to 3 degrees above average
  - Eastern UT and along the CO river Valley saw 0 to 2 degrees cooler than average
  - East of the basin was also a mix
  - Most of northeast CO 0 to 3 degrees above average
  - Southeast CO was 0 to 2 degrees cooler than average, with areas closer to the mountains were slightly warmer than average
  - The upper Arkansas River and Rio Grande River basins were 0 to 2 degrees cooler than average.
  - Most of WY experienced temperatures 0 to 3 degrees warmer than average
- 

## **FORECAST AND OUTLOOK**



The top two images show Climate Prediction Center's Precipitation outlooks for 8 - 14 days (top left) and 3 months (top right). 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:**

- A system will move through the area early and will bring snow in the mountains through late afternoon New Years Day, 6-12 inches of snow

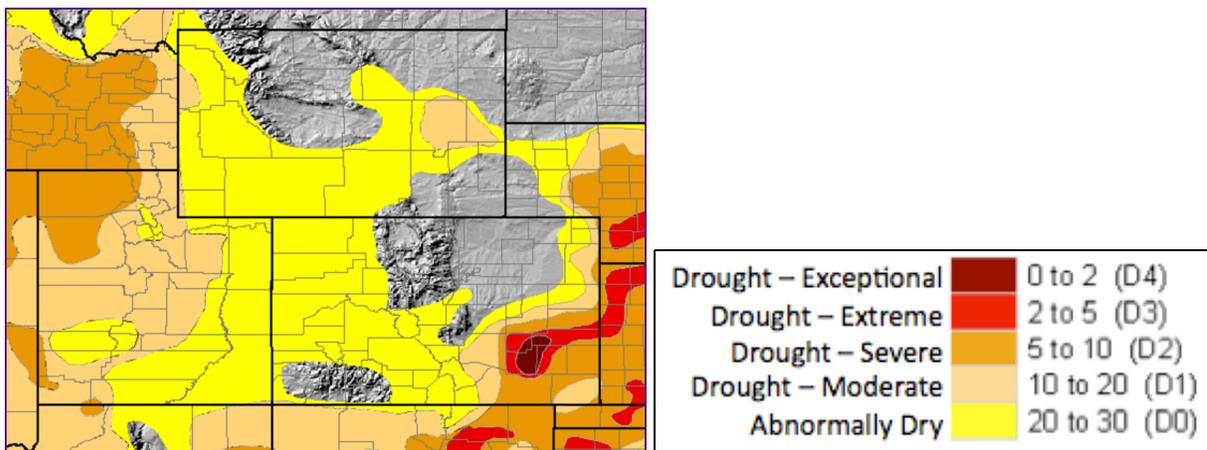
is expected in the mountains

- A chance of light snow on the Plains will come with this system
- After the system passes, dry and warmer through Friday
- Another small disturbance is expected to pass over the area during the weekend, bringing a slight chance of snow

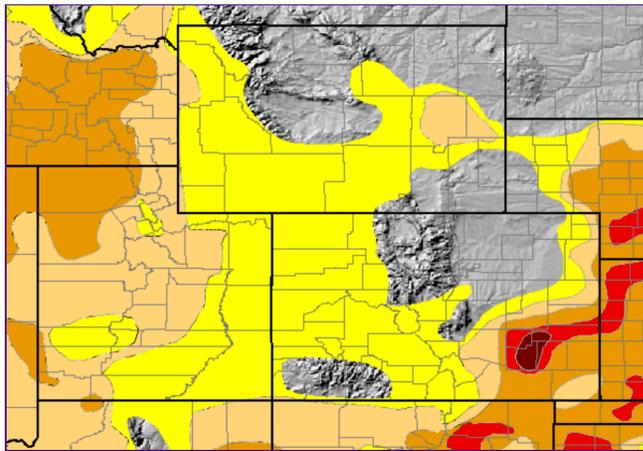
### Longer Term:

- The 8-14 day precipitation outlook shows increased possibility of drier than average conditions for most of the UCRB, CO, and UT, with likely near normal conditions across most of WY
- The CPC 3-month outlook shows greater chances for drier than normal conditions across the southern part of the UCRB, with equal chances for wet, dry, or near normal conditions across the northern part of the basin and the rest of CO and WY
- The seasonal drought outlook shows a probability of drought development across the southern and central portions of the basin with drought persistence likely across southeast CO and northern UT

## U.S. DROUGHT MONITOR



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 31, 2013**

It was once again a quiet week across the region. Snow was observed across the higher mountains, along the Continental Divide. The lower elevations remained mostly dry, with little accumulations. Some snow can be expected in the coming days with dry and mild conditions following. The snow the last week was not enough to justify improvements and conditions are still good enough to keep away additional degradations.

Last week drought conditions were expanded in eastern Kit Carson and Cheyenne counties by the Drought Monitor Author.

### **Recommendations:**

**UCRB:** Status quo is recommended.

**Eastern Colorado:** Status quo is recommended.