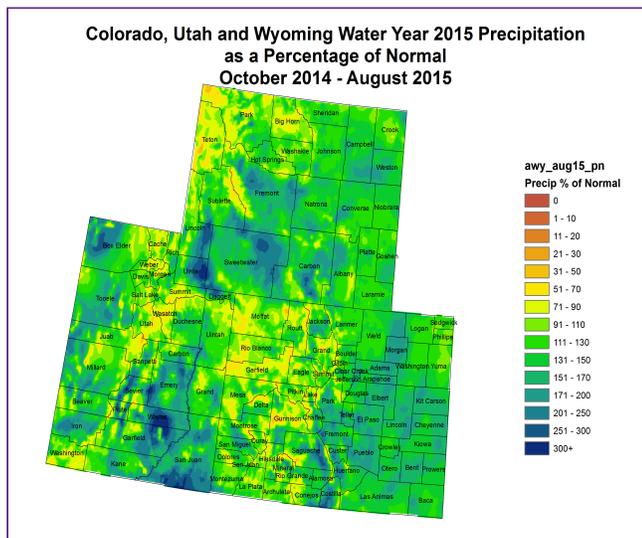
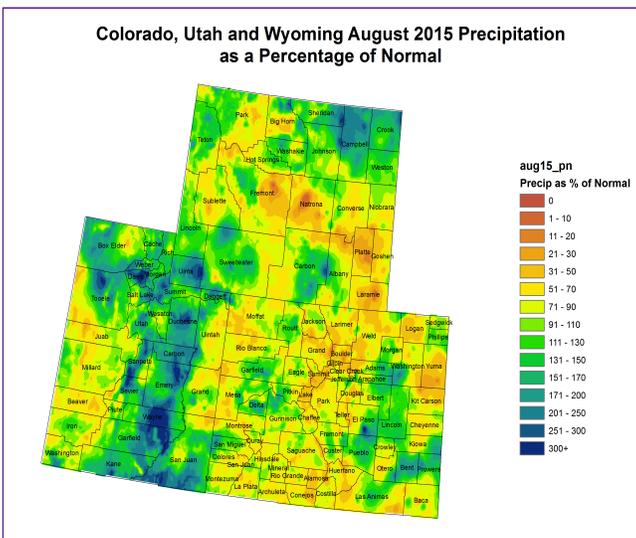
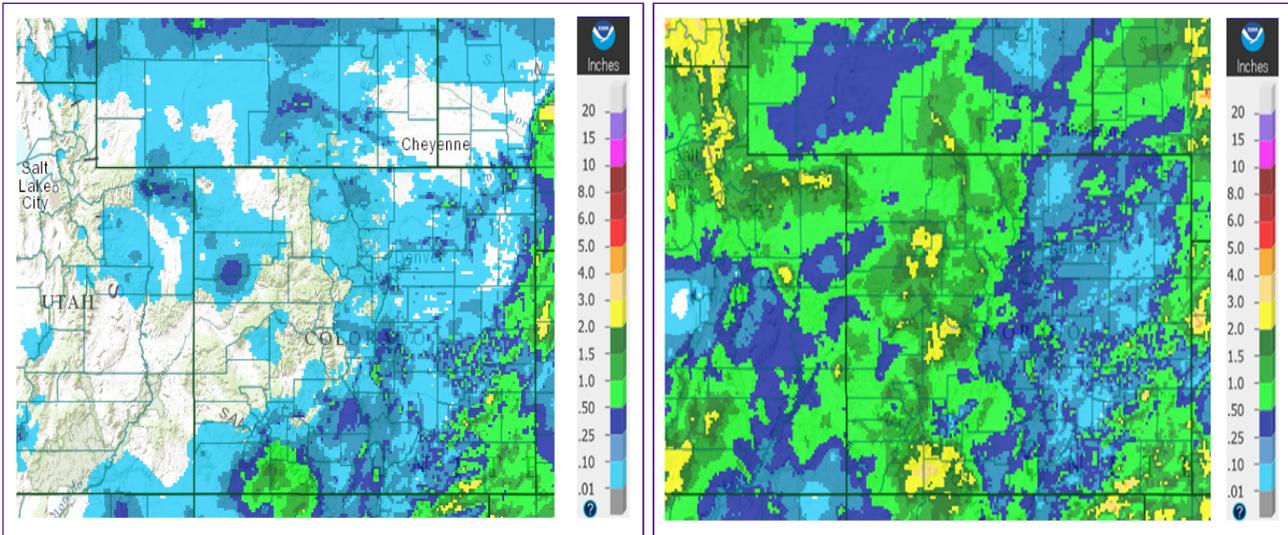


PRECIPITATION



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:

- While the southern portion of the San Juans and the southeast corner of Colorado did experience some beneficial moisture, it was a dry week across most of the basin and Colorado east of the divide.
- Totals in the Upper Green River Basin were mostly below 0.10" with some higher totals upwards of 0.25" in the Wind River Range.
- Most of the Uintah Basin was also below a tenth of an inch for the week with the eastern portion of the Uintah Mountains picking up 0.25-0.50".

- The Yampa and White Basins were once again below 0.10" for the most part. No areas in these basins exceeded half an inch.
- Southeast Utah was nearly completely dry.
- The Southern end of the San Juans, in La Plata and Archuleta Counties especially, picked up 0.50-1.50" of rainfall over the past week. These totals taper quickly moving northwest.
- The San Luis Valley received 0.10-0.25" of rainfall for the most part. Some isolated areas received over half an inch.
- Totals in the Upper Arkansas Basin were mostly between 0.10 and 0.50".
- Southeast Colorado was still pretty dry along the Front Range with the Pueblo and Colorado Springs areas receiving less than a quarter of an inch, but farther east some remnants of a tropical Pacific storm were pulled in. Baca, Bent, and Prowers Counties were among the biggest beneficiaries receiving over half an inch. Over 2.00" of rain fell in portions of eastern Las Animas County and northeast Bent County.
- Northeast Colorado was very dry again receiving less than 0.10" of moisture other than some very isolated areas of convection. Eastern Kit Carson County and southeast Yuma County did pick up over half an inch 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.

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

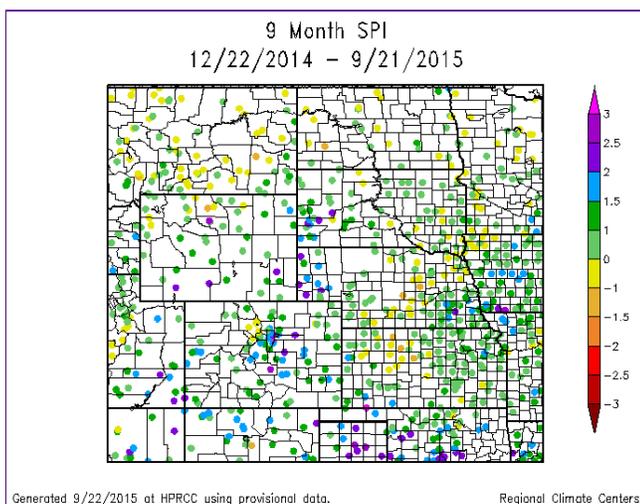
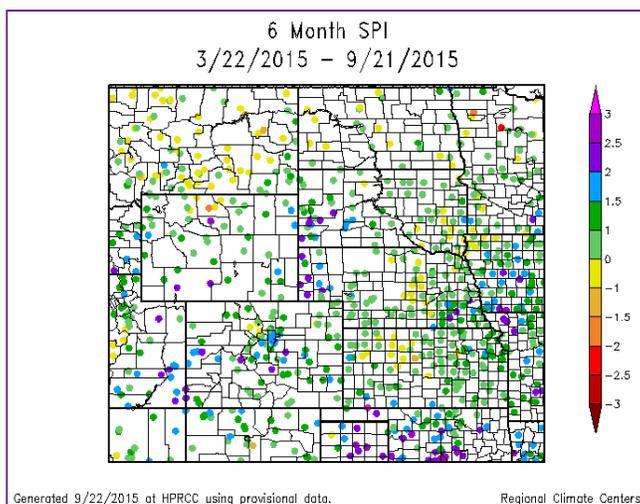
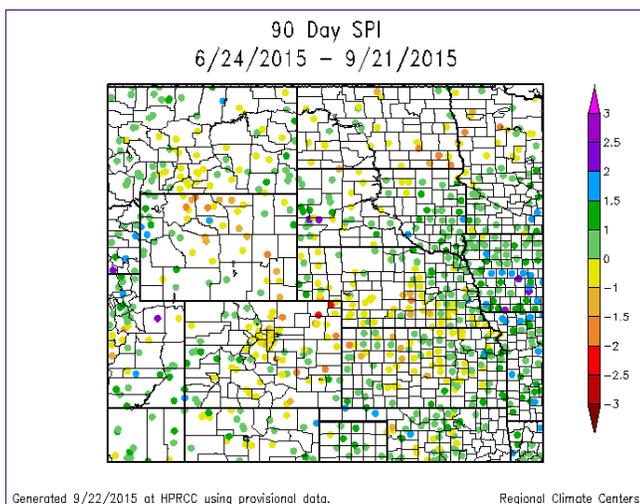
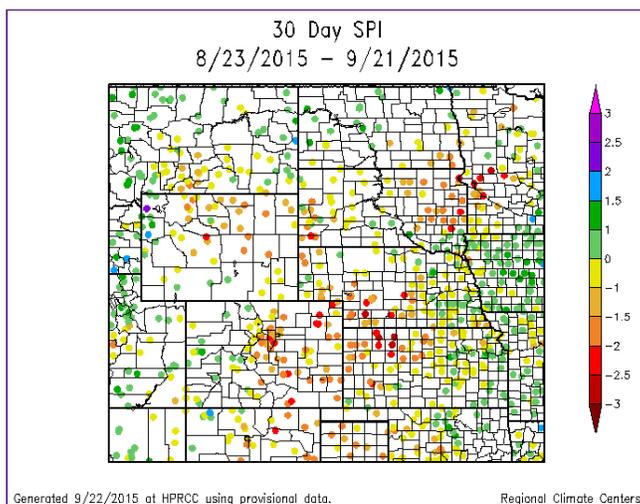
northern San Juans above the 50th percentile.

- 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.

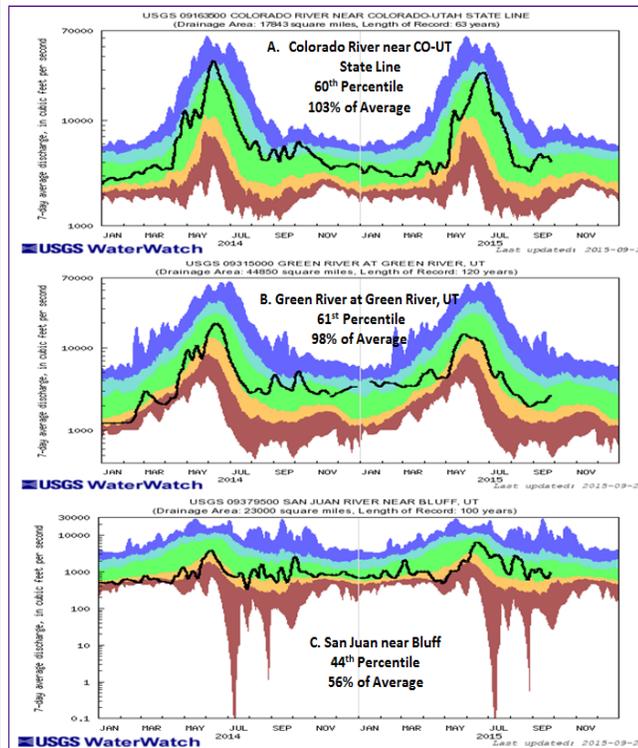
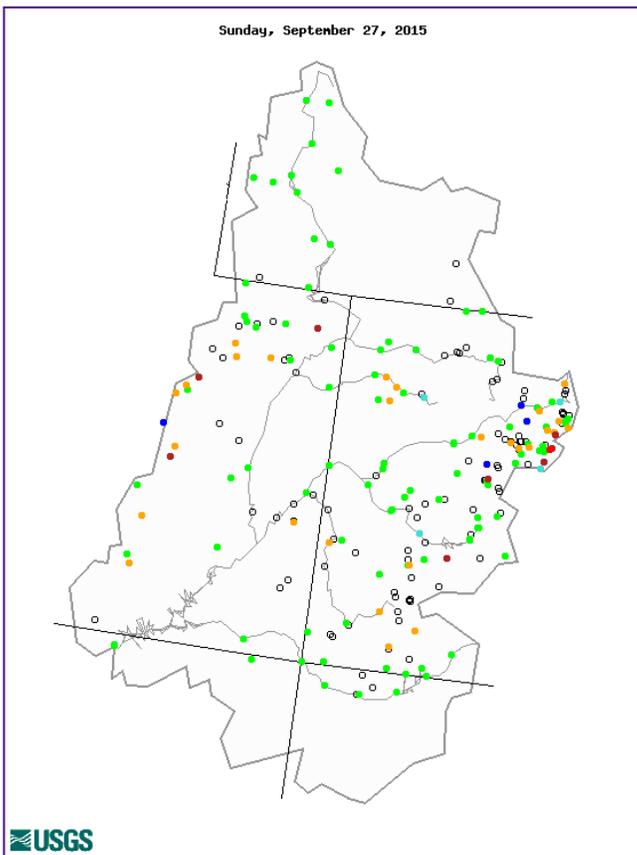
Short Term (30-day):

- 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



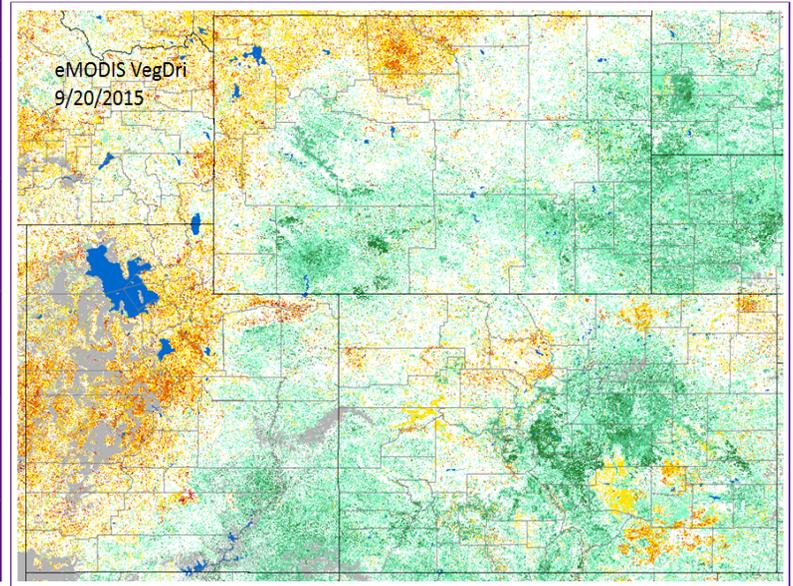
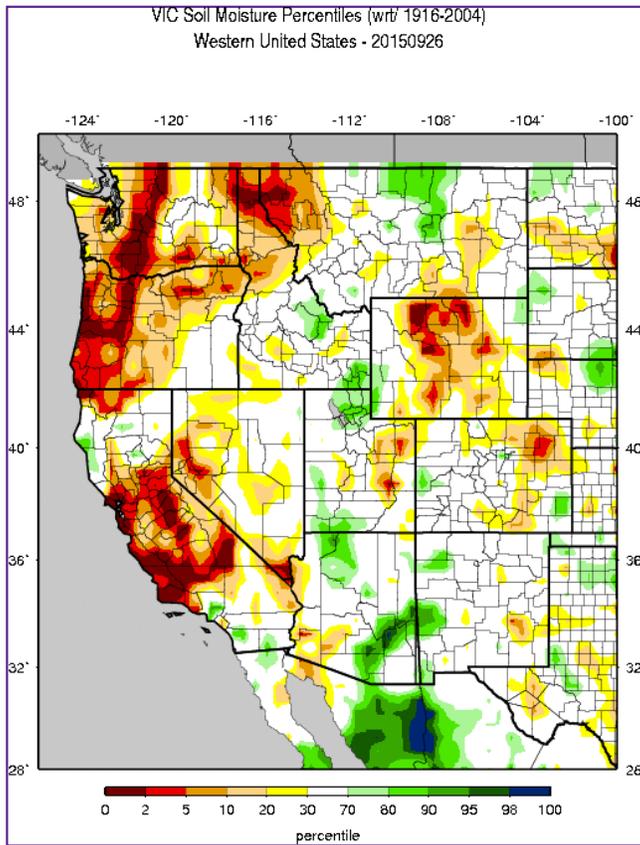
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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:

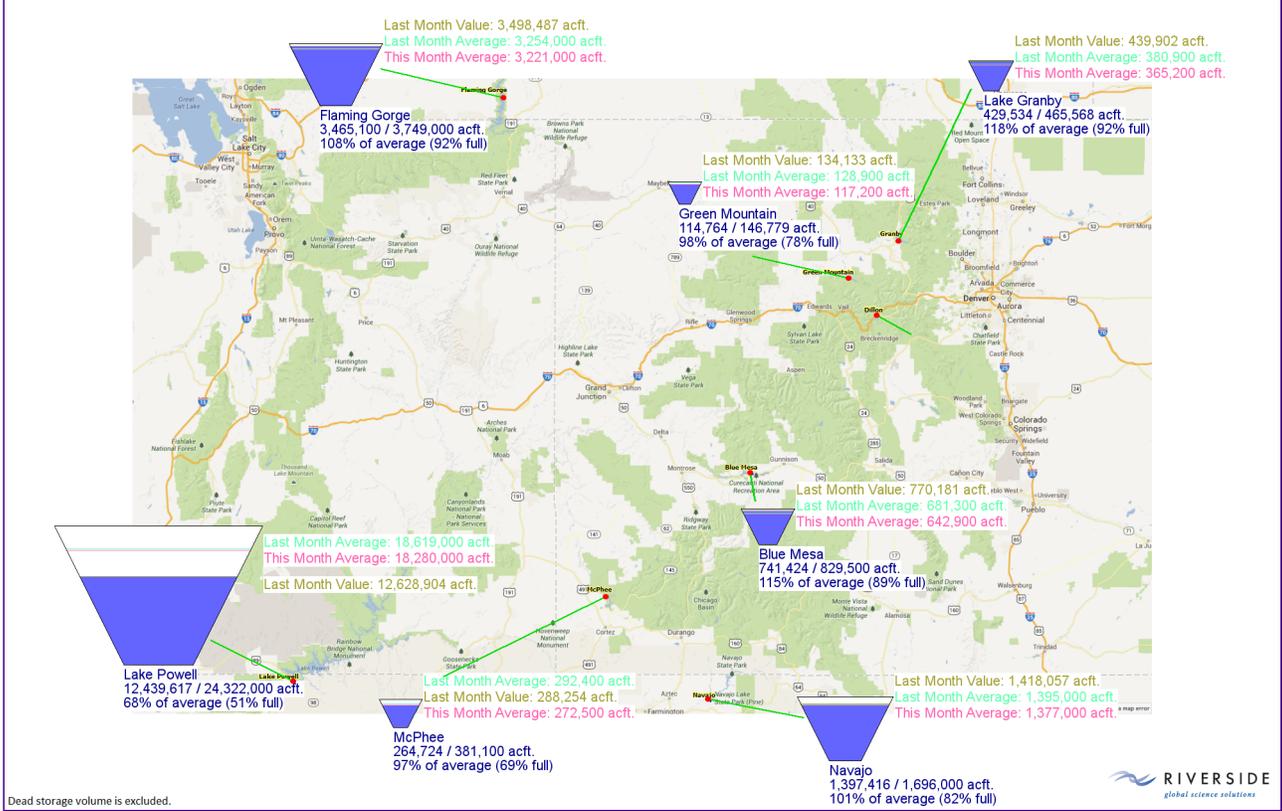
- Flows across the UCRB appear to be falling off a little bit with respect to average. Only 6% of flows in the basin are above normal, and 27% of flows in the basin are below normal.
- One gage along the Blue River near the headwaters of the UCRB is reporting record low flows for this time of year.
- Streamflow along the Colorado River at the CO-UT state line is at 103% of average and in the 60th percentile.
- The Green River near Green River, UT has seen a slight decrease in flows. It is at the 61st percentile, 98% of average..
- The San Juan River near Bluff is still at 56% of average, now in the 44th percentile.

SURFACE WATER



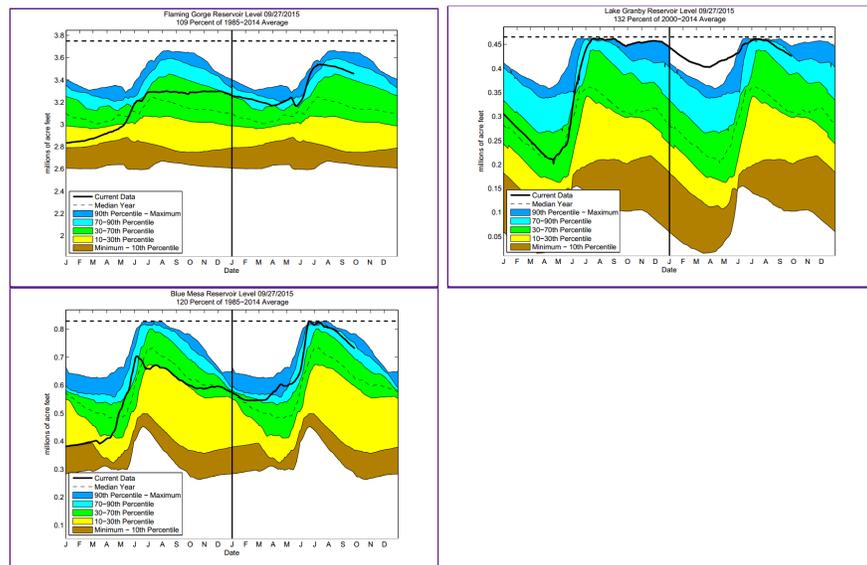
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

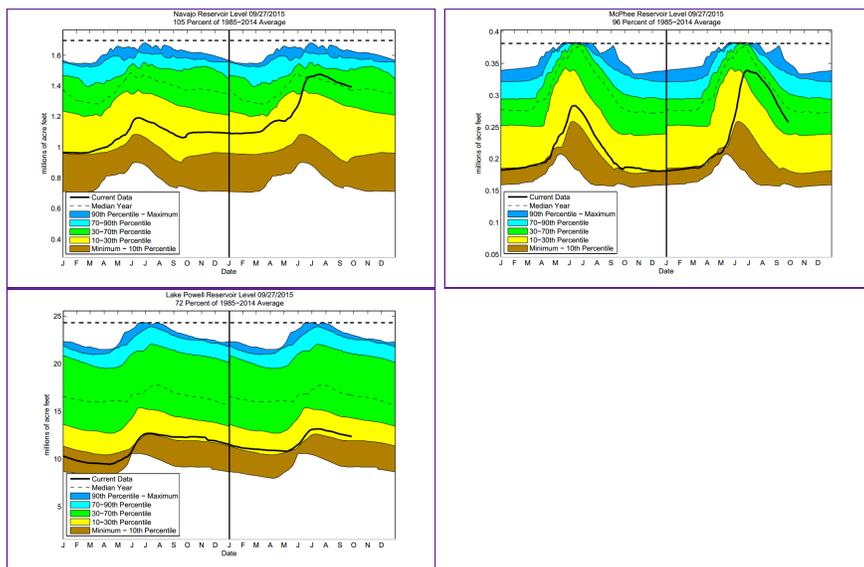
2015/09/21



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 and eastern Colorado appear to be continuing to display an overarching drying trend with few exceptions.
- The Upper Green River Basin is still showing very dry soils across Sweetwater County despite the very wet SPIs at the 6-month timescale. In the eastern portion of Sweetwater County soil moisture is shown in the 0-10th percentile. Some wet soils still exist in western Sublette and Lincoln Counties in southwest Utah above the 70th percentile.
- The Yampa and White River Basins are showing soils mostly in the normal range, but some dry soils in eastern Routt and western Rio Blanco and Moffat Counties in the 20-30th percentile range.
- The VIC shows very dry soils in the Duchesne Basin and farther down river along the Green. In Duchesne and Uintah Counties soils are mostly in the 2-20th percentile range. In southeast Emery County soils are depicted in the 0-10th percentile range.
- Western Colorado still has an area of wet soils, up to the 90th percentile in Mesa County. The rest of the region remains normal.
- The dryness continues for NE CO. The worst looks to be in Washington County, with soil moisture levels in the 2nd-20th percentile range. The rest of the area is seeing soil moistures generally in the 20th down to the 5th percentile.
- Southeast Colorado actually shows a wet spot over Prowers County following this week's rain event. Here root zone soil moisture ranges from the 70th to the 90th percentile. Dryness continues for western Las Animas, eastern Pueblo, Crowley, and Otero Counties. Soils here are by and large in the 5-30th percentile range.

VegDri (9/20):

- VegDri's depiction of the UCRB is currently least favorable in the Wasatch and Uintah Mountain Ranges and most favorable at low elevations. Unfortunately if the VegDri did update this week it is

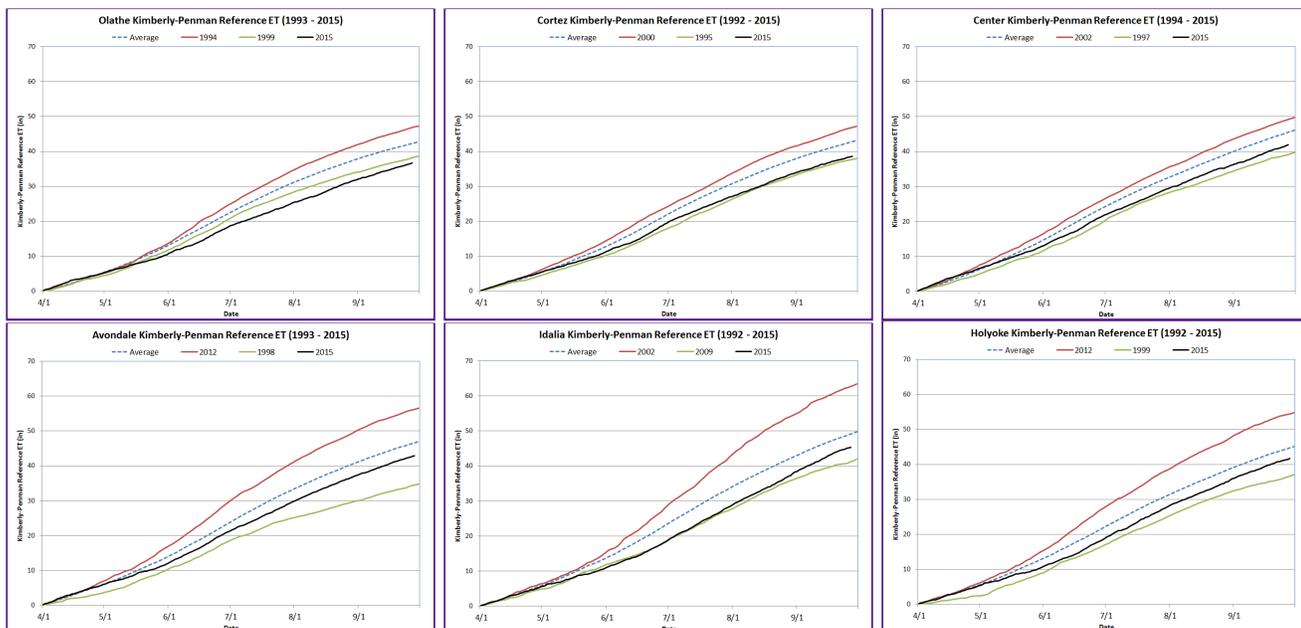
not yet online.

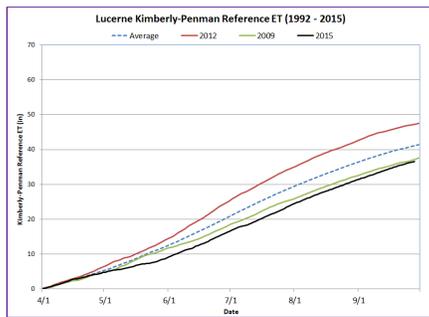
- Far northeastern Utah is showing vegetation in the pre to moderate drought. East-central and southeastern Utah is still seeing moist conditions.
- Western Colorado has rebounded somewhat in the VegDri, however large portions of Moffat, Rio Blanco, Routt, Grand, Eagle, and Summit counties have pre to moderate drought conditions.
- Southwestern Colorado is still showing many areas with moist vegetation conditions. Parts of the eastern San Juan Mountains are starting to show pre-drought conditions.
- Eastern Colorado continues to show a mix of moist conditions in the Denver metro area and the east-central counties, while northeast CO contains pre to moderate drought conditions, with the worst hit being Weld and Sedgwick counties.
- Southwest CO contains areas that are in pre to moderate drought, especially in areas of Pueblo, Crowley, Otero, Bent, and Las Animas counties.

Reservoirs (9/27):

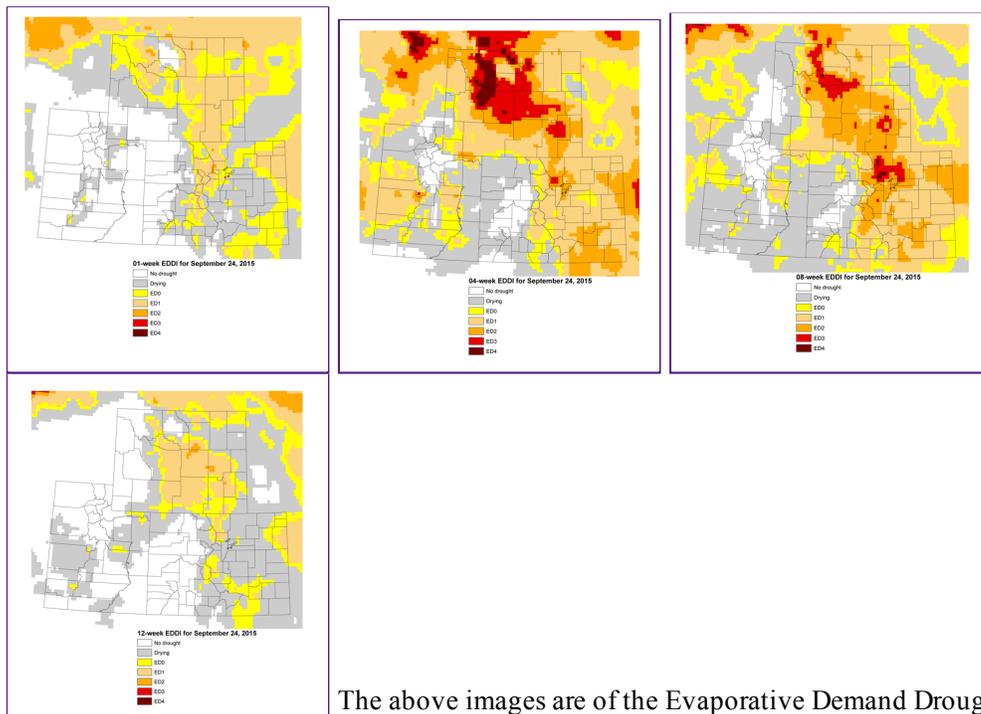
- Reservoir Levels are depicted with respect to the timeseries below rather than the teacups. The teacup figure is updated through September 20th.
- Flaming Gorge is at 109% of average.
- Lake Granby is at 132% of average.
- Blue Mesa is at 120% of average.
- Navajo is at 105% of average.
- McPhee is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

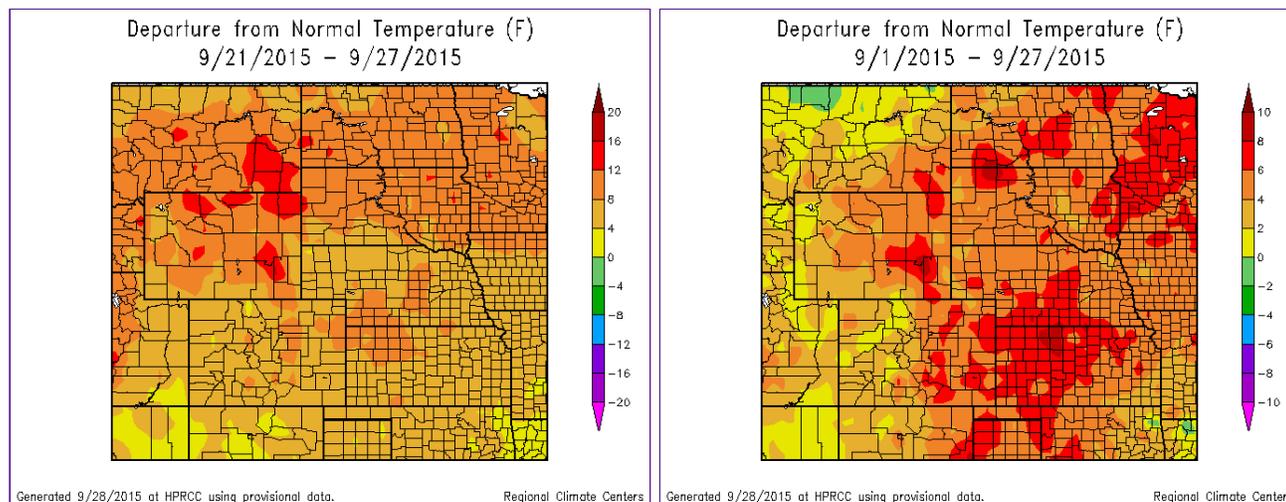
Reference Evapotranspiration:

- Olathe: 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. ET has slightly increased closer to 1999 over the last couple weeks.
- 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.
- 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 increased significantly since the beginning of September. ET rates were down a bit over the past week.
- Holyoke: ET started around normal and has dropped below normal since the second week of May. It has followed a fairly normal track

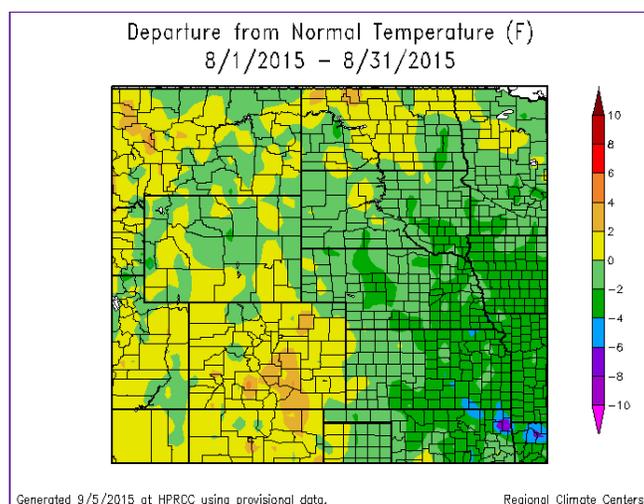
since early July.

- Lucerne: ET has been tracking lower than the previous record low year in 2009 since the second week of May. It is now in a very close battle with 2009 for the lowest ET year on record since 1992.

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:

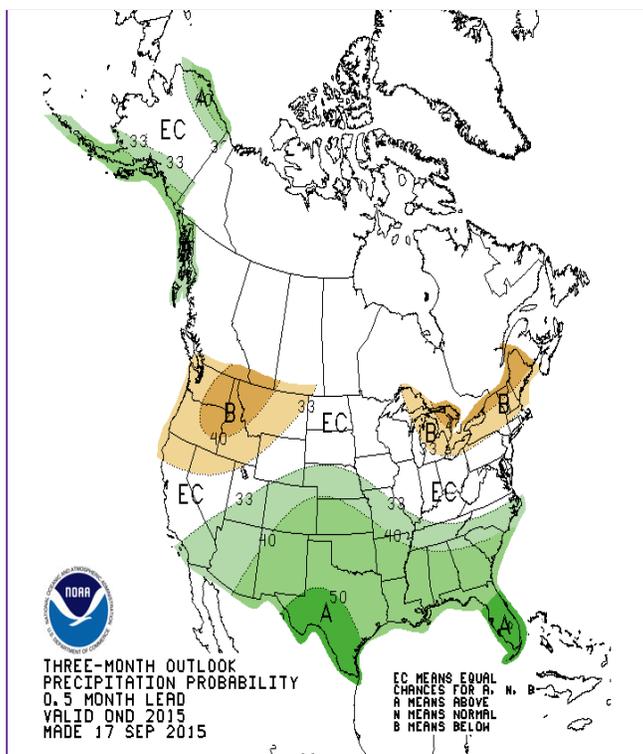
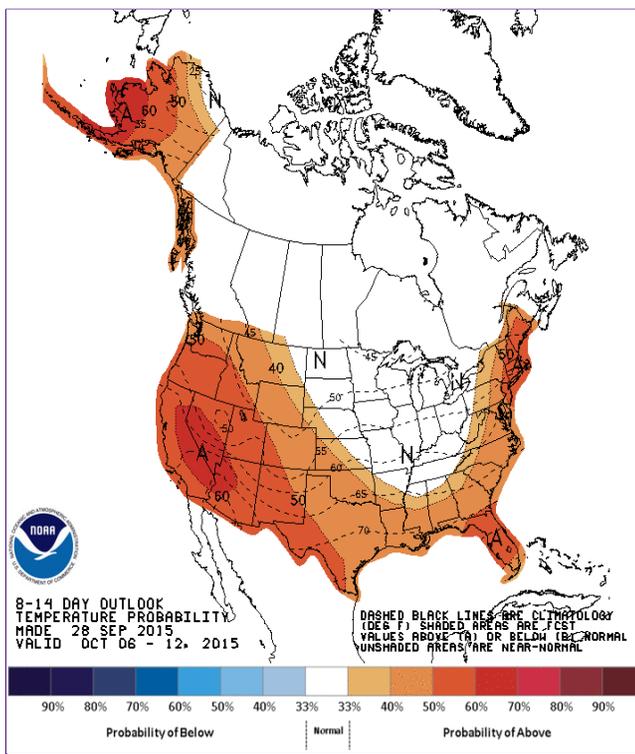
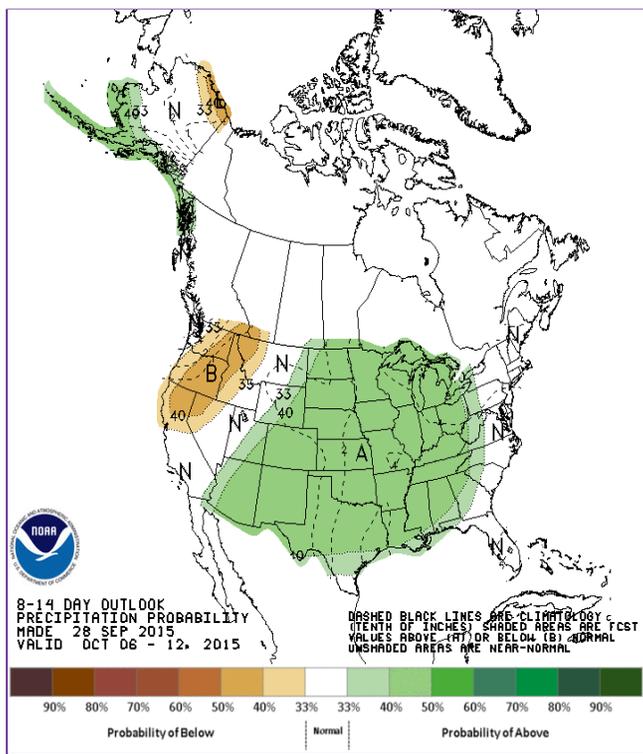
- It was a much warmer than average week across the entirety of the High Plains Region, let alone just the UCRB and eastern Colorado. Temperatures were generally 4-12 degrees above average for the week.
- The Upper Green River Basin fit the pattern of 4-12 degrees above normal. The largest departures from normal were in northern Sweetwater County and in Sublette County. These areas were 8-12 degrees above normal.

- The rest of the UCRB fell in the 4-8 degrees above normal range for the week for the most part. Southern San Juan County in Utah was only 0-4 degrees above normal. Parts of Eagle and Lake Counties were 8-12 degrees above normal.
- The San Luis Valley was mostly 4-8 degrees above normal as well with areas in Rio Grande and Saguache Counties 8-12 degrees above normal.
- East of the divide in the Upper Arkansas and Upper South Platte Basins temperatures were mostly in the 4-8 degrees above normal range, but were even hotter in some spots. Just east of the Front Range in El Paso, Elbert, Arapahoe, Adams, and Weld Counties temperature anomalies were in the +8 to +12 range. Likewise, temperatures were 8-12 degrees above normal in eastern Kit Carson, central Washington, and Yuma Counties.

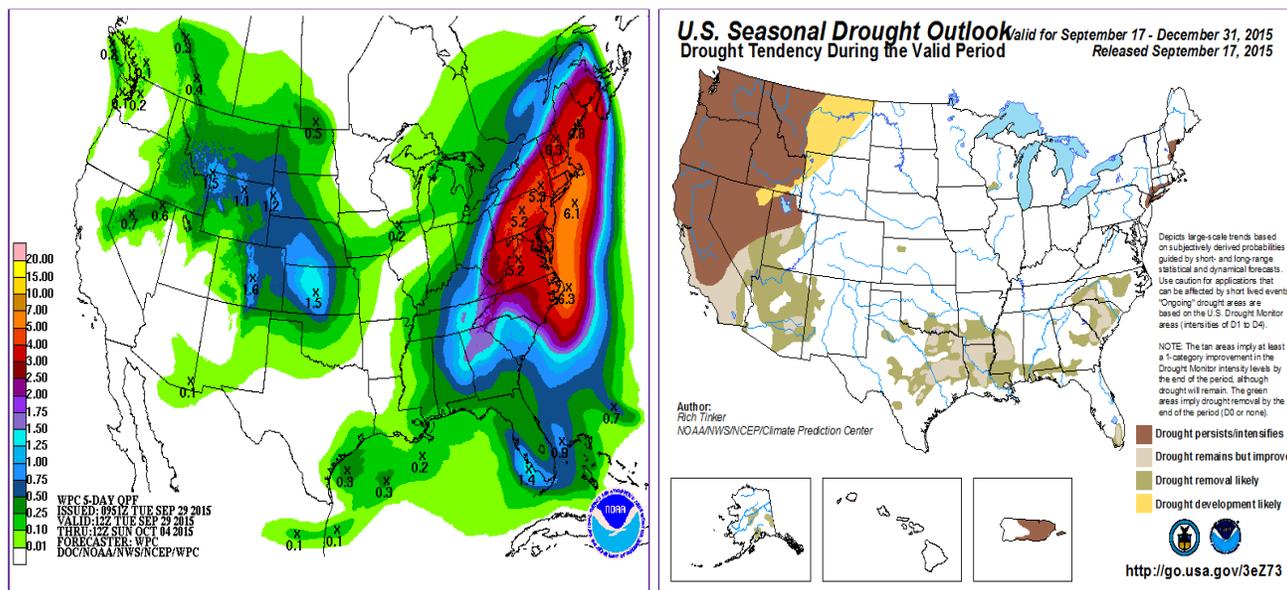
August Temperatures:

- 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.



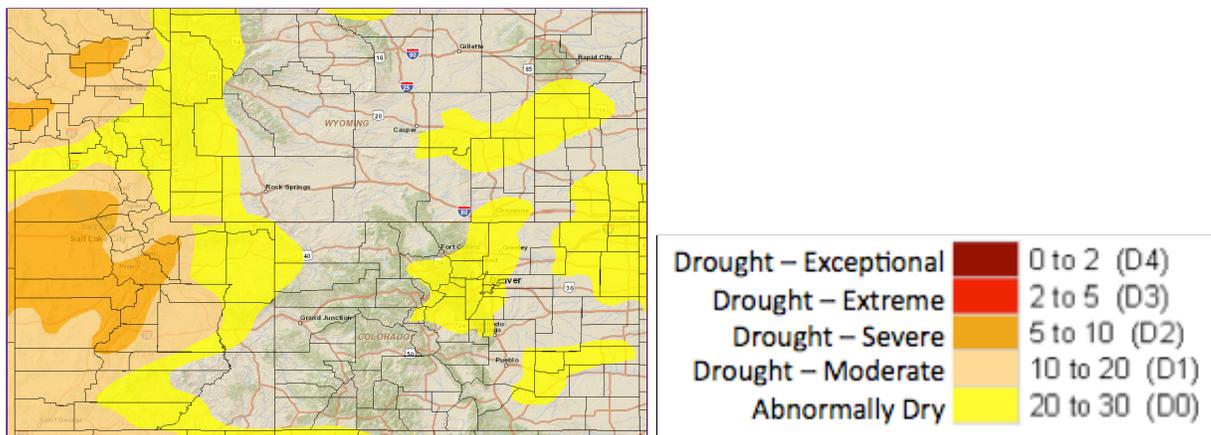
Short Term: (9/29)

- The UCRB should finally see some cooler temperatures this week along with some moisture. The northeast quadrant of Colorado is already seeing a cooler day today after the passage of a shortwave last night, but highs will rebound for Wednesday and Thursday.
- Between now and Thursday morning there is some decent moisture expected for the eastern Rockies and Sangre de Cristos. Higher terrain thunderstorm totals could be upwards of an inch in the southern portion of Colorado. Some of this will sweep out onto the southeast corner of the state where totals are expected to average between 0.25 and 0.50" over the next two days.
- Big changes come sweeping across the UCRB and eastern Colorado Thursday evening into Friday. Low pressure will drop in from the northwest bringing precipitation and cooler air behind it. This low is forecast to take shape over the northern Great Basin Thursday night and be centered over southeast Colorado by Friday night. This storm will bring high temperatures down by 10-20 degrees Friday and Saturday.
- Moisture totals aren't anticipated to be anomalously heavy anywhere as of now, but light rain should fall across much of the basin. The Upper Green River Basin, and high elevations in western Colorado will likely receive between a tenth and a quarter of an inch. The eastern Rockies and northeast Colorado will probably receive over a quarter of an inch by Saturday night with totals tapering south of the Palmer Divide.
- As this system exits the region early Sunday, models currently favor the development of a secondary low a little bit farther south in the Great Basin rather than a warming and drying trend. Currently the areas forecast to be the largest beneficiaries of this storm are the San Juan Mountains and eastern Colorado, but precipitation total certainty for the Sunday through next Tuesday time is low right now.

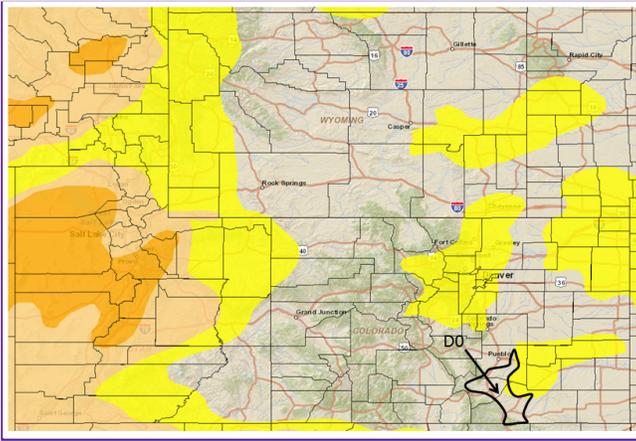
Longer Term:

- The 8-14 day precipitation outlook shows increased chances for above normal precipitation most of the UCRB, and all of Colorado east of the divide. The northwest end of the Upper Green River Basin is forecast equal chances of above and below normal precipitation.
- 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 lowest in the northeast quadrant of Colorado and highest in the southwest corner of the UCRB.
- 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 September 29, 2015:

Precipitation, SPI, and VegDri products commonly used in the Colorado Climate Center's drought monitor process did not update this week, so we are a little bit hindered this week and thus will rely heavily on AHAPS, and tend on the conservative side with recommendations this week.

The Upper Colorado River Basin has been hot and dry with respect to average for the month of September. This was especially the case over the past week. Streamflows and reservoir levels appear to be coming down more quickly than is climatologically-typical, especially near the headwaters of the Colorado River. The Evaporative Demand Drought Index is still showing the UCRB in much better shape than east of the divide on all timescales. Drought still seems to be marked in the correct places across the UCRB for the time being. If the next couple weeks are also dry, and water supplies continue to lose out at rates above climatological norms expansion of D0 is likely if not imminent.

It has been a very hot September for eastern Colorado. In some areas this September is slated to break records. Some of the bigger names on pace for record heat in September according to the National Weather Service in Boulder are Fort Collins, Greeley, Estes Park, Limon, and Wheat Ridge, and that's just to name a few. In many areas it has been dry as well, but some tropical storm remnants that swept up into south and east Colorado saved part of the area from recommended degradation. Other than a few areas that received strong thunderstorms, precipitation as a percentage of normal is eerily low east of the divide for the month of September. Soils have dried out substantially, and some fall planting as been delayed.

Recommendations:

UCRB: Status quo.

Eastern CO: It is recommended that D0 be expanded in southern Pueblo County through the majority of Huerfano County, and on the other side through south and west Las Animas County up into the south end of

Huerfano County. This is an area that received by and large less than a quarter of an inch over the past week despite a promising forecast, that was 4-8 degrees above average temperature last week, that the Evaporative Demand Drought Index shows potential evapotranspiration above the 80th percentile for the past eight weeks, and that the VIC Root Zone Soil Moisture Model has indicated drying conditions for.

On the watch list, all short-term indicators seem to point to further degradations in the northeast corner of the state, at least in pockets that have missed out on thunderstorms. The forecast for the next 7-days is promising, and the week after that reveals increased chances of above average precipitation as well. We'll hold off on these degradations for now. Any degradation also still must make sense in the context of low growing season ET and healthy reservoir levels from the late spring surge in precipitation.