Last Week Precipitation:

- Heavier precipitation totals were mainly confined to the higher elevations of the UCRB.
- The Wind River and Wyoming ranges in WY and the Wasatch and Uintahs in UT mostly received between .25 and 1 inch of moisture last week.
- The northern and central CO mountains and the San Juans received...
between .10 and 1 inch
- The lower elevations were drier, with much of eastern UT and western CO receiving less than .10 inches
- East of the basin, much of eastern WY received between .10 and .50 inches
- Eastern CO was a bit drier, with most areas seeing less than .10 inches, with the exception of the Palmer Divide and Sangre de Cristos areas, which received between .10 and .50 inches of precipitation

**February Precipitation:**

- The Upper Green River basin and Wasatch mountains saw much above normal precipitation in February. Large areas of 300% or more are present in Western Wyoming and NE Utah.
- The lower Yampa basin and eastern Utah saw below normal precipitation in February.
- The northern, central and southern mountains in Colorado saw near normal to above normal precipitation in February.
- The four corners area was dry in February receiving less than 70% of normal precipitation for the month.
- East of the divide saw above normal precipitation for February farther east (SE Wyoming and NE Colorado were >300% of normal) on the plains while areas closer to the Front Range saw below average moisture in February.
- The Crowley/Otero area saw near normal to above normal moisture in February, which was very much needed. That moisture also made it farther east into Cheyenne, Kiowa, Bent and Powers counties bringing normal to above conditions in February.
- The I-25 corridor was dry for February, but February is normally dry along the Front Range.
- The San Luis Valley saw below normal moisture through much of the valley bottom in February.

**Water Year Precipitation (Oct-Feb):**

- Much of the UCRB is showing normal to above conditions for the water year through February.
- The driest areas are present in eastern Utah and the four corners area. Those areas saw less than 90% of normal.
- Much of the mountainous areas of the UCRB are reporting above normal conditions, particularly in the Green River basin.
- Much of the state of Wyoming has seen normal to above normal precipitation since the start of the water year.
- East of the divide in CO, conditions for the water year are above normal over the NE plains and deteriorate to the South, particularly south of I-70 and east of I-25.
- Las Animas and Baca counties saw less than 50% of their normal water year precipitation through February. Below normal water year
precipitation predominates much of the lower Arkansas valley.

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 precipitation is at or above the median for the northern and eastern part of the UCRB with drier
percentiles along the western and southern portions

- Percentiles in the Upper Green region are mostly above the 75th percentile.
- In the northern and central CO mountains percentiles are at or above the median percentile, with most SNOTEL sites along the divide above the 80th percentile, lower to the west.
- The Wasatch and Uintah ranges are showing mixed precipitation percentiles ranging from the teens and 20s to near the median.
- Percentiles in the San Juans range from teens in the lower elevations to near to above the median.

**Basin-wide Snow Water Equivalent (SWE) Percent of Normal:**

- The eastern and northern sub-basins in the UCRB currently have near to above normal snowpack, with the highest values in western WY
- Snowpack in eastern UT is mostly below average, between 77% and 120% of normal
- Snowpack in southwest CO is also slightly below normal at 90%
- East of the basin, snowpack is above normal, with the exception of the Rio Grande Basin at 86%

**SWE Timeseries Graphs:**

- The Upper Green, Yampa-White, and Upper Colorado sub-basins continue to see snowpack accumulations and are well above average, and also above their seasonal peaks
- The Duchesne basin is currently the driest region, with 84% of the median accumulation, and only saw minor increases in the past week
- The Gunnison basin shows near median snowpack for this time of year
- The San Juan is slightly below the median (92%), and has not seen any increases in snowpack this past week

**STANDARDIZED PRECIPITATION INDEX**

![Image of 30 Day SPI from 2/15/2014 to 3/16/2014](image1)

![Image of 90 Day SPI from 12/17/2013 to 3/16/2014](image2)
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):**

- Most of the UCRB is slightly dry on the short-term time scale. SPIs across most of eastern UT, western CO, and the Four Corners region is between 0 and -1
- SPIs are wet for western WY
- SPIs along the Continental Divide in CO are between 0 and +1
- East of the basin, most of eastern WY shows wet SPIs while eastern CO SPIs are mostly between 0 and -1

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

- Most of the UCRB shows wetter long-term SPIs with the exception of the Wastach and Four Corners areas.
- The driest area of the UCRB on the longer term is northern Utah near the Wasatch range where SPIs range from -1.5 to +1
- The Four Corners area is still slightly dry on the longer term with SPI's from -1.5 to +1
- The rest of the UCRB indicates wet conditions, with SPIs ranging from 0 to +2.5
- The driest areas on the plains remain in the lower Arkansas valley in southeast CO

**STREAMFLOW**
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:

- The number of reporting gages (not ice affected) has increased to 100 from 55 one month ago
- 75% of the gages in the UCRB are reporting normal (25th to 75th percentile) or above 7-day average streamflows
- 16% of the gages are recording much below normal (below the 10th percentile) or record low 7-day average streamflows
- The driest streams are in the San Juan Basin in SW Colorado and middle Green River in northeast UT and northwest CO.
- Flows on the Colorado River near the CO-UT state line are in the near

http://climate.colostate.edu/~drought/current_assessment.php
normal range, currently at the 60th percentile
- The Green River at Green River, UT is currently reporting below normal flows at the 13th percentile
- Flows on the San Juan River near Bluff, UT are much below normal, currently at the 9th 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).
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:**

- Most of the UCRB is showing near average to wet soil moisture conditions.
- Soil moisture across most of western CO and parts of eastern UT are between the 70th and 95th percentiles.
- Some spots of southern WY and northern UT are slightly drier, with soil moisture percentiles between the 5th and 30th percentiles.
- Most of eastern WY is showing wet soil moisture.
- The lower Arkansas valley, east of the divide, is reporting dry soil moisture conditions with percentiles in the 5th to 30th percentile range. The driest area is centered over Otero county.
- Adding in SWE for total moisture storage, conditions are even drier for northern UT with the below normal snowpack conditions.

**Reservoirs:**

- All of the major northern reservoirs in the UCRB are near to above their March averages, ranging between 89% (Lake Granby) and 110% (Dillon Reservoir) of average.
- The southern reservoirs are below average, ranging between 56%
(Powell) and 75% (Navajo) of average
- Blue Mesa in the Gunnison basin increased in volume most of this winter (when it normally decreases) and is now at 97% of average
- Navajo, McPhee, and Flaming Gorge have seen slight increases since the end of last month while the remaining reservoirs have seen slight decreases.

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:
- Temperatures across the UCRB were mixed with warmer than average temperatures in the northern portion and cooler than average

http://climate.colostate.edu/~drought/current_assessment.php
temperatures across eastern portions

- Temperatures over eastern UT, western CO, and the Four Corners region ranged between 2 degrees cooler than average to 4 degrees warmer than average
- East of the basin, temperatures over eastern WY and eastern CO were 0 to 8 degrees above average

Last Month Temperatures:

- The UCRB mainly saw above normal temperatures in February ranging from near normal along the divide to 10 degrees above normal.
- The warmest areas were in Utah and SW Wyoming with temperatures near normal to 10 degrees above normal for the month.
- Western Colorado was mainly in the 2-4 degrees above normal range for February.
- The Rio Grande basin was also warm with temperatures 2-8 degrees above normal.
- East of the divide was a completely opposite situation with temperatures ranging from near normal at the divide to more than ten degrees below normal farther to the east. The effects of these cold temperatures on the plains winter wheat crop can only be assessed once it emerges from dormancy.
- The coldest areas were in north central and eastern Wyoming as well as the NE corner of Colorado. Temperature departures moderated slightly on the SE plains of Colorado but remained 2 to 8 degrees below the February normal.

FORECAST AND OUTLOOK
The top two images show Climate Prediction Center's Precipitation outlooks for 8 - 14 days (top left) and 3 months (top right). 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:

- The passage of a storm system on Tuesday will bring snow to the higher elevations and the chance for light snow showers along the
eastern CO plains

- Warmer and drier conditions will return to the region mid-week
- The next chance for cooler, more active weather will return late in the week and into the weekend

**Longer Term:**

- The 8-14 day precipitation outlook shows increased chances of wetter than average conditions across most of the basin, with near normal precipitation expected across eastern and southern CO
- The CPC 3-month outlook shows equal chances for wet, dry, or near normal conditions across the entire basin for March-April-May
- The seasonal drought outlook shows a probability of drought persisting across the western portion of the basin and across southeast CO and northern UT

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**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: March 18, 2014

Higher elevations continue to see weekly precipitation accumulations, and the northern sub-basins of the UCRB and most of the WY basins and northern CO basins are seeing well above average snowpack conditions. While the San Juans in southwest CO are below average, the area has fortunately not experienced much dust-on-snow events. High snowpack amounts in northern CO, combined with higher streamflows could mean that flooding may be a concern this spring snowmelt season and will be closely watched.

In southeast CO, minimal storm passages have not prevented the preponderance of dust storms that have blown through the area on a fairly consistent basis. This dust storms have worked to deplete the limited soil moisture and stress the winter wheat crops.

Recommendations**

**UCRB:** The current U.S. Drought Monitor (USDM) author expanded the D1 in the Four Corners region in a recent draft. The GJT NWS office suggests that this expansion was too aggressive for a normally drier time of year for the lower elevations. Reports are that the Animas river valley are in fairly good shape. Therefore, we recommend that the D1 expansion be scaled back a little, with almost no expansion across the Animas river valley (orange line is recommended adjusted expansion line).

Status quo is recommended for the rest of the UCRB.

**Eastern Colorado:** The current USDM author expanded the D3 in southeast CO to connect with the D3 in western KS. As there is little data to support this expansion, reports of impacts are needed. Current reports from the area are that eastern Kiowa County (from Eads to the KS border) is in better shape (with better looking wheat) than areas further to the south in Prowers
County. In Prowers County, conditions are very dry all the way to Holly. Therefore, we recommend that the D3 be adjusted so that it does not extend through eastern Kiowa and Cheyenne counties, but does extend through more of Bent and Prowers counties (back to D2 is the green shape, down to D3 is the yellow shape).

Reports are also that parts of Baca County, especially east of Highway 287 and through Walsh are in better condition than the surrounding areas. Therefore we recommend that the D2 deterioration in Baca County be adjusted to trim from the west (where conditions are worse), but to leave areas east of 287 and around Walsh in D1 (red shape is recommended D1 depiction).

Status quo is recommended for northeast CO.