Summer 2011

August 23, 2011

Weekly Colorado Drought Assessment

Today's Agenda

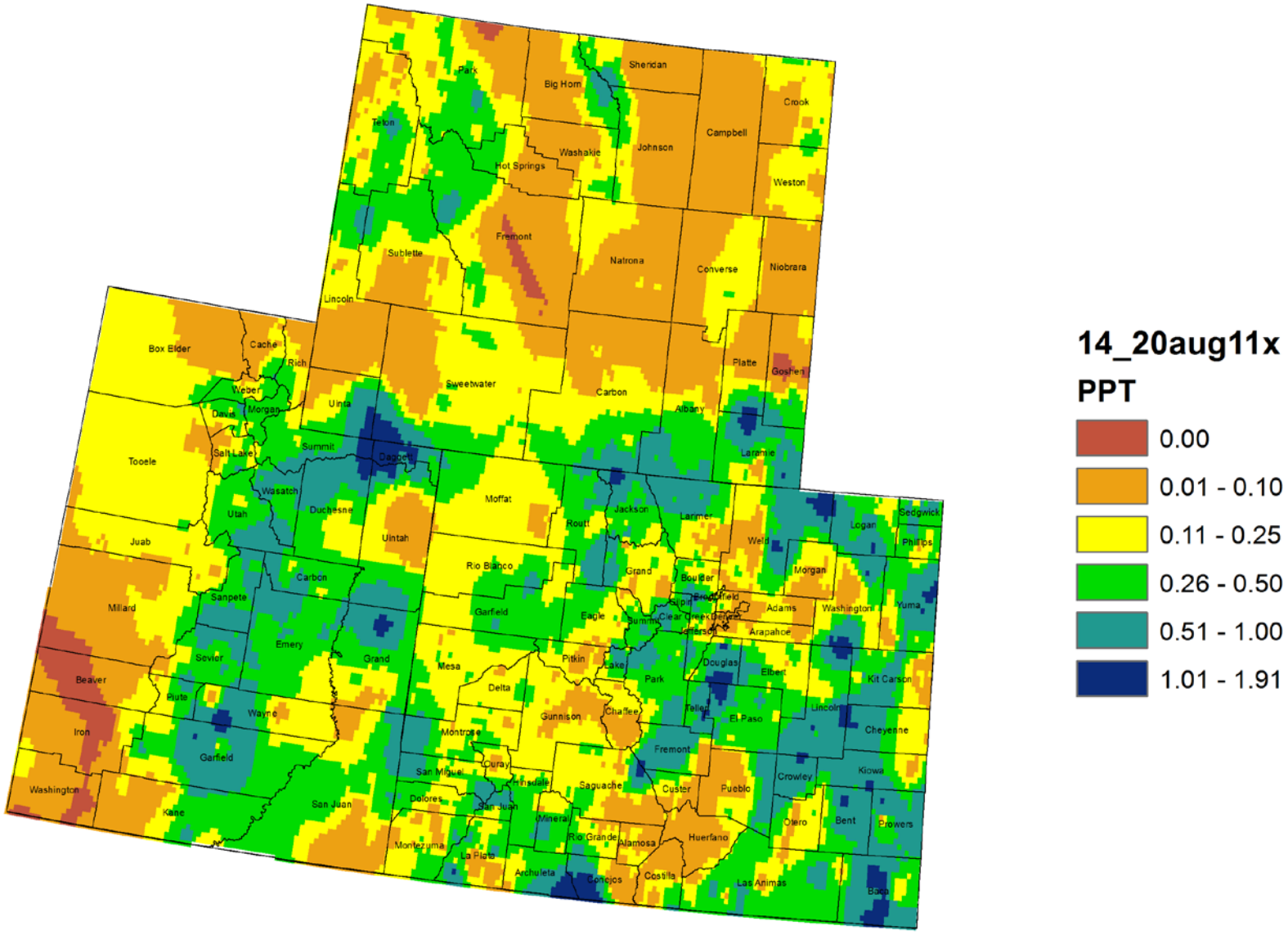
-Assessment of current water conditions

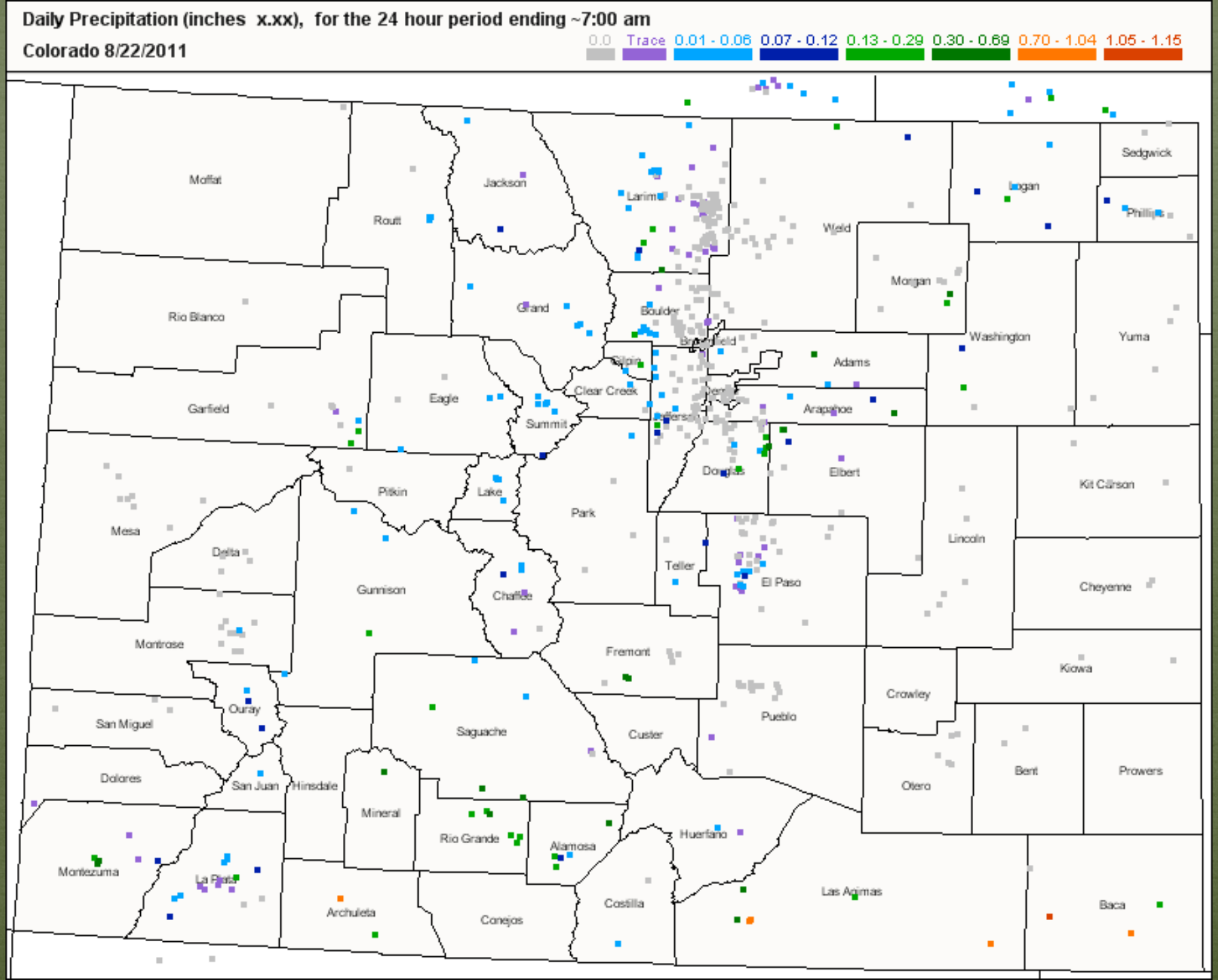
- Precipitation Forecast

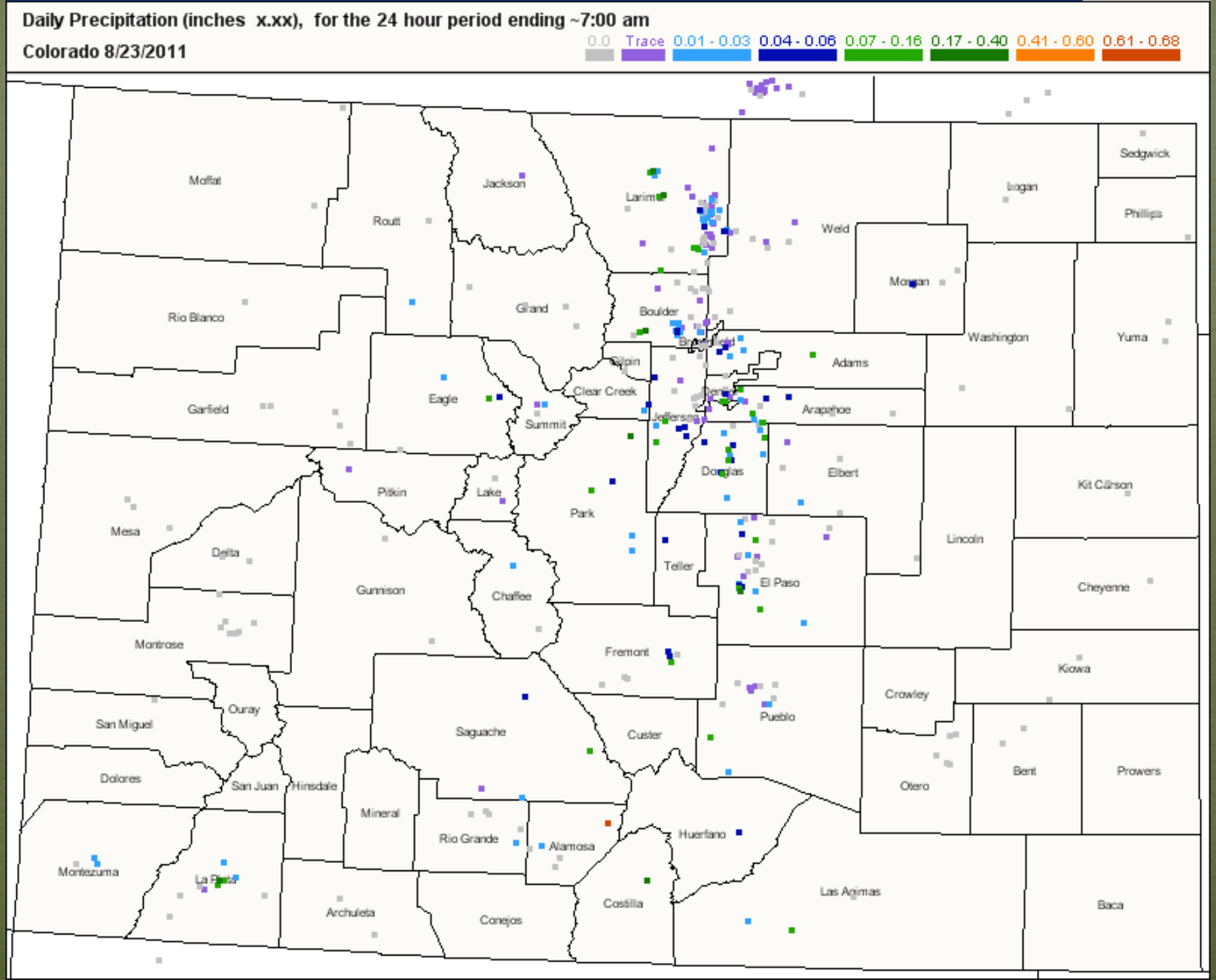
- Recommendations for Drought Monitor

Precipitation/Snowpack Update

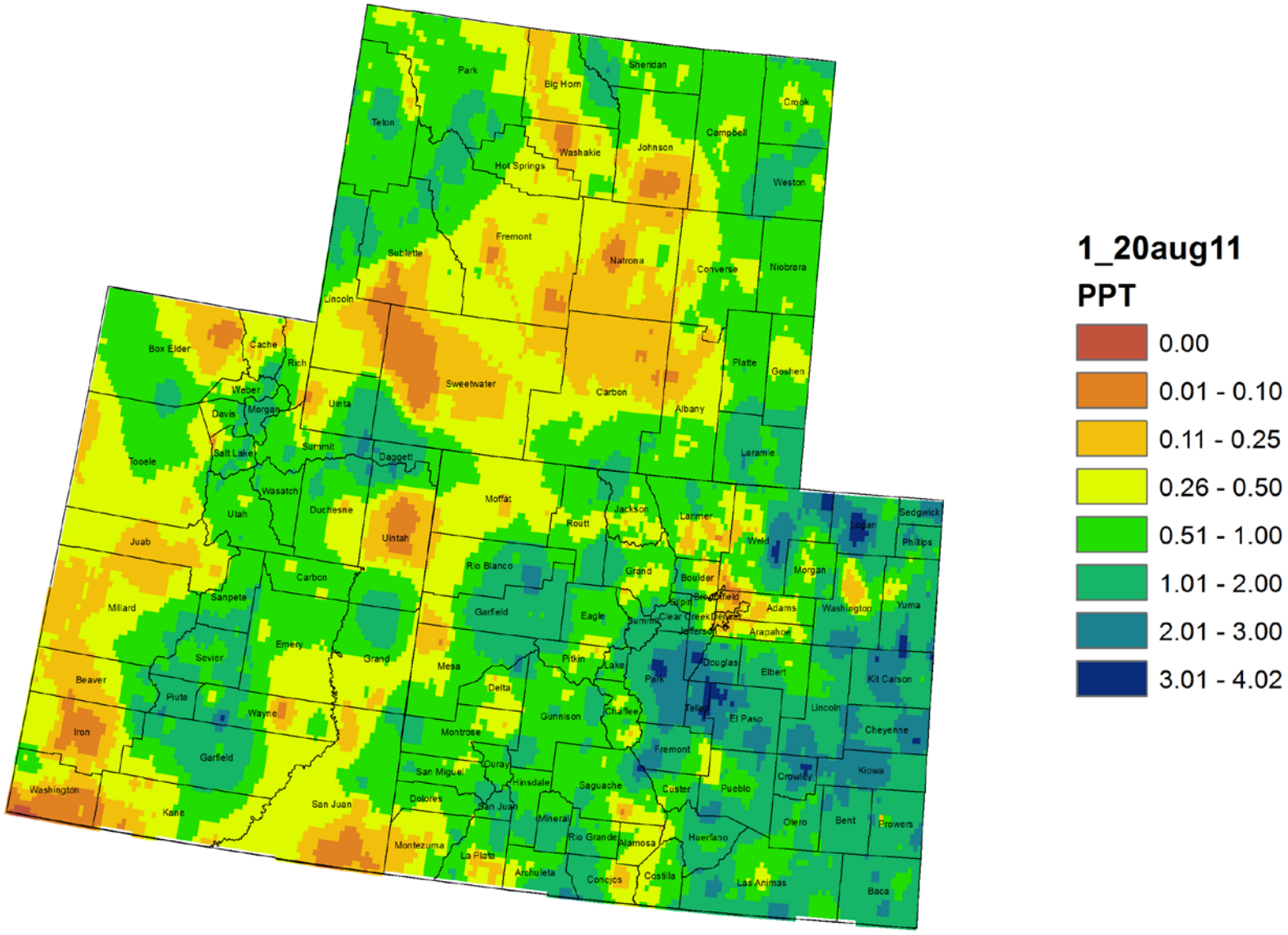
Colorado, Utah and Wyoming 7 Day Precipitation (in)
14 - 20 August 2011




Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
Colorado 8/22/2011
0.0
Trace
0.01 - 0.06
0.07 - 0.12
0.13 - 0.29
0.30 - 0.69
0.70 - 1.04
1.05 - 1.15
Moffat
Routt
Jackson
Larimer
Weld
Logan
Sedgwick
Phillips
Rio Blanco
Grand
Boulder
Morgan
Washington
Yuma
Garfield
Eagle
Summit
Clear Creek
Adams
Arapahoe
Elbert
Kit Carson
Mesa
Delta
Pitkin
Lake
Park
Teller
El Paso
Lincoln
Cheyenne
Montrose
Gunnison
Chaffee
Fremont
Kiowa
Crowley
Ouray
San Miguel
Saguache
Custer
Pueblo
Otero
Bent
Prowers
Dolores
San Juan
Hinsdale
Mineral
Rio Grande
Alamosa
Huerfano
Montezuma
La Plata
Archuleta
Conejos
Costilla
Las Animas
Baca


Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
Colorado 8/23/2011
0.0
Trace
0.01 - 0.03
0.04 - 0.06
0.07 - 0.16
0.17 - 0.40
0.41 - 0.60
0.61 - 0.68
Moffat
Routt
Jackson
Larimer
Weld
Logan
Sedgwick
Phillips
Rio Blanco
Grand
Boulder
Morgan
Washington
Yuma
Garfield
Eagle
Summit
Clear Creek
Gilpin
Adams
Arapahoe
Jefferson
Douglas
Elbert
Kit Carson
Pitkin
Lake
Park
Mesa
Delta
Gunnison
Chaffee
Teller
El Paso
Lincoln
Cheyenne
Montrose
Fremont
Kiowa
Ouray
San Miguel
Saguache
Custer
Pueblo
Crowley
Dolores
San Juan
Hinsdale
Mineral
Rio Grande
Alamosa
Huerfano
Otero
Bent
Prowers
Montezuma
La Plata
Archuleta
Conejos
Costilla
Las Animas
Baca

Colorado, Utah and Wyoming Month to Date Precipitation (in)
1 - 20 August 2011

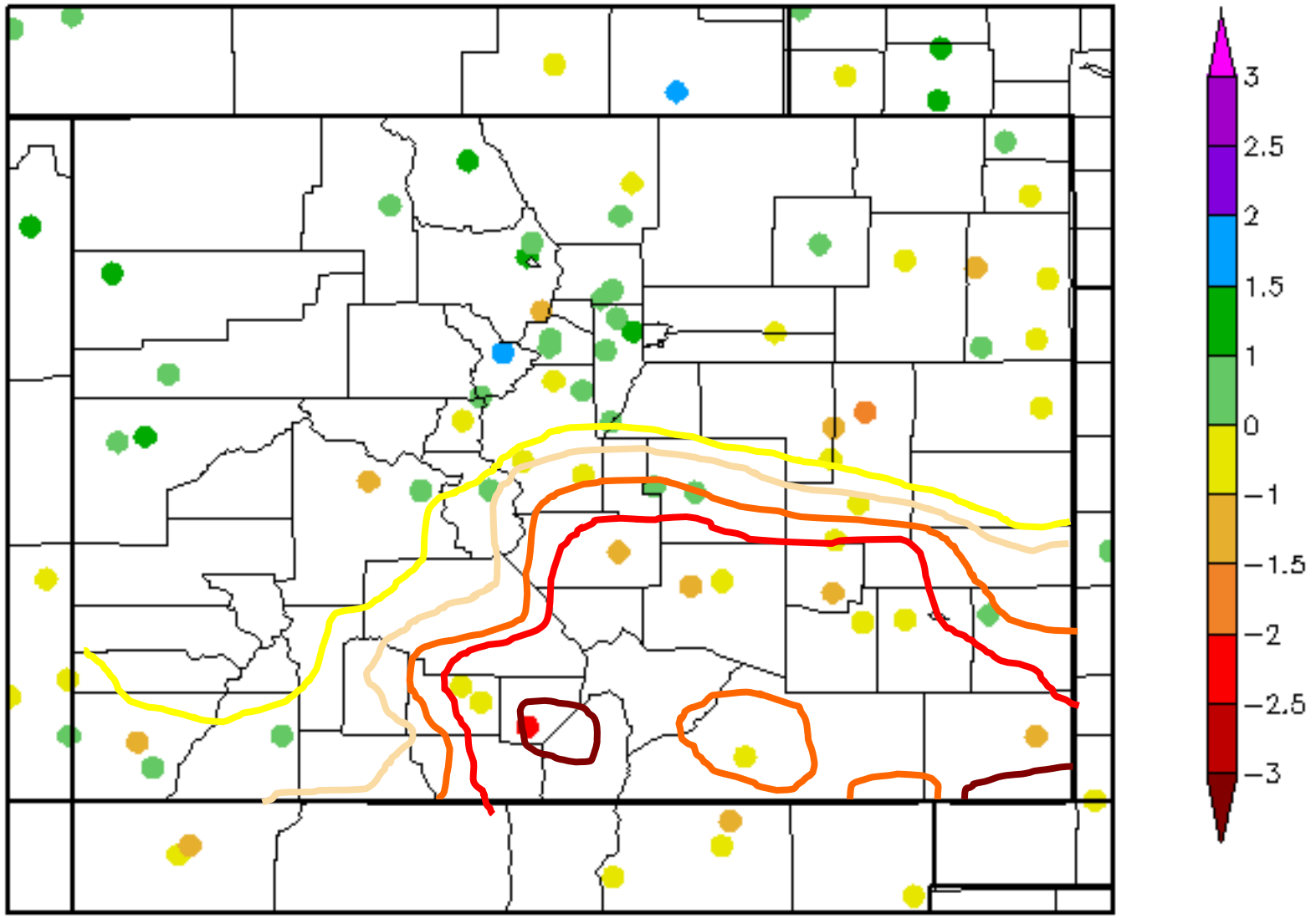


1_20aug11

PPT

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.02

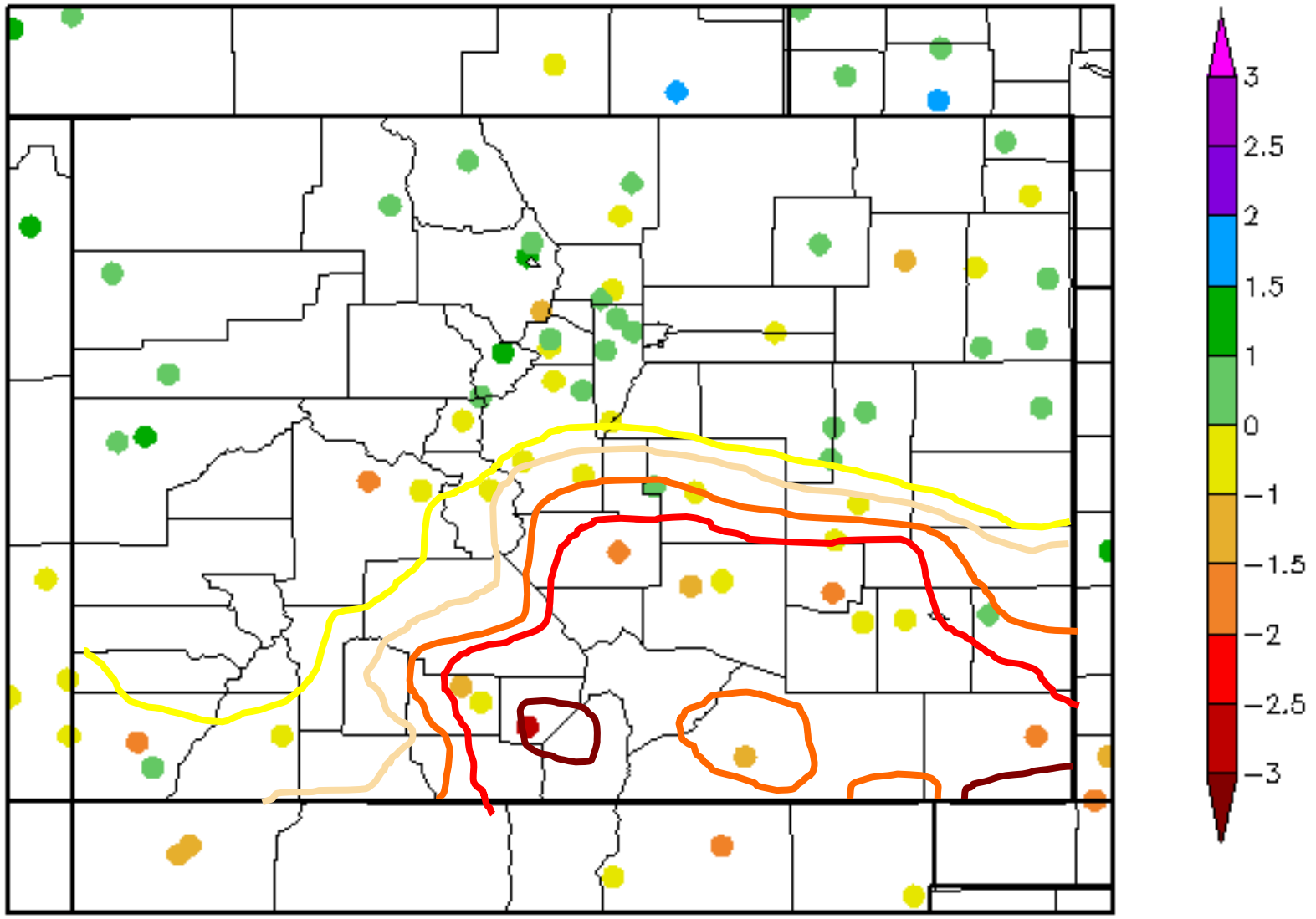
60 Day SPI
6/23/2011 – 8/21/2011



Generated 8/22/2011 at HPRCC using provisional data.

Regional Climate Centers

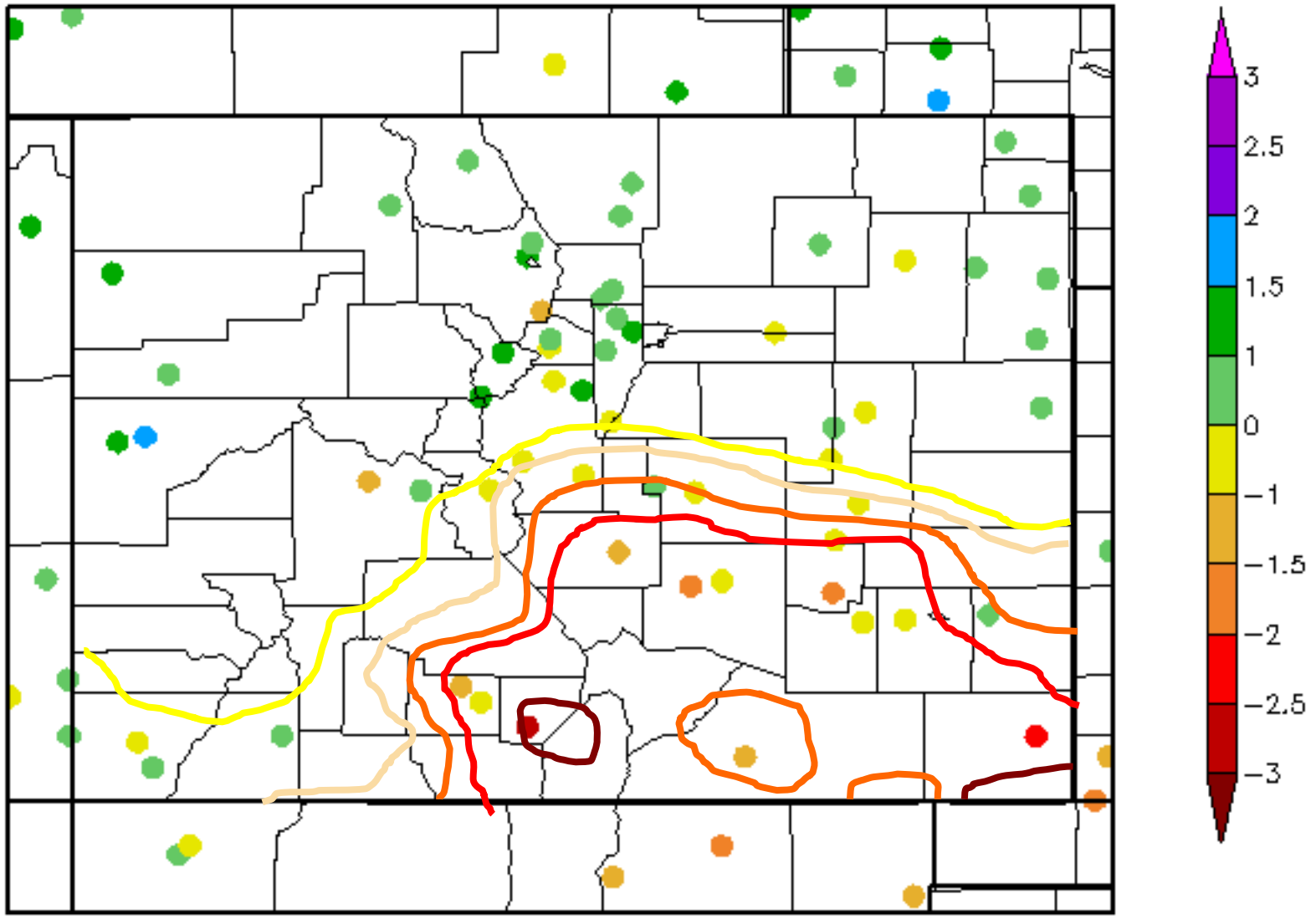
90 Day SPI
5/24/2011 – 8/21/2011



Generated 8/22/2011 at HPRCC using provisional data.

Regional Climate Centers

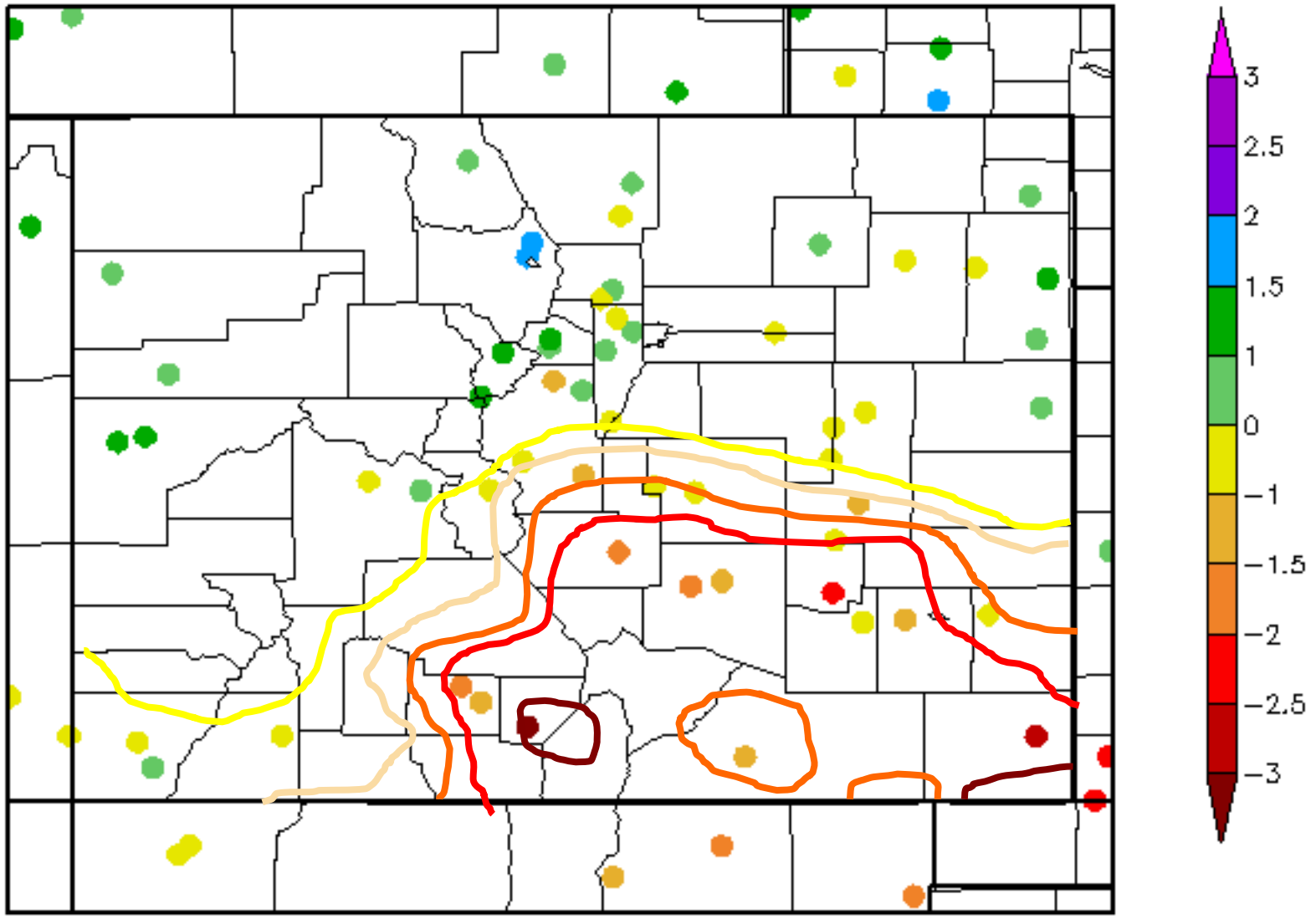
120 Day SPI
4/24/2011 – 8/21/2011



Generated 8/22/2011 at HPRCC using provisional data.

Regional Climate Centers

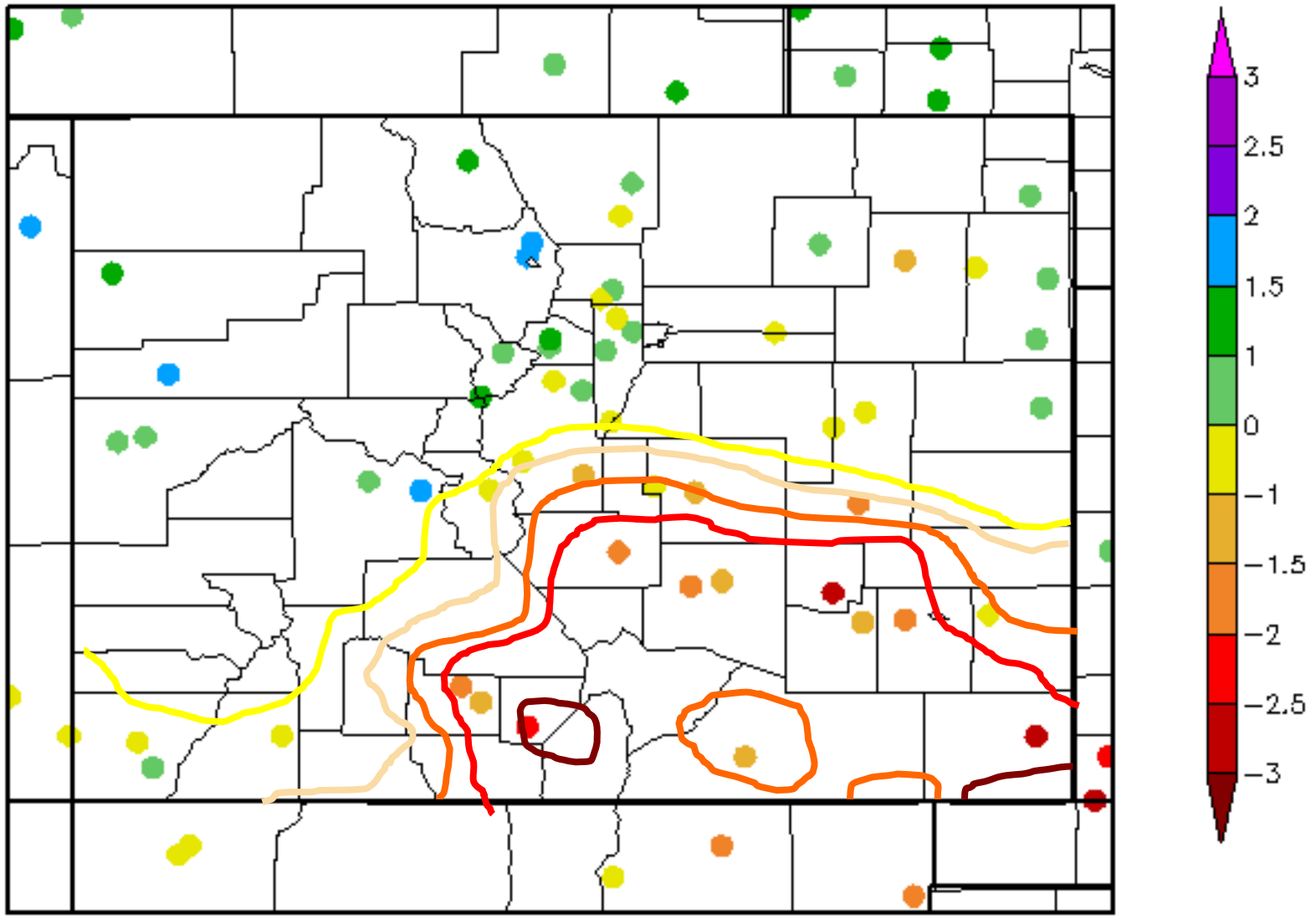
6 Month SPI
2/22/2011 – 8/21/2011



Generated 8/22/2011 at HPRCC using provisional data.

Regional Climate Centers

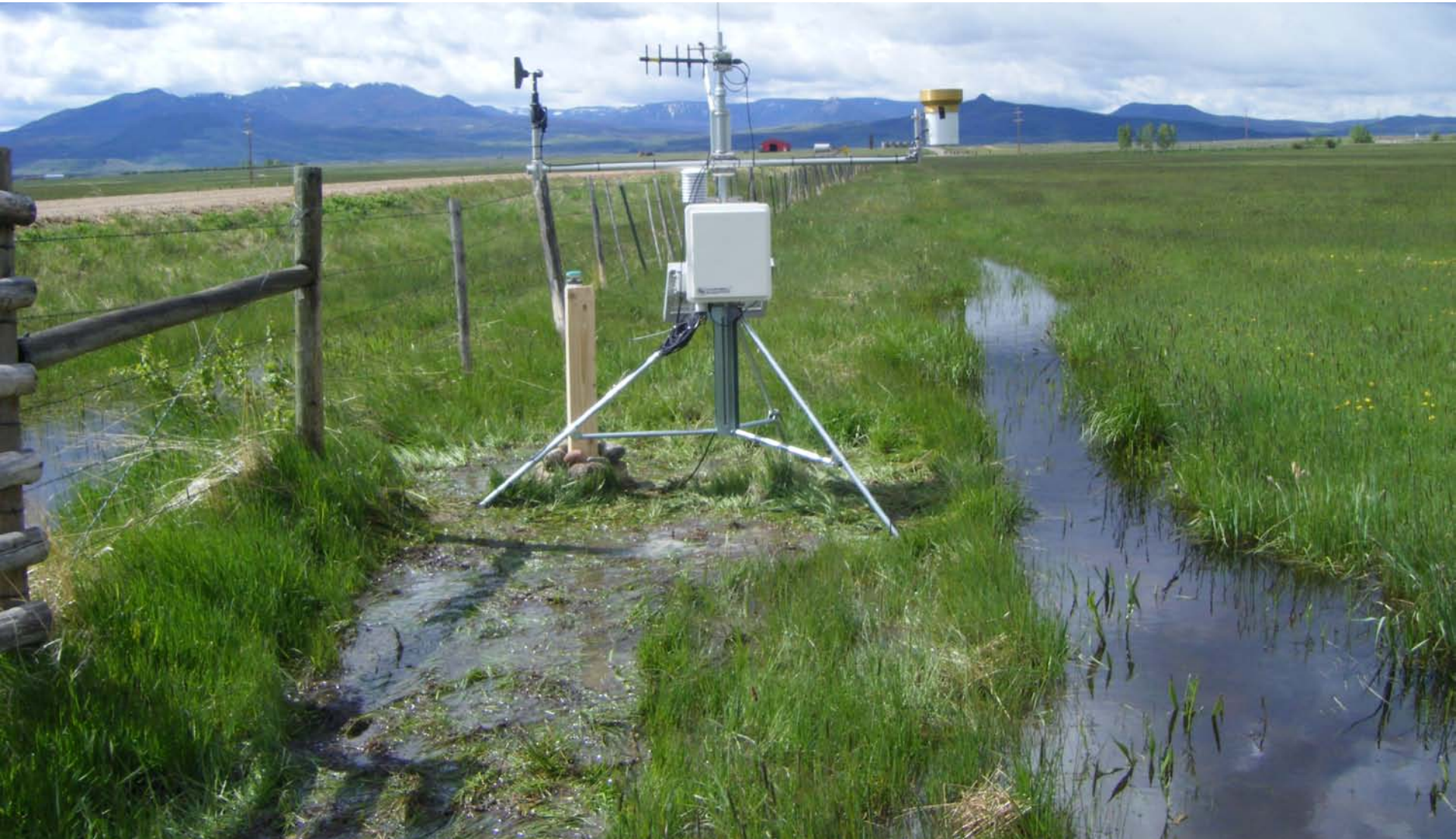
Water Year SPI
10/1/2010 – 8/21/2011



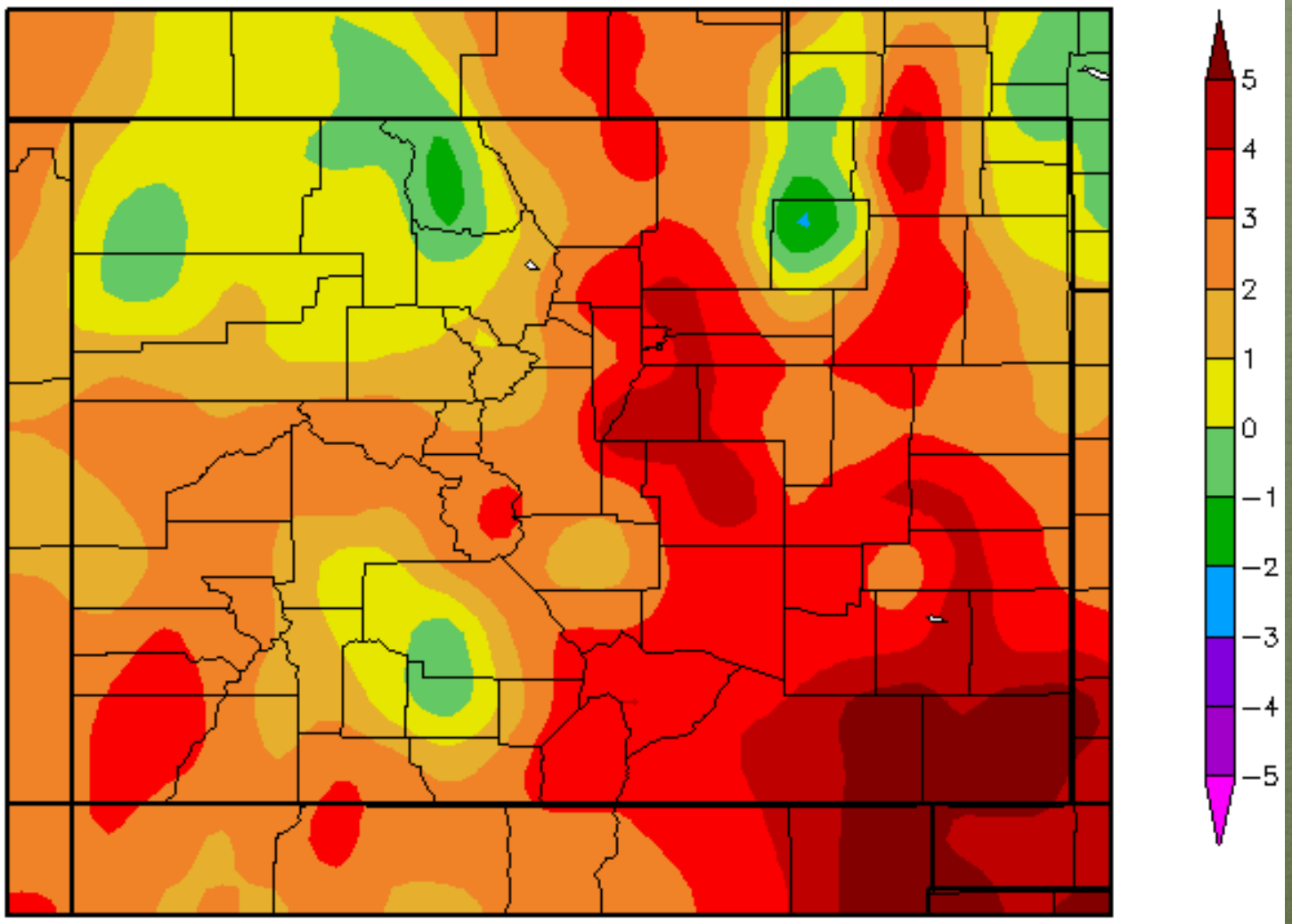
Generated 8/22/2011 at HPRCC using provisional data.

Regional Climate Centers

Water Demand

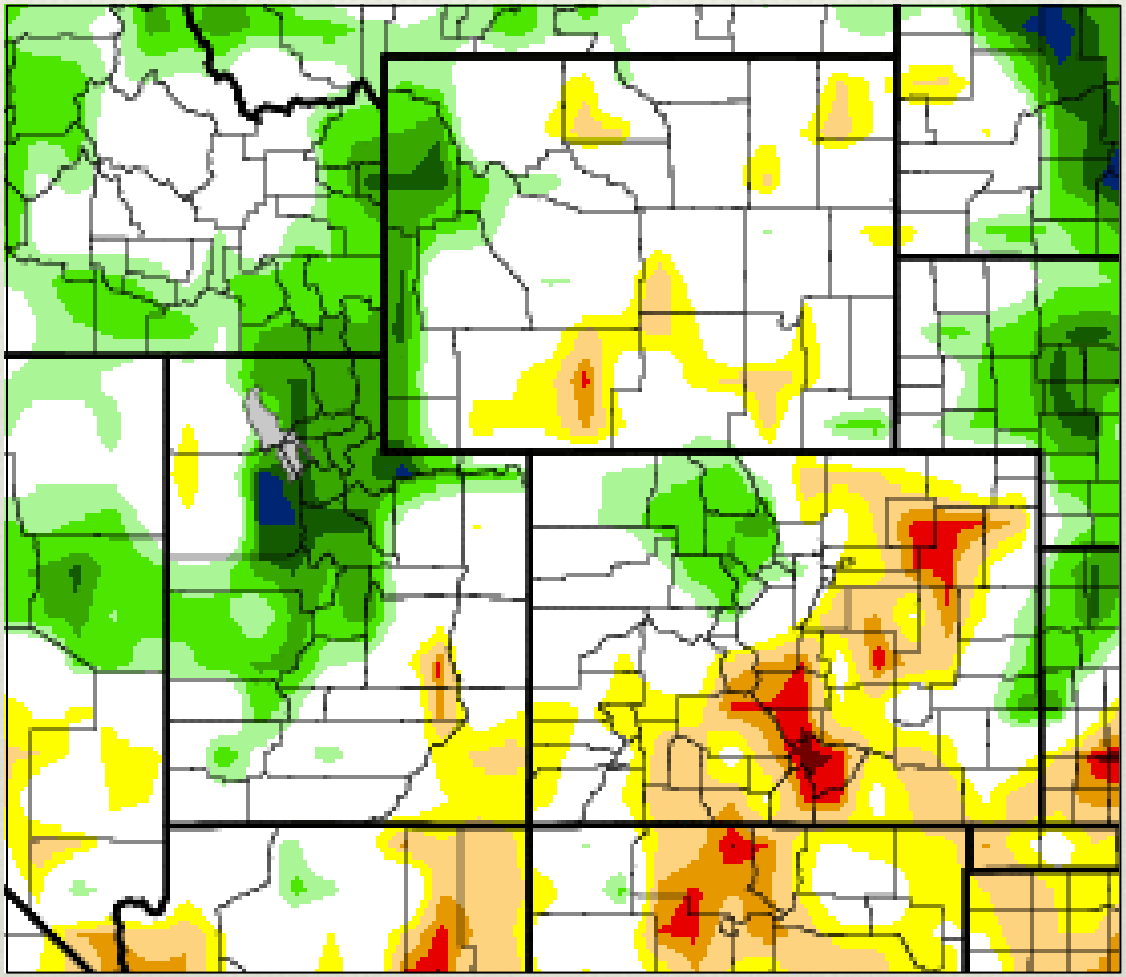


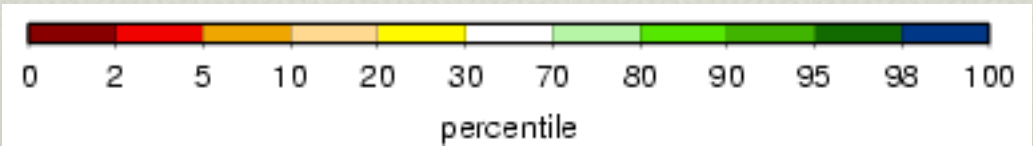
Temperature Departure from Normal
08/01/2011 – 08/21/2011



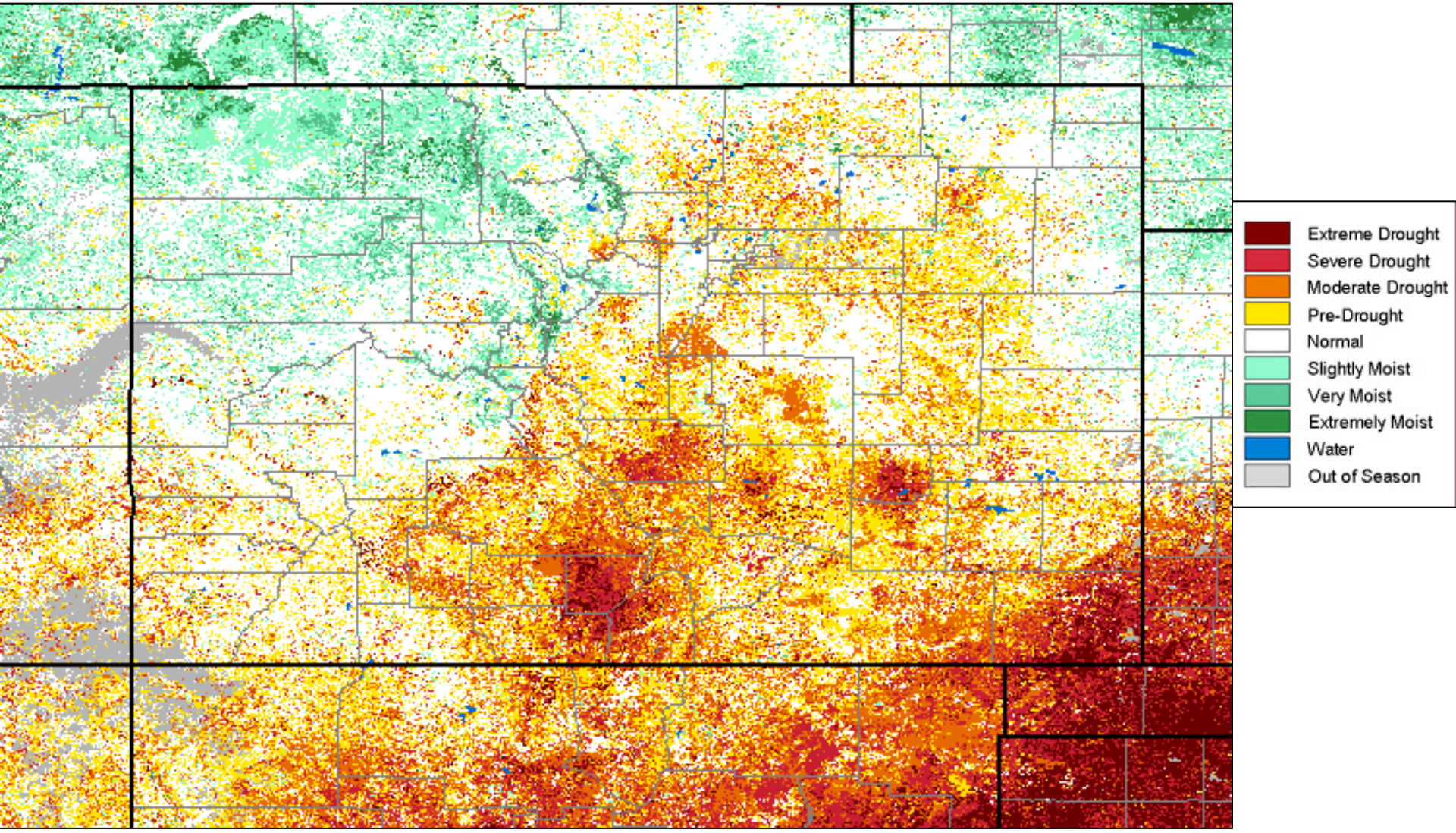
High Plains Regional Climate Center

VIC Soil Moisture Percentiles
21 August 2011

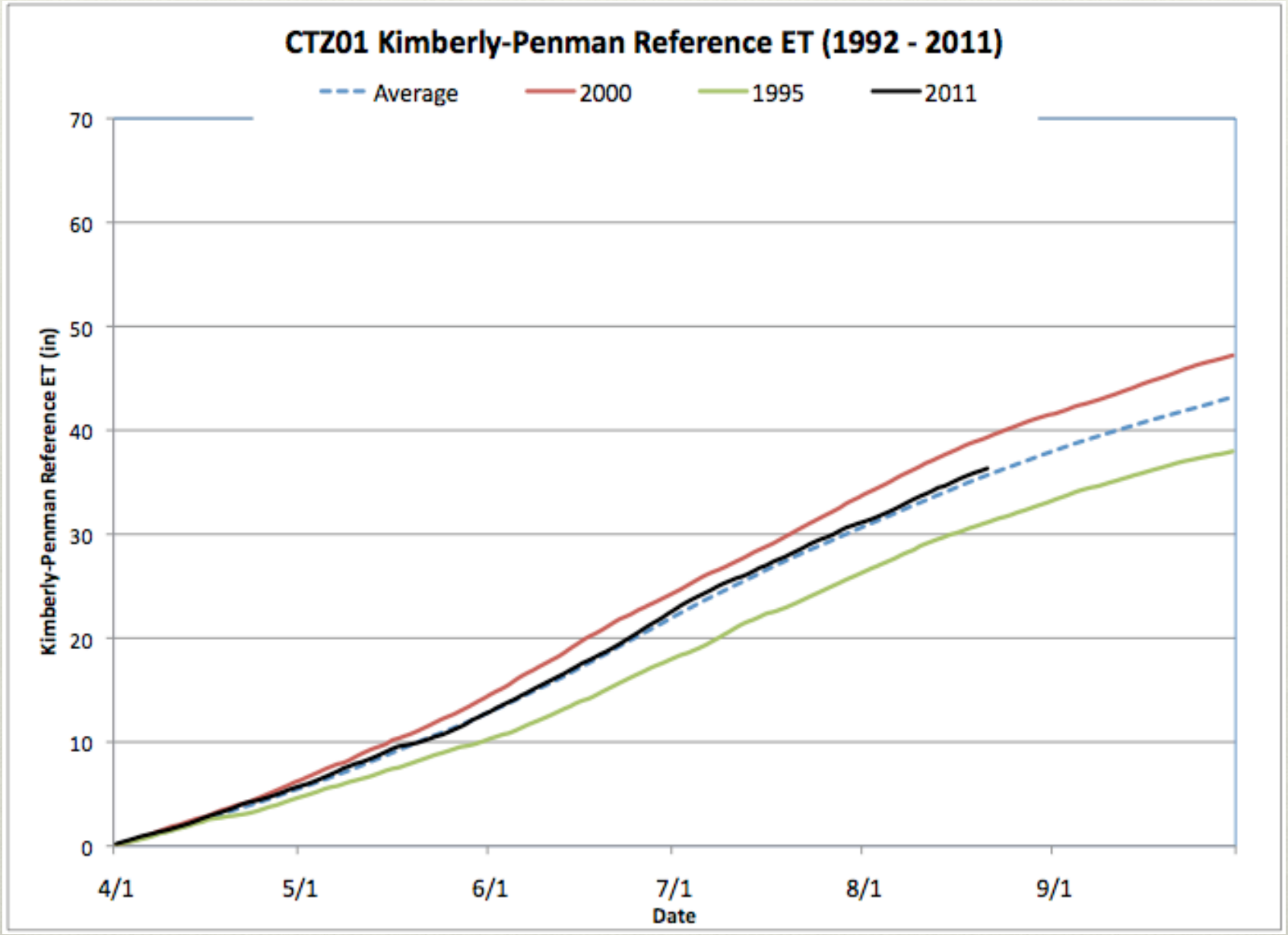




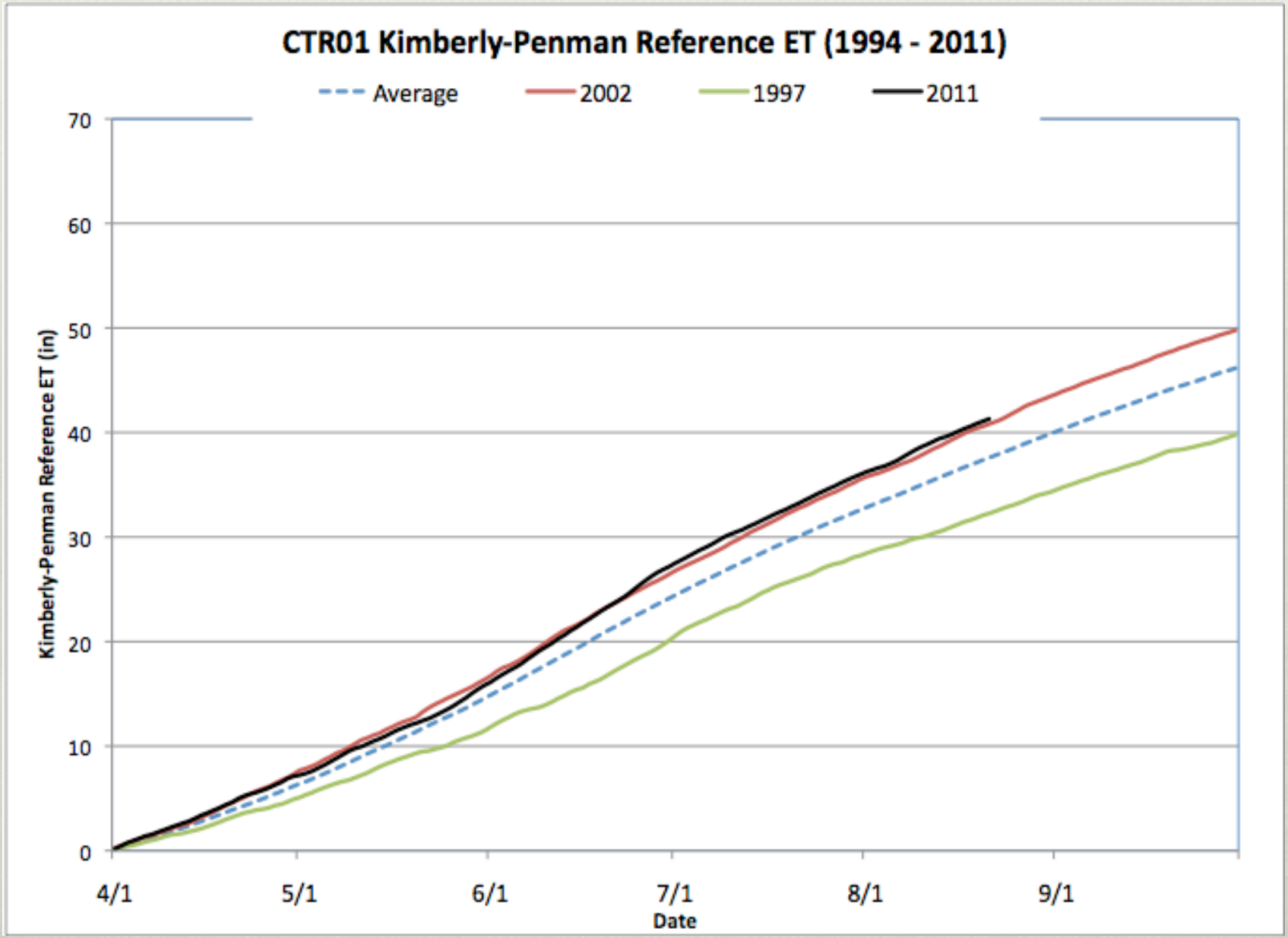
eMODIS VegDRI – 08/21/2011



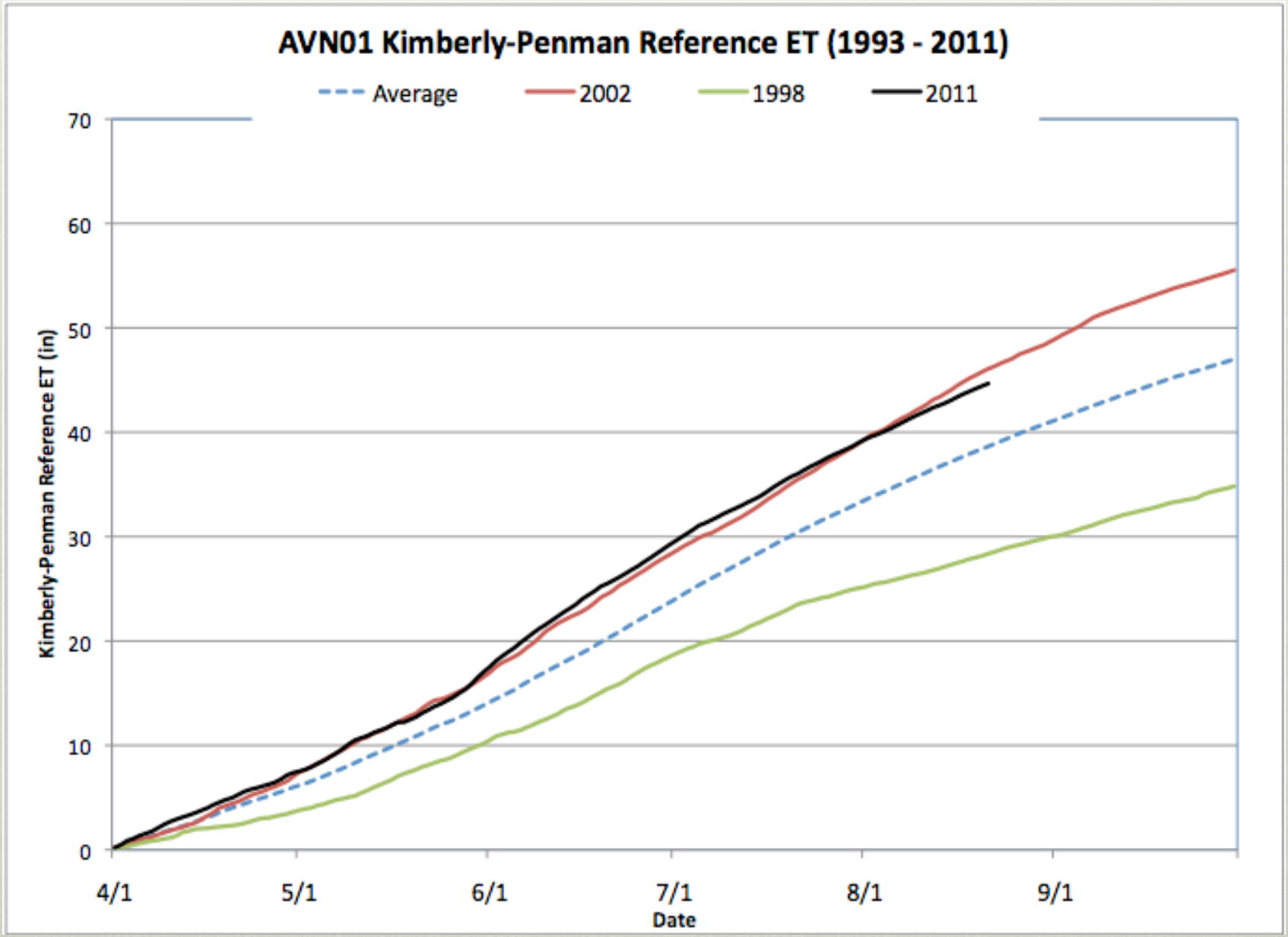
Cortez Reference ET – SW CO



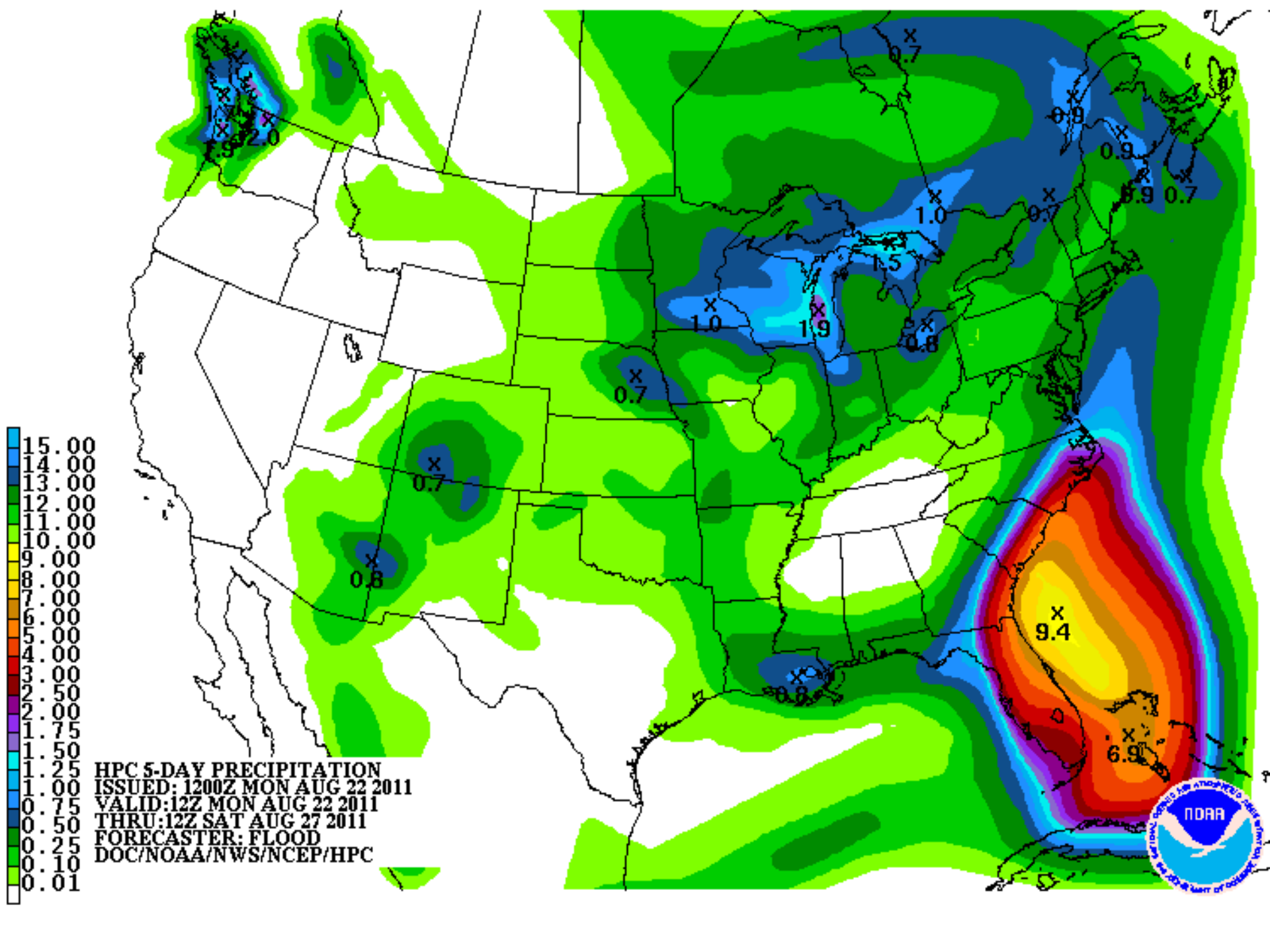
Center Reference ET - SLV



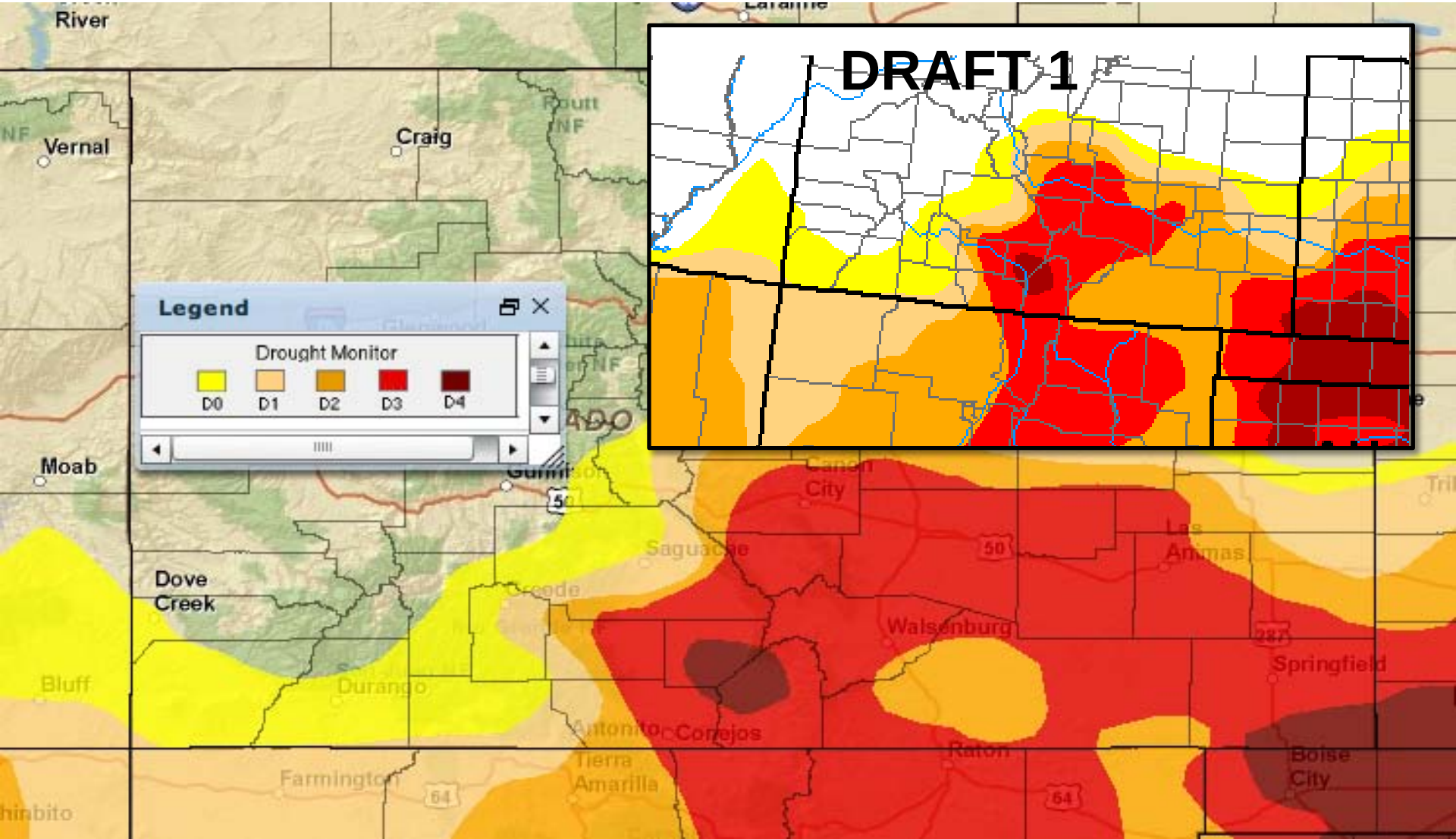
Avondale Reference ET – AR Basin



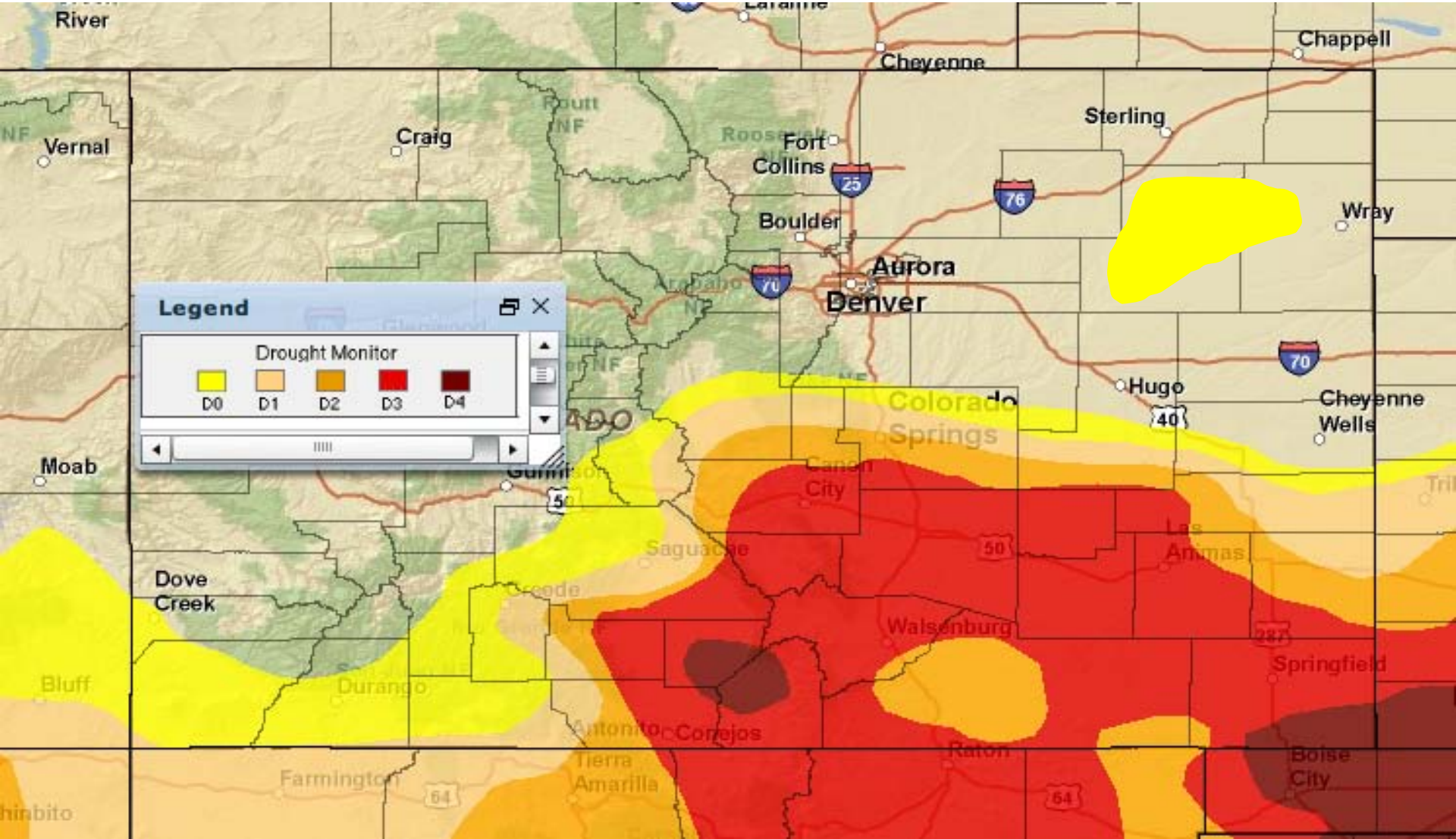
Precipitation Forecast


15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.50
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.10
0.01
HPC 5-DAY PRECIPITATION
ISSUED: 1200Z MON AUG 22 2011
VALID:12Z MON AUG 22 2011
THRU:12Z SAT AUG 27 2011
FORECASTER: FLOOD
DOC/NOAA/NWS/NCEP/HPC
9.4
6.9
2.0
1.9
1.5
1.0
0.9
0.8
0.7
0.6
NOAA

Recommendations



Recommendations



INFO

For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 23, 2011

Precipitation and Snowpack

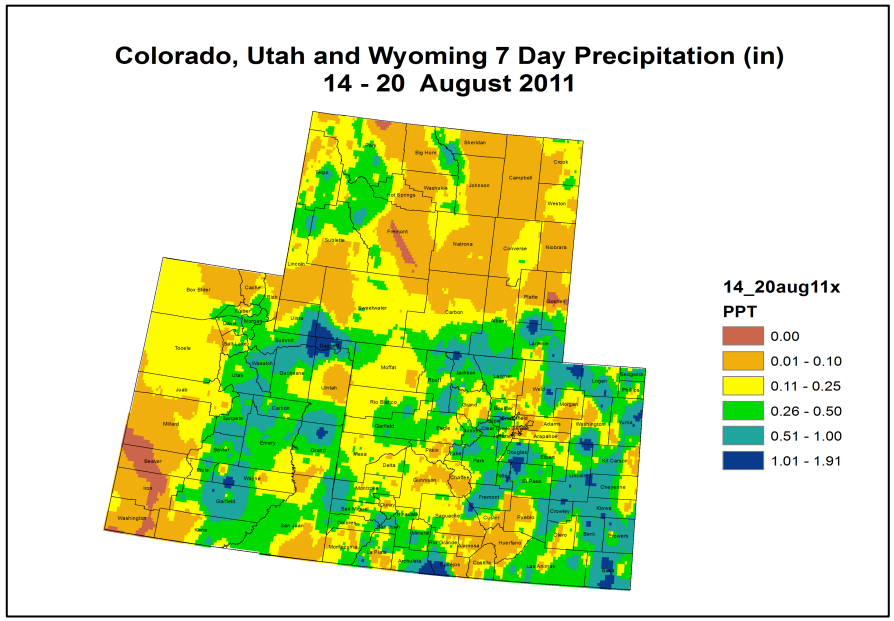


Fig. 1: August 14 – 20 precipitation in inches.

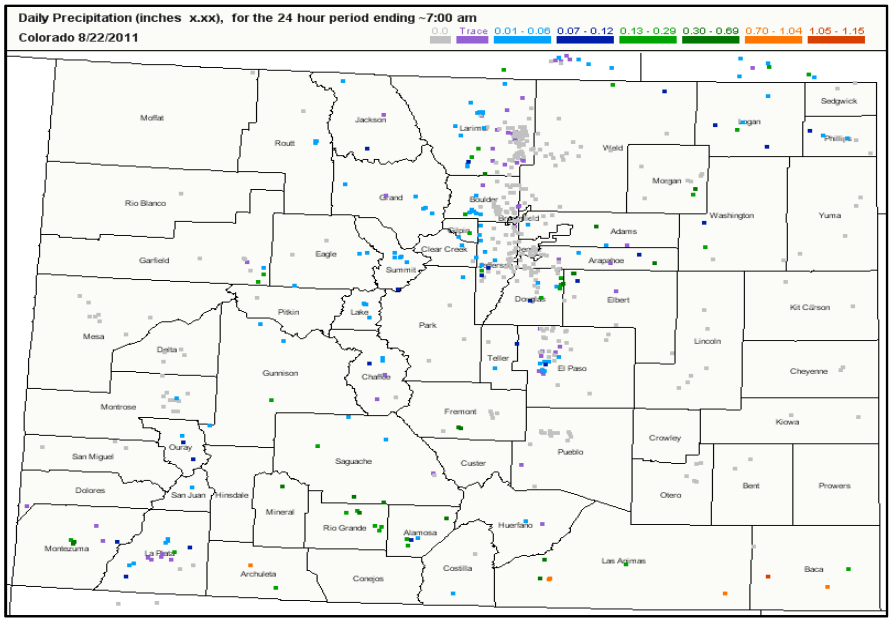


Fig. 2: August 22 Colorado CoCoRaHS observations in inches.

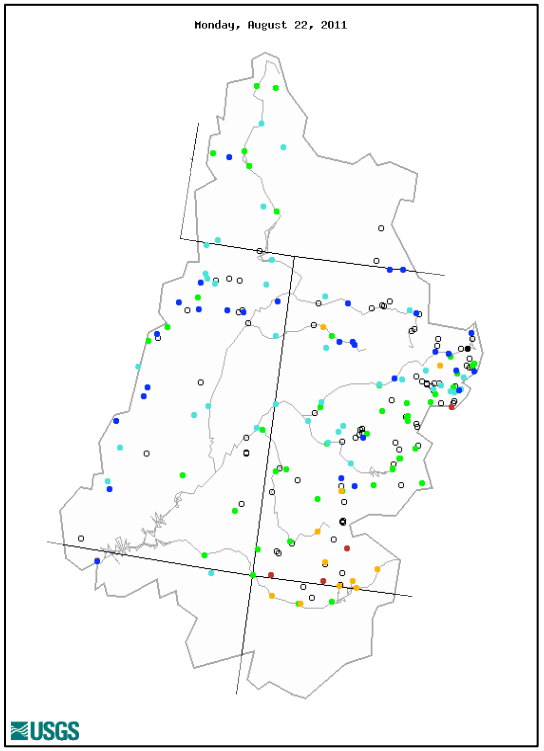
Water-year-to-date (WYTD), most of the Upper Colorado River Basin (UCRB) received near or above average precipitation. The Upper and Lower Green River basins have received over 200% of their average WYTD precipitation in many spots. The southern portion of the UCRB has been drier, seeing around 70 to 100% of average. For the month of August so far, precipitation has favored Colorado east of the UCRB with widespread amounts of around an inch to 2 inches. Short term dryness in northeast CO and the northern Front Range have started to pop up.

Last week, beneficial moisture fell throughout drought stricken southeast CO (Fig. 1), with many areas seeing around .5 to 1 inch of precipitation. Some isolated showers also fell around the Four Corners region and the San Juan mountains. The San Luis Valley and many areas in northeast CO remained relatively dry, receiving less than a tenth of an inch. As of August 22nd, more rains fell in Las Animas and Baca counties, with daily accumulations of .75 to over an inch at several stations (Fig. 2).

Streamflow and Water Supply

As of August 22nd, about 88% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3), with 53% of the gages recording flows above the 75th percentile (down from 66% two weeks ago). Key gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT have above normal 7-day average streamflow at the 82nd and 87th percentiles, respectively (Fig. 4). Streamflow on the San Juan River near Bluff, UT is at the 28th percentile.

After large storage volume increases throughout the UCRB during July, all the major reservoirs' storage volumes are now slowly decreasing, with Green Mountain, Lake Granby, and Lake Dillon seeing only minor decreases. All of the major reservoirs above Lake Powell are currently above their average August levels. This April – July period was the 3rd wettest with regard to inflows into Lake Powell since operations at Glen Canyon Dam began in 1963. Powell's current level is the highest August level it's been since 2001.



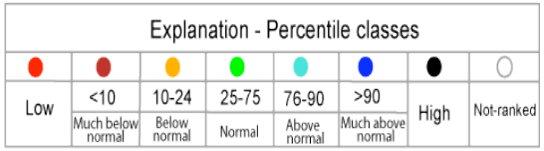


Fig. 3: 7-day average discharge compared to historical discharge for August 22nd.

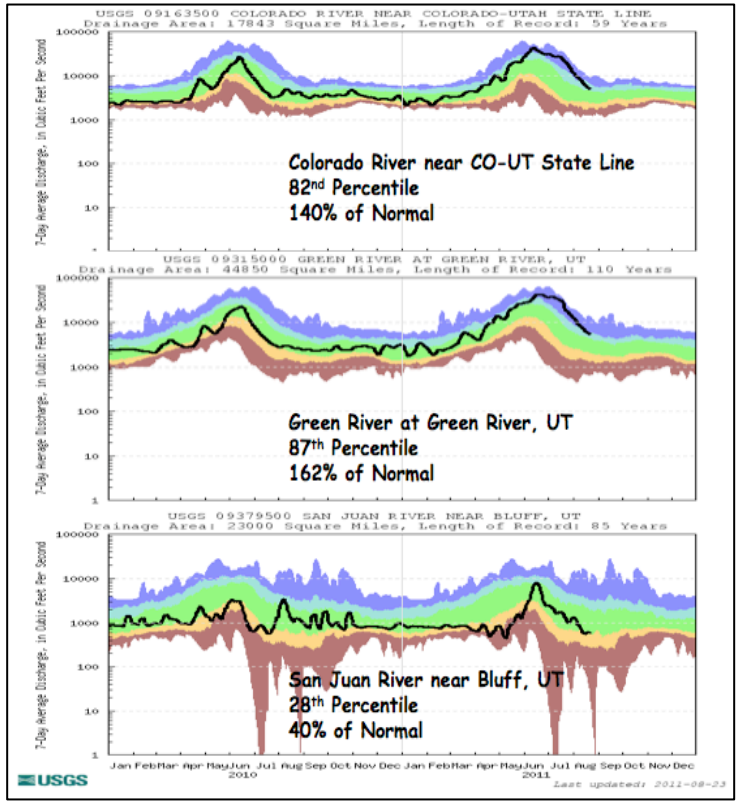


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Demand

Last week, warmer than average temperatures were observed over the UCRB, and also across the Front Range and eastern plains of CO. The warmer temperatures have contributed to higher reference evapotranspiration (refET) in drought stricken areas. In the Four Corners, refET is currently just above average, on track with the drier years. In the San Luis Valley refET is currently tracking above the highest refET year, during the drought of 2002—so precipitation falling there could be quickly lost to the atmosphere again. Very high refET rates are also seen in the Arkansas River basin, though improvements have been seen over the past few weeks (Fig. 5).

Soil moisture conditions remain poor for the San Luis Valley and have begun drying out in northeast CO and southern WY. Soil moisture is above average for much of northern UT and the northern mountains of CO, with improving soil moisture conditions over southeast CO. Satellite imagery of vegetation conditions show very dry vegetation with little growth in the San Luis Valley and southeast CO (Fig. 6). Vegetation conditions are moist for the northern portion of the UCRB, slightly dry in the Four Corners area, and slightly drier than average for northeast CO.

Precipitation Forecast

A strong high pressure ridge will dominate weather over the UCRB for the rest of this week and into the weekend. While monsoonal flow will continue through much of this week, moisture within the plume will be fairly sparse and lead to only isolated showers. Most of the storms will likely remain anchored to the higher terrain. The best chance for rainfall will be over southeastern portions of the basin in the central CO mountains, the San Juans and to a lesser extent in the Four Corners area. Drought stricken areas in southeast CO may also see some isolated activity, with the best chance being on Wednesday. By late this weekend into early next week forecast models are indicating a weak upper air disturbance will pass to the north of the UCRB and send a cold front across the region. This could lead to a slight increase in thunderstorm activity with cooler and drier conditions expected to build in behind the front.

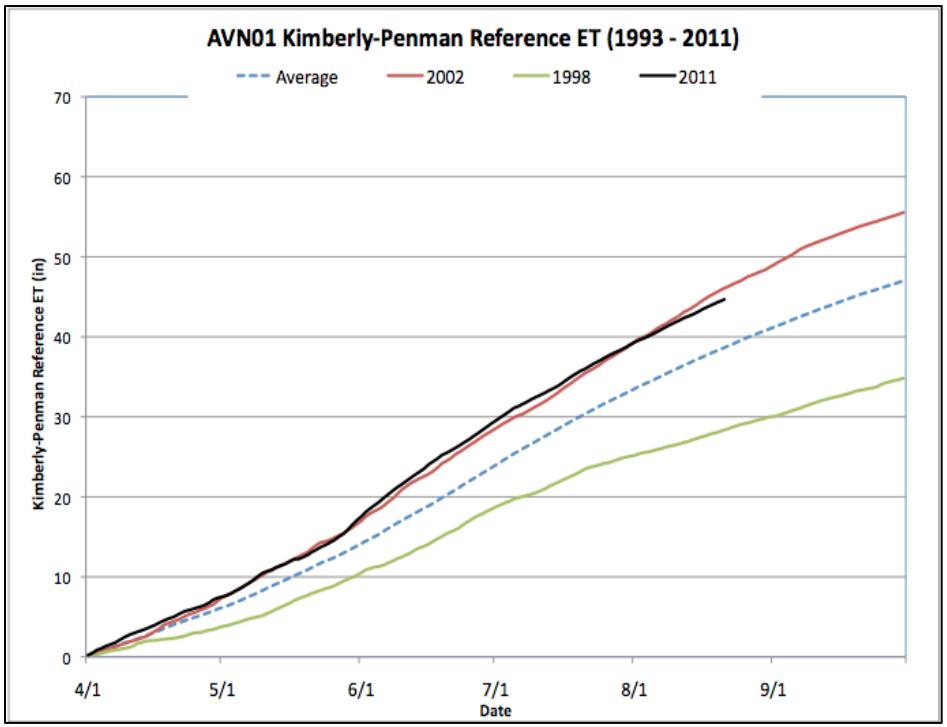


Fig. 5: Reference evapotranspiration since April 1st at Avondale, CO in the Arkansas River basin.

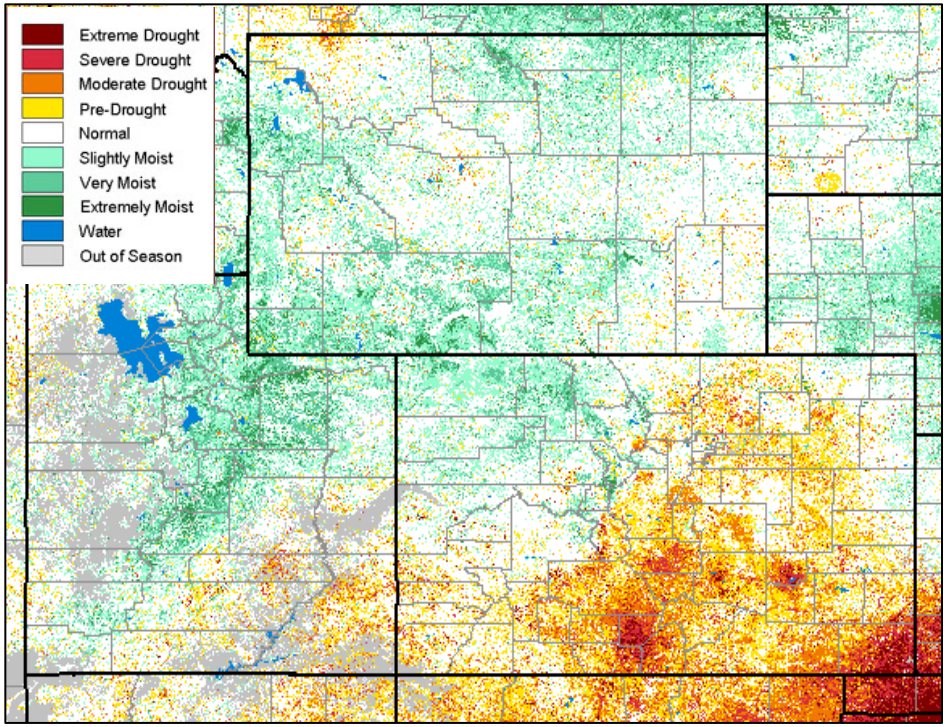
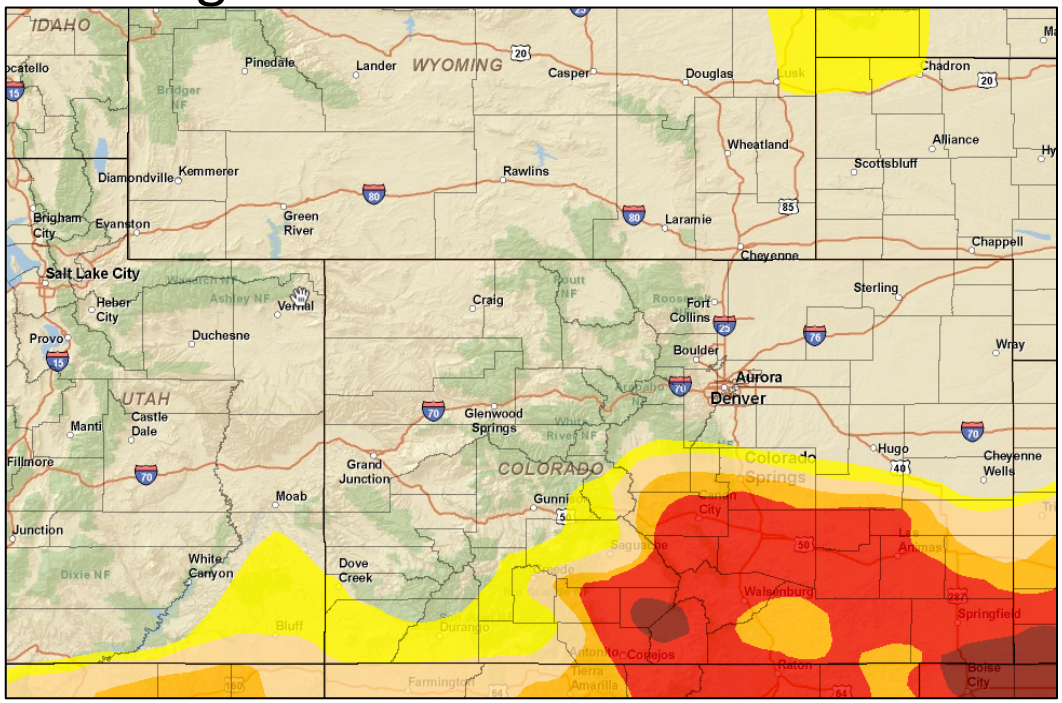
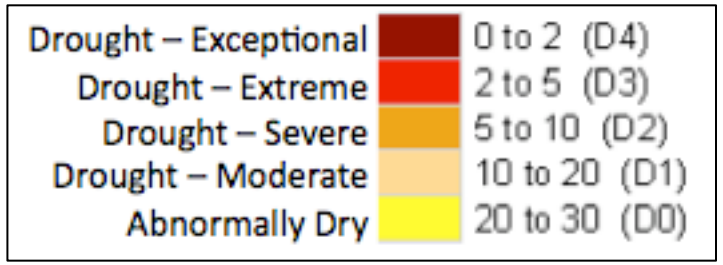


Fig. 6: August 21st VegDRI map, based on satellite-derived observations of vegetation.

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 7: August 16th release of U.S. Drought Monitor for the UCRB

No changes are recommended in the UCRB for the current U.S. Drought Monitor (USDM) map (Fig. 7). Very little changes have been seen around the Four Corners area, so the D0/D1 there is still justified.

The current USDM author has suggested some improvements for southeast CO. Short and long-term SPIs, modeled soil moisture, and refET have all indicated improvements in Otero, Kiowa, Bent, Prowers, and Las Animas counties—thus justifying the removal of some D3 and trimming of D2. Local experts have noted that extreme dryness still persists in central Crowley County (where D3 should remain and extend to the Lincoln County border) and also in Baca County (where D4 should not be removed).

Due to the short term dryness in northeast CO that is having minor impacts on the planting of crops, it is suggested that D0 be expanded from Elbert County, extending northward through western Adams and Arapahoe and into Morgan counties and eastward through much of Washington and western Yuma counties.