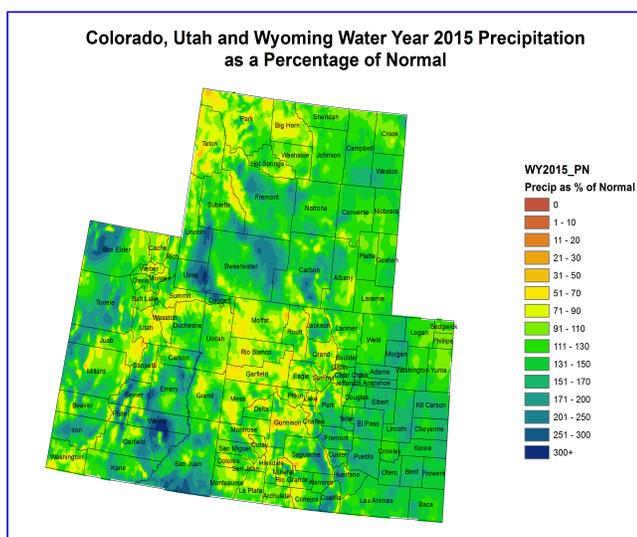
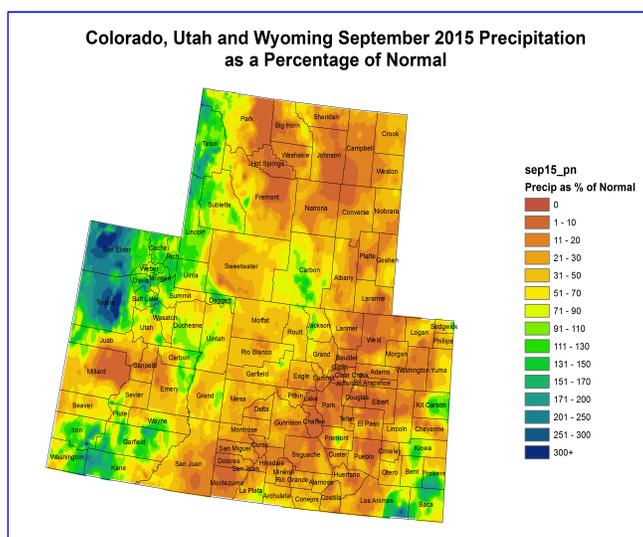
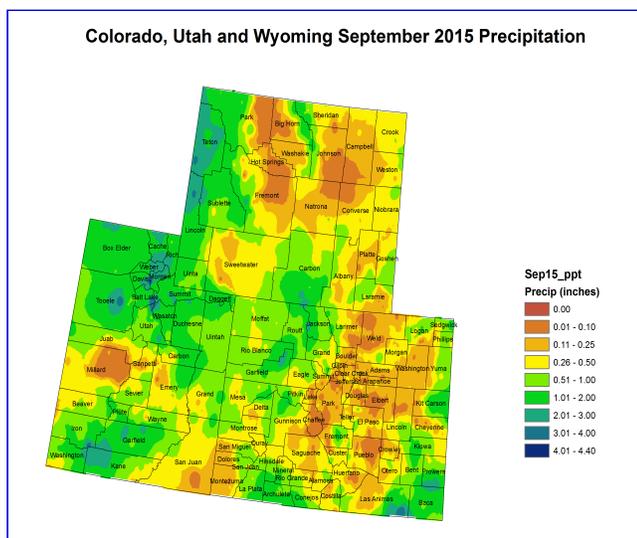
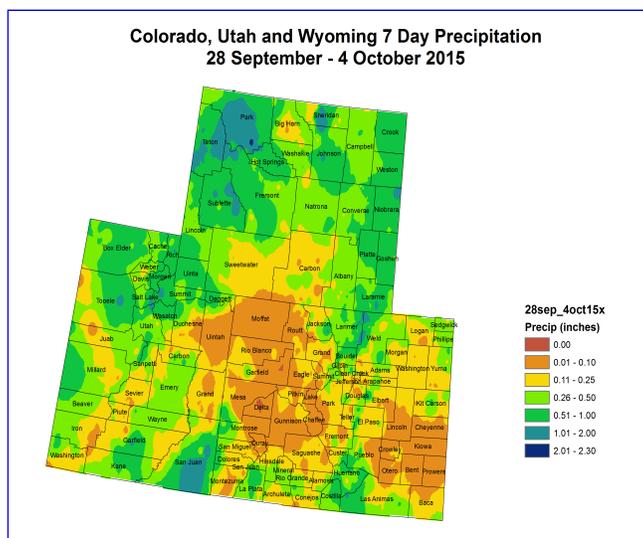


# PRECIPITATION



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:

- There was very little precipitation in the UCRB over the past week. Grand and Eagle counties did see up to 0.25" in areas.
- The headwater areas of the Green River saw about 0.25" of rainfall, while Uinta and Lincoln counties in SW Wyoming were wet with nearly 1" of rainfall.
- Far NE Utah saw substantial rainfall, with Summit and Daggett counties seeing over 0.5" of rain over the past week. Uintah and Grand counties were dry, however, with very little rainfall. In SE UT there was a return to plentiful rainfall. San Juan county had

areas that saw between 1 and 2" of rainfall.

- Much of western CO was fairly dry over the last week, although western portions of Mesa, Montrose, San Miguel, and Dolores counties so up to 1" of rain. La Plata county was wet as well, with central Montezuma county experienced almost no precipitation.
- Two areas in CO east of the divide so a good amount of precipitation. First, in east Jackson, Larimer, Boulder, Weld counties in the north, and Huerfano, Costillas, and western areas of Las Animas and Pueblo counties to the south.
- Sedgwick and Phillips counties were lucky to receive nearly 0.5" of beneficial rainfall over the past week, and SE CO was very dry.

### **September Precipitation:**

- September was a dry month for most areas. The UCRB saw about normal precipitation in Jackson county but was below normal in most other areas.
- The Green River basin was a mixture of wet and dry. Sweetwater county was well below normal for September, with some areas in the SW approaching near record lows. Uinta and Lincoln counties, however, were nearly 150% of normal throughout.
- Daggett county in eastern Utah was very wet for September: about 150% of normal. There were areas in Duchesne, Uintah, Carbon, Emery, and Grand counties that were above normal as well. The SE corner of the state fared worse, however, with portions of San Juan county less than 10% of normal.
- Western Colorado was very dry for September. Worst hit was the SW, with areas of San Miguel, Dolores, and Montezuma counties receiving only about 10% of normal rainfall. The Rio Grande basin was also very dry, generally less than 50% of normal.
- Much of eastern Colorado was also very dry. The NE area of the state was the driest east of the divide. The Denver metro area saw less than 20% of average precipitation, and areas in Boulder, Larimer, and Weld counties were at near record lows. Kit Carson county had a good September, however, with some areas up to 130% of normal.
- SE Colorado was generally wetter. Eastern Las Animas, Baca, and south Prowers counties were substantially moist for the month, greater than 200% of normal in places. Kiowa County also saw above average precipitation. Pueblo and western Las Animas counties were not so lucky, only receiving 30% or less of average rainfall.

### **Water Year 2015 Precipitation (Oct-Aug):**

- 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.
- 

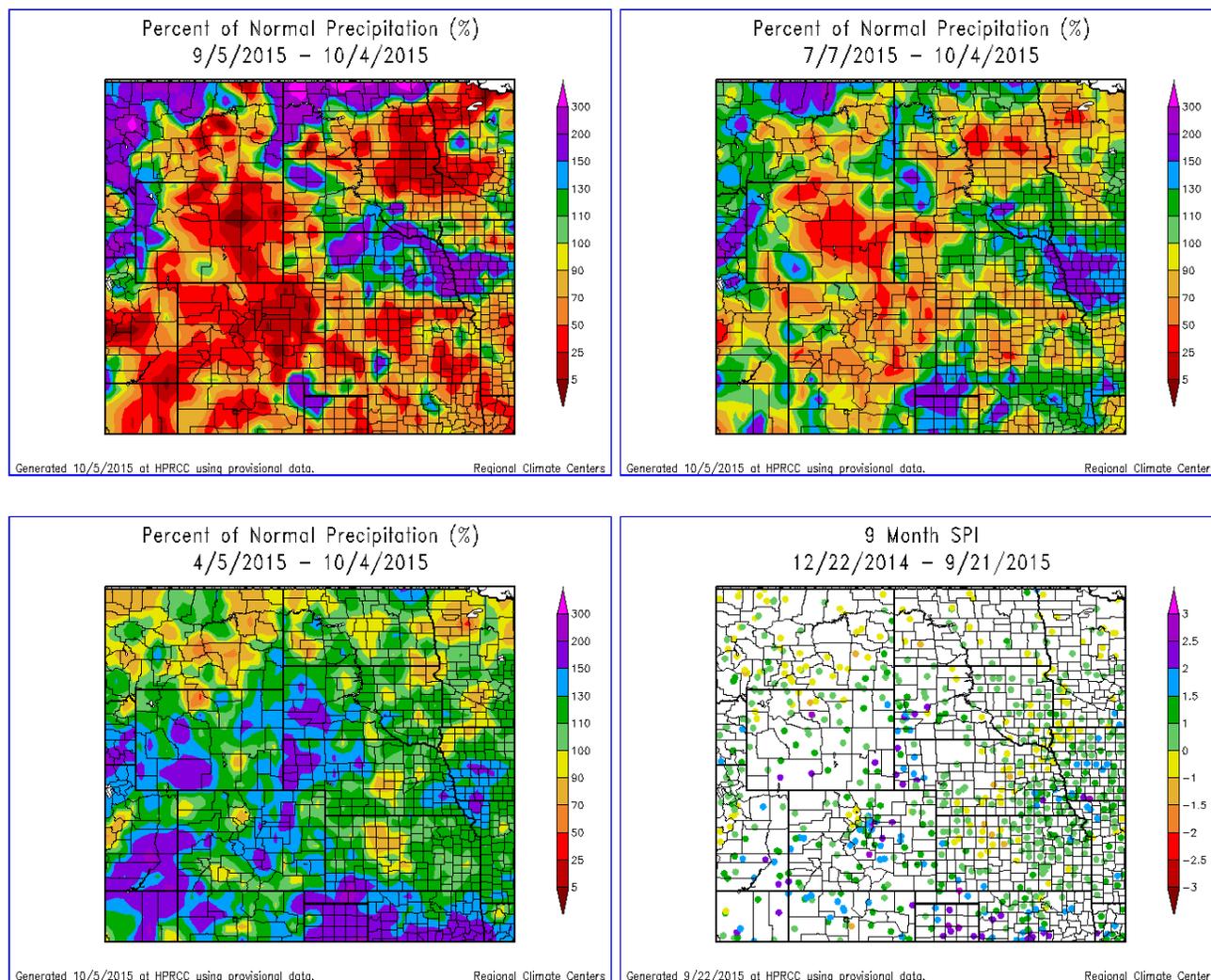
### **SNOTEL Precipitation Percentiles:**

- SNOTEL year to date percentiles across much of the UCRB saw quite a rebound this last week.
- In the Upper Green the percentiles are mostly in the median range between the 32nd to the 59th. Some Snotel sites in eastern Sublette County area a bit lower, down to the 22nd.
- The Wasatch and Uintahs are still showing drier percentiles ranging from the 0 to 63rd, but mostly in the 0-20 range. Many of the percentiles that were the 0th are now in the single digits and teens.
- The northern mountains in Colorado west of the Continental Divide are showing percentiles between the 11th and the 53rd. The Percentiles in the teens and 20s are mainly in eastern Rio Blanco, Garfield and Routt counties.
- The lower elevations of the Colorado and Gunnison are still seeing percentiles below the 39th percentile, however sites along the divide are in the normal range.
- The San Juans are reporting mostly below the 40th percentile, with a number of Snotel sites in the northern San Juans above the 50th percentile.
- The Sangre de Cristo mountains in SE Colorado are near average with percentiles ranging from 35th to 69th.
- The South Platte stations are all mainly at or above the median.

### **SWE Timeseries Graphs:**

- All sub-basins are well into the melt season.
  - The peak snowpack was 85% of normal.
  - The peak snowpack was 63% of normal.
  - The peak snowpack was 68% of normal.
  - The peak snowpack was 79% of normal.
  - The peak snowpack was 70% of normal.
  - The peak snowpack was 67% of normal.
-

# 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):

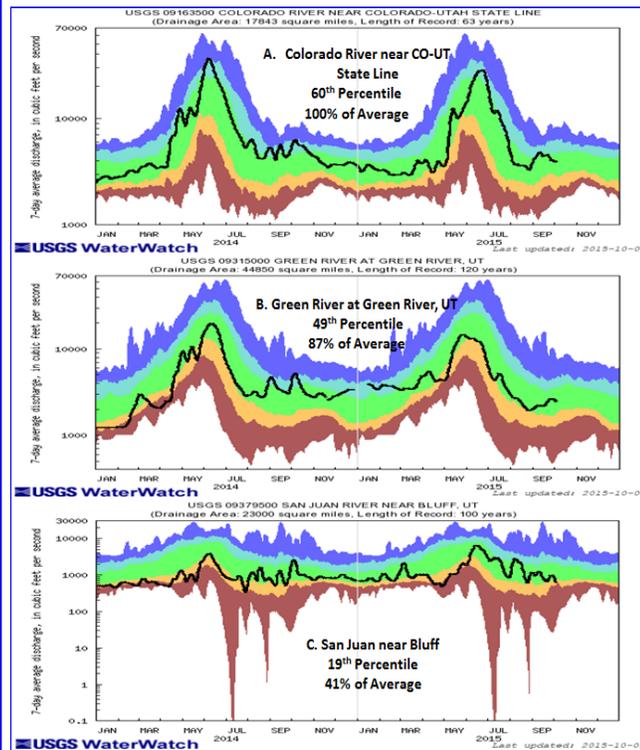
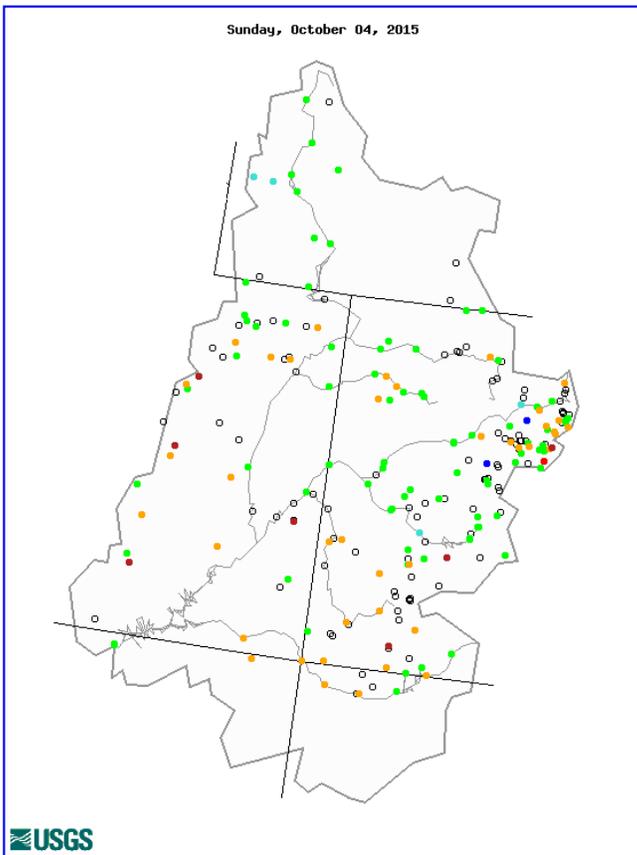
- The UCRB contains SPIs about normal, between -1 and 1. There are stunningly few exceptions to this. There is one SPI in San Juan County, UT in the -1.5 to -1 range, and there appears to be one in Mesa County, CO that is between +1 and +1.5.
- It is dry in the headwaters of the North Platte as well. Some SPI values are falling to below -2 SPI in Jefferson and Weld counties.
- Eastern Colorado is strikingly dry on the 30-day timescale. SPIs are between -3 and 0. The east-central portion of the state in Lincoln, Kit Carson, and Cheyenne Counties appears to be in the best shape at the 30-day timescale with SPIs between -1 and 0. Some of the areas worst off (-2 to -3) are Jefferson County, Washington, Logan, and Sedgewick Counties, and eastern Las Animas and Pueblo

Counties.

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

- The UCRB is still wet on the 6-month timescale. A few areas pop up slightly dry including Grand County and the Wasatch Range with SPIs between -1 and 0. Some areas of the UCRB still show up exceptionally wet at six months (+1.5 to +2.5). These areas include southern Sweetwater County in Wyoming, central Duchesne County, San Juan and Grand Counties in Utah, and Mesa County in Colorado. Most of the UCRB shows SPIs between 0 and +1.5.
- Colorado east of the divide is also still above 0 across the board at the 6-month timescale. SPIs have come down considerably in the northeast and southeast corners of the state, and are now residing in the 0 to +1.5 range. SPIs are still in the +1.5 to +2.5 range south and west of the Denver Metro area, and in portions of the Upper Arkansas Basin such as Fremont and central Park Counties.

**STREAMFLOW**



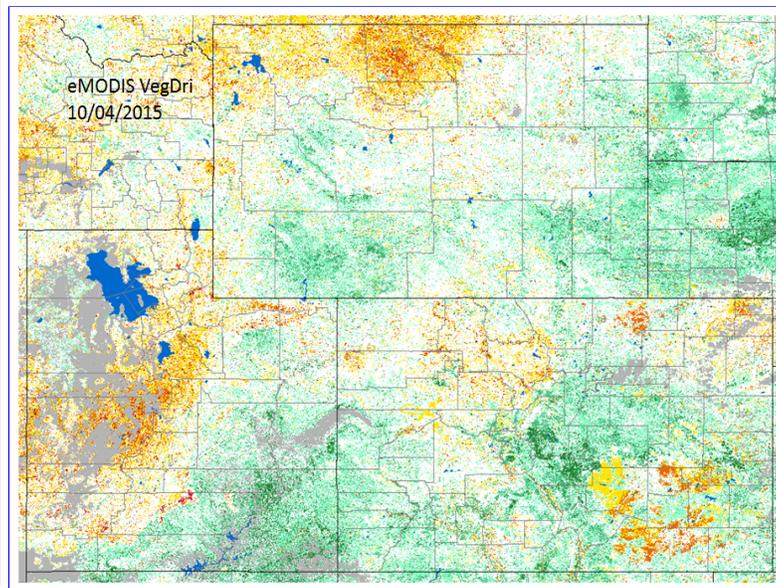
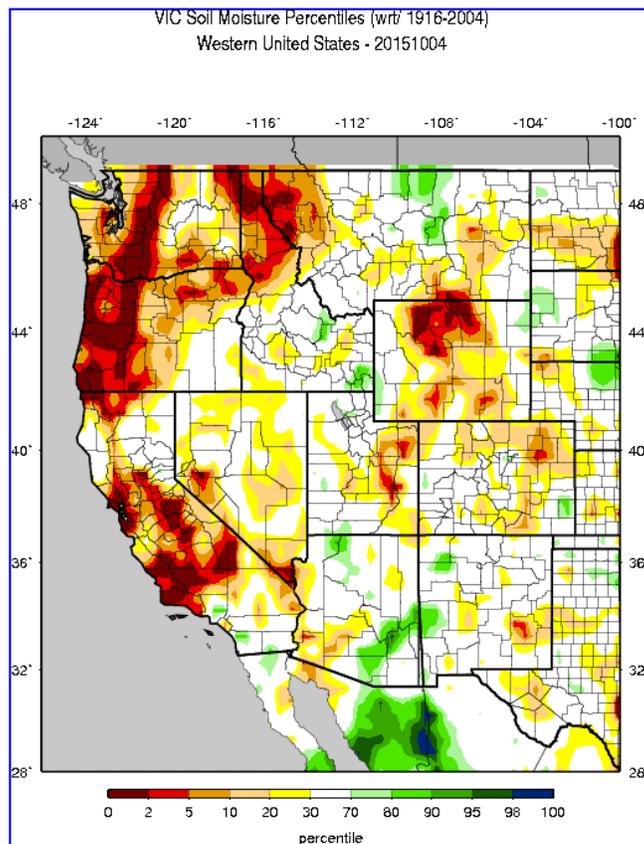
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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:

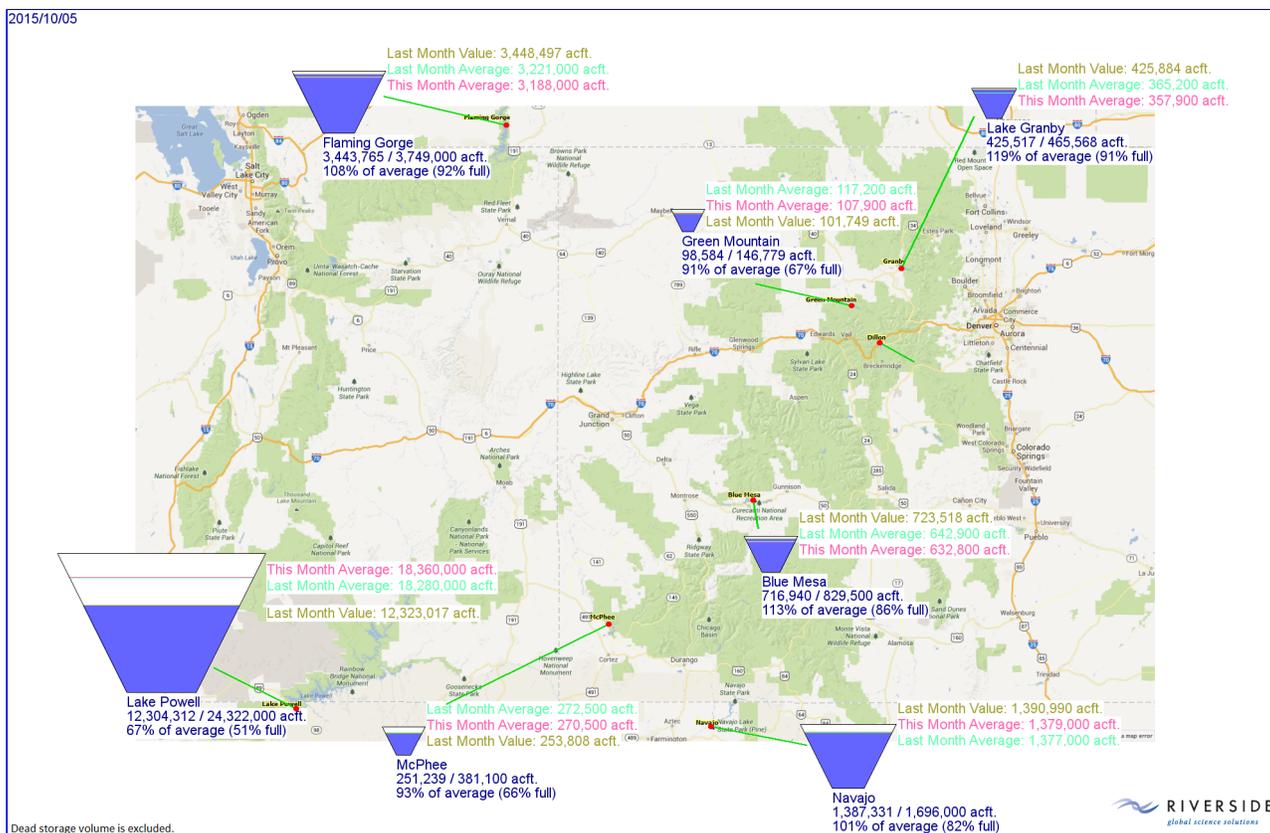
- Flows across the UCRB in the headwaters are now generally below average. Two gauges are showing streamflows less than 10% of normal.
- Streamflow along the Colorado River at the CO-UT state line is at 100% of average and in the 60th percentile.
- The Green River near Green River, UT has leveled off and is at about a normal streamflow: 87% of average and in the 49th percentile.
- The San Juan River near Bluff has seen a decrease in streamflows over the past week. It is now in the 19th percentile and 41% of average.

## SURFACE WATER



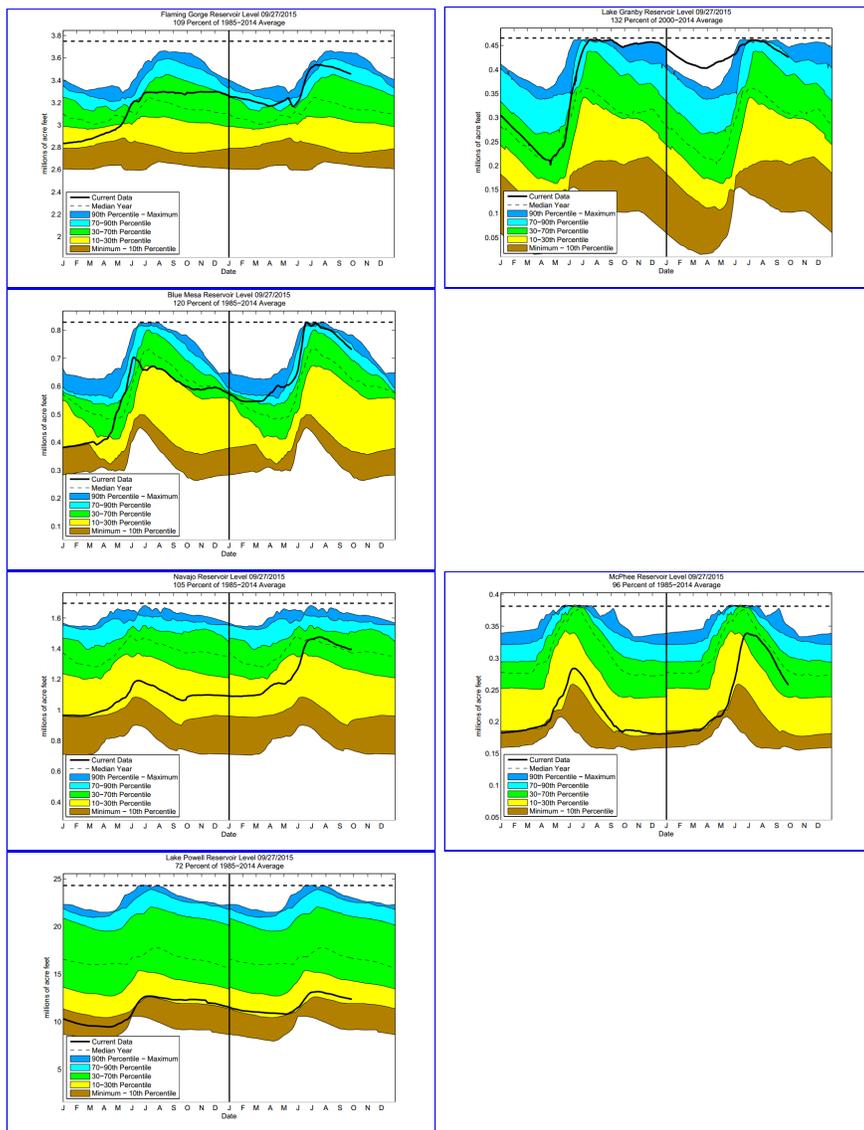


The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).



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.

The graphs shown below 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:**

- Soils across the UCRB shows soils continuing to dry, with some places in the headwaters down into the 10th percentile.
- Upwards in the Upper Green River basin, very dry soils are still present, especially in Sweetwater county where eastern portions are down near the 2nd percentile. The far western portion of Wyoming is still normal to a bit on the moist side, however.
- The Yampa and White River basins are showing soils mostly in the normal range. Portions of western Moffat and Rio Blanco counties are tending towards dry.
- The Duchesne River basin area in Utah shows low soil moisture levels, Duchesne and Uintah counties in particular. Emery, Wayne, and San Juan counties are also faring poorly.
- Western Colorado still is in about the normal range. Montezuma County is beginning to see low soil moisture levels.
- Continued dryness for NE Colorado and the South Platte basin. The least moist soils are centered around western Washington county, with soils near the 2nd percentile.
- The bullseye of moist soils in Powers county is still present for a

2nd week in a row. The rest of SE CO remains in the normal range.

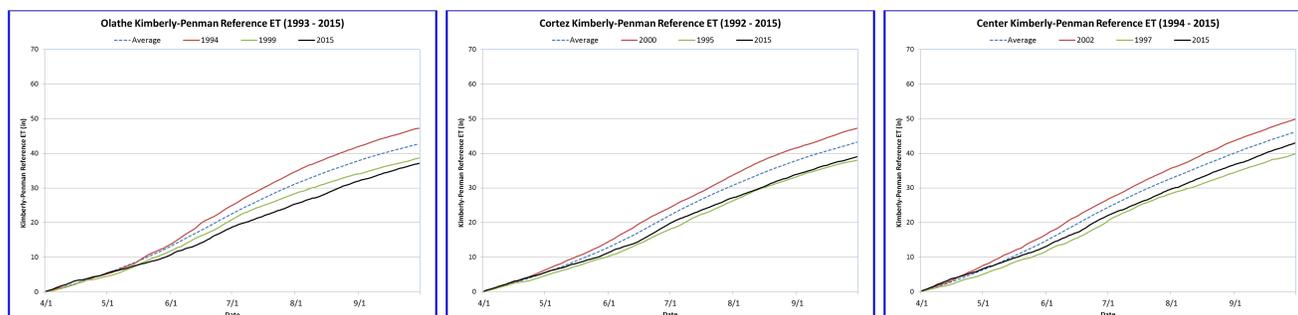
### VegDri (10/04):

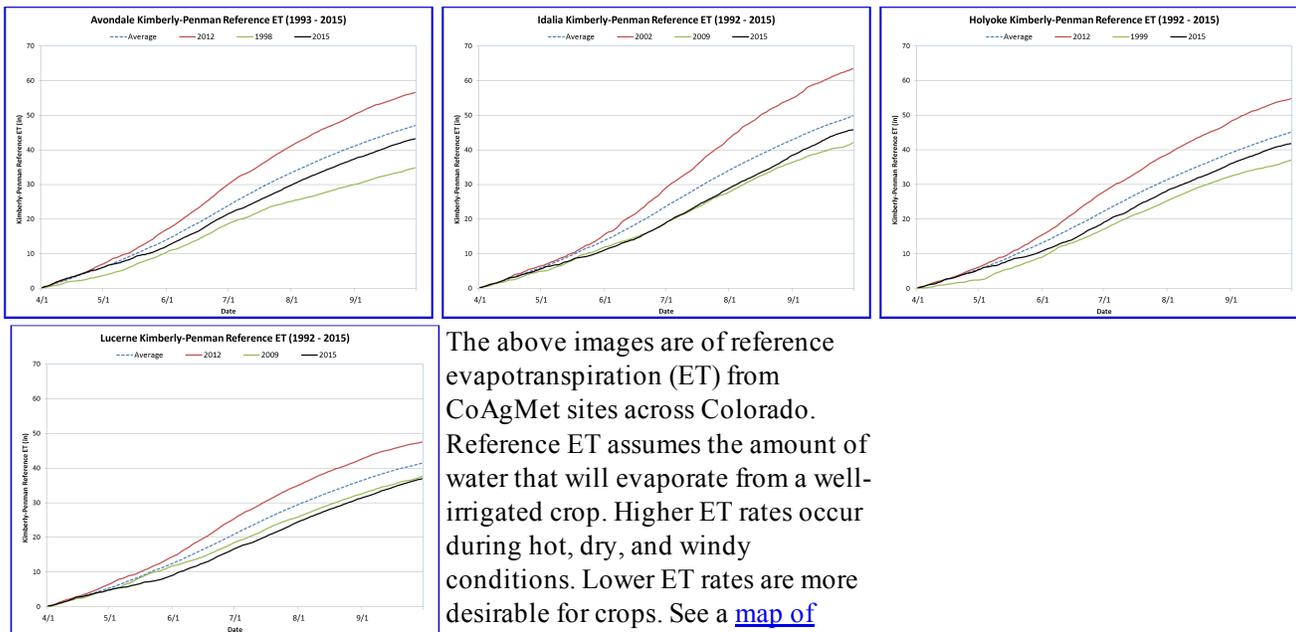
- The VegDri is showing much of the UCRB in the pre to moderate drought stage for vegetation, moreso in high elevation areas.
- Vegetation in SW Wyoming around the Green River basin is still showing healthy vegetative conditions for the most part, with some drying present in Uinta and Lincoln counties.
- The NE portion of Utah remains in pre to moderate drought vegetation conditions. The east-central to SE portion of the state is looking very healthy.
- Western Colorado has rebounded somewhat in the VegDri, however large portions of Moffat, Rio Blanco, Routt, Grand, Eagle, and Summit counties have pre to moderate drought conditions.
- The Dolores and San Juan River basins are still showing healthy vegetative moisture; however, the San Juan Mountains and into areas of the Rio Grande are beginning to show drying.
- Eastern Colorado is again showing a mixture of moist vegetation (Denver metro area and east-central counties), and pre to moderate drought conditions in the corners. Areas looking especially dry are eastern Weld County in the NE, and Las Animas, Pueblo, Crowley, Kiowa, and Prowers counties in the SE.

### Reservoirs (9/27):

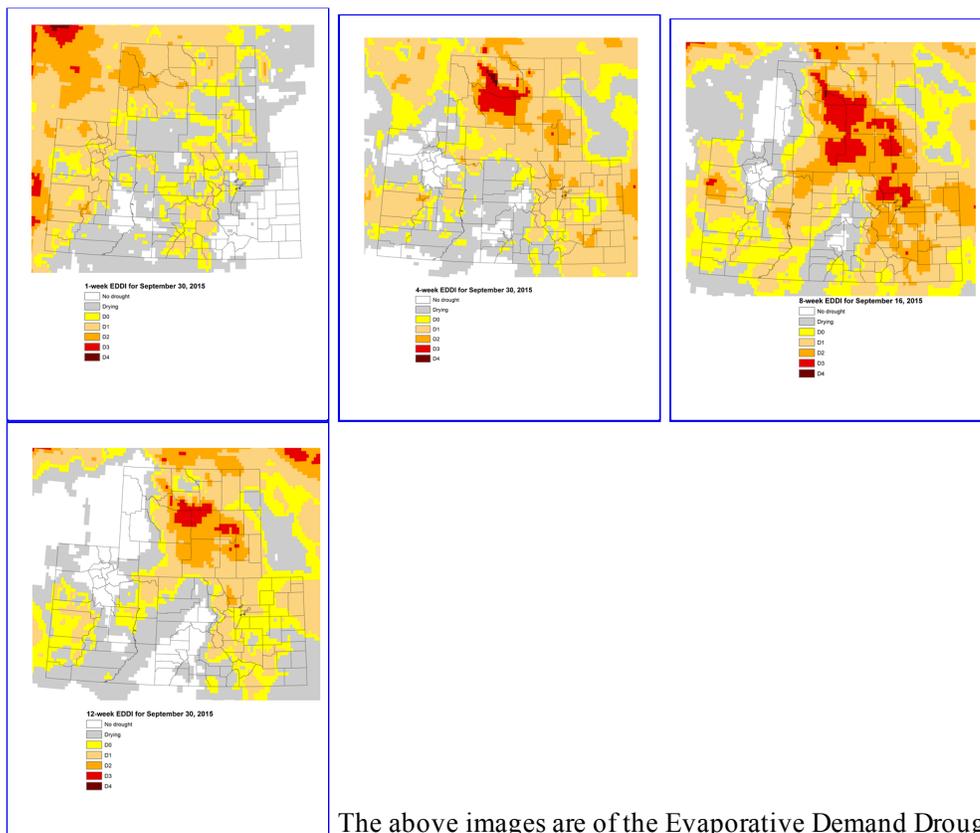
- Reservoir Levels are depicted with respect to the timeseries below rather than the teacups. The teacup figure is updated through September 20th.
- Flaming Gorge is at 109% of average.
- Lake Granby is at 132% of average.
- Blue Mesa is at 120% of average.
- Navajo is at 105% of average.
- McPhee is at 96% of its average for September 27th.
- Lake Powell is at 72% of average.

## EVAPOTRANSPIRATION





The above images are of reference evapotranspiration (ET) from CoAgMet sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of locations](#) for the above ET sites.



The above images are of the Evaporative Demand Drought Index (EDDI).

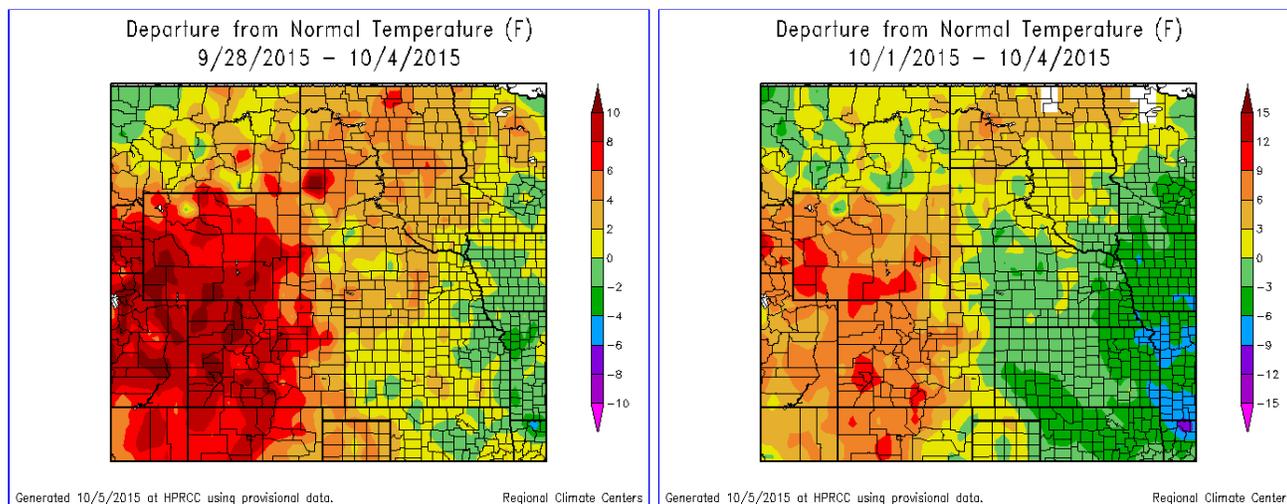
**Reference Evapotranspiration:**

- 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

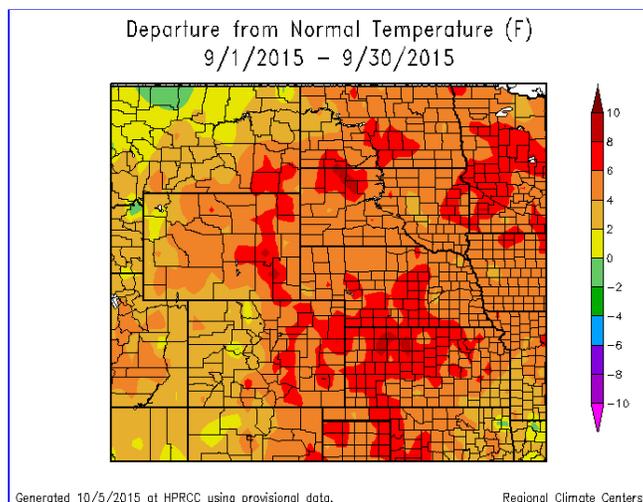
for a dip from early to late May, and thus has ended slightly below normal.

- 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.



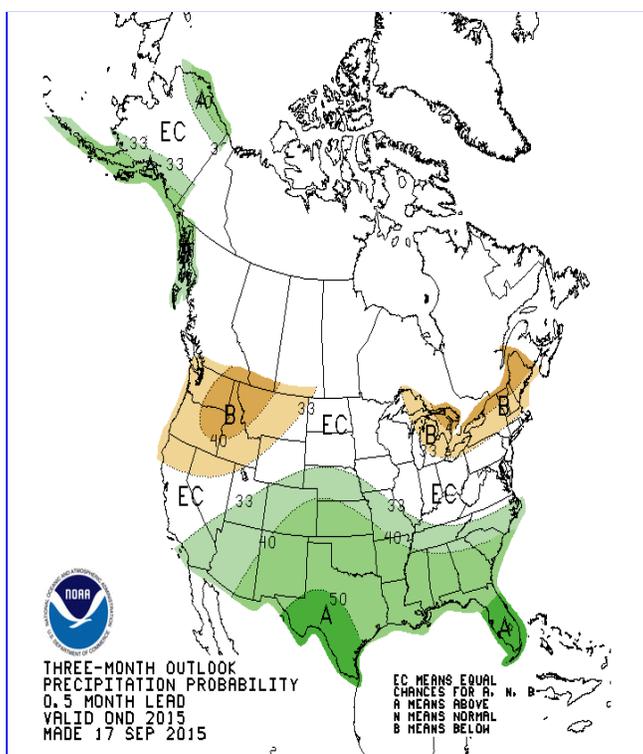
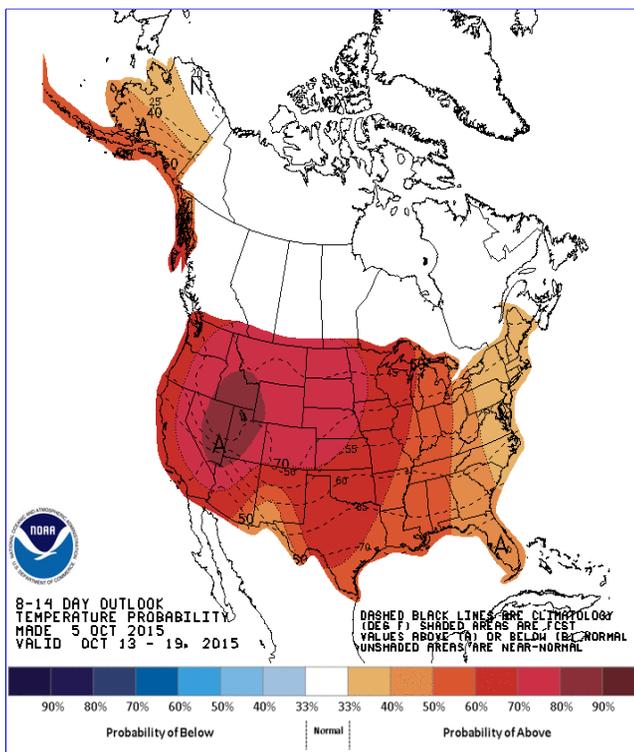
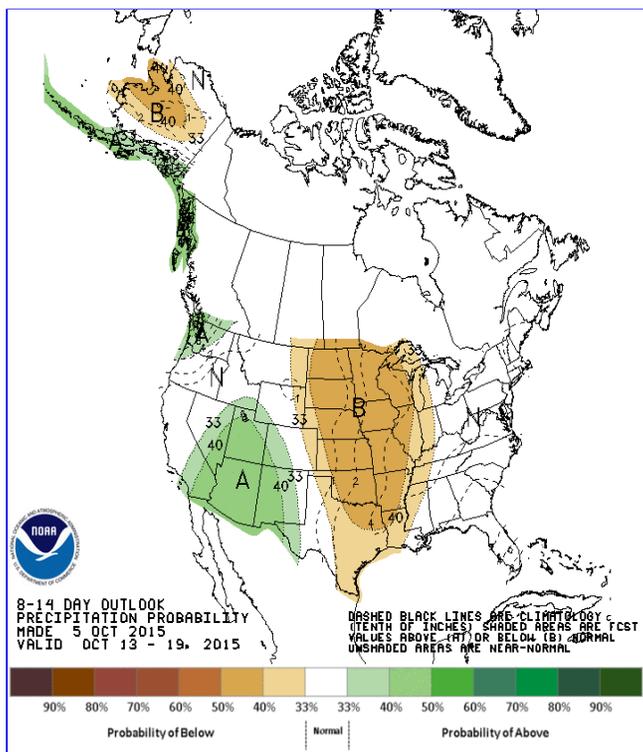
### Last Week Temperatures:

- The entire UCRB was well above normal for temperatures over the past week. Areas in eastern Garfield and most of Routt counties were over 10 degrees above normal.
- SW Wyoming along the Green River basin was also quite warm. The far SW portion of the state was hardest hit, with areas over 10 degrees above normal.
- Eastern Wyoming is no exception either. Temperatures throughout were generally at least 6 degrees above normal.
- The Dolores to the Rio Grande river basins saw temperatures more than 6 degrees above normal.
- East of the divide, temperatures began to cool down somewhat moving further east onto the plains. However, temperatures all around were above normal.

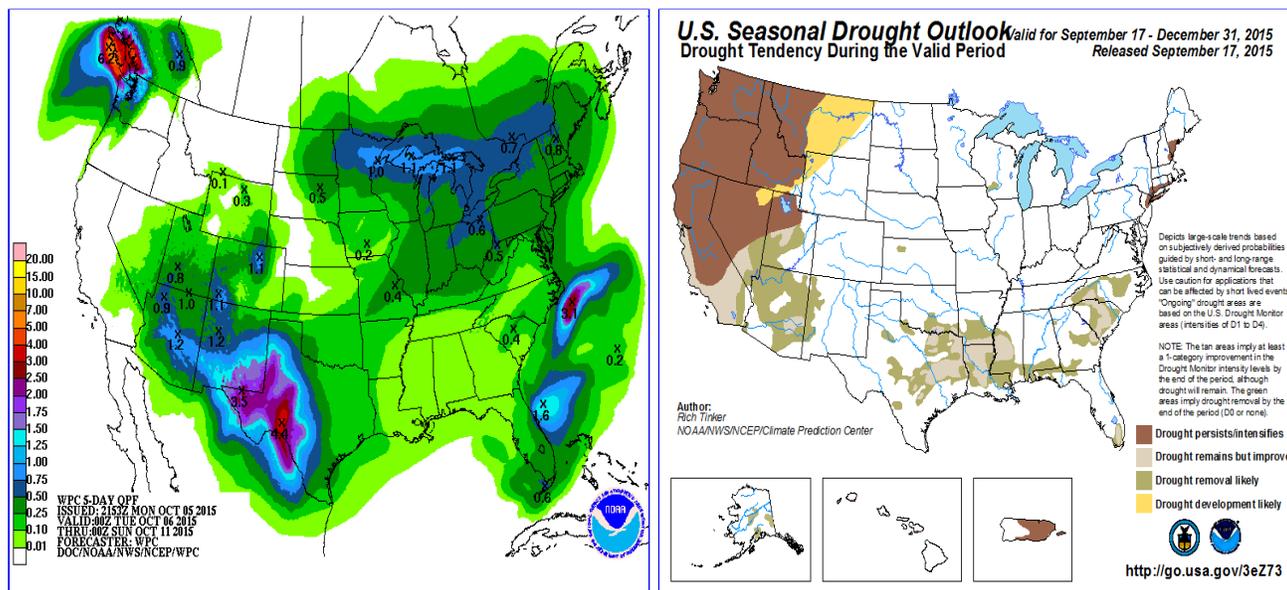
### **September Temperatures:**

- The UCRB for September was generally about 2 to 4 degrees above normal. Jackson county was slightly cooler and almost near normal.
  - The Green River basin was 2 to 6 degrees above normal throughout.
  - Eastern Utah was also fairly warm for September. Duchesne, Emery, Wayne, and Garfield counties saw the largest departure from normal temperatures in the area.
  - SW Colorado was generally 2 to 4 degrees warmer than normal. South-central Saguache county was over 6 degrees above normal.
  - Eastern Colorado saw very warm temperatures for September. All areas east of the divide were at least 4 degrees above average.
- 

## **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: (10/6)

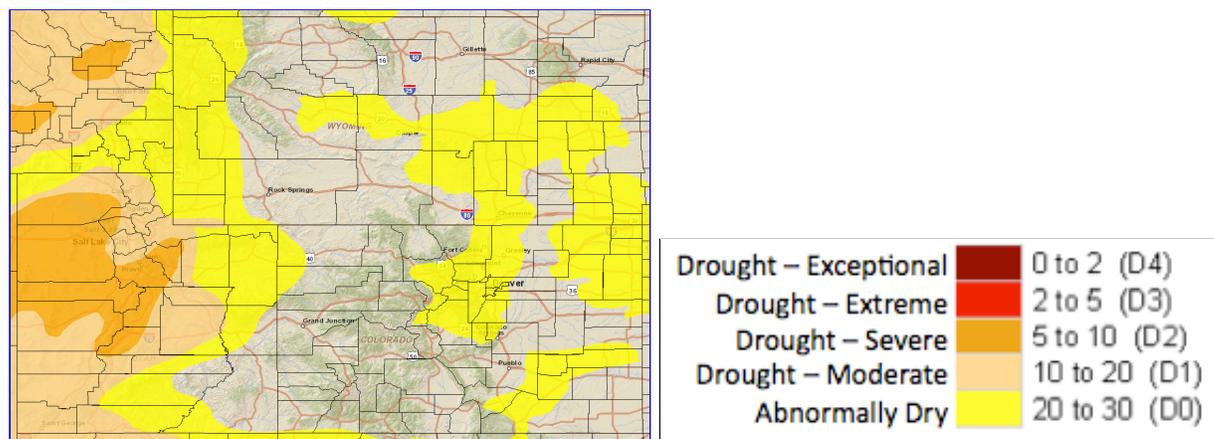
- Currently, temperatures are cooler with a lot of cloud cover across the UCRB and eastern Colorado. The visible satellite shows about 2/3rds cloud cover for the UCRB. Northeast Colorado looks cloudy why southeast Colorado has cleared out.
- Temperatures in the basin will warm up over the Basin from southwest to northeast over the next few days with high pressure and warm temperatures expected by this weekend. Today, Price, UT is forecast to top out at 66, Grand Junction at 69, and Denver at 66. Look for these numbers to rise over the next few days such that these locations are topping out around 80 Saturday and Sunday.
- Today a good chance exists for beneficial moisture along the Front Range and in northeast Colorado as well as in the San Juan area. These totals could top out at over half an inch of additional moisture for the northern Front Range.
- Isolated thunderstorm activity tonight from Pueblo east across Otero, Crowley, Kiowa, and Bent Counties appears likely.
- After tonight the basin and eastern Colorado dry out considerably. No substantial moisture is expected between. Wednesday and Sunday. Probability of precipitation raises for the Monday-Tuesday time frame, particularly for northwest Colorado.

## Longer Term:

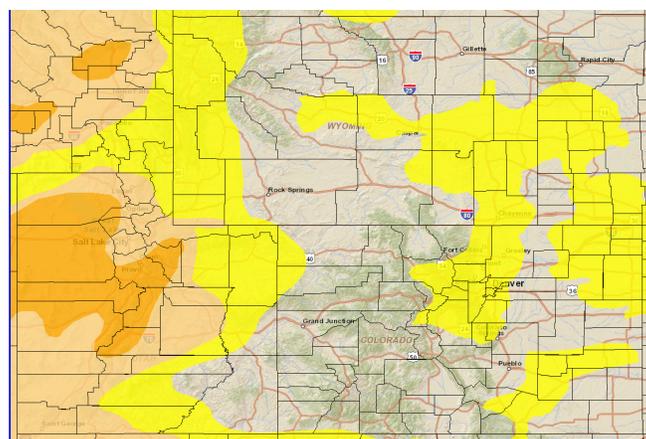
- The 8-14 day precipitation outlook shows increased chances for above normal precipitation for the southwest UCRB. There is increased chances for below normal precipitation in far eastern Colorado.
- The 8-14 day temperature outlook shows increased chances for above normal temperatures for the entirety of the UCRB and Colorado east of the divide. These chances are highest for western Wyoming and northern Utah. The entire area has considerably raised chances for above average temperatures.

- The Climate Prediction Center October through December precipitation outlook shows increased chances for above average precipitation across all of the UCRB with the exception of the Upper Green Basin. These chances increase in the southeast portion of the basin. East of the divide, the Climate Prediction Center is calling for a wetter than average October through December. These chances are best for southeast Colorado.
- The seasonal drought outlook indicates that drought improvement and removal are likely for the western portion of the UCRB by the end of November. No drought development is likely over this time frame.

## 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 for October 04, 2015:

It was fairly hot and dry for the UCRB over the past week, with some areas receiving less than 0.1” of rainfall and temperatures upwards of 10 degrees warmer than average. Surface water maps, such as VIC soil moisture profiles and satellite-derived vegetative health from the eMODIS VegDri, are also not showing particularly normal surface moisture for this time of year. Much of the UCRB is showing to be in pre to moderate drought stages for vegetation. At this time of year, however, vegetation is very quickly going dormant as the winter months approach. Stream flows in much of the area remain at about normal as well, and further into SW Colorado vegetation is still holding on to a fair bit of moisture, this Monday the four corners region received a large, very beneficial amount of precipitation. We will need to

continue to keep a watchful eye on this area, but as of now we do not see a pressing need to degrade any areas further.

Hot and dry was generally the story for eastern Colorado as well. Areas in the NE portion of the state received some very beneficial rainfall over the past week, particularly in eastern Larimer/western Weld counties, where over 1" of precipitation fell. The rest of Weld and Larimer, as well as Boulder, Sedgwick, and Phillips counties all received above average rainfall during the past week. NE Colorado is still an area of interest, as the VIC and VegDri are still showing troubling vegetative health in the area, and temperatures were again warmer on average. SE Colorado was warm and dry, but soil moisture profiles are still at or above normal however, especially in the areas not currently in D0.

**Recommendations:**

**UCRB:** Status quo.

**Eastern CO:** Status quo.