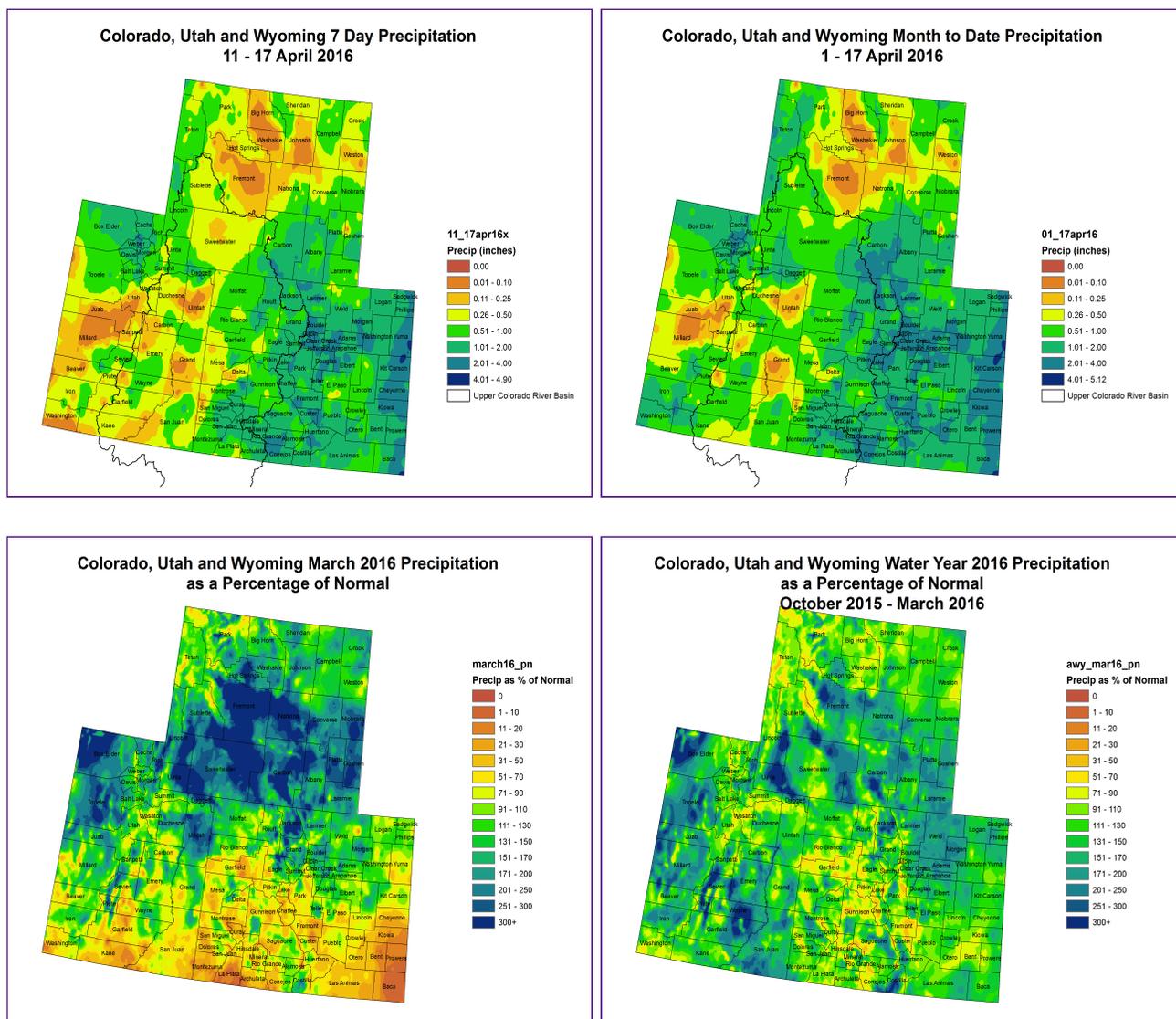


PRECIPITATION



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:

- Due to the influence of a cutoff low that dipped into the region out of the Pacific Northwest last weekend most of the UCRB and eastern Colorado experienced an above average week of precipitation.
- The Upper Green River Basin received less moisture than areas in the basin farther east picking up an average of 0.25-0.50".
- Eastern Utah was also relatively dry. The eastern Uintah Range did well picking up 1.00-2.00" of precipitation, but much of the area in the Green and Colorado River Valleys received 0.25-0.50". Central

Duchesne and Uintah Counties, where soils are already showing up as dry, received under 0.10".

- The headwaters of the Yampa, White, and Colorado River Basins picked up 1.00-2.00" of precipitation over the past week. Areas farther downstream still benefitted from at least 0.50".
- In southwest Colorado the San Juan Range received 1.00-2.00" of rain/snow, and the Gunnison River Valley had at least 0.50". Delta and Mesa Counties were on the drier end picking up between 0.10 and 0.50".
- Northeast Colorado mostly received 1.00-2.00" of precipitation over the last week with a little bit of a hole in coverage in northern Weld and northeast Larimer Counties. The Denver Metro Area and the northeast fringe of the state received over 2.00" of precipitation. West of Nederland this fell as 40" of snow. In some spots in Yuma and Kit Carson Counties over 4.00" of rainfall was received.
- Precipitation coverage in southeast Colorado likewise was mostly between 1.00 and 2.00" for the week. Similar to the hole south of the Cheyenne Ridge there was a hole in precipitation coverage south of the Palmer Divide. The southern portion of Colorado Springs picked up only 0.25-0.50". Parts of the Wet Mountains and Sangre de Cristos as well as eastern Cheyenne, Kiowa, and Baca Counties received 2.00-4.00" of moisture.

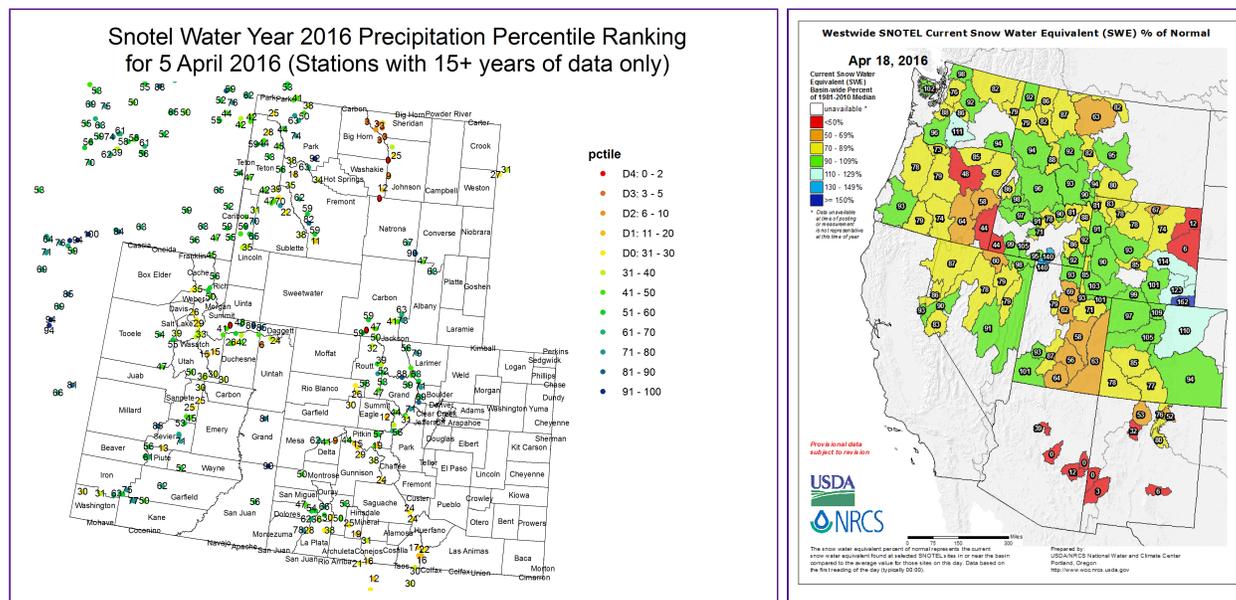
March Precipitation:

- March precipitation was characterized by a very obvious south-north gradient in percent of average precipitation. The southern half of Wyoming received much above normal precipitation. The UCRB south of the Colorado River and eastern Colorado south of the Palmer Divide were below average for the month, and in some places received as little as 10-20% of normal March precipitation.
- In the Upper Green River Basin the Rockies and the Tetons received 4.00-6.00" of precipitation in the high spots and 1.00-2.00" of precipitation at low elevations. This corresponds to above normal precipitation for most of the region.
- March precipitation was above normal in eastern Uintah and Grand Counties, and on the eastern side of the Uintah Mountain Range. Areas further south and west were below normal. The Uintah and northern Wasatch Ranges were between 2.00 and 4.00" for the month.
- March precipitation in western Colorado was above average from Rio Blanco County north, and below average from Garfield County south with some sparse exceptions. Precipitation was as much as 250% of average along Muddy Pass between Grand and Jackson Counties.
- Largely due to the March 23rd snowstorm precipitation was above normal east of the Continental Divide and north of the Palmer Divide. South of the Palmer Divide the plains tended to consistently end up in the dry slot of storms. Baca County received only 10-20% of normal March precipitation.

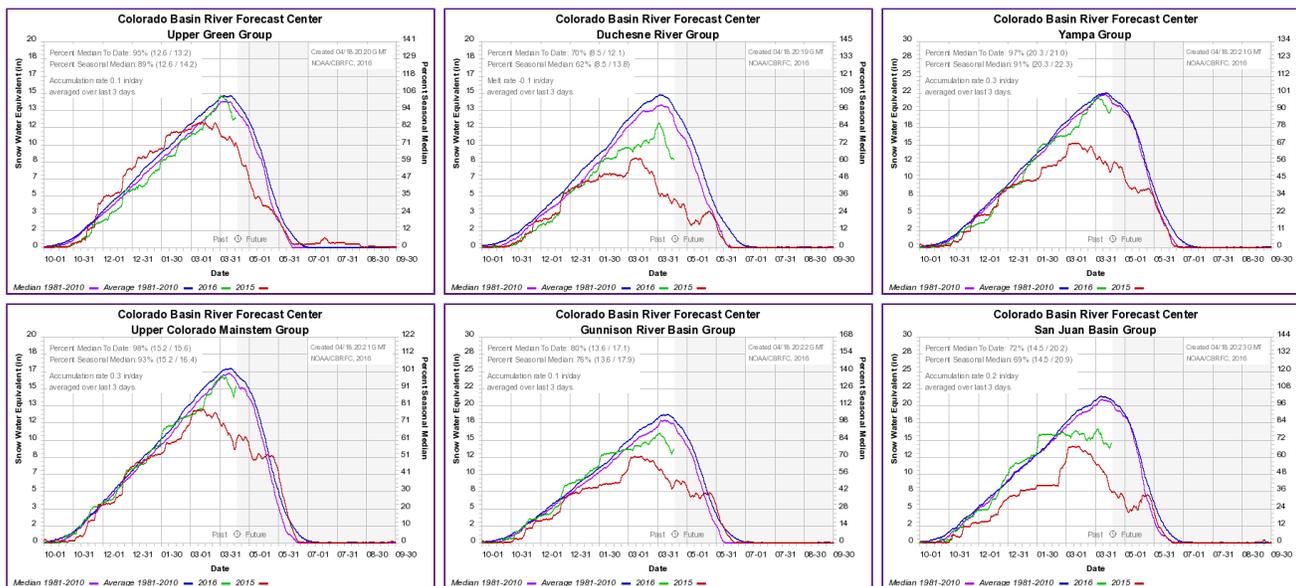
Water Year 2016 Precipitation (Oct-Feb):

- Most of the UCRB and eastern Colorado has seen a near to above normal start to the 2016 Water Year through March. Some of the driest areas are in Garfield, Pitkin, and Gunnison Counties.
- Most of the Upper Green Basin is seeing a normal water year to date, with Lincoln and Uinta counties seeing much above normal. Central Sweetwater County is mostly above normal as well.
- The water year to date is above normal in southeastern Utah, and near normal in northeastern Utah.
- Western Colorado is mostly normal or slightly above normal to start the water year as well. The driest areas are in Garfield, Pitkin, and Gunnison Counties, and are reporting precipitation 50-70% of normal for the water year to date.
- Eastern Colorado is at or near normal for the water year to date in most places. The Weld, Adams, and Morgan County area has been exceptionally wet receiving over 170% of average precipitation to date. The southeast plains are starting to dry out, but are still in decent shape for the water year to date due to a wet late fall. Totals in Bent, Otero, and Kiowa Counties are as low as 70-90% of average for the water year to date.

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:

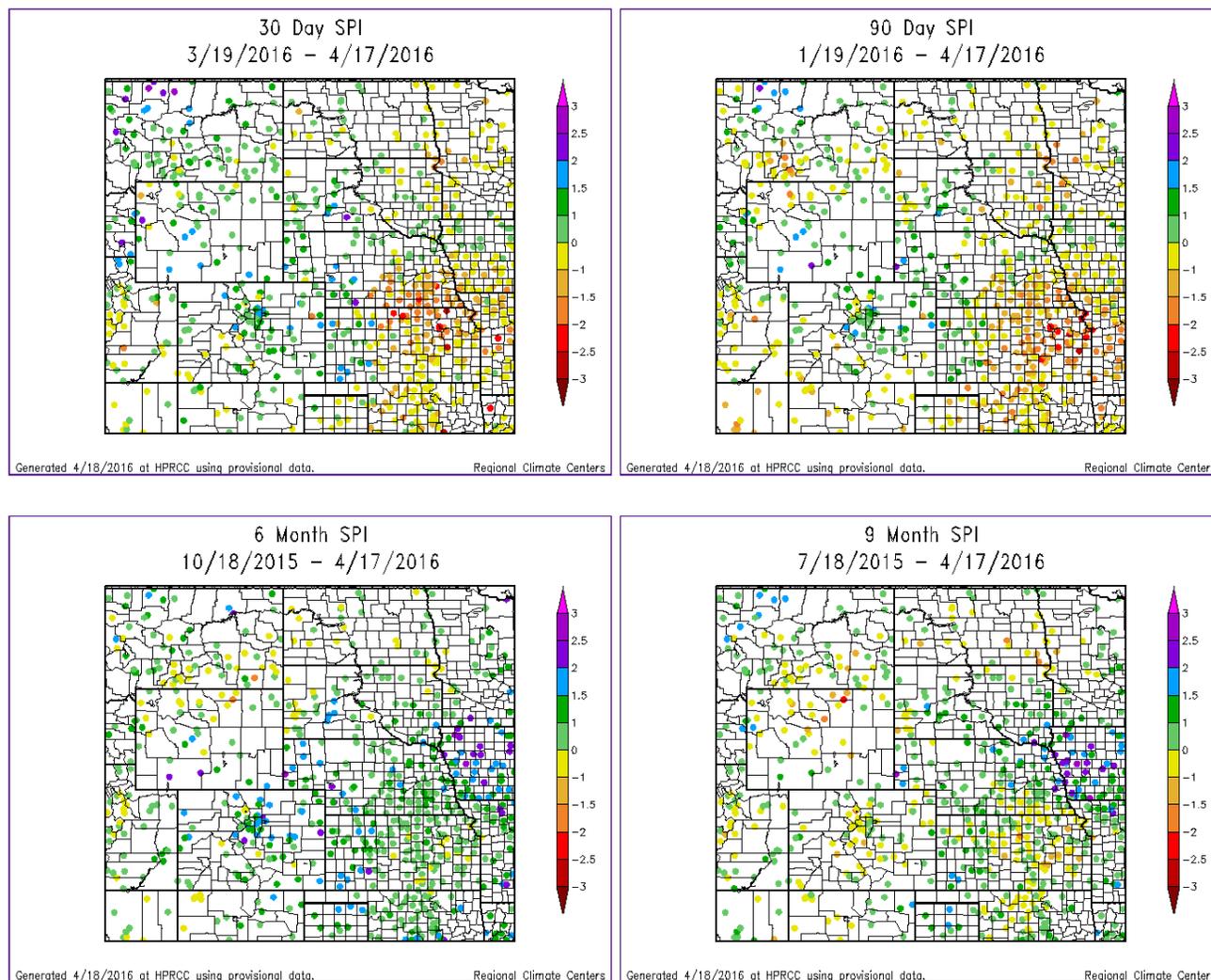
- SNOTEL Water Year precipitation percentiles in the Upper Green Basin have made a nice recovery over the last several weeks. Percentiles are mostly between 30 and 70 with few outliers.
- The Uinta Range is quite diverse. SNOTEL percentiles are mostly between 25 and 50. Two outliers on the north side of the range are between the 80th and 90th percentile. Two outliers on the south side of the range are at the 0 and 6th percentile.
- The gradient in water year to date percentiles in the Wasatch Range has been relaxing over the last several weeks. In the northern Wasatch Range precipitation percentiles at most stations are below median, in the 15th to 50th range. The southern Wasatch SNOTEL sites in Utah are reporting generally from the 50th to the 80th percentile.
- The northern Rockies in Colorado extending into Wyoming percentiles are in pretty good shape. These stations are by and large reporting from the 30th-80th percentile following a strong week of snowfall. Several outliers in southern Wyoming are much lower.
- The Rockies of central Colorado have become quite diverse as well. Reports for the water year to date are anywhere from the 9th to 88th percentile. Stations along the Front Range are doing better than further south and west.
- The San Juans are reporting above the median on the western end and below the median on the eastern end. On the western end percentiles span from 28 to 78, and on the eastern end percentiles span from 19 to 53.
- The Sangre de Cristos reporting below average with percentiles from 17 to 24.

SWE Timeseries Graphs:

- The Upper Green Basin reached 103% of its seasonal peak and has decreased back to 89%.
- The Duchesne Basin peaked at the end of March at 85% of its seasonal peak. Snowpack has fallen to 62% of the median seasonal peak.
- The Yampa River Basin likely peaked at 98% median season snowpack. It is now down to 91% of median seasonal peak value.
- The Upper Colorado River Mainstem peaked at 98% of its seasonal peak snowpack. It is now down to 93% of the seasonal median peak value.
- The Gunnison Basin looks to have peaked in snowpack on April 3rd at 89% of the median snowpack peak value. It is now at 76% of the seasonal median peak.
- The San Juan Basin also will have peaked on April 3rd barring a large storm event. It peaked at 79%

of the seasonal median and is now back down to 69%.

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):

- 30-day SPIs are above normal in the north and east parts of the basin, and tend towards slightly dry conditions in the south and west ends of the basin.
- The Upper Green River Basin is showing SPIs between 0 and +2.
- In the San Juans and the southern part of Gunnison Basin SPIs are between -1 and 0. In the northern and central Rockies of Colorado SPIs range from 0 to +2.
- The San Luis Valley is in the normal range.
- Eastern Utah is showing SPIs between -2 and 1. The driest SPIs are nearest the Wasatch Range. A station in western Wayne County is

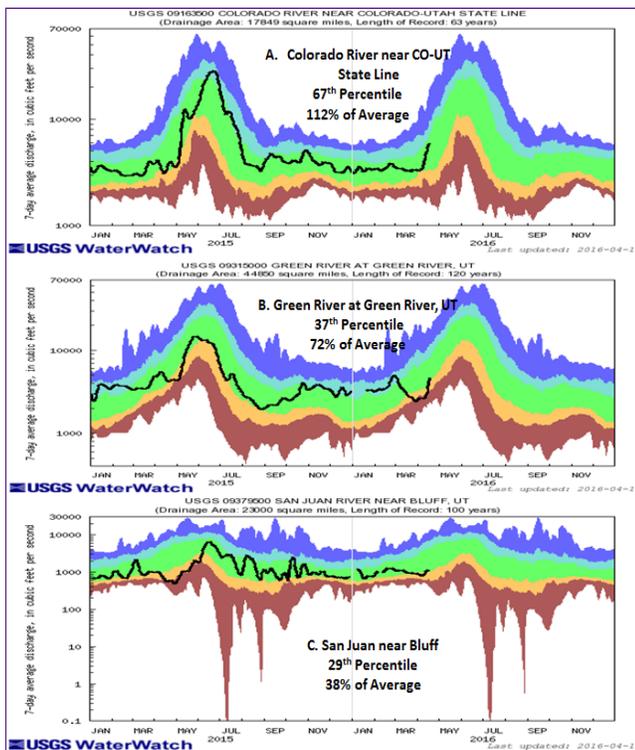
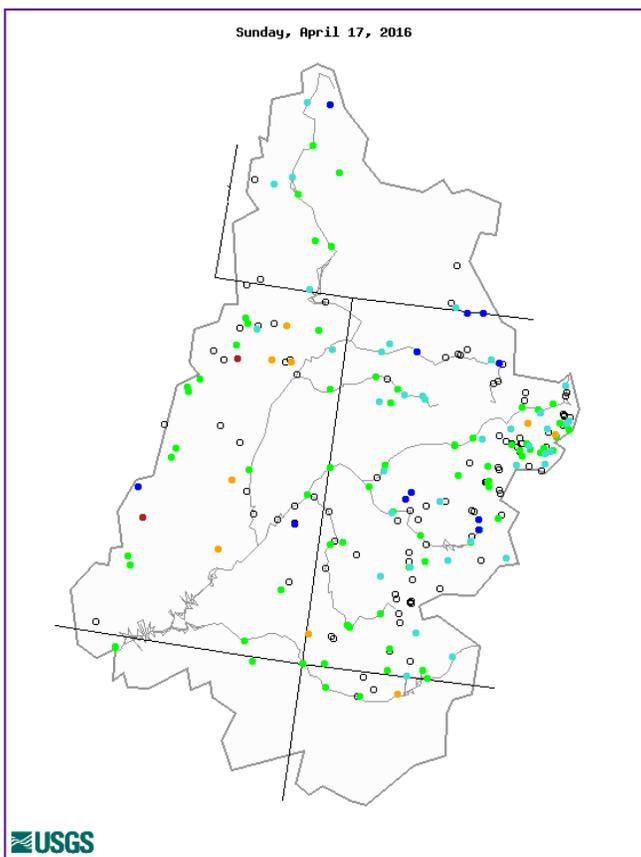
reporting in the -2 to -1.5 range.

- 30-day SPIs in eastern Colorado are now completely above average with the exception of one station in southern Yuma County, which is reporting in the -2 to -1.5 range. This is likely an erroneous reading. The wettest SPIs are on the north side of the Denver metro area.

Long Term (6-month):

- 6-month SPIs in the UCRB are mostly in the normal range with some favoring of the above normal range, particularly in the valleys of the Upper Green, Yampa, and White River Basins.
 - The Upper Green River Basin in Wyoming is showing 6-month SPIs between +2 and +2.5 in southern Sweetwater County. Farther north and west long-term SPIs are in the normal range.
 - Eastern Utah is in the normal to above normal range with the exception of the northern Wasatch and eastern Uintah Ranges.
 - Western Colorado is also in the -1 to +1 normal range. SPIs in Mesa, Rio Blanco, and Lake Counties are showing a little wetter over the past 6 months, up to the +1.5 to +2 range.
 - Southwest Colorado and the Rio Grande River Basin are both reporting in the normal range.
 - Northeast Colorado is showing SPIs in the above normal range. The northern Front Range, and north side of the Palmer Divide are showing SPIs from 0 to +2.
 - Southeast Colorado is a little bit drier at the six month window, but still mostly above normal. The driest SPIs are in Fremont, and Otero Counties, which are showing SPIs between -1 and 0. Baca County is reporting at +1.5 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.

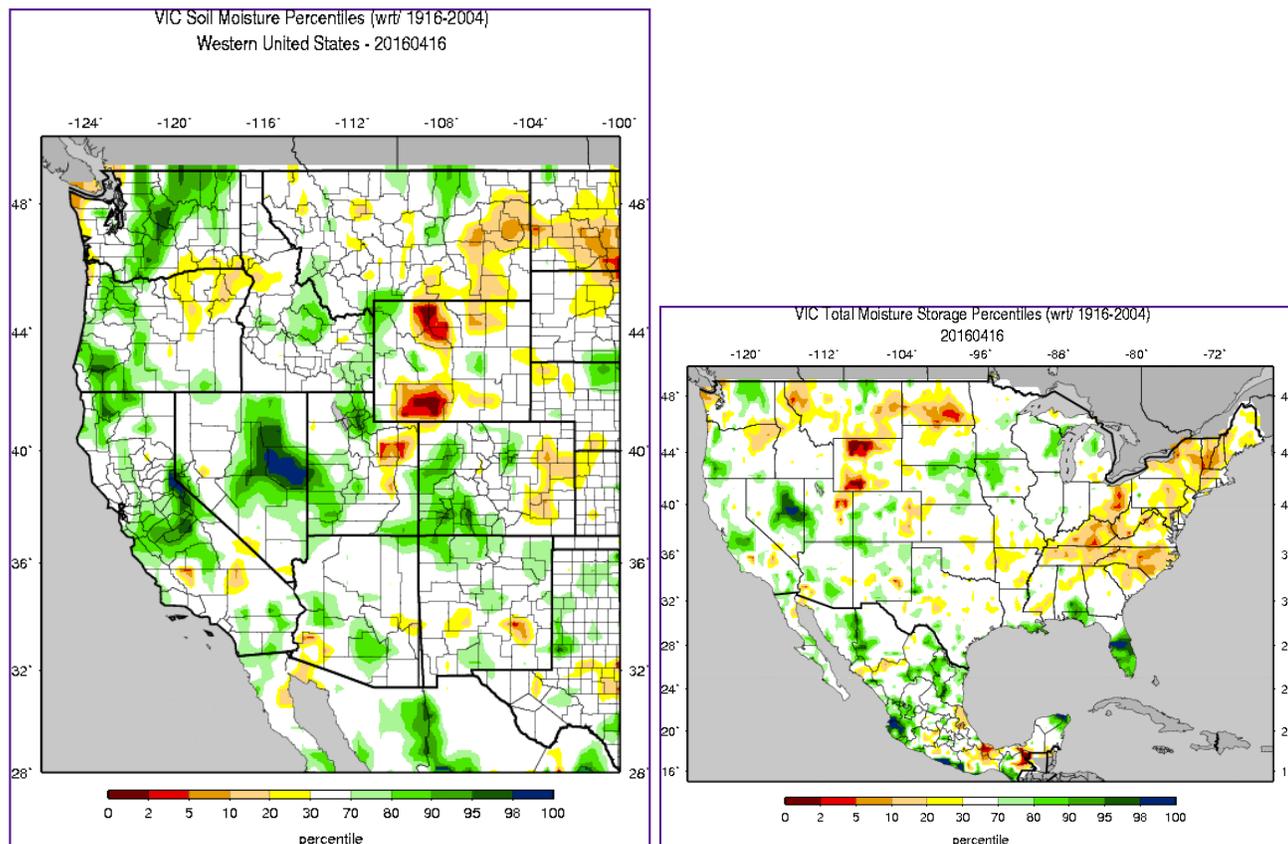
Streamflow Statistics:

- Nearly all gages are reporting in the UCRB with only eight of the total 140 not outputting data.
- 91% of gages are reporting in the normal to much above normal range for the 7-day average streamflow. No gages are reporting record 7-day flows.
- 9% of gages reporting are in the below normal range to much below normal range. No gages are reporting record low flows.
- The Colorado River at the CO-UT state line is now above average at the 67th percentile, or 112% of the 7-day average. This represents more than a doubling over the past week.
- The Green River at Green River, Utah is reporting at 72% of 7-day average, which corresponds to the 37th percentile. This corresponds to a large increase over the past week from flows only at the 8th

percentile.

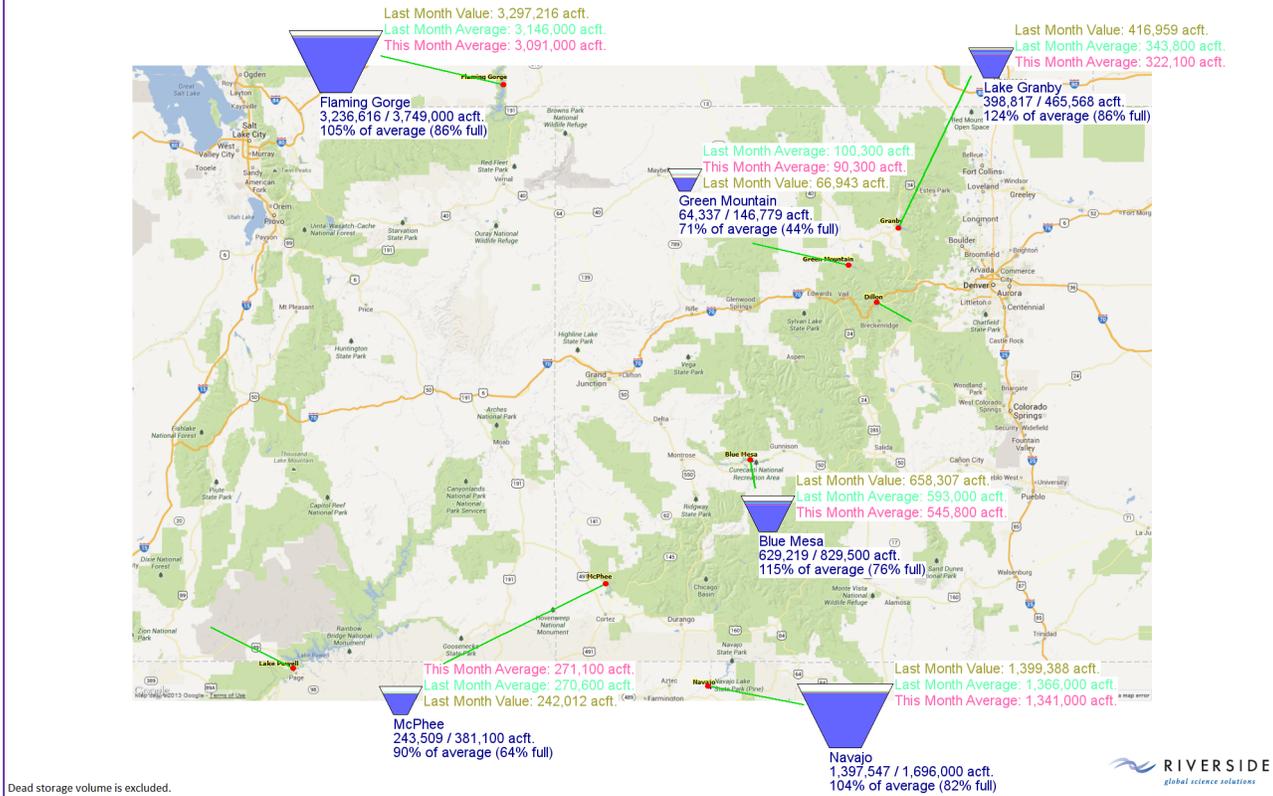
- The San Juan River near Bluff, Utah is reporting at 38% of average, which corresponds to the 29th percentile.
- All key indicator sites should see flows begin to ramp up rapidly over the next two to three weeks climatologically.

SURFACE WATER

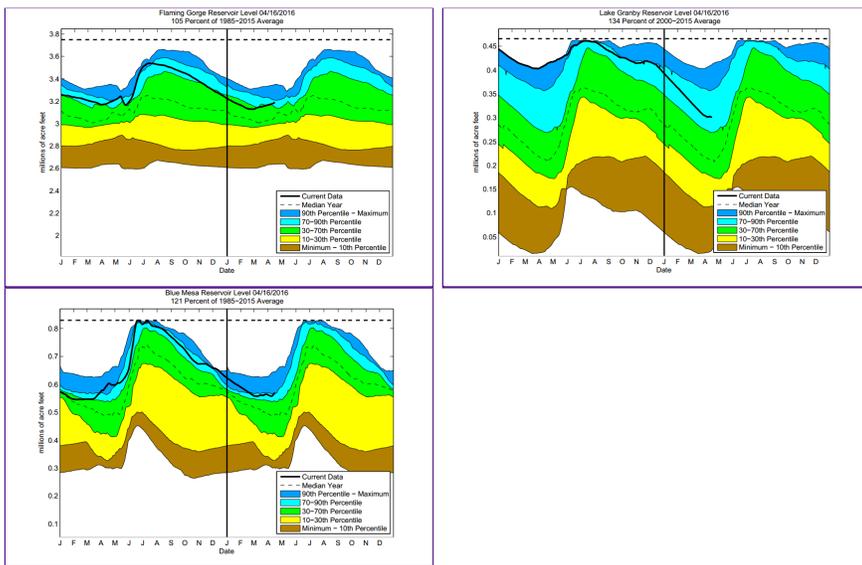


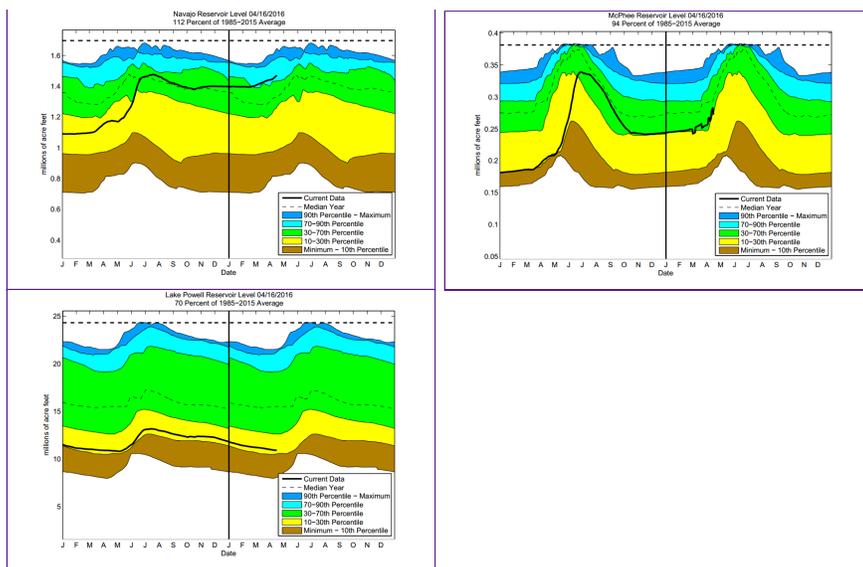
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows VIC+SWE.

2015/12/28



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:

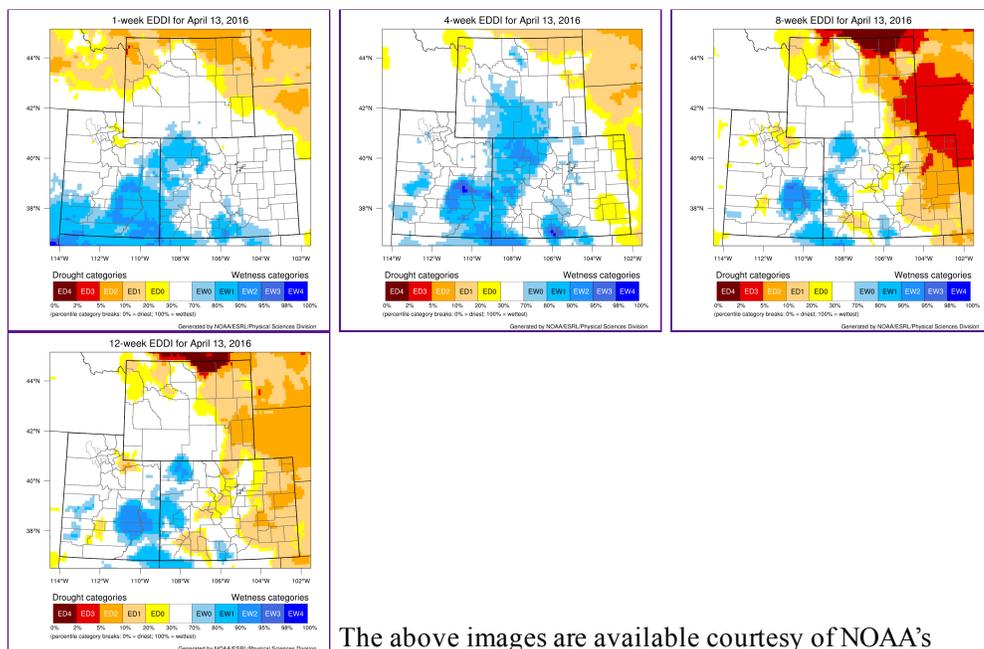
- VIC modeled soil moisture in the Green River Basin in Wyoming continues to be much below normal. Most of central Sweetwater County soil moisture is below the 2nd percentile. Sublette and Lincoln Counties are showing soil moisture levels in the normal range. Based on the timescale this anomaly has persisted for and the 24-months SPEIs for the area this data is probably erroneous.
- There are several areas in eastern Utah along the Green River that are showing much below normal soil moisture. Southern Duchesne and southwest Uintah Counties are reporting below the 10th percentile. The south end of the Wasatch Range is reporting above the 70th percentile.
- Western Colorado is now showing soils in the 70th to 95th percentile. Once current snowpack is included, the area drops to the normal range.
- The high elevation areas of the Rocky Mountains have soil moistures mostly in the normal range. Jackson County is showing some areas in the 70th-80th percentile range.
- The northern Front Range is showing soil moisture above the 70th percentile. Soils dry out into the normal range farther to the east in Morgan and Logan Counties. Farther east yet soils drop below the 20th percentile in Washington County and Kit Carson County.
- Soil moisture in southeast Colorado is in the normal range near the Front Range and generally below normal farther out on the plains. Crowley and Otero Counties are reporting in the 10th-30th percentile range.

Reservoirs (based on the graphs below the map): (3/6)

- Flaming Gorge is at 105% of average.
- Lake Granby is at 134% of average.
- Blue Mesa is at 121% of average.
- Navajo is at 112% of average.
- McPhee is at 94% of average.

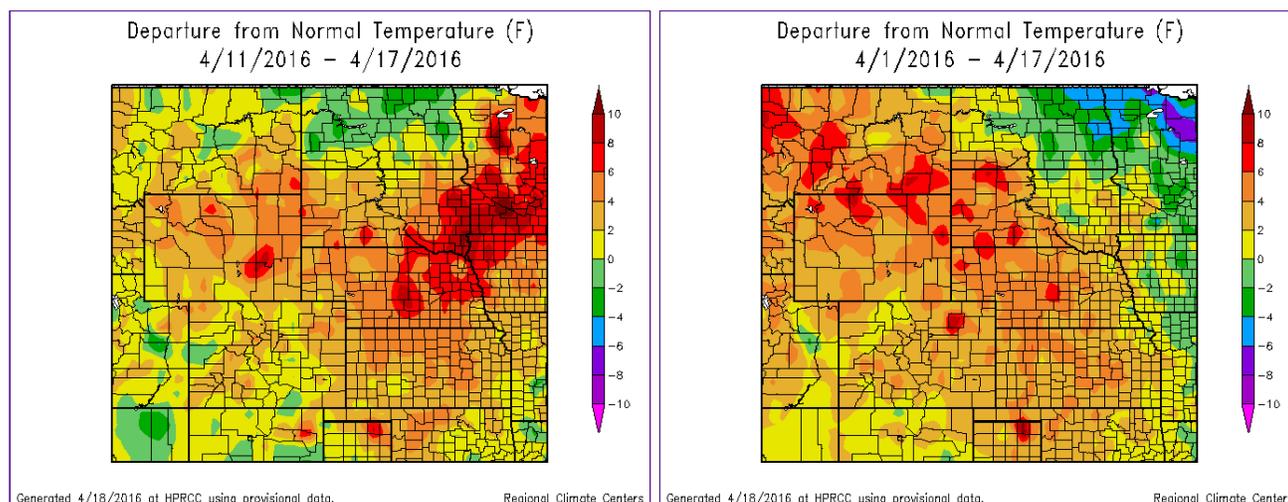
- Lake Powell is 70% of average.

EVAPOTRANSPIRATION

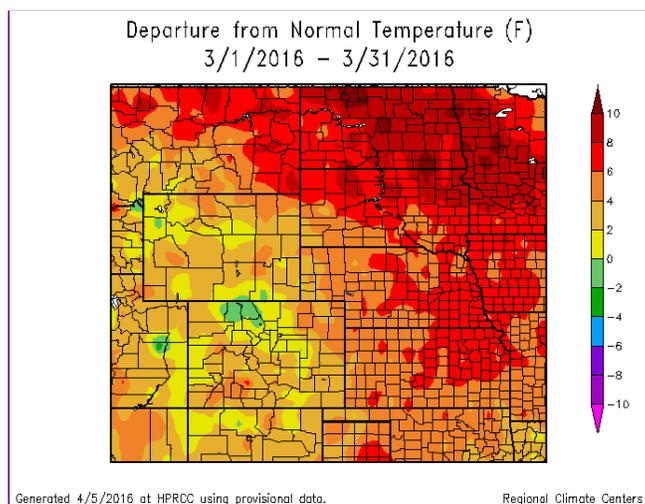


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are in line with the US Drought Monitor's Percentile Ranking Scheme <http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>. Data used to generate these maps come from the North American Land Data Assimilation System Phase-2 (NLDAS-2) project, which assimilates observations of temperature, wind speed, radiation, and vapor pressure deficit. The date indicates the last day of the period of record, and the week number indicates the window size for the period of record..

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:

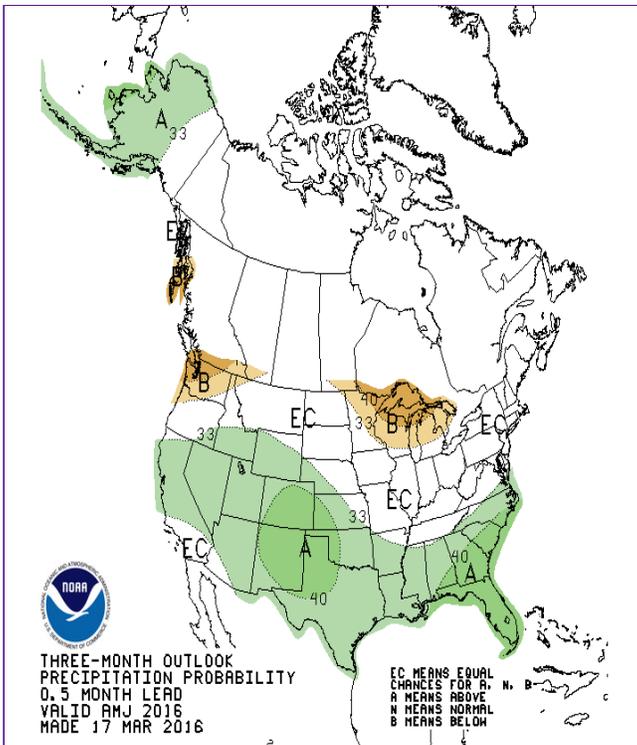
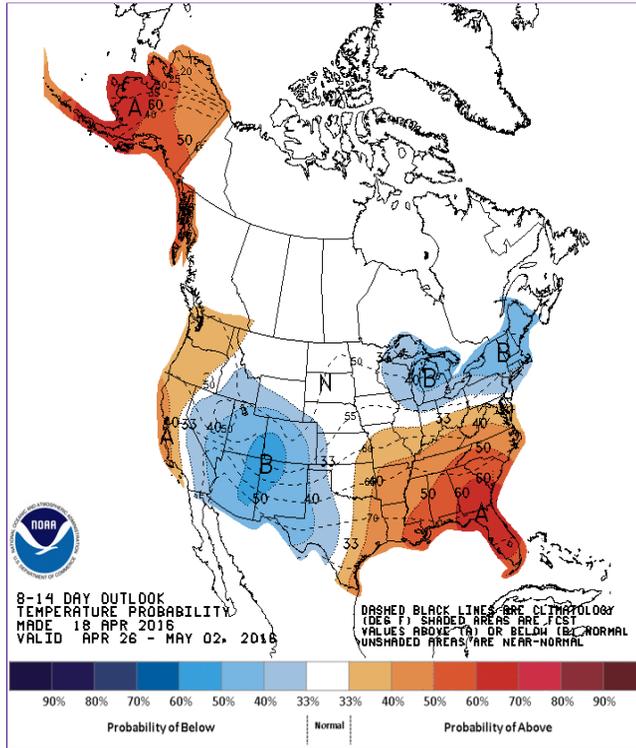
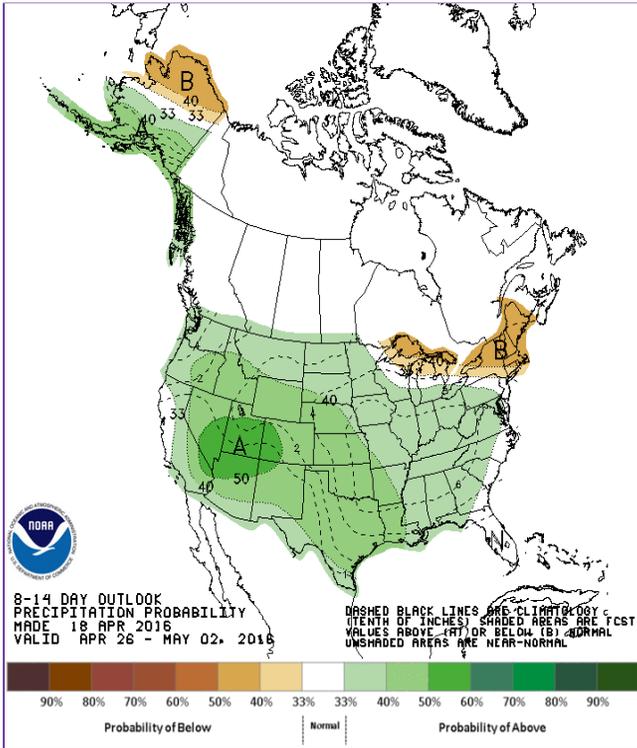
- Last week was warmer than average across the vast majority of the UCRB and eastern Colorado.
- The Upper Green River Basin was 0-4 degrees above average for the week.
- Eastern Utah was mostly above average by 0-4 degrees. Carbon County and northern Emery County were below average by 0-4 degrees.
- Western Colorado was above average by 0-4 degrees for the most part as well. Mesa County recorded temperatures a little below average.
- East of the divide, temperatures were mostly 0-4 degrees above average too. Western Las Animas County was below average by 0-2 degrees.

March Temperatures:

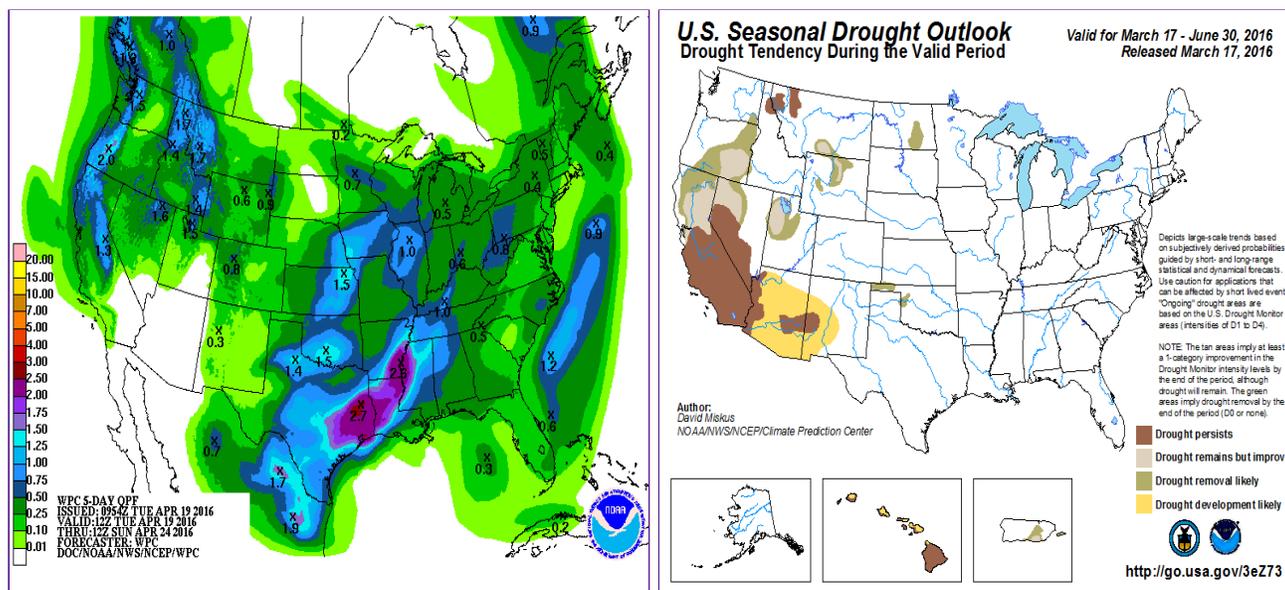
- It was a warmer than average March for most of the UCRB and eastern Colorado. These warm anomalies accumulated primarily in the first two weeks of March.
- The Upper Green River Basin was 0-4 degrees above average for the month of March. The highest anomalies were in Sublette County where temperatures were 4-6 degrees above normal.
- Eastern Utah experienced lightly above normal temperatures. Carbon and Emery Counties were largely between 0 and 2 degrees below normal for the month, but the rest of the area was 0-4 degrees above normal.
- In western Colorado the cooler temperature anomalies were in Jackson and Routt Counties, and were only 0-2 degrees below normal. Most of western Colorado was 2-4 degrees above normal. La Plata, Hinsdale, Mineral, and San Juan Counties were 4-6 degrees above average in the month of March.

- Eastern Colorado was mostly 0-4 degrees above average for the month of March. The northeast corner of the state and parts of Washington and Morgan Counties were 4-6 degrees above average. The Front Range saw temperatures closer to average than further out east on the plains.

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.



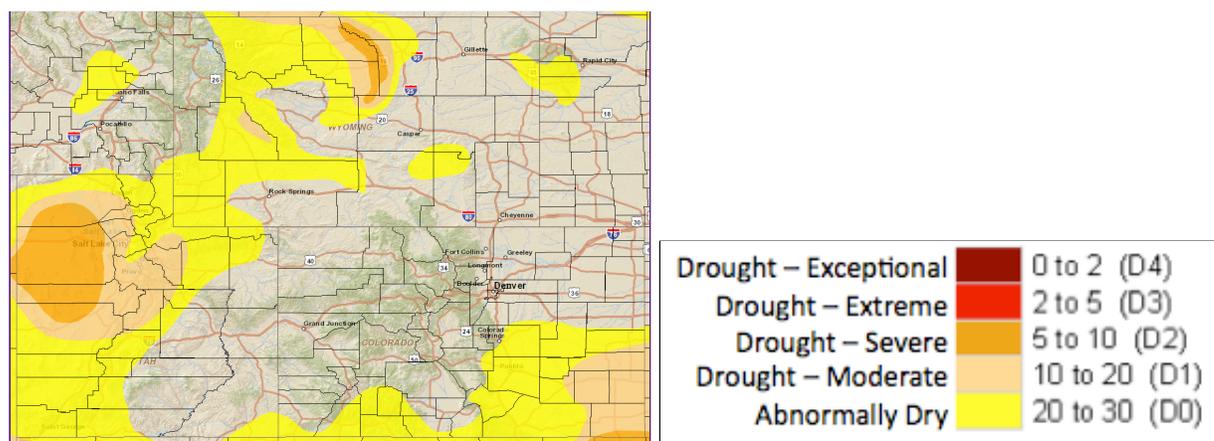
Short Term: (4/19)

- Remnants of the cutoff low that brought precipitation across the UCRB and eastern Colorado this weekend are still hanging around. A weak band of wrap-around moisture will bring light precipitation and snowfall primarily to the Yampa and Upper Green Basins through the day today. The northern Uintahs and northern Rockies will be the biggest beneficiaries. Totals may be as high as 0.50". In eastern Colorado some light rain is possible with conditions staying cool and moist through the day today.
- Tomorrow light wrap-around moisture is still possible for western and southern Colorado, but a short warming and drying trend will begin to enter the region from the southwest.
- On Thursday look for warmer temperatures and high pressure across the UCRB.
- On Saturday another low pressure system will drop into the region from the Pacific Northwest. The initial wave is forecast to bring rain and snow to the Tetons and northern Rockies, and bring higher winds to southern Colorado, but there's a deeper, cooler wave anticipated behind it that will bring rain, snow and colder temperatures to a larger portion of the basin. Stay tuned for further updates.
- **Longer Term:**
- The 8-14 day precipitation outlook shows increased chances for above average precipitation across the entirety of the UCRB and eastern Colorado. These chances are most highly enhanced in

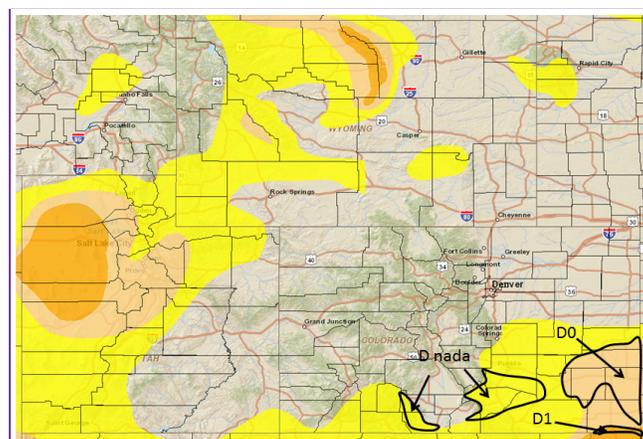
southern Utah and southwest Colorado.

- The 8-14 day temperature outlook shows increased chances for below average temperatures across the entirety of the UCRB and eastern Colorado. These chances are strongest in the Four Corners Region.
- The Climate Prediction Center April through June outlook shows increased chances of above average precipitation for the entirety of the UCRB and eastern Colorado. These chances are most enhanced in southeastern and central Colorado, but peak at a 40% chance of above average precipitation. This is a more neutral forecast for above average precipitation than what the CPC released for March through May.
- The seasonal drought outlook for Colorado and the UCRB shows no likely drought development over the next three months, and removal likely in the southeast corner of the state.

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: April 19, 2016

Last week began warmer than average, but cooled off quickly as a large cutoff low out of the Pacific Northwest moved across the UCRB and

centered itself over southeast Colorado for several days. Precipitation totals were greater east of the divide than west of the divide, which is a shift we should expect to see more of over the next two months climatologically. The Rocky Mountains, San Juans, and eastern Uintahs did receive 1.00-2.00" of moisture making for an above average week of precipitation at high elevations. Snowfall totals were greatest in the high elevations on the Front Range extending out along the Palmer Divide. Snowfalls totaled above 20". Precipitation totals were greatest along the far eastern reaches of Colorado where rainfall totals from mesoscale convective complexes were in excess of 4" in several areas.

As predicted, this storm did result in very temporary mountain snowpack increases, but was not enough to create new basin-wide peaks in snowpack for the season. Snow melt is in season particularly at lower elevation SNOTEL sites, and streamflows have begun their expected exponential hike. Other than Lake Powell and Green Mountain, major reservoirs across the UCRB are in or above their average range for this time of year with storage totals expected to increase with runoff. Reservoirs in the southern end of the basin such as McPhee and Navajo Reservoirs may receive below average fills from snowpack this year.

Remnants from the big storms are still hanging around at upper levels with cool and moist surface conditions in eastern Colorado and some weaker wrap-around precipitation and snowfall occurring in the Upper Green and Yampa River Basins. These low precipitation totals and cooler conditions are expected to continue for the next two days before warming and drying. More cooler, wetter weather is anticipated next week.

Recommendations:

UCRB: Status Quo.

Eastern Colorado: It is recommended that D2 be downgraded to D1 in southern Baca County. Warm, windy weather was harmful to winter wheat crops in this area, but following last week's storm we do not want to claim severe drought.

It is recommended that D1 be downgraded to D0 in northeast Baca County, eastern Prowers County, all but the southwest corner of Prowers County, all but the southeast corner of Bent County, Otero County, Kiowa County, and southeast Cheyenne County. Precipitation totals in this area have been over 1.00", and in some cases well over 2.00" during the past week, which is as much as one eighth of the expected annual average, and SPIs are now positive here on 30 day and six month timescales with most of the area now above average for the water year to date. D0 is still appropriate due to the hotter, drier, windier than average weather experienced through much of March.

It is recommended that D0 be removed from the western end of the San Luis Valley in western Rio Grande and Conejos Counties. Rainfall totals here were primarily 2.00-4.00" over the past week.

It is recommended that D0 be removed from Huerfano County and the northern tip of Las Animas County, the extreme western portion of Otero County, and the southern end of Pueblo County. The Wet Mountains and Sangre de Cristo Mountains received considerable snowfall, and the whole area received anywhere from 1.00-4.00" of precipitation for the week.