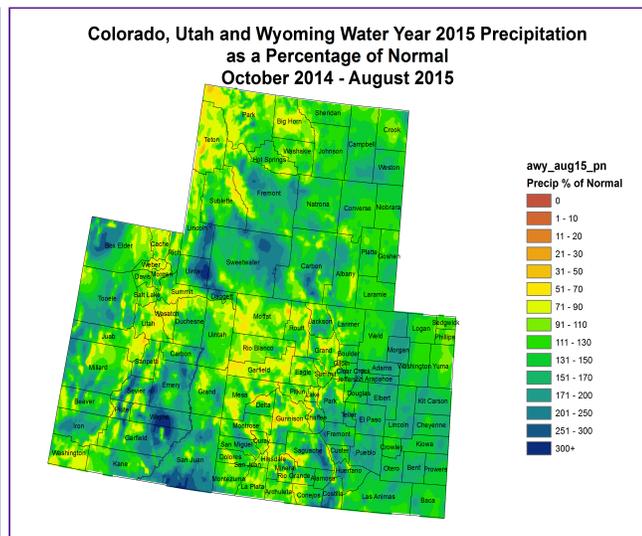
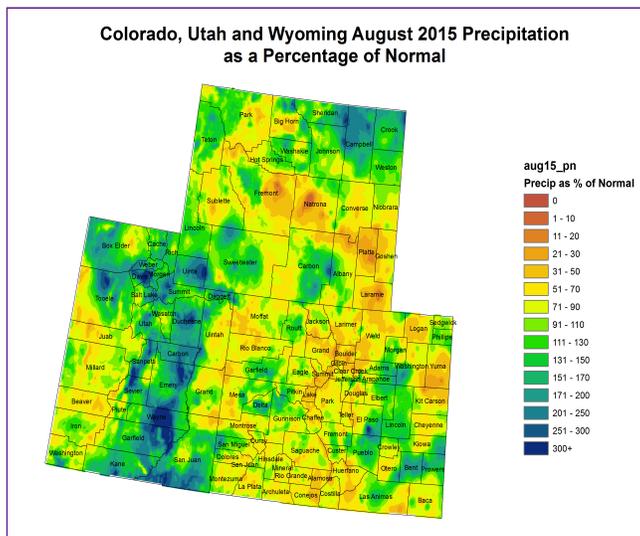
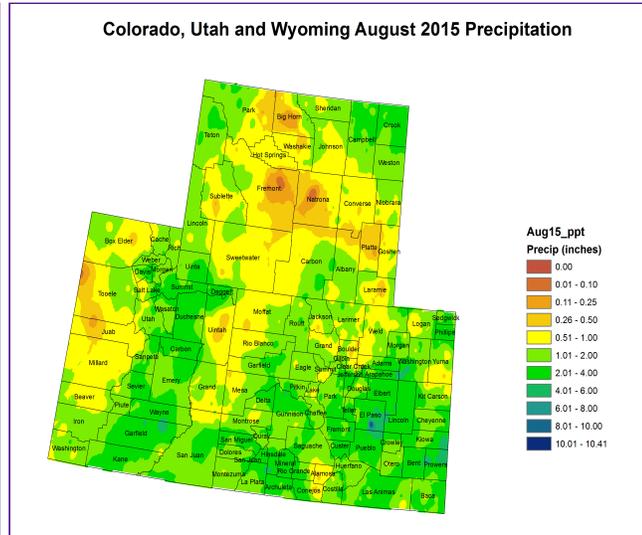
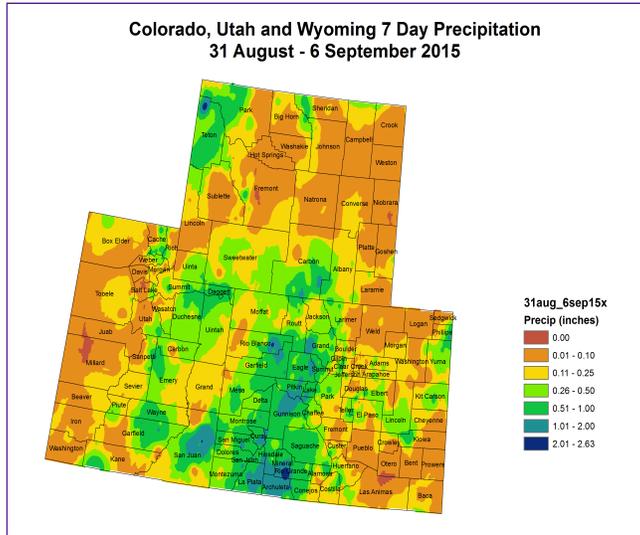


# PRECIPITATION



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 UCRB as well as the Yampa and White River Basins had varied precipitation over the last week, with some areas in eastern Rio Blanco and Garfield Counties receiving greater than 1" of rain, while western Rio Blanco, Garfield, and Mesa getting almost no rainfall. Grand County saw quite a bit of much-needed rainfall as well.
- The Upper Green River Basin, for the most part, received less than a quarter of an inch of rainfall. Some areas in Sweetwater County, WY did receive up to 0.5" of rain.

- The northeast corner of Utah saw a fair amount of rainfall with some places getting over 0.5". Further south into east-central Utah was generally drier.
- Southeast Utah was spotty with areas of San Juan County seeing greater than 1" of rain, while other areas only receiving 0.1" or less.
- The San Juan and Dolores basins received a good amount of rainfall throughout. Further east near the Rio Grande was even wetter, with parts of Mineral County seeing greater than 2" of rainfall.
- The San Luis Valley to the east was drier, with rainfall generally around 0.25" or less. Areas of Alamosa County only received up to 0.1".
- East of the divide was much drier than the western portion of Colorado. The lower portions of both the Arkansas and South Platte Rivers saw little in the way of precipitation, less than 0.25" in both cases.
- East central Colorado saw the most rainfall east of the divide, with areas in Park continuing due east to Kit Carson County getting close to 0.5" of precipitation.

### **August Precipitation:**

- With the exception of some strong thunderstorm activity along the eastern plains of Colorado, and some anomalously heavy rains in Duchesne and Carbon Counties in Utah, August was by and large a dry month for the UCRB and eastern Colorado.
- The Upper Green River Basin received some polarized precipitation totals in August. Uinta County did well picking up well over 125% of normal across much of the county. Sweetwater County was wetter than average in the western half and drier than average in the eastern half.
- August was also a polar month for northeast Utah precipitation-wise. The western Uintah Range in Daggett County, Uintah County, and Carbon County were all well above average for the month. In some places precipitation was over double average. The UT-CO border was dry from top to bottom with less than 75% of average precip.
- A couple isolated spots of western Colorado picked up above average precipitation for the month of August. Pitkin County and central Garfield County were over 125% of average. Northern Eagle County had a good month as well. Most of the western portion of the state was below 75% of average. The lowest areas with respect to average were northern and eastern Grand County, and Summit and Eagle Counties. In these areas less than 50% of normal precipitation fell.
- The San Luis Valley had a drier month than average at 50-90% of normal.
- East of the Divide, precipitation was mostly below normal, but there were some areas of above normal precipitation stemming from the Denver metro area and extending to the north and east. Morgan County, and eastern Weld and Adams Counties picked up over 200% of average August precipitation. Southern El Paso County,

southern Bent County, and central Prowers County were well above average for the month also. The areas with the lowest precipitation totals with respect to normal were southern Yuma County and Huerfano County.

### **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.

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### **SNOTEL Precipitation Percentiles:**

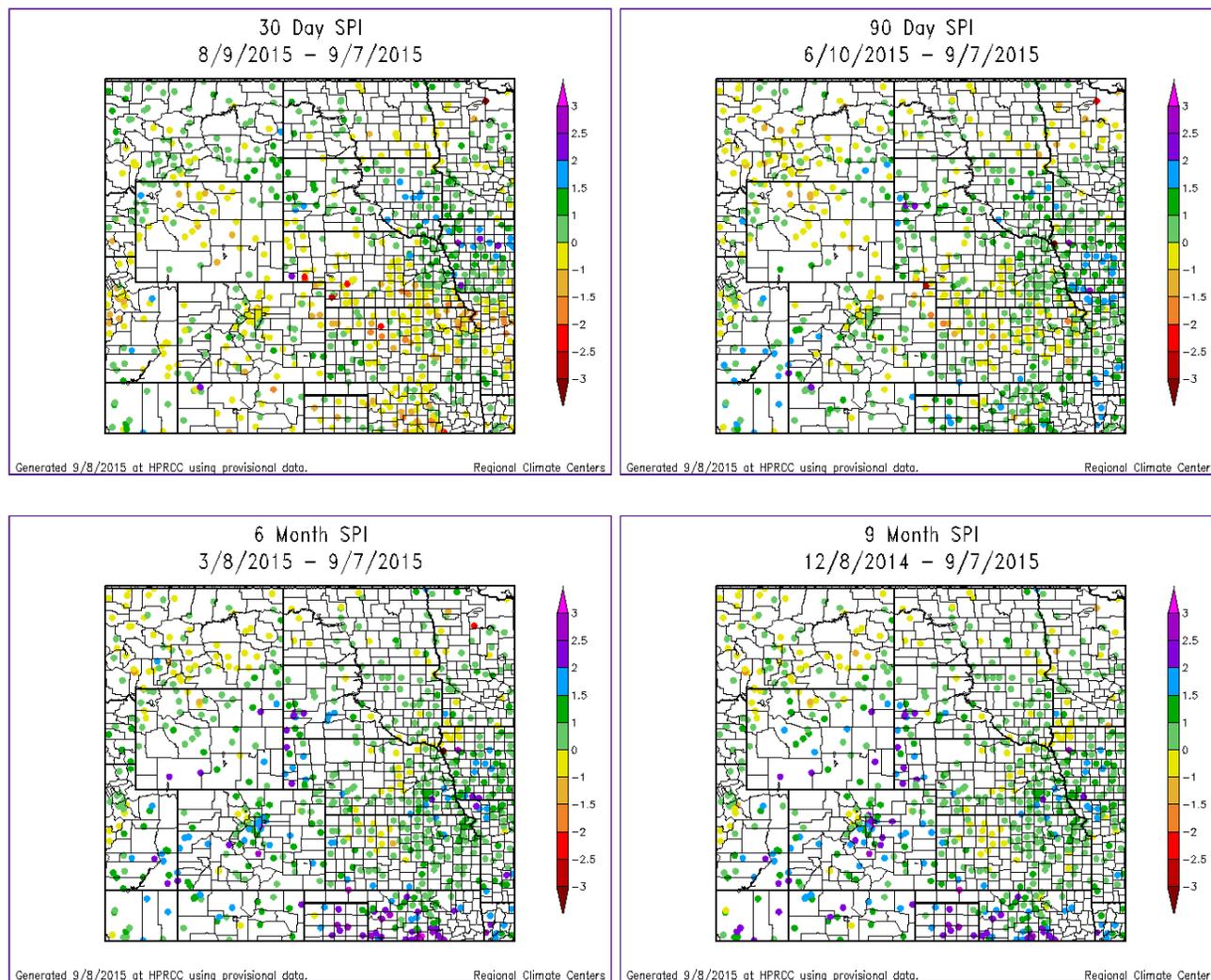
- SNOTEL year to date percentiles across much of the UCRB saw quite a rebound this last week.
- In the Upper Green the percentiles are mostly in the median range between the 32nd to the 59th. Some Snotel sites in eastern Sublette County area a bit lower, down to the 22nd.
- The Wasatch and Uintahs are 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):

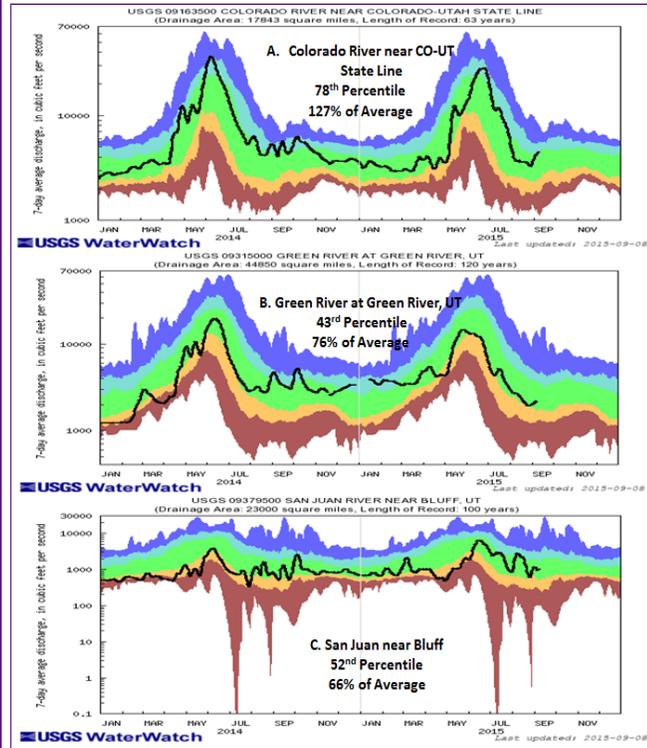
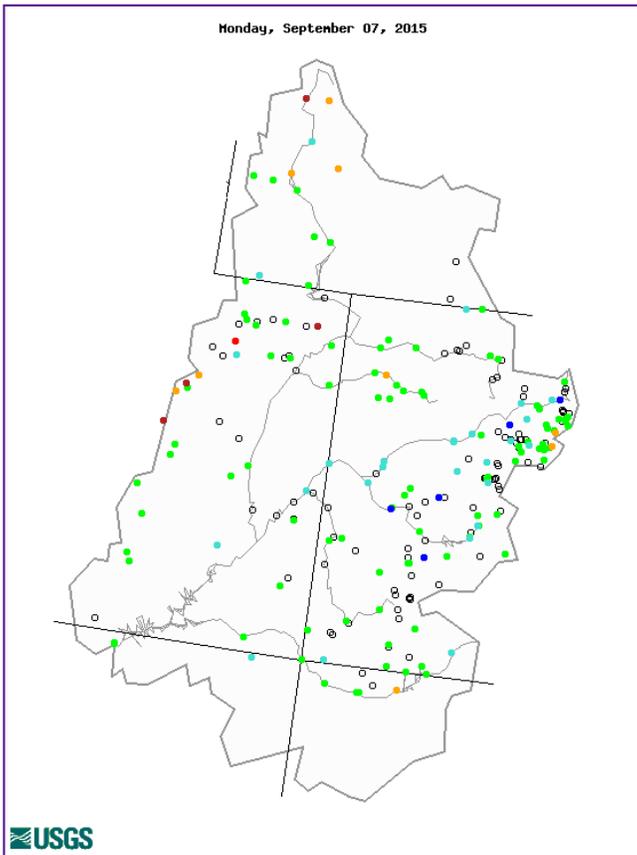
- The UCRB and essentially all of Colorado, as well as the Upper Green River and eastern Utah, are about normal in the short term with SPIs ranging from -1 to 1.
- The far eastern portion of the Upper Green River looks to be on the dry side, and a point in Carbon County WY shows between -1 and -1.5 SPI.
- The Wasatch Range in Utah remains dry at less than -1 SPI. A point near the Uintah Mountains in Duchesne County has been wet at greater than +1.5.
- The point in southern Alamosa County has remained relatively dry recently with an SPI of less than -1.
- There has been drying in northeast Colorado along the South Platte River with some points less than -1. Sedgwick County looks to be the driest with a point nearing -2 SPI.

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

- Grand County and Mineral County are the only areas in Colorado that are below-normal for SPIs (-1). The headwaters and river basins are mostly still wet over the last 6 months.
- The Upper Green River is wet, with SPIs ranging from +1 to greater than +2.
- The entire eastern portion of Utah is wet in the long-term, with values around +1 (northeast) to +1.5/+2.5 (southeast).
- Western Colorado is showing SPIs mostly between 0 and +2.
- SPIs along the front range remain very wet, up to +2 SPI, especially near the Denver metro area. A point in Fremont County also has an SPI value greater than +2.5.
- Far eastern Colorado continues the wet trend as well with SPIs between 0 and +2.

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## **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		

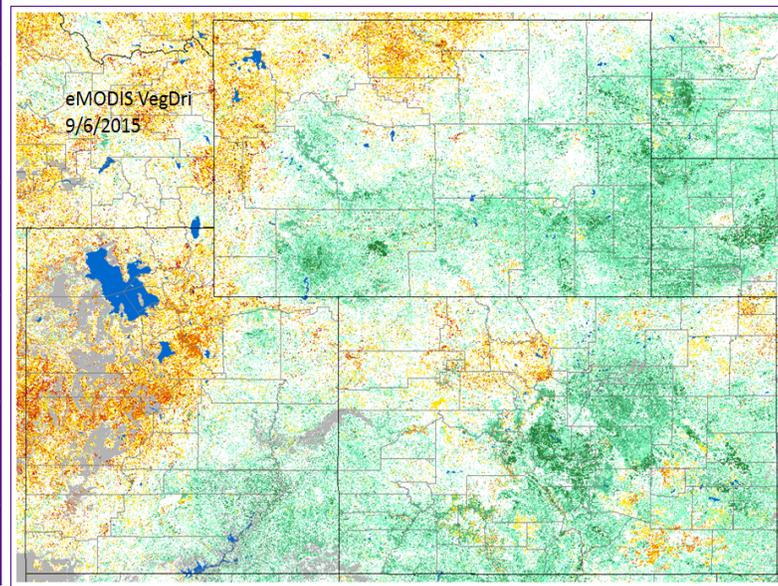
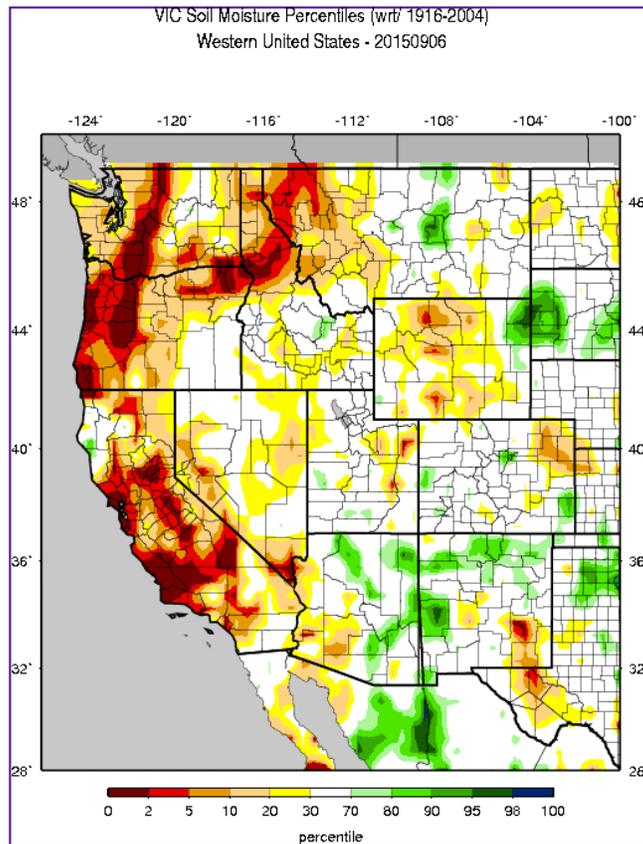
The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

**Streamflow Statistics:**

- There are some gages in the Yampa River Basin recording below to much below normal streamflow. Most, however, are in the normal range.
- Most of the gages in the UCRB are reporting in the normal range for 7-day average streamflow. Roughly 10% of gages are recorded larger than normal streamflows.
- The headwaters of both Colorado as well as a gage in the San Juan Basin are recording below normal flows over the past week.
- Streamflows in the UCRB near the CO-UT border saw a substantial increase in discharge over the past week, now at 127% of average and 78th percentile.
- The Green River also saw an increase in discharge. It is, however still below normal at 76% of average. The San Juan River near

Bluff is at 66% of average (52nd percentile).

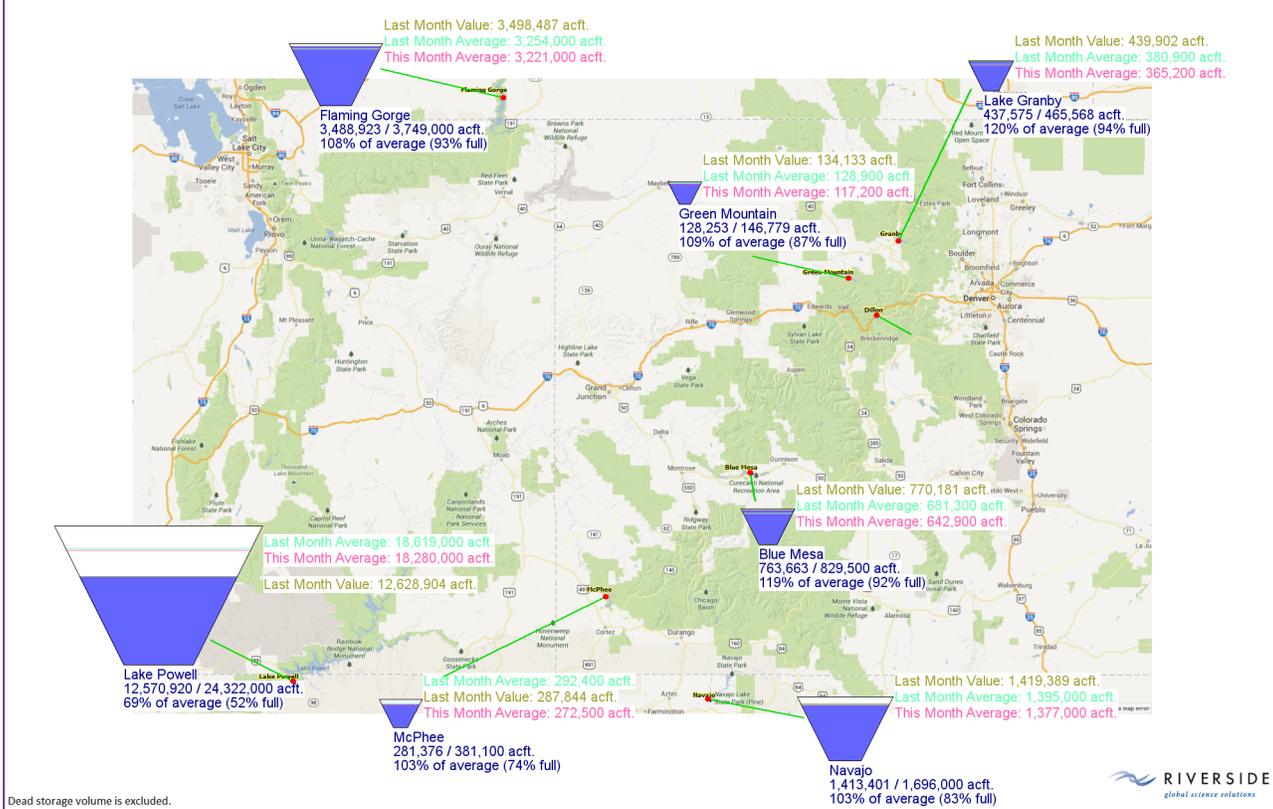
# SURFACE WATER



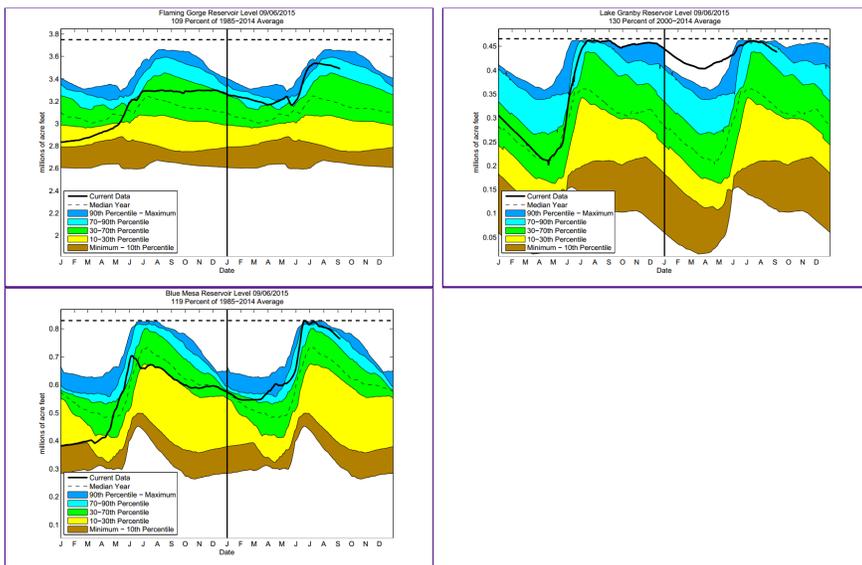
- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Normal
- Slightly Moist
- Very Moist
- Extremely Moist
- Water
- Out of Season

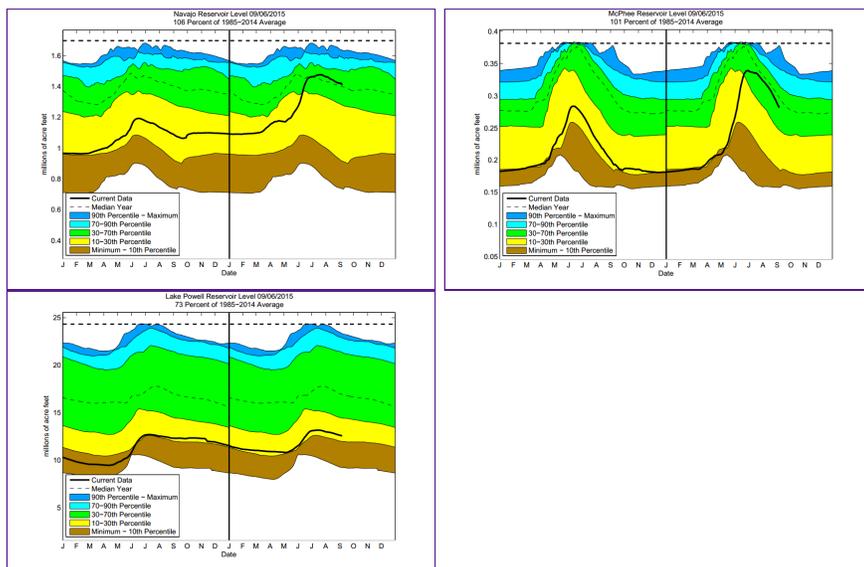
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

2015/09/08



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 are in the average to below average range in the Upper Green River Basin. Arid soils are expanding through the whole of Sweetwater County. The County is in the 2-30th percentile range, with a small sliver of 0-2nd percentile showing up. Lincoln and Uintah Counties have dried somewhat but are still in the normal range.
- In Utah, much of central Uintah County is in the 2-30th percentile range with another sliver of 0-2nd percentile showing up, and a very small portion of western Duchesne County is between the 5 and 10th percentile. The rest of the area is drying and is at normal or between the 20th and 30th percentile.
- Southeast Utah is also showing soil moisture mostly in the normal range. Southeast Emery County is showing a dry patch between the 2 and 30th percentile.
- Western Colorado is almost entirely in the normal range. The far northwest corner of the state is between the 20th and 30th percentiles. The eastern part of Mesa County is in the 70th and 80th percentiles.
- The San Luis Valley is showing soils mostly in the normal range, with a spot of 20th-30th percentile.
- The Upper Arkansas River Basin, which has been moist since May, is back in the normal range for the most part. Kiowa and Prowers are still above the 70th percentile.
- The Front Range is holding onto some wet soils primarily in Jefferson County. Most of the area is in the normal range.
- Soil have been in a drying trend for the northeastern portion of the state. Kit Carson, Yuma, and Washington Counties are seeing soils in the 5-20th percentile range.

## VegDri:

- The VegDri has been showing drying conditions for the UCRB as well as the White River Basin. Almost all points show a pre to

moderate drought.

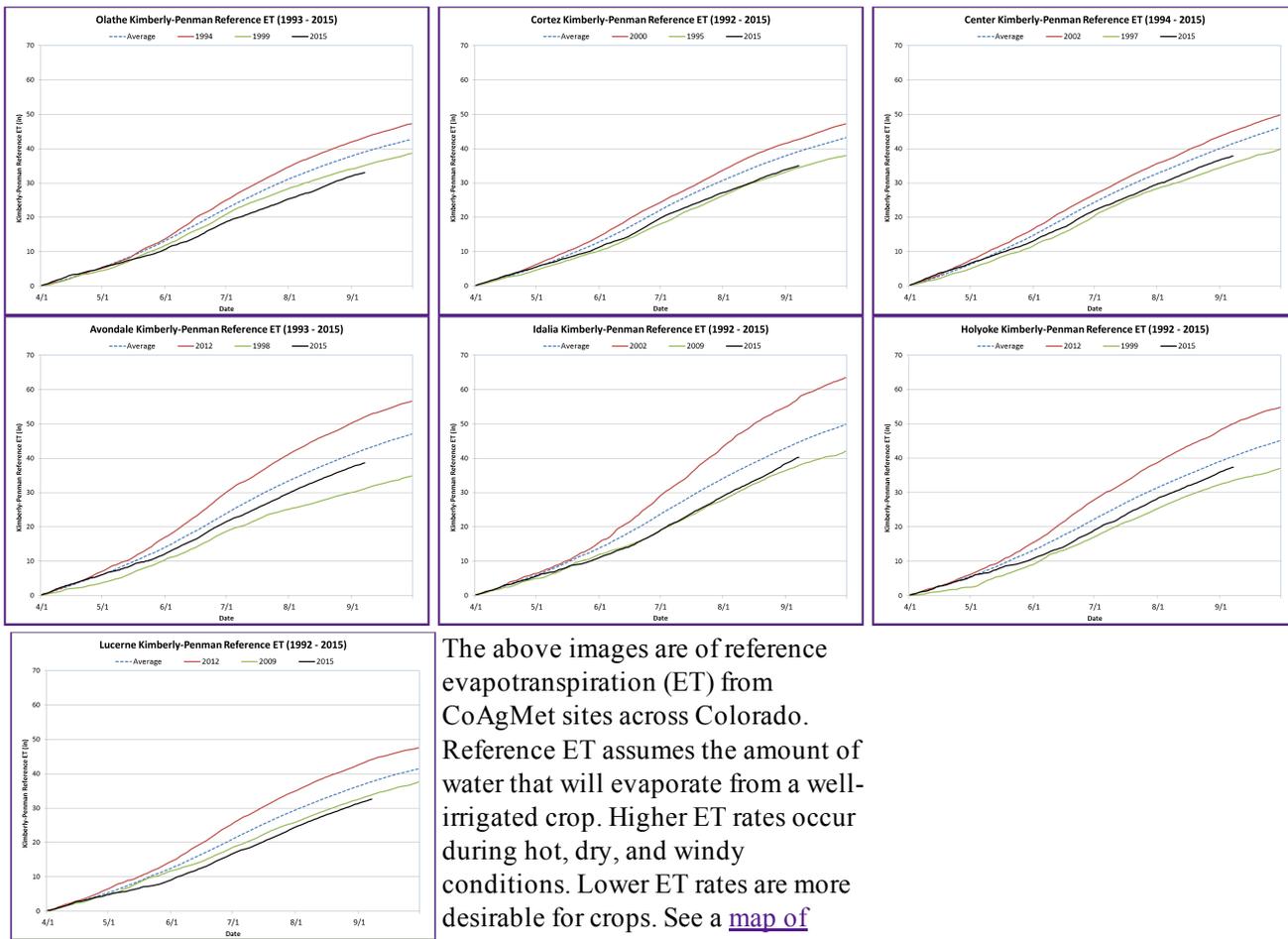
- The Upper Green River Basin shows mostly moist vegetative health conditions with some areas of pre to moderate drought along the northwest flank of the basin in Lincoln and Uinta Counties.
- The Wasatch Mountains are showing pre to moderate drought. The Uintah Mountains are still holding on to a fair amount of pre-drought, especially in the northwestern portion of the range. Duchesne County however is fairly moist.
- Conditions in the Duchesne River Basin are now showing mostly wet vegetative health. This degrades into pre-drought farther east into Uintah County.
- In southeast Utah vegetative health is mostly normal or slightly moist.
- Most of western Colorado is in the normal to slightly moist range. Montrose County is beginning to see pre-drought conditions, and Gunnison, the eastern part of Saguache, as well as Mineral and Rio Grande Counties are showing pre to moderate drought.
- The San Luis Valley is showing mostly moist vegetative health conditions.
- The Upper Arkansas and Upper South Platte Basins are showing very moist vegetation conditions. This includes Chaffee, Park, Teller, Fremont, and Custer Counties. This area of very moist vegetation extends onto the Front Range and into El Paso, Elbert, Douglas, Jefferson, Adams, and Arapahoe Counties. This has been the case for a couple months now.
- Northeast Colorado from the front range in Larimer County to the Colorado/Nebraska border continue to dry, with pre drought to moderate drought conditions widespread. The driest areas remain in Sedgwick County.
- Southeast Colorado remains a mix of moist and dry conditions. The area to keep an eye on is Las Animas County and most of eastern Pueblo/Crowley County. These places have strong indications of moderate drought.

### **Reservoirs (8/24):**

- Flaming Gorge is at 108% of its August average.
- Green Mtn is 109% of its August average and is 87% full.
- Lake Granby is at 120% of its August average and 94% full.
- Blue Mesa is 119% of the August average, 92% full.
- Navajo is 103% of its August average and 83% full.
- McPhee is at 103% of its average, 74% full.
- Lake Powell is now at 69% of the August average, 52% full.

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## **EVAPOTRANSPIRATION**

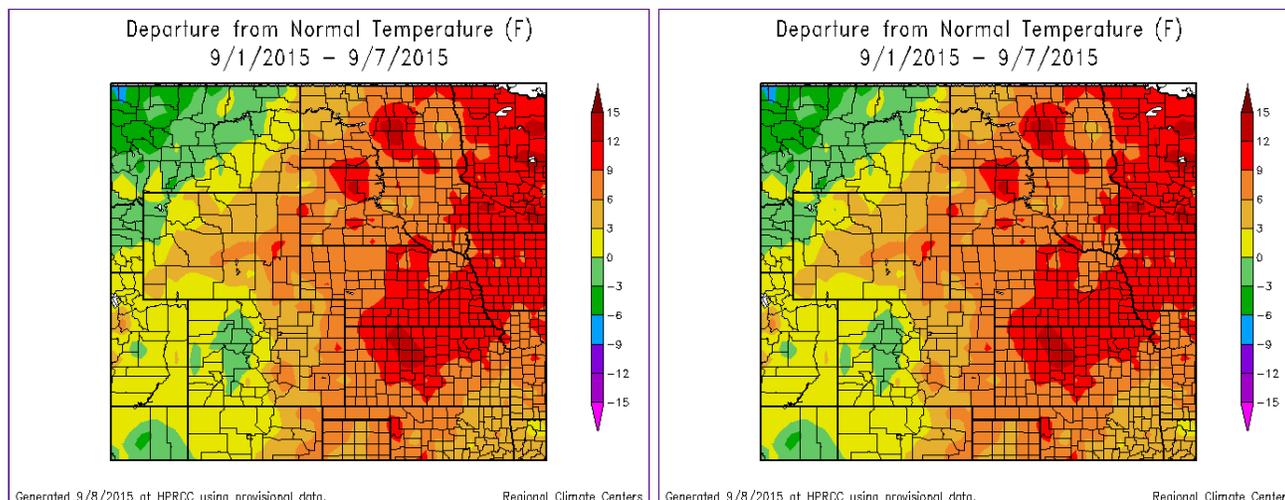


The above images are of reference evapotranspiration (ET) from CoAgMet sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of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

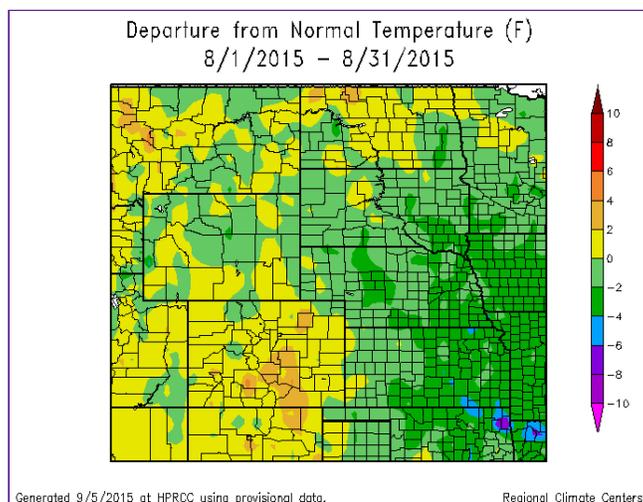
## Reference Evapotranspiration:

- Olathe: ET started the growing season at higher than average ET rates and since mid-May has been tracking below the lowest reference ET year of 1999.
- Cortez: ET began a little above normal, but has been tracking below normal since early May, and for much of the summer has been very near the lowest year of 1995. This week has been no exception.
- Center: Early season ET was higher than the track taken during the record year, but has slowed considerably with respect to the seasonal average, and is now tracking below average.
- Avondale: ET began just above average, but has slowed to below normal. It has been tracking at the normal rate over the past month and a half.
- Idalia: ET started near average, then tracked with the low year of 2009 from mid-May to late July. It is still below average, but has taken a steep track upwards over the past two weeks.
- Holyoke: ET started around normal and has dropped below normal since the second week of May. It has followed a fairly normal track since early July and this week is continuing this trend.
- Lucerne: ET has been tracking lower than the previous record low year in 2009 since the second week of May. It gained some ground on the low year's track in August but has followed a normal track for the first week of September.

# 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:

- All of western Colorado including the UCRB was at about normal for the past week with temperatures ranging from -3 to +3 degrees from average.
- Moving up into the Green River Basin in Wyoming, temperatures continue to be warmer than normal, between 0 and 6 degrees warmer.
- All of eastern Utah is generally 0 to 3 degrees warmer than normal. An area around the borders of Sanpete, Sevier, and Emery Counties was slightly cooler at 0 to -3 degrees.
- East of the divide, temperature departures were on the warm side at greater than 3 degrees throughout. In general temperatures warmed moving further east of the rockies. Most areas were between 3 and 9 degrees warmer than normal, with a portion of Kit Carson County

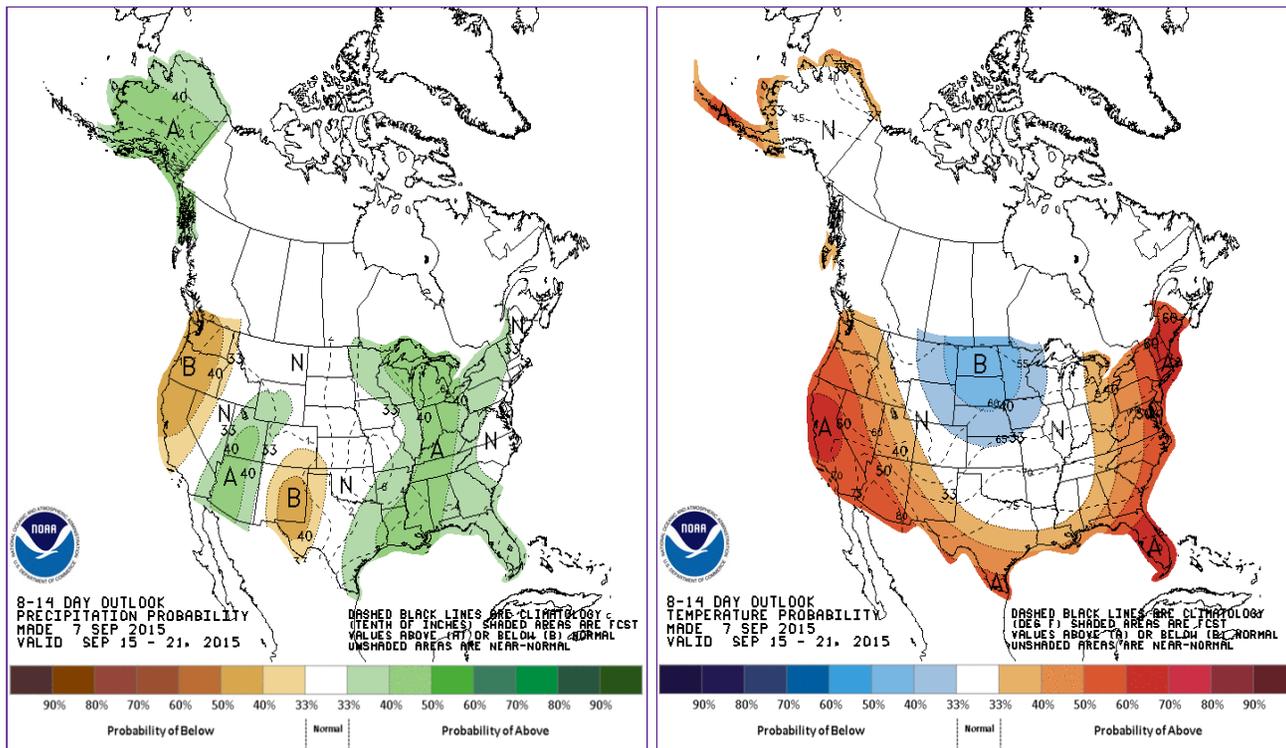
greater than 9 degrees from normal.

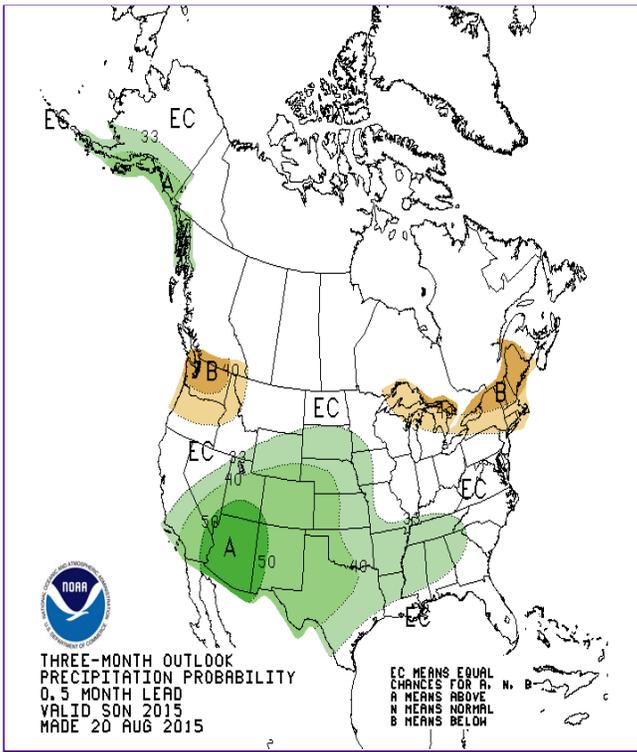
- Eastern Prowers County had slight relief with temperatures at 0 to +3 degrees from average.

**August Temperatures:**

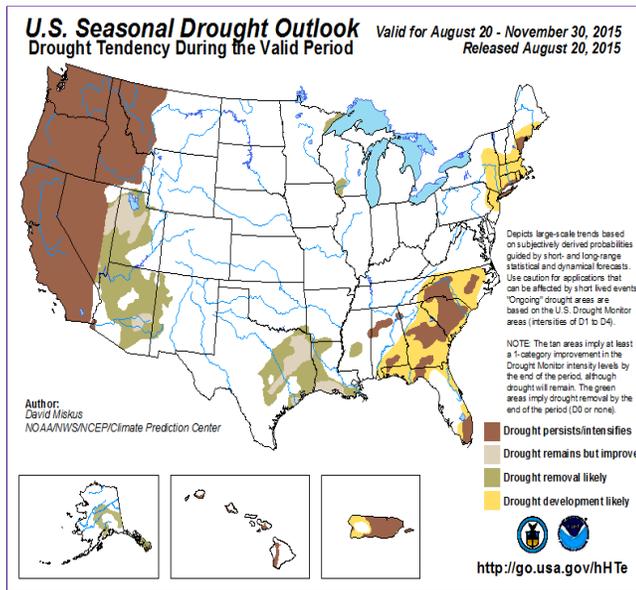
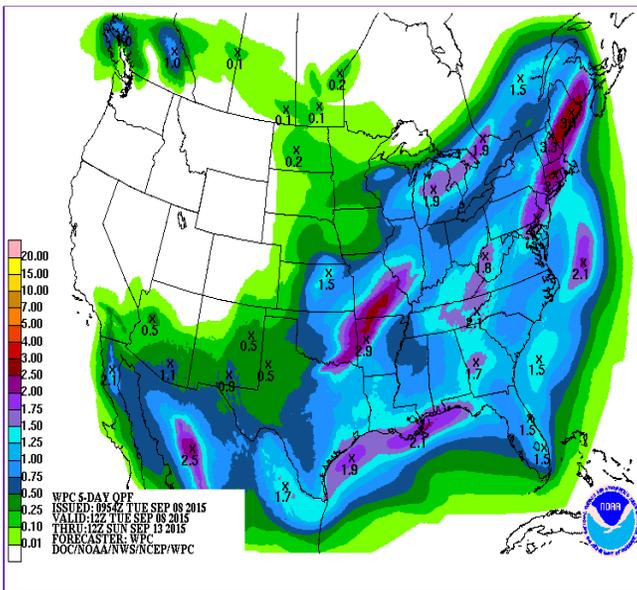
- For August, the UCRB was about normal for temperatures, ranging from -2 to +2 degrees from normal. This is also true for the Upper Green River Basin in Wyoming.
- Throughout eastern Utah, temperatures were also roughly normal for August. Again, between -2 to +2 degrees.
- Southwest Colorado was warmer than normal, generally around +2 degrees, with areas in La Plata and Ouray/Montrose Counties nearing +4 degrees.
- The Rockies were also warmer than normal. The southern portion near the Rio Grande River was the warmest at near +6 degrees warmer in Saguache County.
- The areas near the headwaters of the Arkansas River Basin were fairly warm at +4 degrees warmer than normal.
- Much of the rest of the eastern portion of the state was 0 to +2 degrees warmer than normal. Exceptions are Sedgwick, Philips, and Logan Counties slightly cooler than normal, and Morgan County warmer at +2 to +4 degrees warmer.

**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: (9/8)**

- A seasonably-warm, dry week is on tap for the Upper Colorado River Basin, and eastern Colorado.
- For Tuesday through Thursday clear conditions are west-northwesterly upper-level flow will dominate the area. This will keep high temperatures in the 70s and for the northern portion of

the basin at low elevation and in the 80s in the southern portion of the basin at low elevations. High temperatures will be in the 80s across much of eastern Colorado, and will be hottest farthest to the south and east. Some isolated thunderstorm activity is possible in southern Colorado tonight and Wednesday night, but totals will most likely be below 0.10".

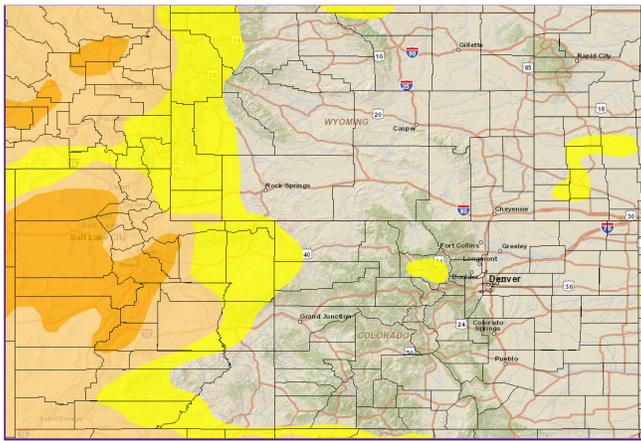
- Early Friday afternoon, a frontal disturbance will hit eastern Colorado out of the northeast. This will bring scattered showers to the southeast corner of the state, but this should be a dry shift in the weather for northeast Colorado. Temperatures on Friday will be as much as ten degrees cooler for eastern Colorado, but this will not have much impact on the UCRB.
- Following the disturbance Friday, weather should stay fairly warm and dry through Monday afternoon. On Monday evening, models are hinting at some major changes beginning to develop, which may result in some cooler temperatures and substantial precipitation totals for the southern portion of the UCRB on Monday through Thursday of next week. There is still a good deal of uncertainty to the track this storm will take.

### **Longer Term:**

- The 8-14 day precipitation outlook shows increased chances for above normal precipitation for the northern and western portions of the UCRB. These odds are highest in the far southwest corner of the basin.. This outlook shows increased chances of below normal precipitation over southern and southeast Colorado.
- The 8-14 day temperature outlook shows increased chances for above normal temperatures for the southwest portion of the UCRB. These odds are highest in the far southwest portion of the UCRB. This outlook also shows increased chances for below normal temperatures for far northeast Colorado.
- The Climate Prediction Center September through November precipitation outlook shows increased chances for above average precipitation across the entirety of the UCRB and Colorado east of the divide. These chances are maximized at low elevations in the southern portion of the basin.
- 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.

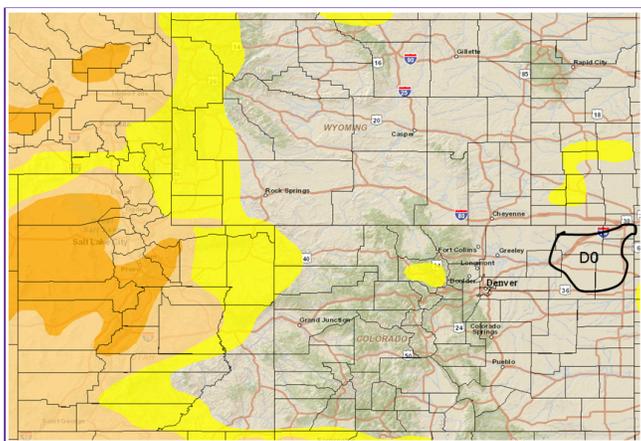
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## **U.S. DROUGHT MONITOR**



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 for September 8th, 2015:**

The UCRB received a fair amount of rainfall in its headwaters and was about average in terms of temperature over the past week. The eMODIS VegDri indicates a trend towards dry conditions across much of the area, which will be something to keep an eye on. It is not until far west/southwest Colorado that there is indication of more moist conditions. This trend continues into San Juan County in Utah. The San Juan/Doroles River Basins as well as the Rio Grande area saw plenty of rainfall, with the exception being Alamosa County getting 0.1” or less. This is not uncommon for that area, however, and VegDri is still showing soils holding on to plenty of moisture in the San Luis Valley. Streamflows across the western portion of the state as well as the Green River in Wyoming and into Utah are mostly at or above normal, with some gages in Utah near the Uintah and eastern Wasatch Mountains far below normal. Finally, Grand County, currently in D0 since last week, did see some decent amount of rainfall (0.5” to nearly 2”), but temperatures were still at or slightly higher than normal and long-term SPIs still indicate that this is an abnormally dry region.

Colorado east of the divide was hot and dry from north to south. East central Colorado saw the most precipitation at 0.25-0.5”, from Park across to Kit Carson County and up into Phillips and far southeast Sedgwick.

VegDri continues to show moisture in this central region, while it along with VIC soil moisture profiles indicates a dry pattern in the northeast corner of the state.

### **Recommendations:**

**UCRB: Status quo.** Because soil moisture remains low, it is recommended that Grand County remain in D0. VegDri continues to show this area in at least a pre to moderate drought, and long term SPIs have the county at 1 standard deviation below the normal.

**Eastern Colorado:** The counties of Logan, Sedgwick, western Phillips, eastern Morgan, and most of Washington and Yuma all saw hot and fairly dry conditions. Despite the wet spring, the soils have been steadily drying, and this entire area is showing arid vegetative conditions. This, on top of another potentially warm and dry week for the area, indicates that this area should be downgraded to D0.