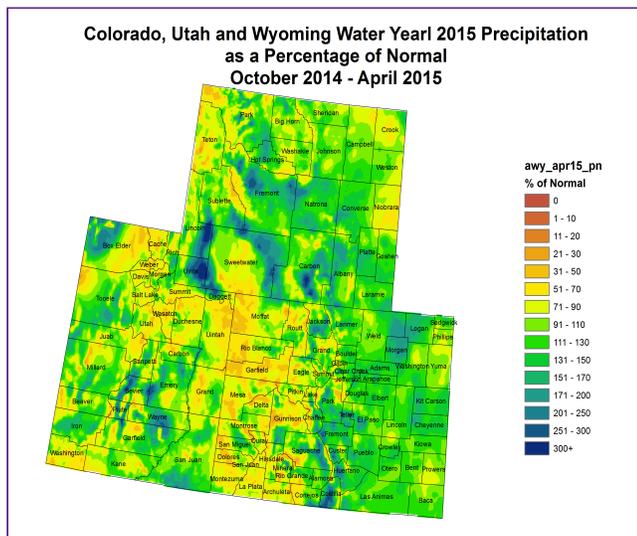
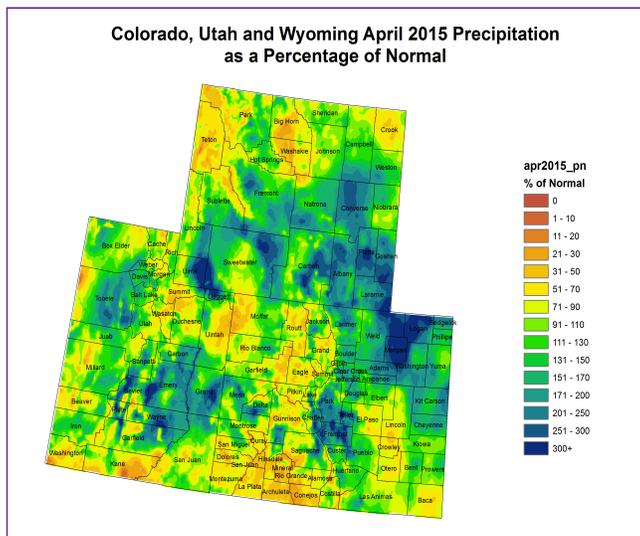
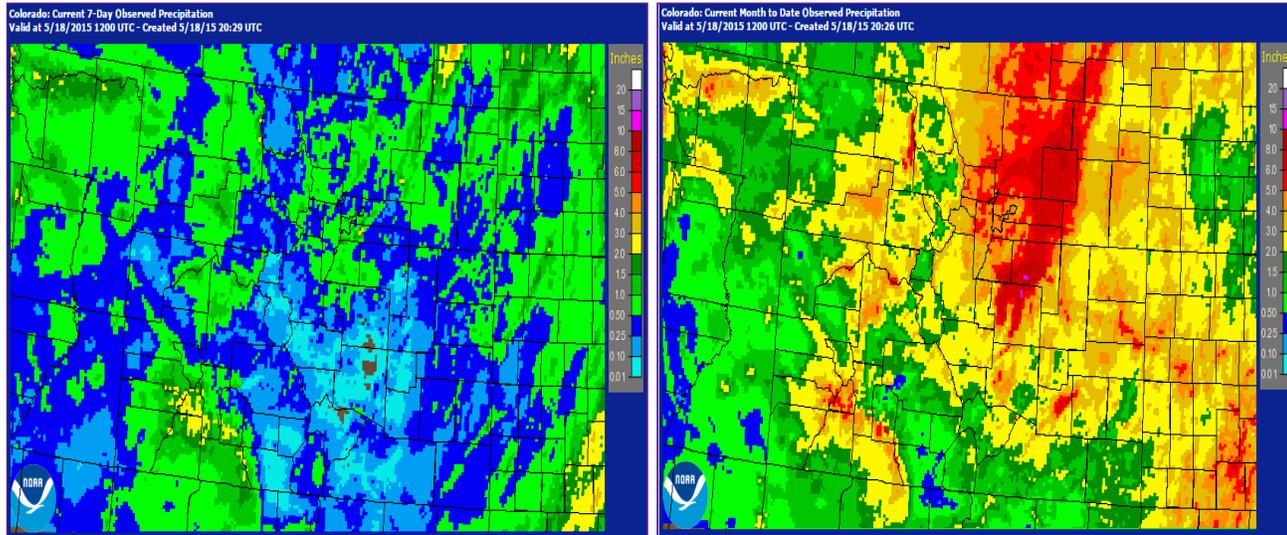


# PRECIPITATION



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:

- Monday the 18th was a heavy precipitation day, and AHAPS did not successfully update for the basin today, so there may be some discontinuities between what is shown in the graphics above and what is reported.
- Northeast Utah received 0.50-1.50" of precipitation last week with some areas along the Uintahs recording a little bit higher totals. There was about a quarter of an inch in addition to that on Monday.
- Southeast Utah received 0.25-1.00" of precipitation over the past week through Monday. Light and spotty accumulations occurred on

Monday through Monday night.

- The San Juans had a productive precipitation week picking up over 2.00" over the high elevations, and picking up over 0.50" across the majority of southwest Colorado. There were additional accumulations over 0.50" for much of the region on Monday.
- Northwest Colorado received 0.50-1.50" of precipitation in most places through midday Monday with some drier regions reporting 0.10-0.50". Accumulations Monday through to Tuesday morning were generally on the order of 0.25-0.50".
- The San Luis Valley and Sangre de Christos were the driest area of the state for the week through midday Monday, but boasted accumulations of 0.50-1.50" Monday evening and night.
- The high elevations east of the divide and northern Front Range have received 1.00-3.00" of moisture over the past week.
- Most of southeast Colorado received accumulations of 0.10-0.50" for the week through midday Monday, but had a very generous shot of moisture last night and picked up an additional 0.75-2.50" of moisture.
- Precipitation totals across northeast Colorado were between 0.50" and 2.00" for the past week.

### **April Precipitation:**

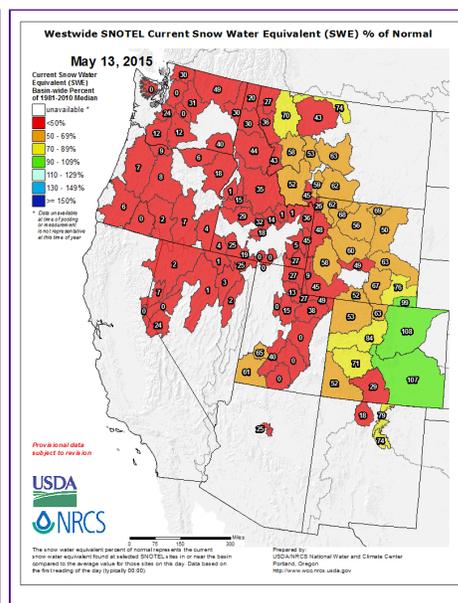
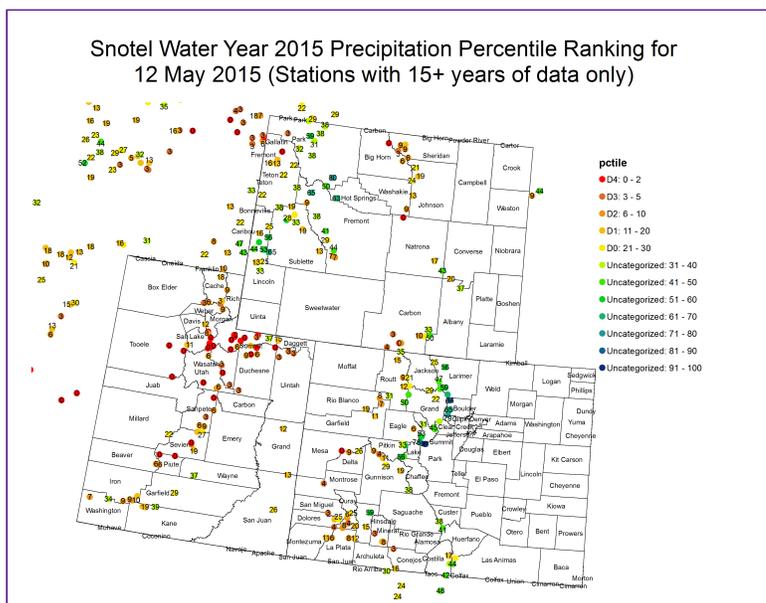
- April was a better month in terms of percent of normal than March, however there were still dry areas in the UCRB.
- The Upper Green River Basin in Wyoming most received above normal April Precipitation, with some of the higher elevations in Sublette County seeing some below normal precipitation. Uinta County in Wyoming saw an area of 300+ percent of normal precipitation.
- Eastern Utah was a mix, with much of the Uintah Range seeing below normal, with the exception of Daggett and eastern Uintah County seeing above normal precipitation. The Wasatch Range saw near normal precipitation, with areas of below normal. Southeastern UT saw near or above normal precipitation, with Grand, Carbon, Emery, Wayne and Garfield counties seeing areas of 200+ percent of normal.
- Western Colorado also saw a mix. Much of the western counties, along the CO-UT boarder from Moffat south to Montrose, were near or above normal for April. Mesa and Delta Counties saw areas of 200+ percent of normal. Much of the rest of western CO was less than 70% of normal.
- The San Juan Mountains saw less than 70% of normal precipitation for April, with a wide area less than 50% of April normal.
- The Rio Grande Basin was also below normal, seeing less than 50% of normal. The exception being eastern Saguache County, seeing better than 200% or normal.
- East of the Divide, much of eastern Colorado saw an above normal Month, with Weld, Logan and Morgan Counties receiving more than 300% of normal April precipitation. Park, Fremont and Teller Counties saw more than 200% of April normal.

- El Paso, Lincoln, Crowley, Otero and Baca Counties were drier, seeing between 50-90% of normal April precipitation.

**Water Year 2015 Precipitation (Oct-April):**

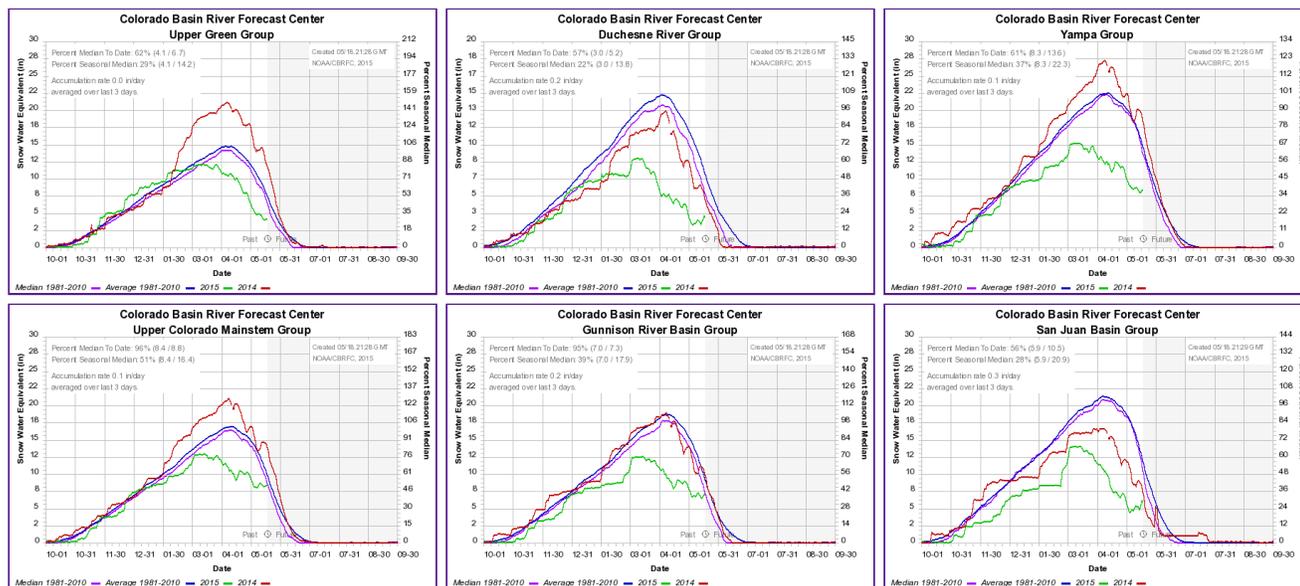
- The Water Year percent of normal continues to be below normal for much of the UCRB following a warm, dry winter.
- The Upper Green river basin has seen above normal moisture for the water year through with the exception of south central Sweetwater County which is 30-90% of normal precipitation.
- Much of northeastern Utah has seen below normal precipitation for the water year through April. A few areas in the northern Wasatch Range and in western Uintah County, are slightly above normal.
- Southeastern Utah has seen mostly near normal for the water year through April.
- Much of Western Colorado has seen below normal precipitation, with much of the area in the 50%-70% of normal range, and some spots through the basin seeing less than 50% of normal. Portions of Moffat, Routt and Rio Blanco counties are near or slightly above normal.
- The eastern side of the Rio Grande Basin has seen above normal precipitation, while the western portion is slightly drier than normal.
- Eastern Colorado is now above normal precipitation for the Water Year through April. There are a few small drier areas, with less than 90% of normal in Prowers, Yuma and Phillips counties.

**SNOTEL AND SNOWPACK**



The top left image shows the Natural Resources Conservation Service's SNOTEL water-year-to-date precipitation percentile rankings. The top right image shows sub-basin

averaged snow water equivalent accumulations as a percent of average. The images below show accumulated snow water equivalent in inches (green) compared to average (blue) and last year (red) for several different sub-basins across the UCRB (and were created by the Colorado Basin River Forecast Center).



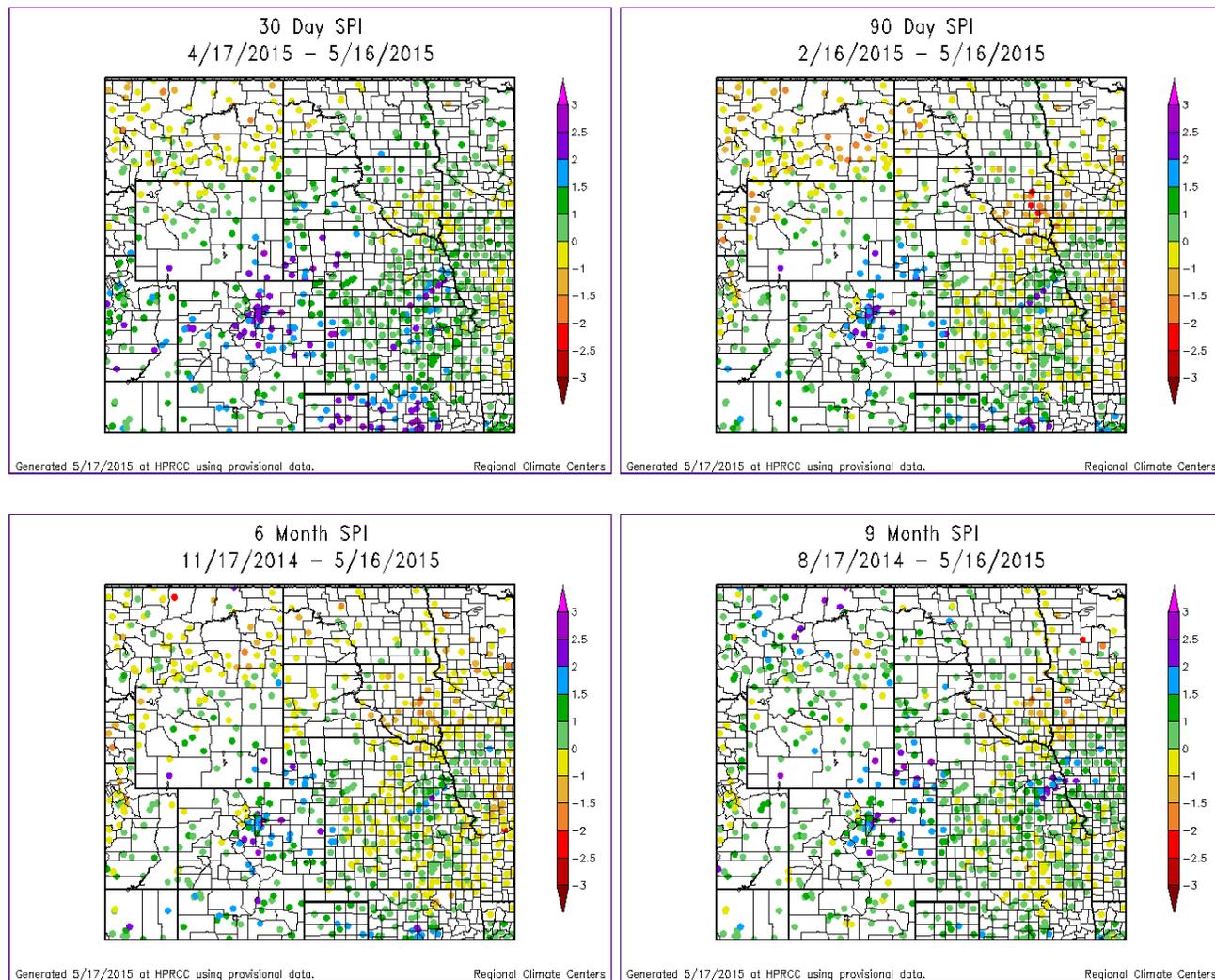
**SNOTEL Precipitation Percentiles:**

- SNOTEL percentiles were not updated this week.
- SNOTEL year to date percentiles are still very low if not record low across much of the UCRB, and are unlikely to rebound with the wet season mostly over for high elevations. The numbers did show slight improvement with the moist conditions over the past few weeks.
- In the Upper Green the percentiles range from the 7th to 65th with the highest along the Lincoln/Sublette county border.
- The Wasatch and Uintahs are still very dry with percentiles ranging from the 0 to 37th.
- The northern mountains in Colorado continue to struggle west of the continental divide where percentiles range from 7th to 50th.
- The lower elevations of the Colorado and Gunnison are still seeing percentiles below the 33rd percentile, however sites along the divide are more near normal.
- The San Juans are reporting mostly below the 15th percentile, with the exception of one station in northern Hinsdale County in the 59th percentile.
- The Sangre de Cristo mountains in SE Colorado are slightly better with percentiles ranging from 17th to 44th.
- 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.

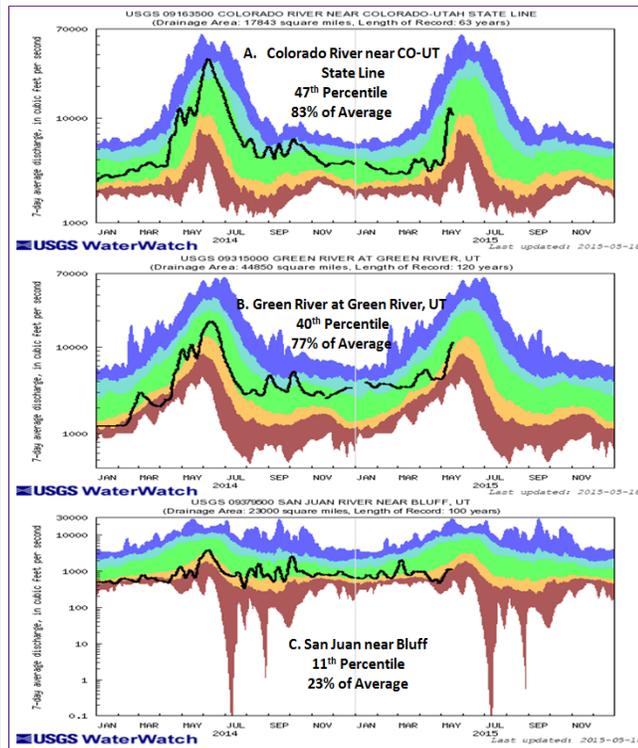
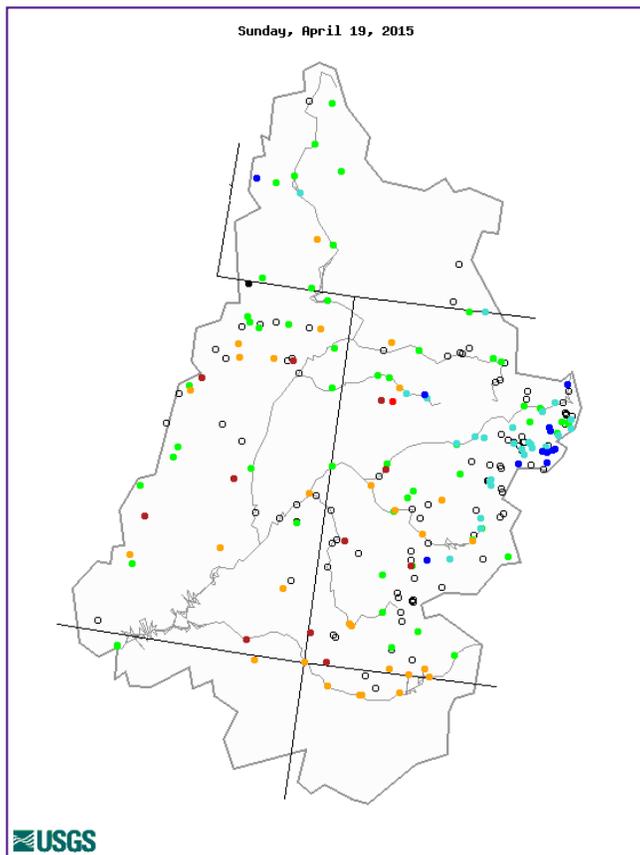
## Short Term (30-day):

- The Upper Green river basin is showing wet SPI's between 0 and +2.5.
- Northeast Utah is showing wet SPI's between 0 and +2.
- Southeast Utah is showing wet SPI's between 0 and +2.5
- Southwest Colorado is showing wet SPI's between 0 and +2.
- Northwest Colorado is showing wet SPI's between 0 and +2.5
- South central Colorado is showing wet SPI's between 0 and +3.
- North central Colorado is showing wet SPI's between 0 and +2.5.
- East of the divide, all SPI's are, you guessed it, wet, and between 0 and +2.5 on the 30-day timescale.

## Long Term (6-month):

- On the 6-month timescale SPI's are more of a mixed bag for the UCRB, but as a general rule of thumb higher elevations are a bit dry and lower elevations are a bit wet. This is consistent with a dry winter and wet spring.
- The Upper Green has SPI's ranging from -1 to +2.5.
- NE Utah shows some longer term dryness with SPI's ranging from -1.5 to +1.
- Southeast Utah has been in the normal range, and is reporting SPI's between -1 and +1.
- Western Colorado saw some improvement with the majority if SPI's between -1 and +1.5. The driest are in Rio Blanco, Gunnison, Grand and Summit counties.
- East of the divide, all SPI's are wet, even on the 6-month timescale. They range from 0 to +2.5.
- The Rio Grande basin is wet for long term SPI's, 0 to +2.

# 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		

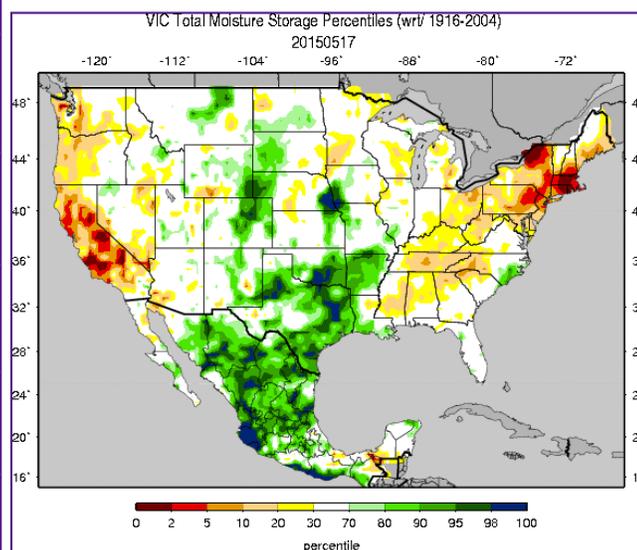
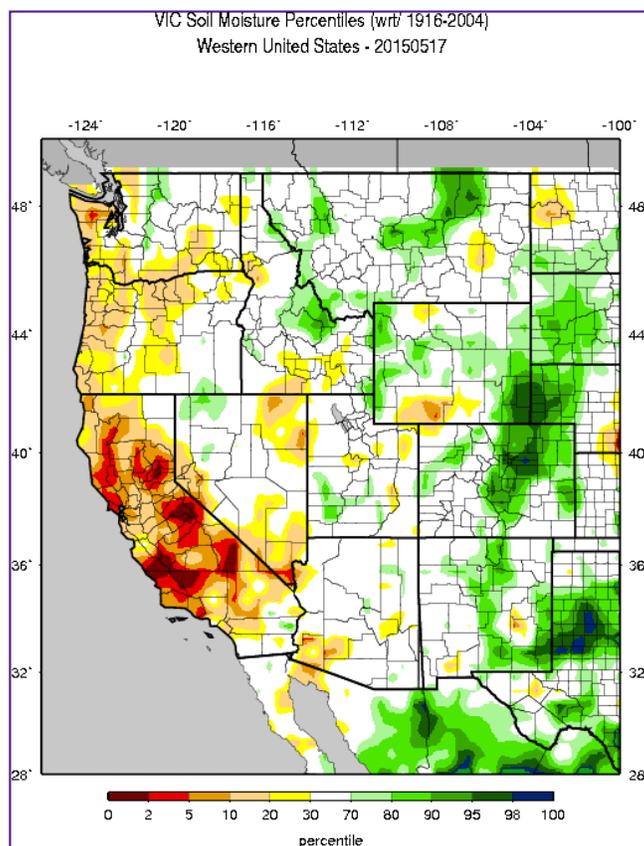
The top left image shows 7-day averaged streamflows as a percentile ranking across the

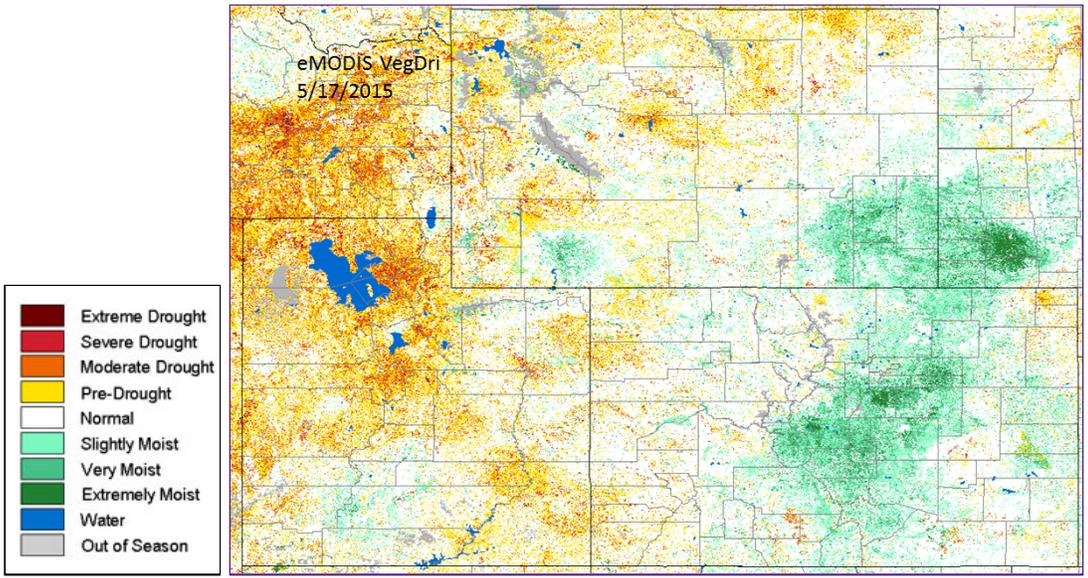
UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff, UT. All streamflow data provided by United States Geological Survey.

### Streamflow Statistics:

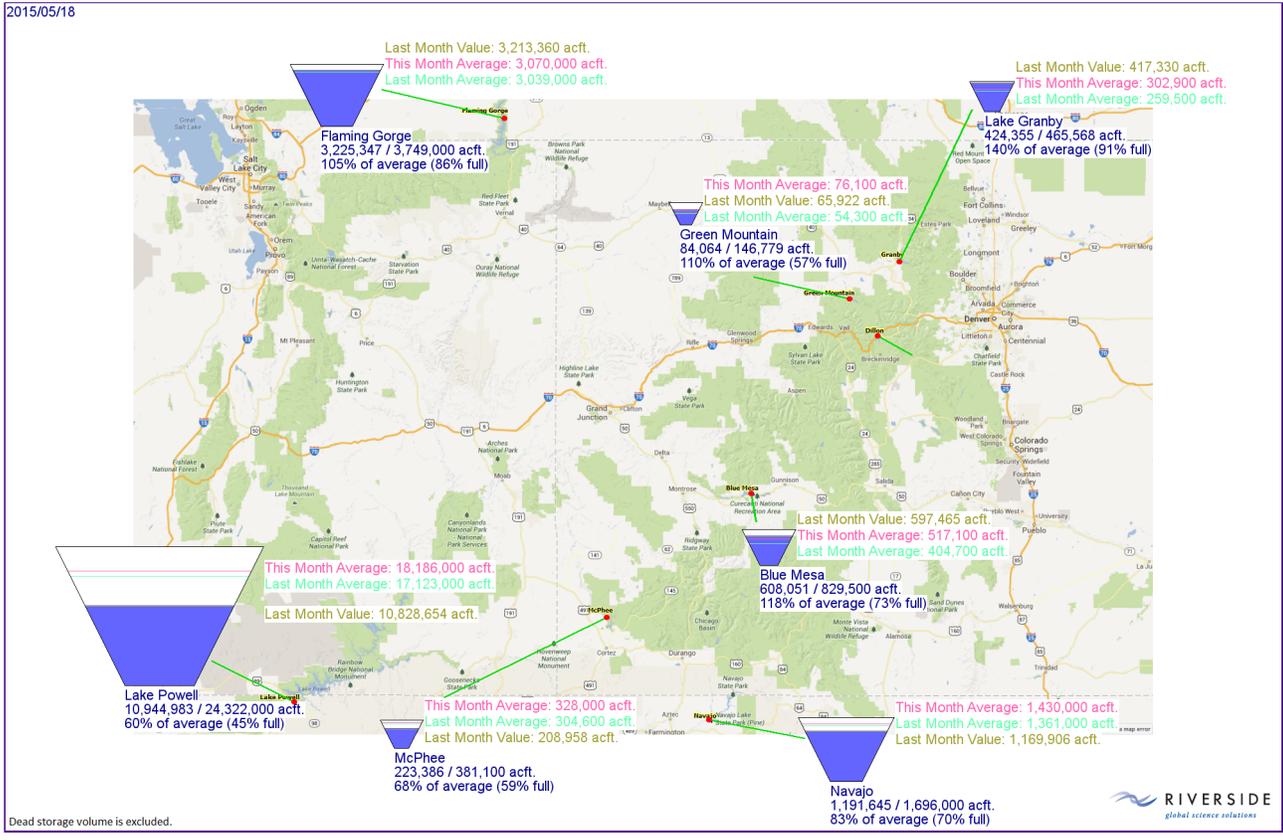
- 138 of the 140 gages in the UCRB are currently reporting.
- 72% of the gages in the UCRB are reporting in the normal to much above normal range for 7-day average streamflow.
- 28% of the gages are recording below normal for 7-day average streamflow, 4% in the much below normal.
- Streamflow on the Colorado River near the CO-UT state line has made a bit of a downturn over the past week. It is now at 83% of average, which corresponds to the 47th percentile.
- The Green River at Green River, UT is showing increases in flow from last week. Currently the green is flowing at the 40th percentile, or 77% of average.
- Flows along the San Juan are increasing, but it is still very low. Right now the San Juan near Bluff is reporting at the 11th percentile, or 23% of average.

## SURFACE WATER





The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows VIC plus SWE total soil moisture storage. The bottom 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:**

- Sweetwater County, WY has been shown as dry by the VIC for a considerable amount of time and continues to depict soils in the 5th-30th percentile range over much of the southern part of the county.

- Wet soils show up in the Upper Green River Basin, in Sublette and Lincoln counties, in the 70 to 90 percentile range. The wet soil moisture turns to normal moisture when SWE is factored in.
- Soils in northeastern UT are mostly in the average range. Some isolated areas between the 10th and 30th percentile are showing up in Duchesne and Uintah Counties.
- Southeast Utah is also showing root zone soil moisture mostly in the normal range. There is one dry spot in eastern Emery and Wayne Counties in the 10-30th percentile range.
- Western CO soils are mainly in the normal to above normal range. There is a channel of wet soils between the 70th and 90th percentile along the Upper Colorado Mainstem.
- The San Juan Mountain region is mostly in the normal range. A dry area between the 20th to 30th percentile range has popped up in Montezuma County, CO.
- The San Luis Valley is mostly in the normal range. Parts of Rio Grande and Costilla Conejos Counties are depicting soil moisture between the 70th and 90th percentiles.
- Eastern Colorado is showing mainly normal to wet soil conditions. Much of NE Colorado has soil moisture percentiles above the 70th percentile. Areas of Adams and Arapaho Counties are above the 98th percentile. Soils over SE Colorado are mainly between the 30th and 70th percentile and are wetter near the foothills and near the Kansas border.

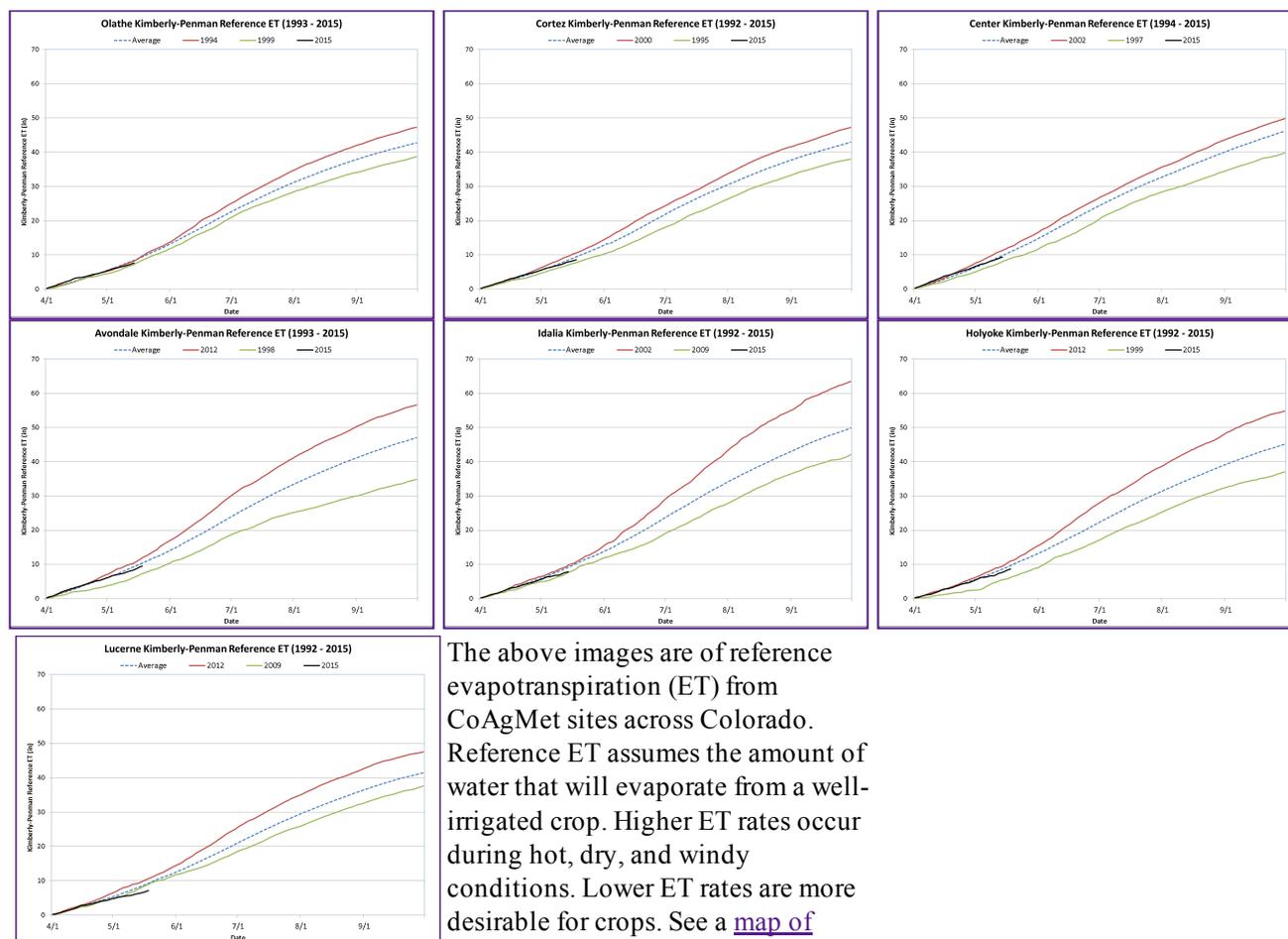
### **VegDri:**

- Contrary to the VIC, the VegDri shows moist conditions over central Sweetwater County. Drier conditions are shown in Uinta, Sublette, Lincoln and northern Sweetwater Counties where the VegDri depicts primarily pre-drought to moderate drought conditions.
- The Wasatch are depicted in pre- to severe drought, the Uintah Mountains are doing better now, and have rebounded mostly into the normal range.
- VegDRI is shown in the pre-drought range in southeast Utah and in southwest Colorado.
- In northwest Colorado, vegetative health is primarily depicted in the normal range, but starting to show some pre drought conditions, especially in Moffat and Rio Blanco Counties.
- The high mountain valleys in central Colorado are depicted as especially moist. This includes Chaffee, Park, Teller, Fremont, and Custer Counties. This area of very moist vegetation extends onto the Front Range mainly along the Palmer Divide into El Paso, Elbert, Douglas, Jefferson, Adams, and Arapahoe Counties.
- East of the Divide, northeastern Colorado is primarily showing healthy vegetation, with the exception of Sedgwick and Phillips counties, where conditions are shown as pre to moderate drought.
- In southeast Colorado conditions are normal to pre-drought in most areas, however southern Lincoln county continues to show moderate to severe drought conditions.

## Reservoirs:

- Flaming Gorge is 105% of the May average.
- Green Mtn is 110% of the May average.
- Lake Granby is 140% of the May average.
- Blue Mesa is 118% of the May average.
- Navajo is 83% of the May average.
- McPhee is 68% of the May average.
- Lake Powell is 60% of the April average and is 45% full.

## EVAPOTRANSPIRATION

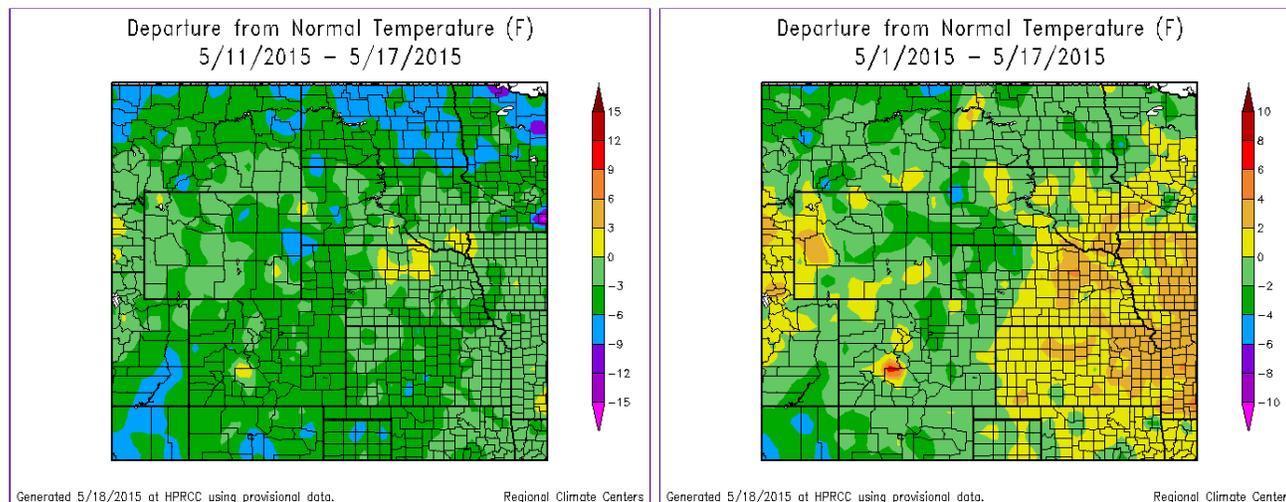


## Reference Evapotranspiration:

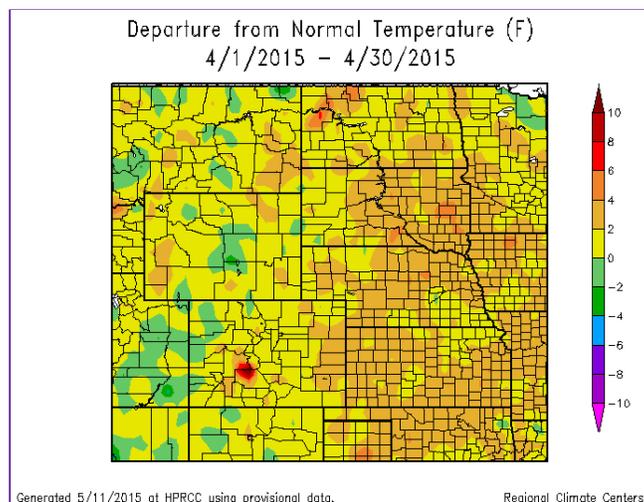
- Olathe: ET started above normal and has dropped below normal.
- Cortez: ET began around normal but has started to trend below the normal.
- Center: ET started at a record high and has slowed considerably, to near average.
- Avondale: ET began just above average, but has slowed to below normal.
- Idalia: ET started near average, and has fallen below average and approaching the record low year of 2009.

- Holyoke: ET started around normal and has dropped below normal.
- Lucerne: ET started normal and is now tracking at the lowest year on record (below 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 majority of the UCRB had below normal temperature over the past week. Conditions were closest to normal in the Upper Green Basin where temperatures were only 0-3 degrees below normal for the most part. Western Sweetwater County was 3-6 degrees below normal.
- Eastern Utah was primarily 3-6 degrees below average over the last week. Portions of Duchesne and Uintah Counties were only 0-3 degrees below normal. There is a tongue of stronger cold anomalies that extends from the Glen Canyon area up to where the Green and

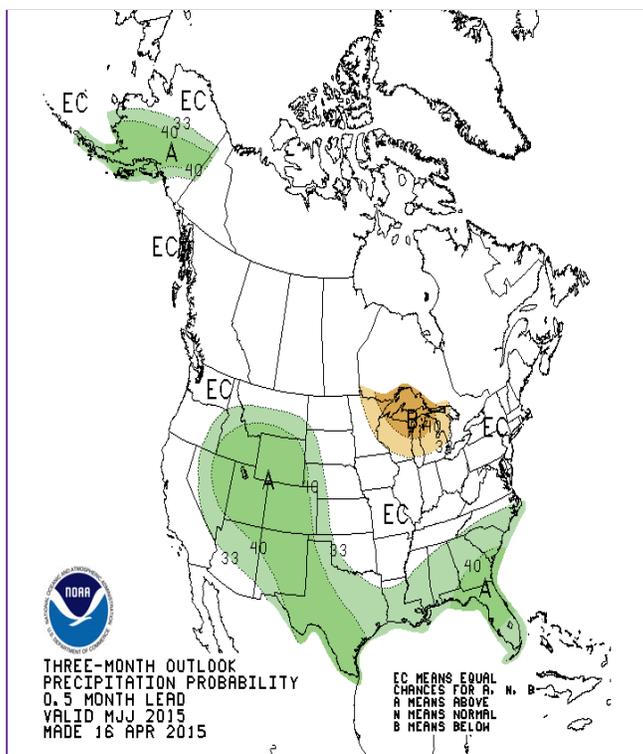
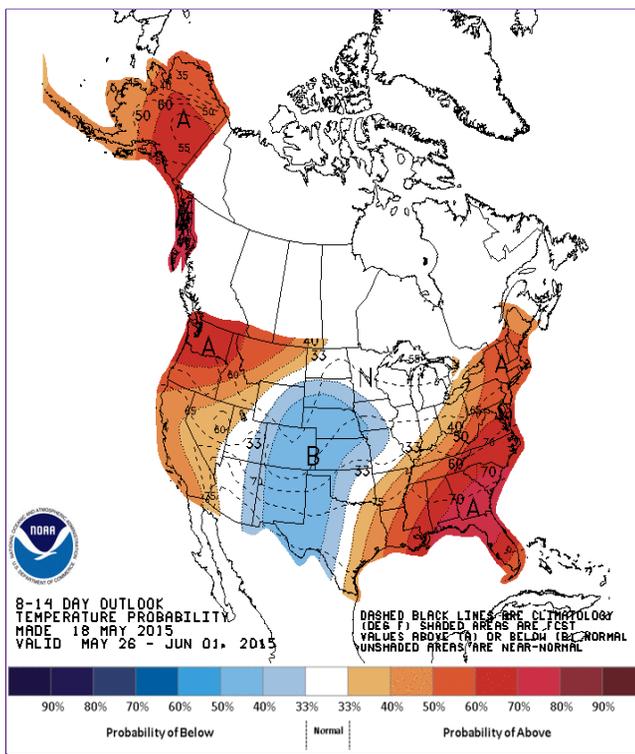
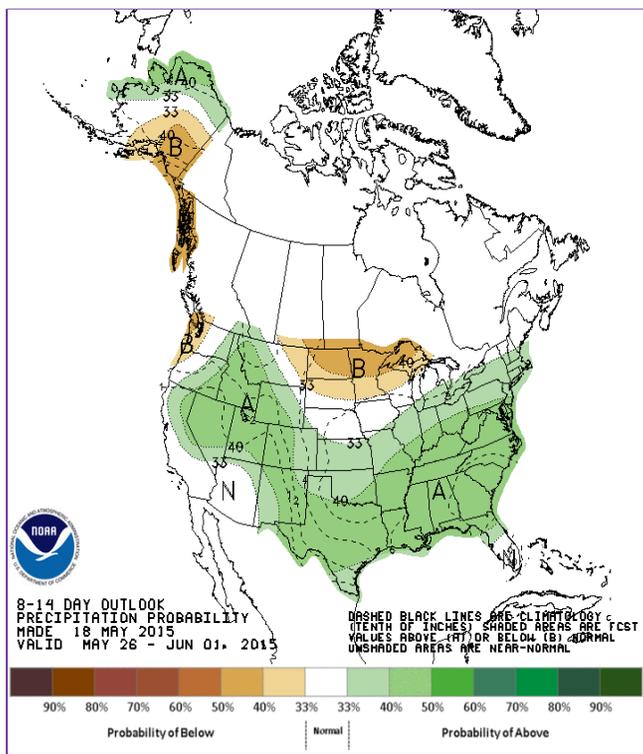
Colorado Rivers intersect. Here temperatures were 6-9 degrees below normal.

- The western slopes of Colorado were mostly 3-6 degrees below normal over the past week. One hot spot continues to show up in northern Saguache and southern Gunnison Counties, but this is believed to be as a result of a malfunctioning weather station. Parts of Moffat, Grand, Summit, and Eagle Counties were closer to normal temperatures. Cool anomalies in these areas were only 0-3 degrees.
- East of the divide temperatures were almost 3-6 degrees below normal for the week across the board. The two exceptions with the largest areal extent were eastern Weld County and eastern Elbert County. In these areas temperatures were only 0-3 degrees below normal.

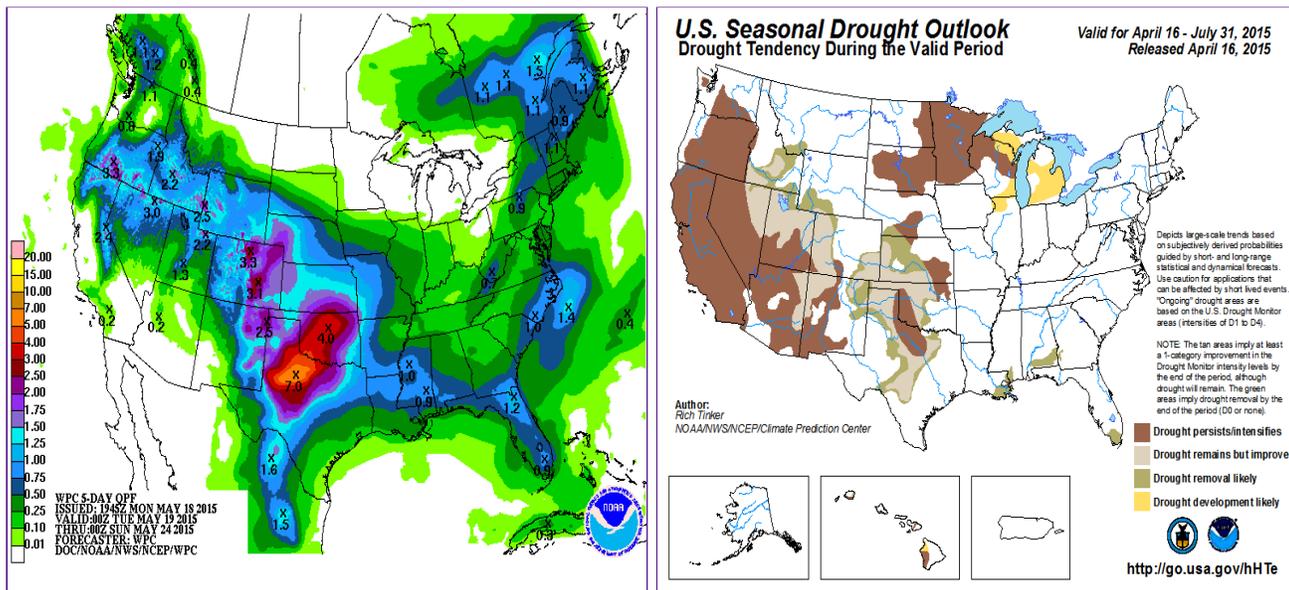
### **April Temperatures:**

- The month of April saw mostly 0 to 2 degrees above normal temperatures in the UCRB. Much of northeastern Utah saw 0 to 2 degrees below average, spilling into western Garfield and Mesa counties in Colorado.
  - A bulls eye of 2 to 10 degrees warmer than average shows up in Gunnison and Saguache counties.
  - East of the Divide, most of eastern Colorado saw temperatures 0 to 2 degrees above average for April. The counties along the Colorado-Kansas boarder were slightly warmer for the month, 2 to 4 degrees warmer than 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: (5/19)

- For the third week straight the same large-scale pressure pattern that has funneled lots of moisture into the area, particularly eastern CO, remains in place. The low is shifted a little farther south, and the center of high pressure over the great plains is a little farther west than last week. The result has been, and will continue to be another good soaker.
- Over the next three days the Upper Green River Basin is expected to receive widespread accumulations over half an inch with areas exceeding one inch. Farther south in the basin accumulations will be lower. The Duchesne Basin is expected to receive 0.25-0.50" of precipitation. The Glen Canyon area is forecast to be dry as per usual this time of year.
- The western slopes of Colorado are forecast to experience good moisture over the next three days as well. The San Juans are forecast under half an inch still, but farther north conditions will be quite wet. Forecasts in excess of an inch over the next three days are on track for Routt, Lake, Pitkin, Eagle, and Summit Counties.
- East of the divide the next three days will be very wet as well with widespread totals over an inch. There is an east-west gradient in the precipitation forecast where areas closer to the Kansas and Nebraska borders are likely to see more.
- As of now we are on track for a wet weekend across the basin as well. Weekend accumulations across the Uintah Range and areas of the Upper Green are forecast to receive over half an inch of additional moisture. Once again, the driest regions over the weekend will be southern Utah and southwest Colorado. Widespread accumulations of 0.25-0.50" are anticipated for western Colorado this weekend with higher accumulations likely in isolated areas.
- East of the divide, the northeast quadrant of Colorado is expected to be the biggest area of moisture collection. North of the Palmer Divide widespread accumulations over half an inch are expected.

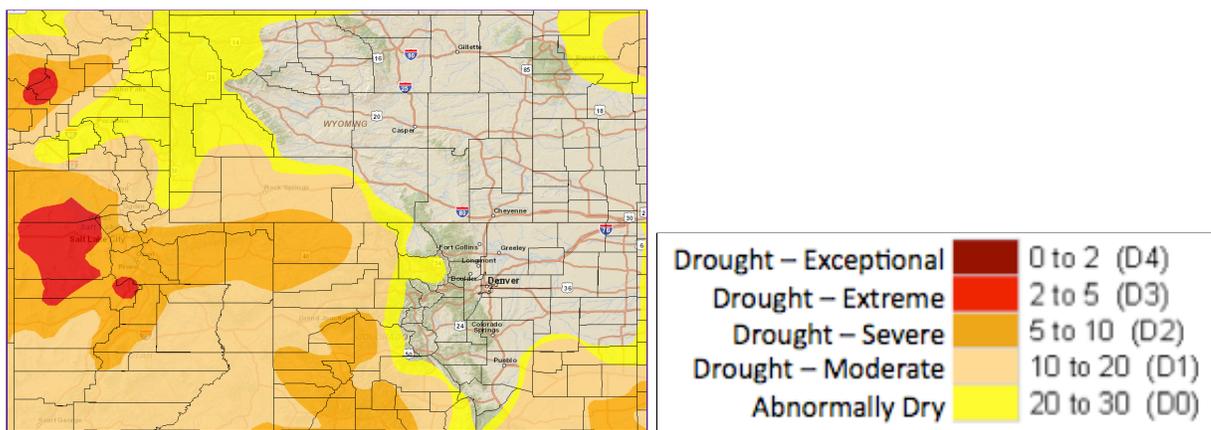
Much of the southeast quadrant of the state is expected to receive an additional 0.25-0.50" of moisture over the weekend. Areas in the northeast corner of the state may experience over an inch of additional moisture.

- Early next week remnants of this system will continue to funnel some beneficial moisture into the basin and eastern Colorado. Widespread accumulations between 0.25-0.50" are forecast for this time frame over eastern Colorado, the western slopes, and the Upper Green River Basin. The south portion of the UCRB will be drier.

### Longer Term:

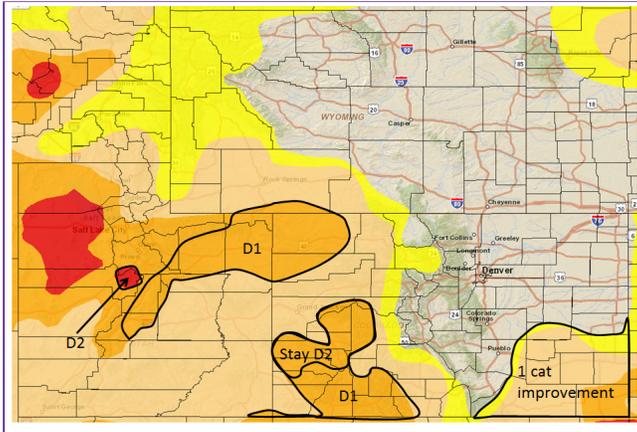
- The 8-14 day precipitation outlook shows increased chances for above average precipitation for the entirety of Colorado and the UCRB. These chances are most highly enhanced for western Colorado and northeast Utah.
- The 8-14 day temperature outlook shows increased chances of below average temperatures for Colorado and the majority of the UCRB. These chances are most highly-enhanced for eastern and central Colorado. The Upper Green River Basin is still forecast equal chances of above and below average temperatures over this time frame.
- The Climate Prediction Center 3-month precipitation outlook shows increased chances for above normal precipitation for the entirety of the UCRB, and the area in Colorado east of the divide for the May to July period. These chances are forecast above 40% for the entire region with the exception of the far eastern end of Colorado.
- The seasonal drought outlook indicates that drought is expected to improve across western Colorado and southeast Colorado with some removal likely for southwest Wyoming and small portions of southeast Colorado. Drought over southeast Utah and the Rio Grande Basin is expected to persist or intensify.

## 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 May 19, 2015:

It was yet another week of above average moisture and below average temperatures across the Upper Colorado River Basin and the eastern plains of Colorado, and the forecast continues to call for more. Basin-wide SPI's are all positive with some areas that are currently classified as D2 seeing 30-day SPI's as high as +2. This needs to be balanced against a winter of poor snowpack leading to a water supply drought across the Upper Colorado River Basin. SPIs on the 6-month timescale are still below average in the Wasatch Range. Many SNOTEL stations in the Wasatch and Uintah Ranges are still at or near record lows to date out of at least a 15 year record. Streamflows in the region are still forecast to peak well below average. Many improvements will be recommended this week, but they will be measured against the long-term drought.

### Recommendations:

**UCRB:** A downgrade from D3 to D2 is recommended for northeast Jaub County. Drought conditions persist in the area, but recent moisture has brought it out of extreme drought.

It is recommended that the southern flank of D2 be downgraded to D1 in the San Juan Region following a week of heavy rains for the area. This recommendation would cut all D2 along the southern border of Utah and southwest CO. The cut would be made from about the border of San Juan and Otero county extending westward through central San Miguel County and then dipping southward to keep north central Dolores County in D2.

It is recommended that D2 be downgraded to D1 in northeast Utah, Northwest Colorado, and in central Utah at lower elevations. The Wasatch and Uintah Mountain Ranges are still in pretty bad shape following this year's snowpack, and the whole region is still in a water supply drought, but low elevations of northeast Utah and northwest Colorado now show positive SPI's on timescales all the way back to a year. Vegetative health and soil moisture conditions in this region do not reflect a severe drought.

**Eastern CO:** A one-category improvement is recommended across

southeast Colorado from the Las Animas-Costilla County Line eastward. The recent and continuing rains in southeast Colorado may serve as the knockout punch to the long-term drought that has plagued the area since 2011. After yesterday's moisture the area has seen anywhere from 0.75-2.50" of rain over the past week, and it continues to fall. Lower temperatures and cloud cover have kept evaporative demand lower as well. SPI's are positive back to 6 months across the region, and modeled root zone soil moisture and vegetative health is being shown now as average or better.