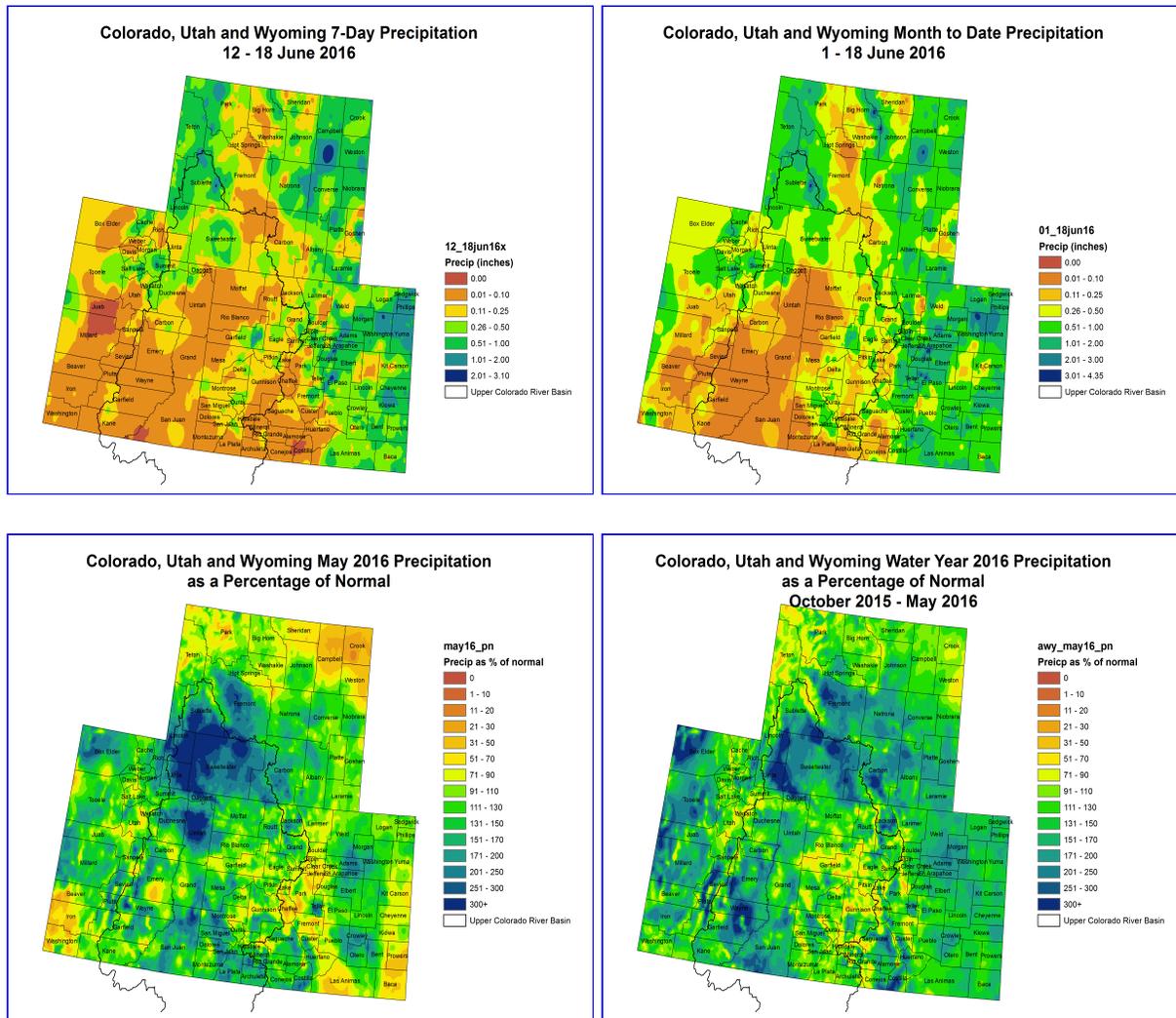
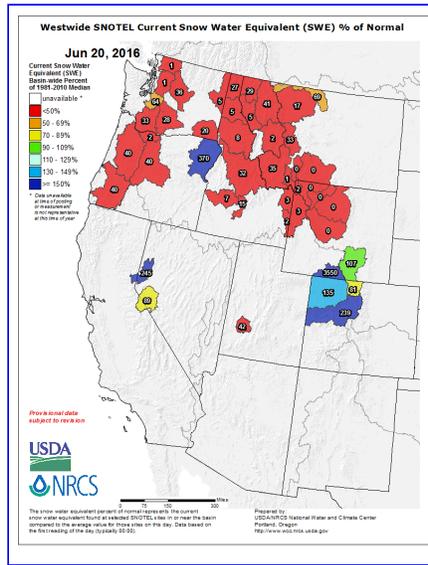
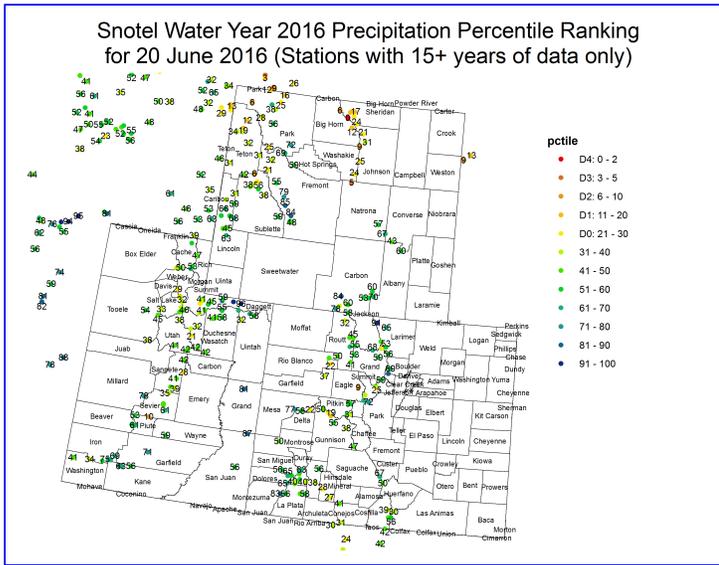


# PRECIPITATION

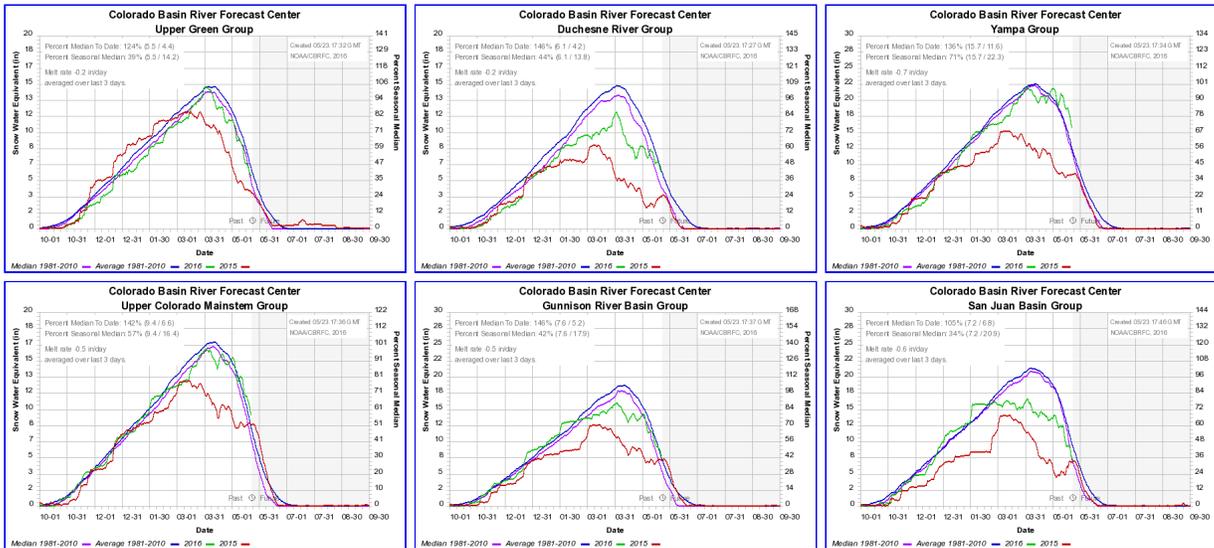


The images above use daily precipitation statistics from NWS COOP, CoCoRaHS, and CoAgMet stations. From top to bottom, and left to right: most recent 7-days of accumulated precipitation in inches; current month-to-date accumulated precipitation in inches; last month's precipitation as a percent of average; water-year-to-date precipitation as a percent of average.

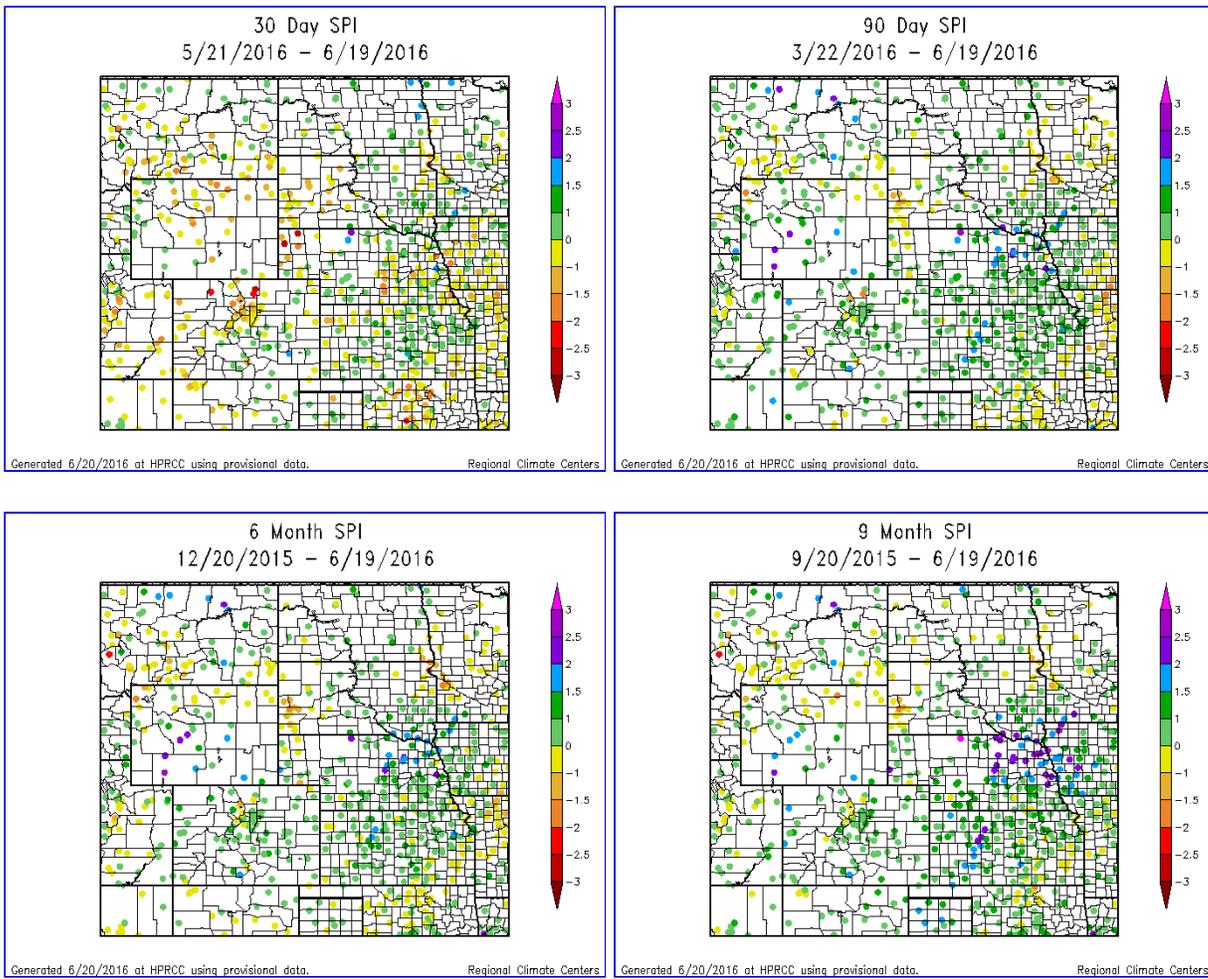
# SNOTEL AND SNOWPACK



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).

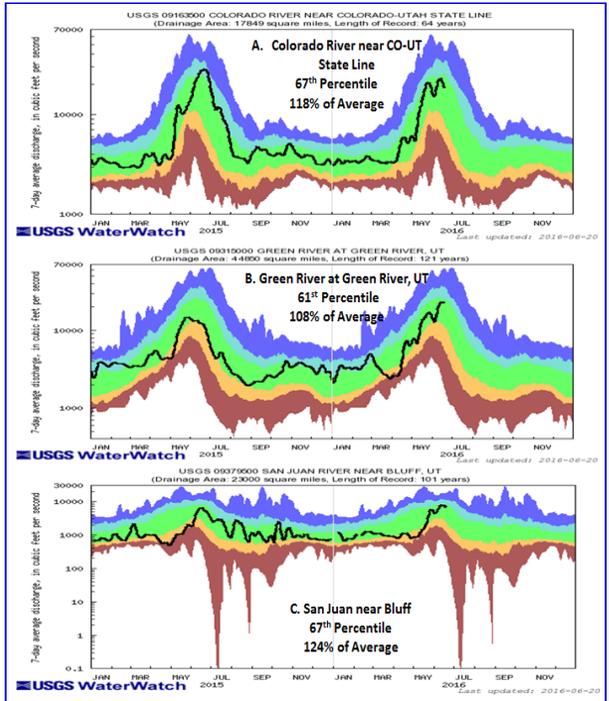
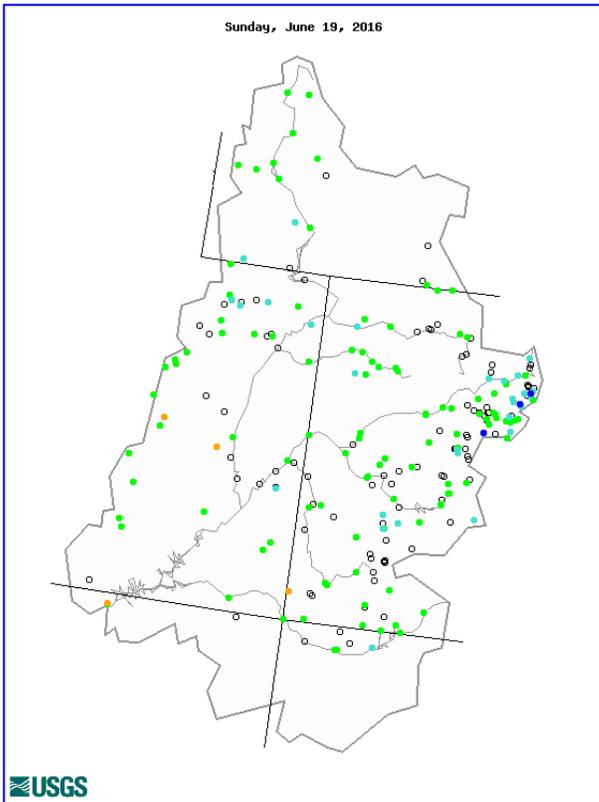


# STANDARDIZED PRECIPITATION INDEX



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.

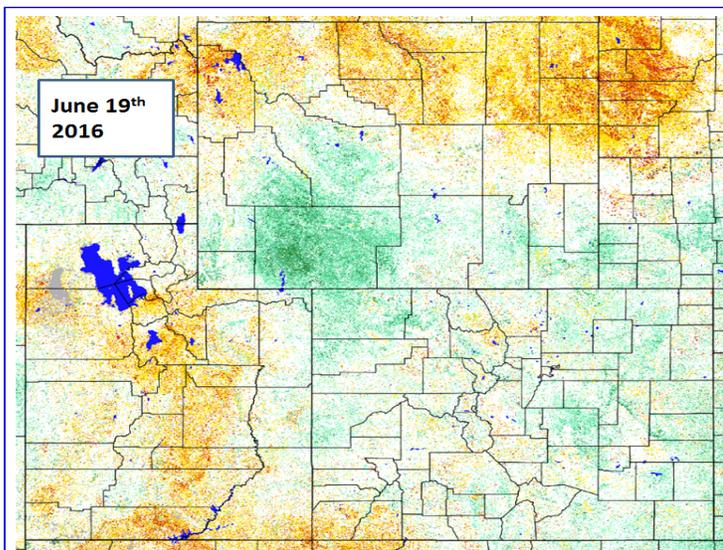
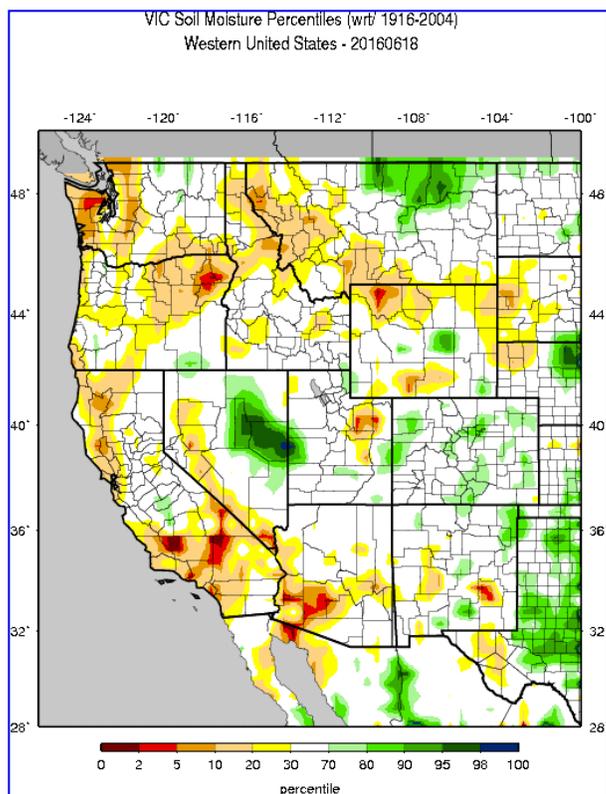
## STREAMFLOW



| 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 |      |            |

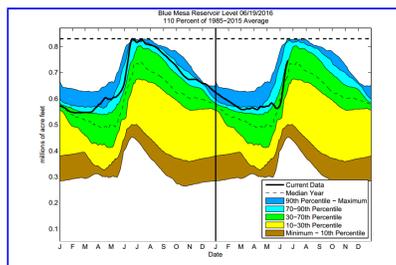
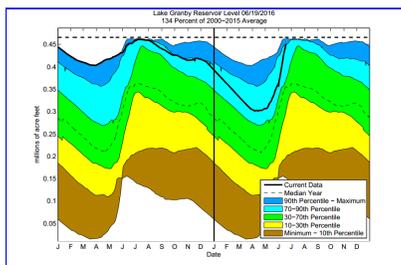
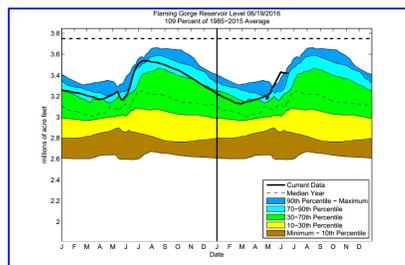
The top left image shows 7-day averaged streamflows as a percentile ranking across the UCRB. The top right image shows 7-day averaged discharge over time at three key sites around the UCRB: The Colorado River at the CO-UT state line; the Green River at Green River, UT; and the San Juan River near Bluff,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

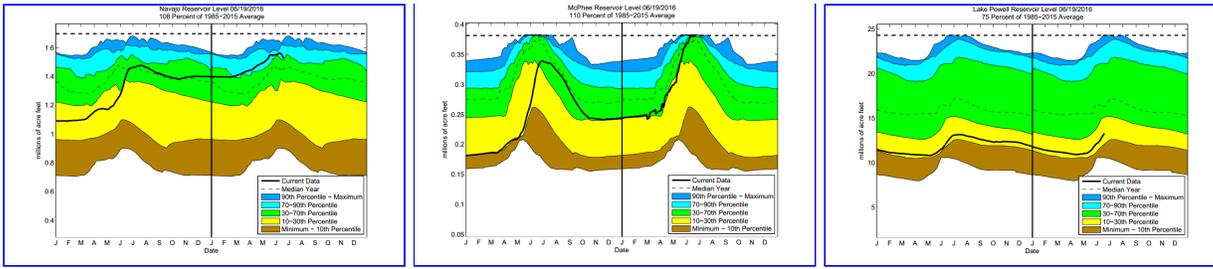
## SURFACE WATER



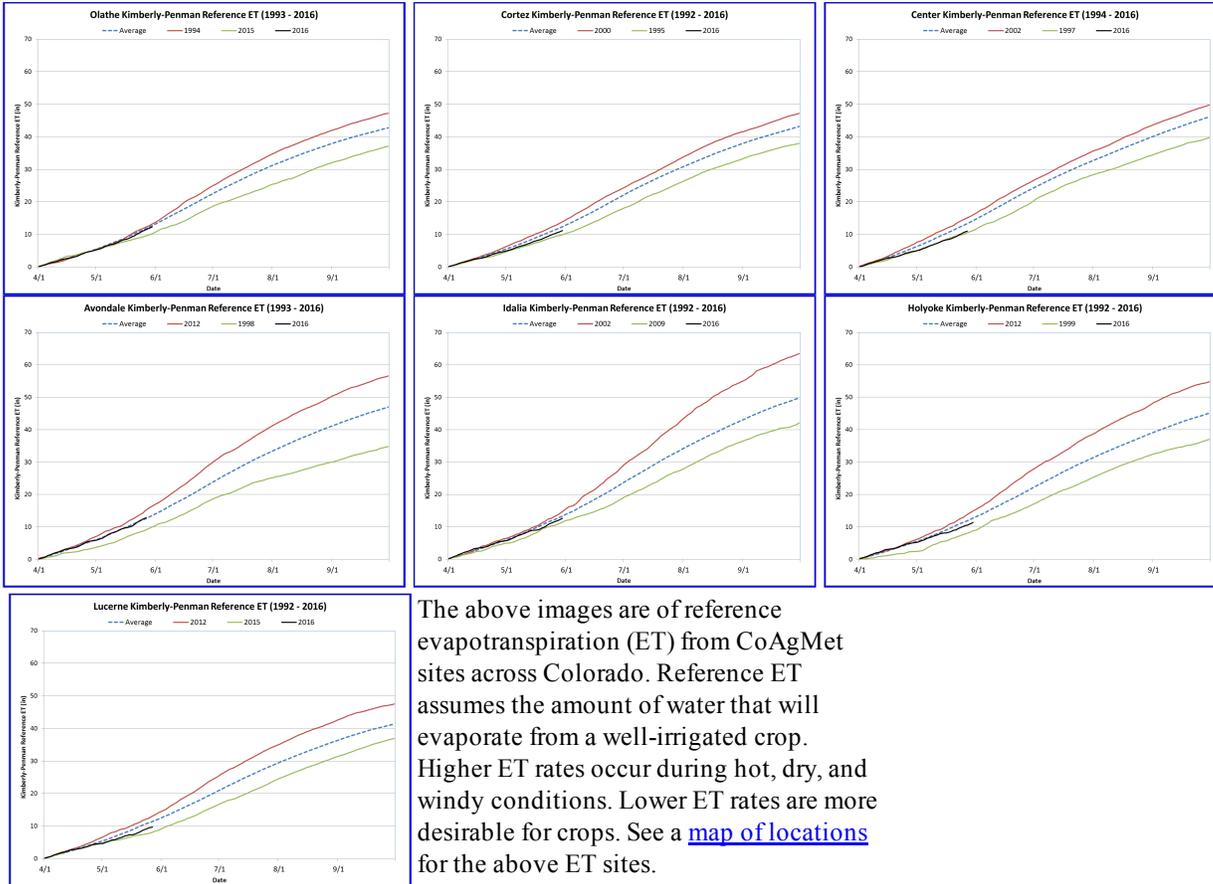
The top left image shows VIC modeled soil moisture as a percentile ranking. The top right image shows satellite-derived vegetation from the VegDRI product (which updates on Mondays).

The 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.

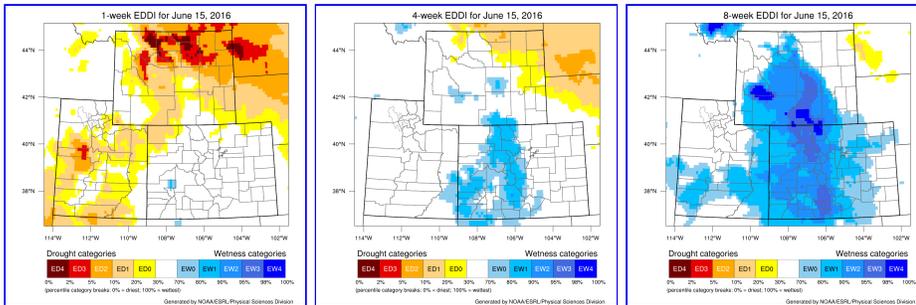


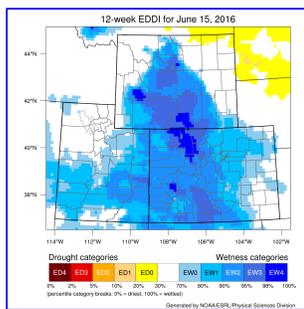


# EVAPOTRANSPIRATION



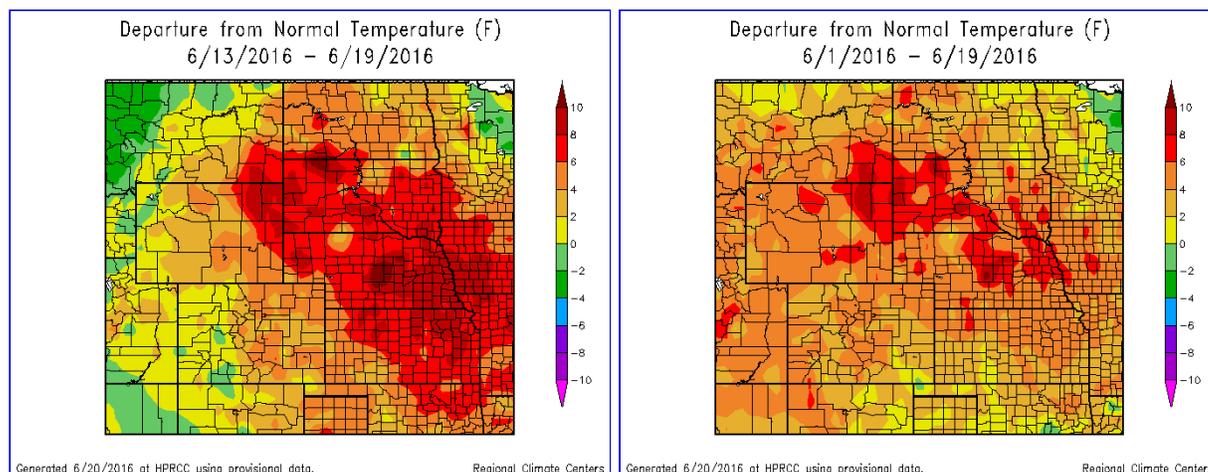
The above images are of reference evapotranspiration (ET) from CoAgMet sites across Colorado. Reference ET assumes the amount of water that will evaporate from a well-irrigated crop. Higher ET rates occur during hot, dry, and windy conditions. Lower ET rates are more desirable for crops. See a [map of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



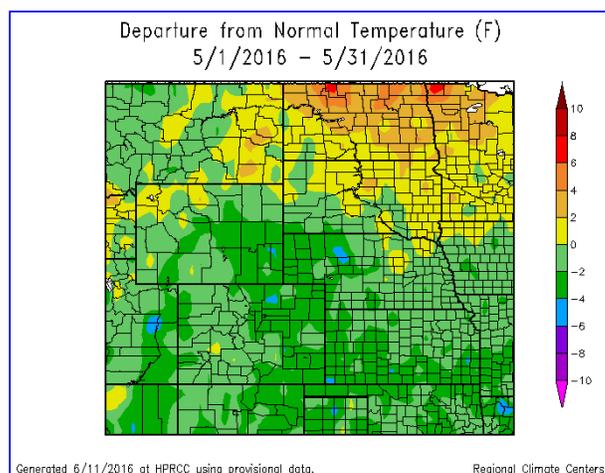


The above images are available courtesy of NOAA's Evaporative Demand Drought Index (EDDI). Drought classification listed is a function of the depth of reference evapotranspiration accumulated over a given period of record with respect to a climatology of 1981-2010. The drought categories displayed are 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..

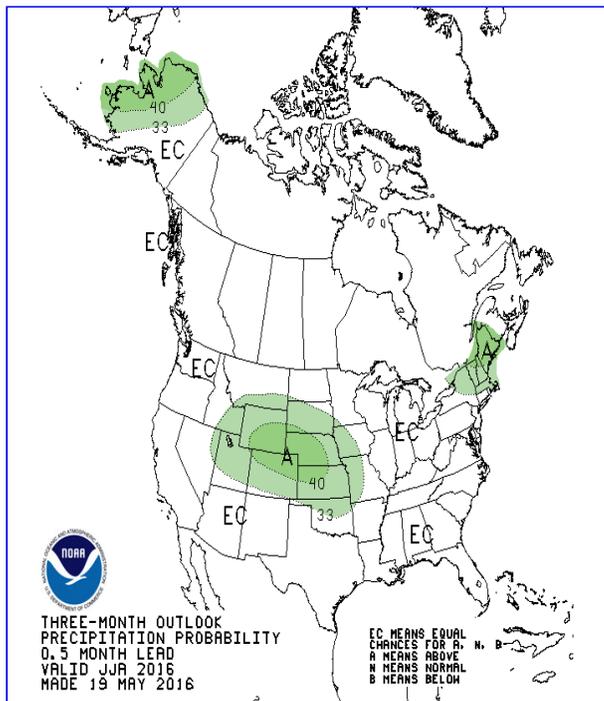
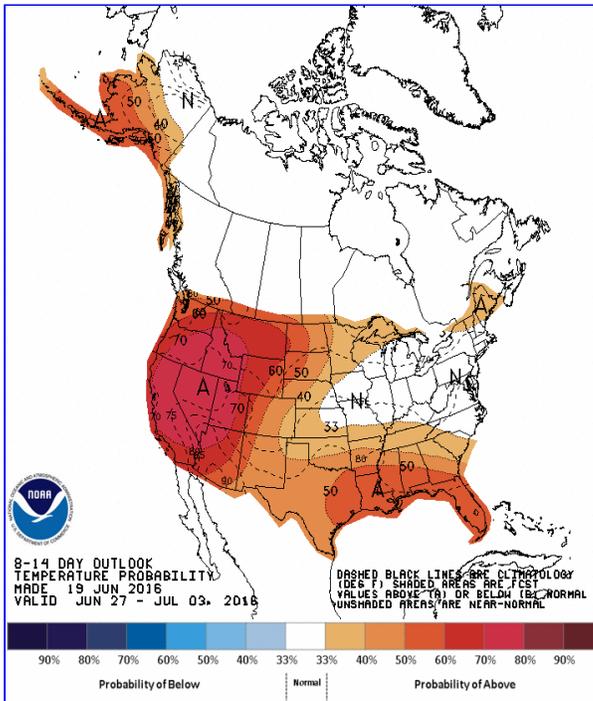
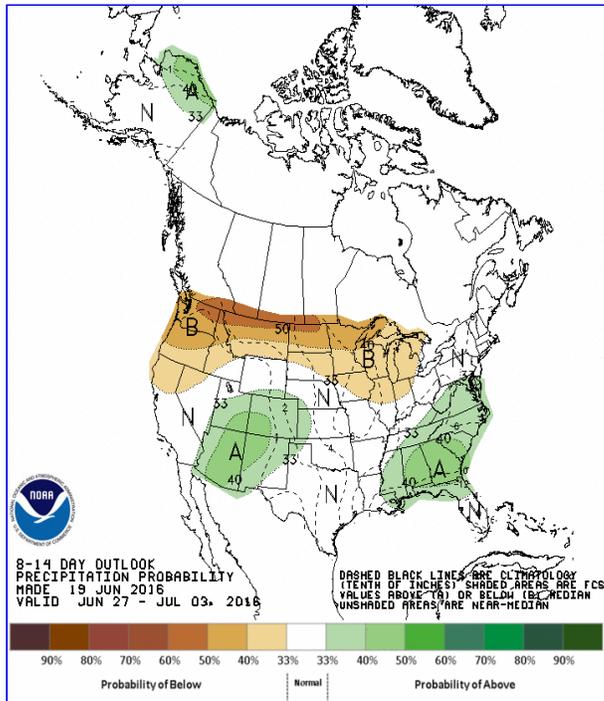
## TEMPERATURE



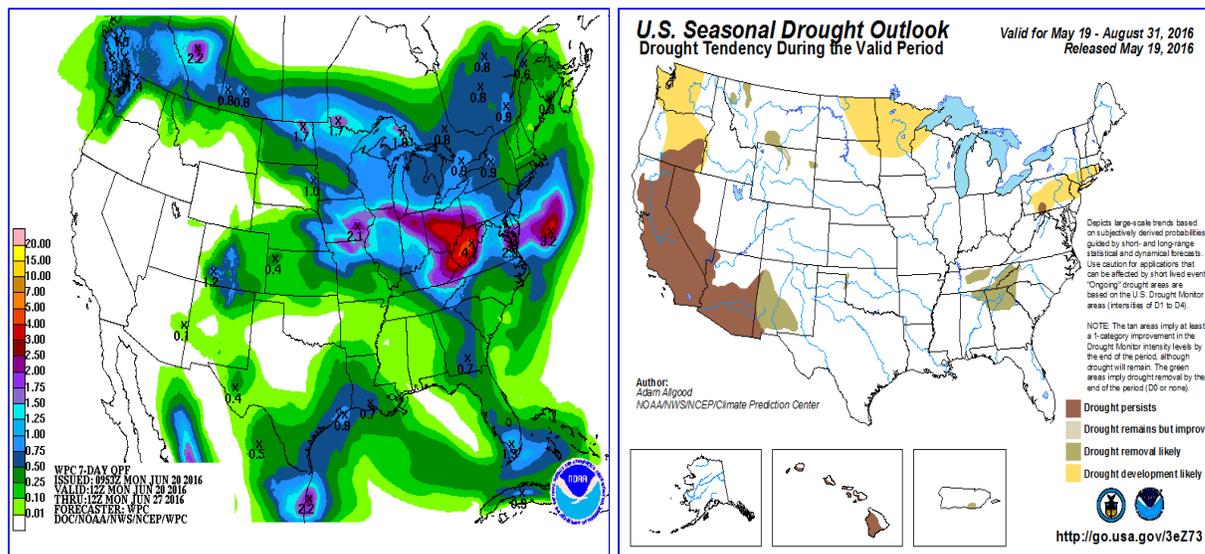
All images show temperature departures from average over different time periods (last 7 days on top left; month-to-date on top right; last full month on bottom). Temperature departure maps provided by HPRCC ACIS.



# FORECAST AND OUTLOOK



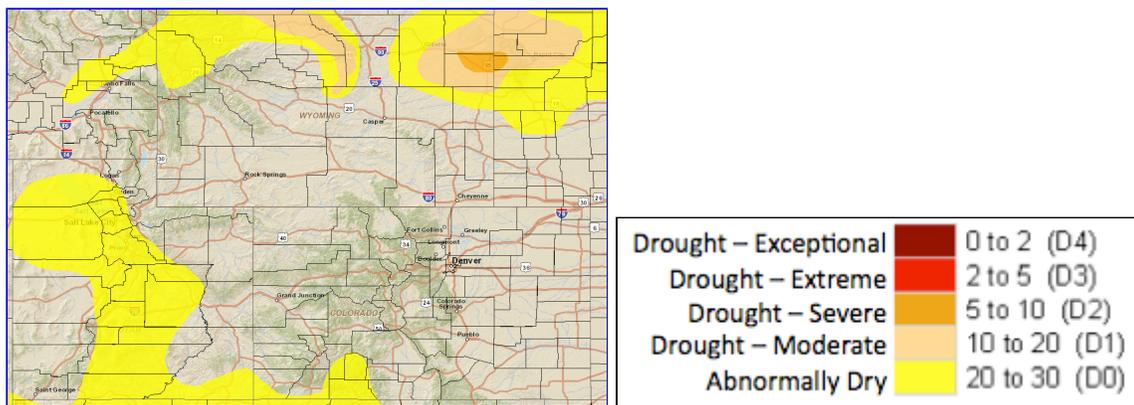
The top two images show Climate Prediction Center's Precipitation and Temperature outlooks for 8 - 14 days. The middle image shows the 3 months Precipitation outlook. The bottom left image shows the Weather Prediction Center's Quantitative Precipitation Forecast accumulation for the seven days between Tuesday 12Z and ending Tuesday 12Z. The bottom right image shows the Climate Prediction Center's most recent release of the U.S. Seasonal Drought Outlook.



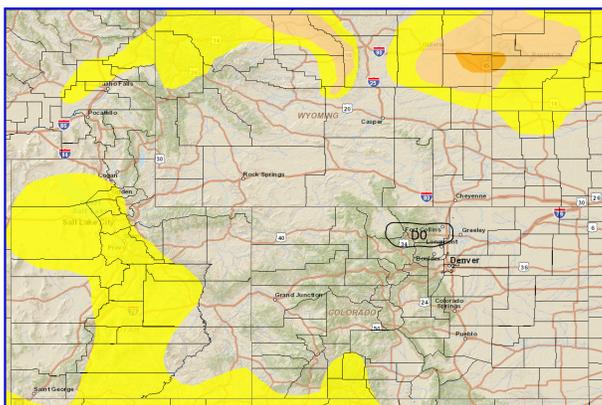
### Short Term: (6/14)

- Afternoon thunderstorms are possible for the headwaters of the Upper Green River Basin today. Following that, the entirety of the UCRB and eastern Colorado can expect a hotter than average week with no precipitation.
- **Longer Term:**
  - The 8-14 day precipitation outlook shows increased chances for below average precipitation for the UCRB and for northeast Colorado. These chances are most highly enhanced over the Upper Green River Basin.
  - The 8-14 day temperature outlook shows increased chances for above average temperatures for the entirety of the UCRB and eastern Colorado. These chances are most highly enhances for the southern UCRB and the San Luis Valley.
  - The Climate Prediction Center June through August outlook shows increased chances of above average precipitation for the entirety of the UCRB and eastern Colorado. These chances are most highly enhanced in north and northeast Colorado.
  - 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: June 21, 2016

The past week temperatures were closer to normal over the Upper Colorado River Basin, compared to the previous week, with temperatures 0-2 degrees F above average for much of the basin. Eastern Colorado experienced temperatures anywhere from 2-8 degrees above average with the higher temperature anomalies of 6-8 degrees in El Paso, Pueblo, and Fremont counties. Most of the UCRB was dry over the last week at low elevations, receiving less than a tenth of an inch of precipitation. Some isolated thunderstorms dropped 0.26-0.50" in small portions of the basin. These storms were primarily confined to the mountains. For eastern Colorado the week was more convectively active. Precipitation was very unevenly distributed from these storms with the heavier precipitation of 0.26-2.00" in the northeast region of the state and south central Colorado being drier at 0.00-0.10". Parts of the Douglas and El Paso Counties received over 2.00" of rainfall. Other areas such as eastern Larimer County, and north Lincoln County, received less than 0.10" of rainfall. This precipitation pattern is quite characteristic of the Upper Colorado River Basin and eastern Colorado for the mid-June time frame.

Streamflows in the UCRB are primarily above average as the high temperatures coaxed an increase in high elevation snowmelt the previous week. All three key indicator sites have reached their peaks for the season and are starting their decrease in flow. Flaming Gorge Reservoir has started its decrease after being at its highest mid-June level over the past 30 years,

McPhee Reservoir is at capacity, and both Lake Granby and Blue Mesa have seen large increases with Lake Granby moving into the 90<sup>th</sup> percentile. Levels at Lake Powell continue to increase even though it is still struggling to make it out of the 10-30<sup>th</sup> percentile. Response of root zone soil moisture and surface vegetation to the drier conditions has been less favorable. Soil moisture across much of northeast Colorado has fallen out of the above average range in response to increased evaporative demand. This is a time of year where soil moisture characteristically decreases across the eastern plains of Colorado, and these decreases have been more rapid than average. The MODIS VegDRI product is showing increases in isolated dry patches in south Larimer, east Grand and central Yuma counties.

The outlook for the rest of June is encouraging compared to last week. The 7-day precipitation forecast shows some precipitation over eastern Colorado with little to no precipitation west into the basin. The one-to-two week outlook, while less certain, is slightly more favorable. While the UCRB forecast has increased chances of above average temperature the precipitation forecast is also above average. In eastern Colorado the one-to-two week outlook calls for above average temperatures and precipitation as well. The summer solstice is upon us, so a heatwave at this time of year has the potential to quickly diminish the low evaporative stress anomalies that have been seen across the region over April and May.

### **Recommendations:**

**UCRB:** Status quo.

**Eastern Colorado:** It is recommended that a short-term impact D0 be added in southern Larimer, southern Jackson, northern Boulder, and northeast Grand Counties. This area is now showing SPIs of -1 to -3 on the 30-day timescale due to missing out on some of the best convective storms across Colorado over the past few weeks. This short-term SPI is alarming since it comes at the time of year when the area characteristically experiences increased precipitation. SPIs in this area also showing -1 to -1.5 on the 90 day time scale.

Areas to keep watch over the next couple of weeks include northern Park county into southern Summit county, and along the border of Saguache and Huerfano Counties where SPI values are -1 to -1.5 on the 30 day time scale as well as below 0 on the 90 day time scale. The increased evaporative stress in this area has been observed in decreasing soil moisture and drying vegetation as well.