

**Summer
2012**



August 28th, 2012

NIDIS - UPPER COLORADO BASIN PILOT PROJECT

Weekly Climate, Water & Drought Assessment

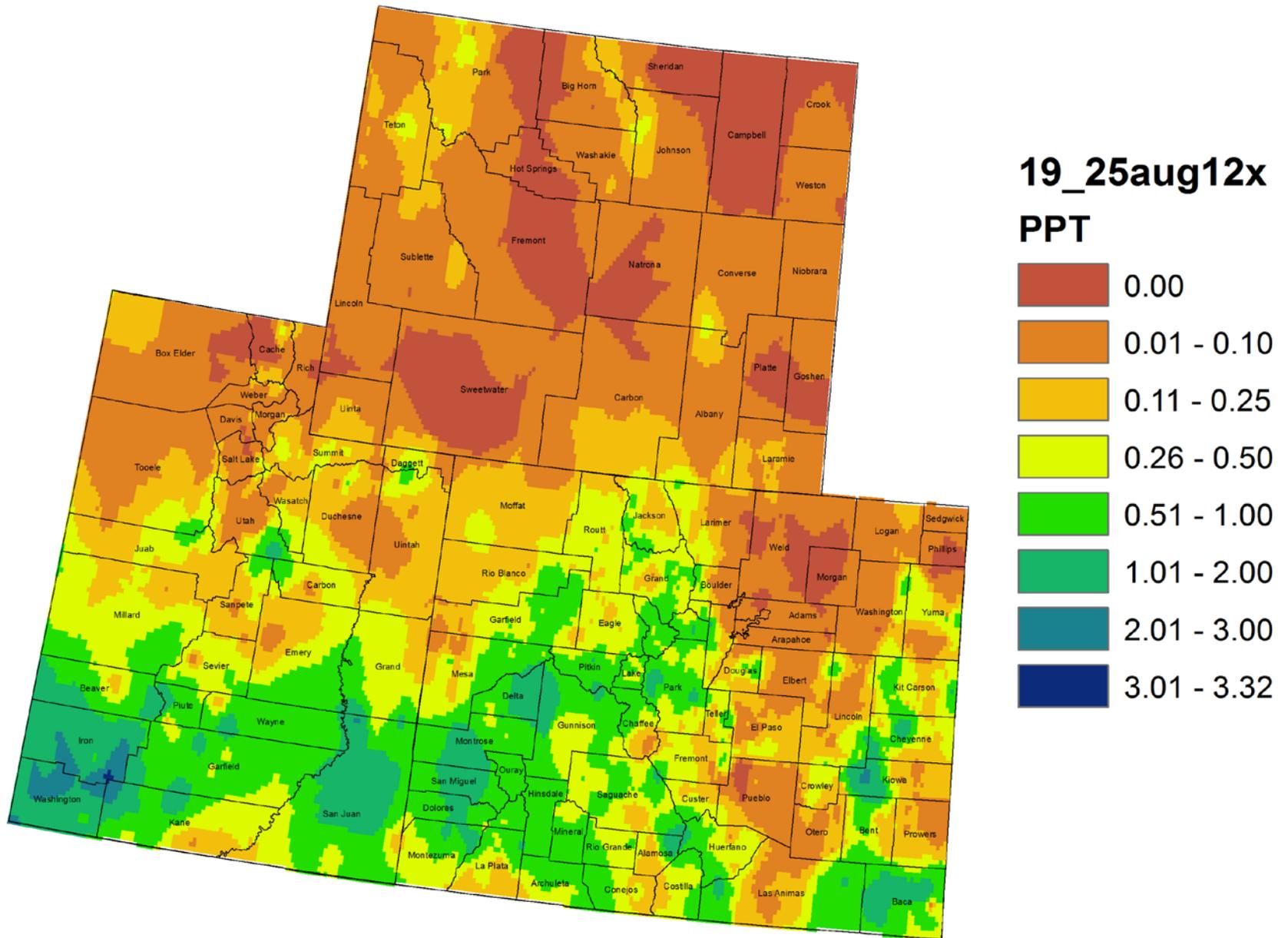
Today's Agenda

- Assessment of current water conditions
- Precipitation Forecast
- Recommendations for Drought Monitor

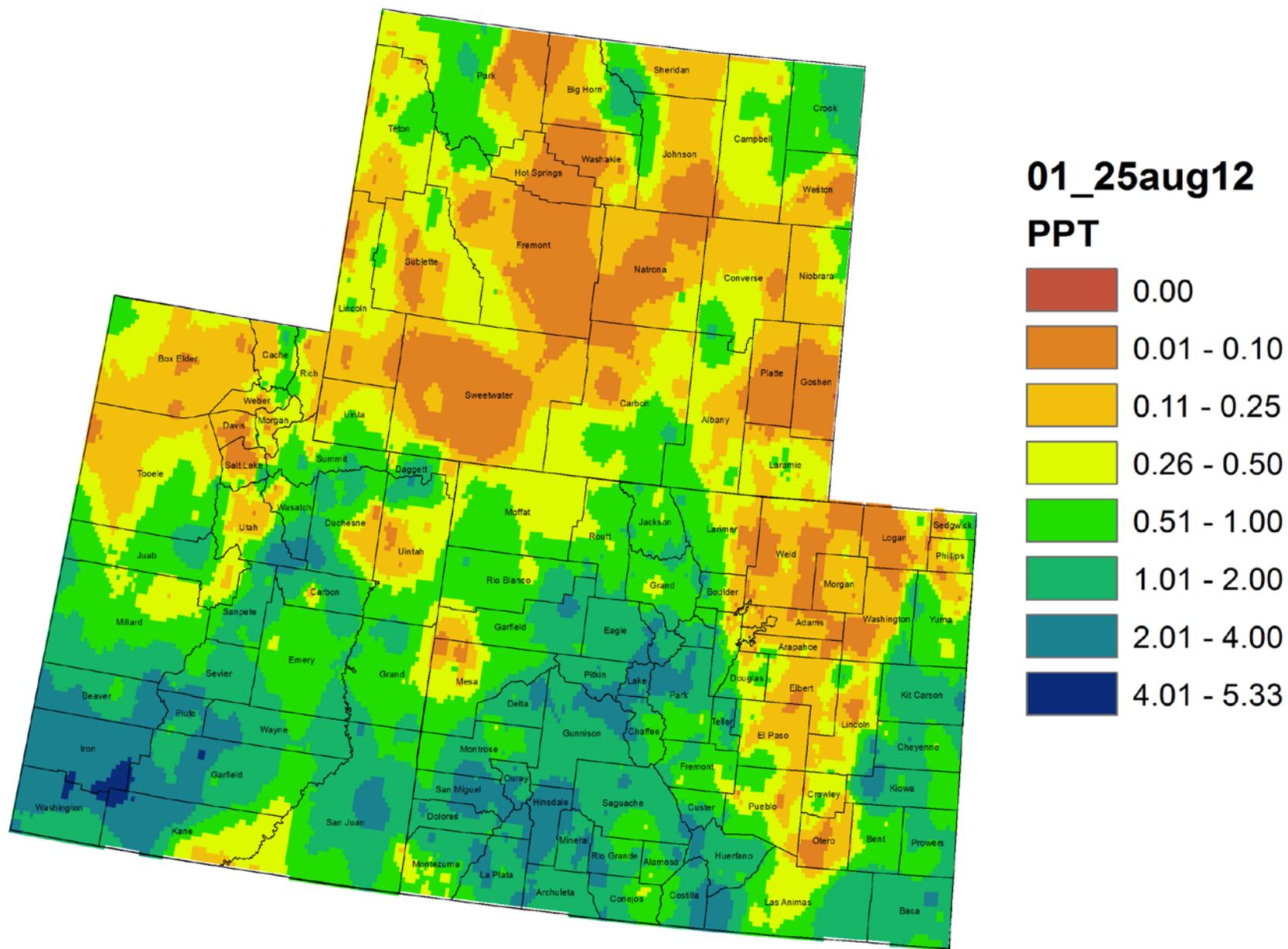
Precipitation/Snowpack Update



Colorado, Utah and Wyoming 7 Day Precipitation (in) 19 - 25 August 2012

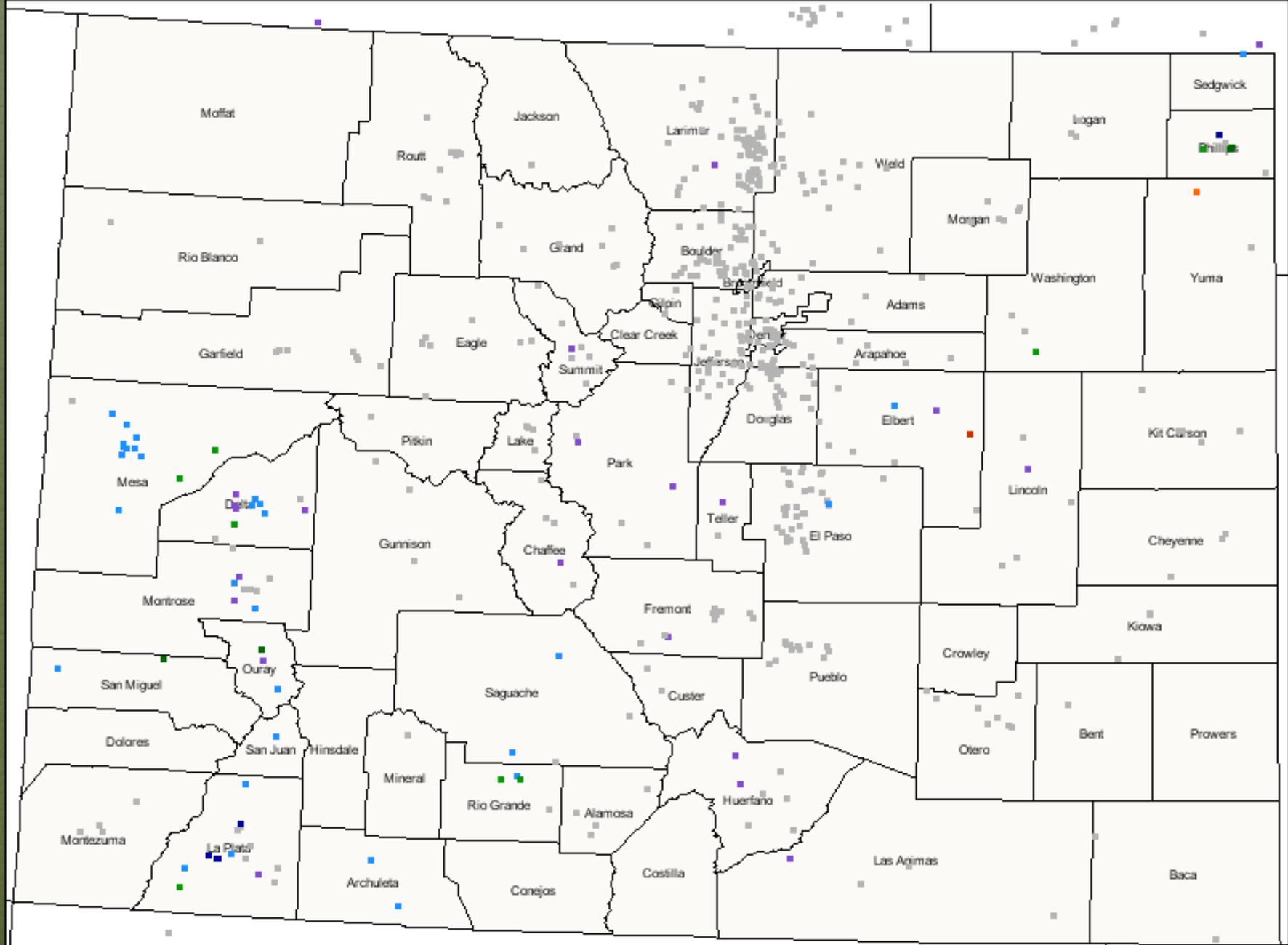


Colorado, Utah and Wyoming Month to Date Precipitation (in) 1 - 25 August 2012



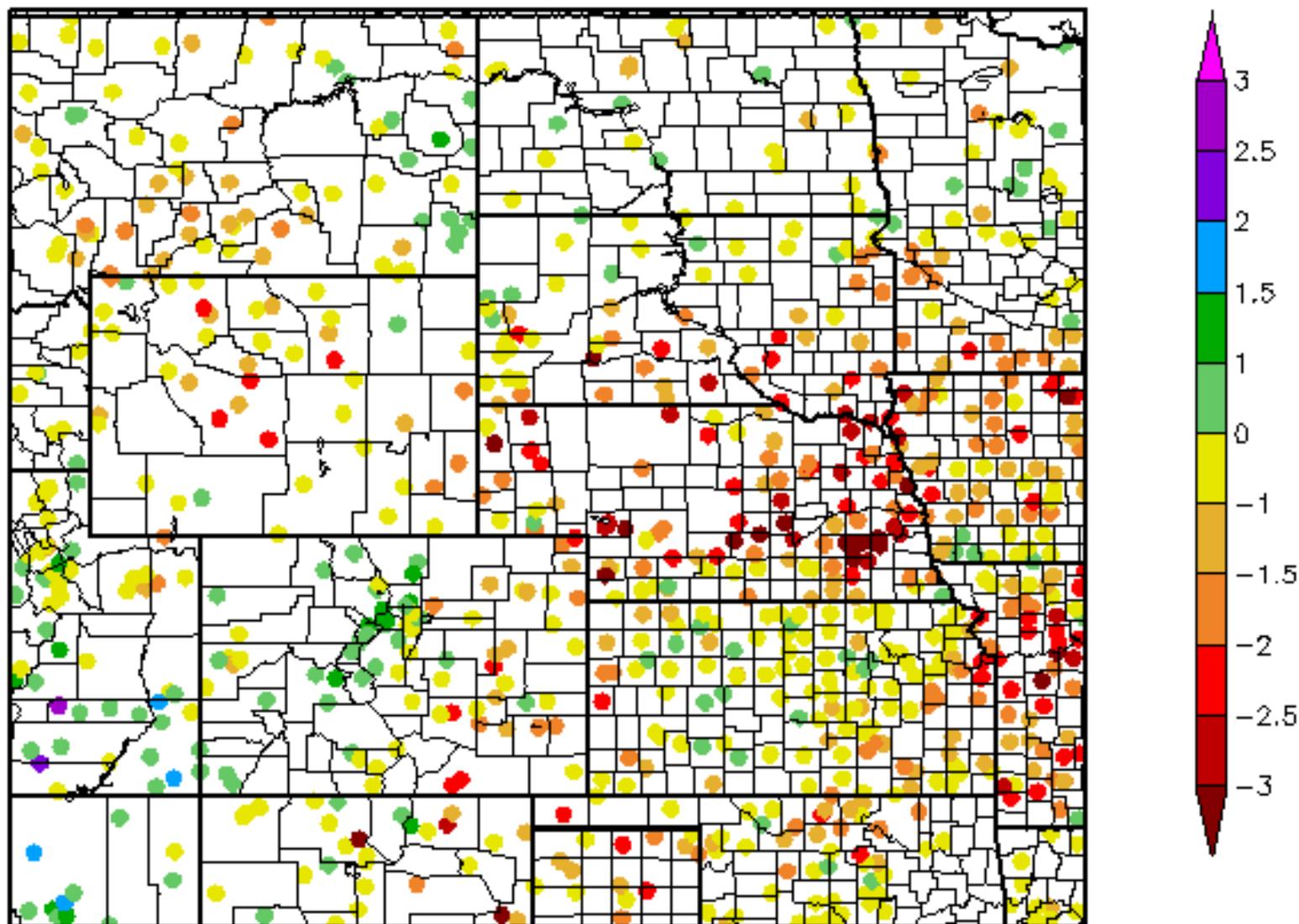
Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am

Colorado 8/27/2012



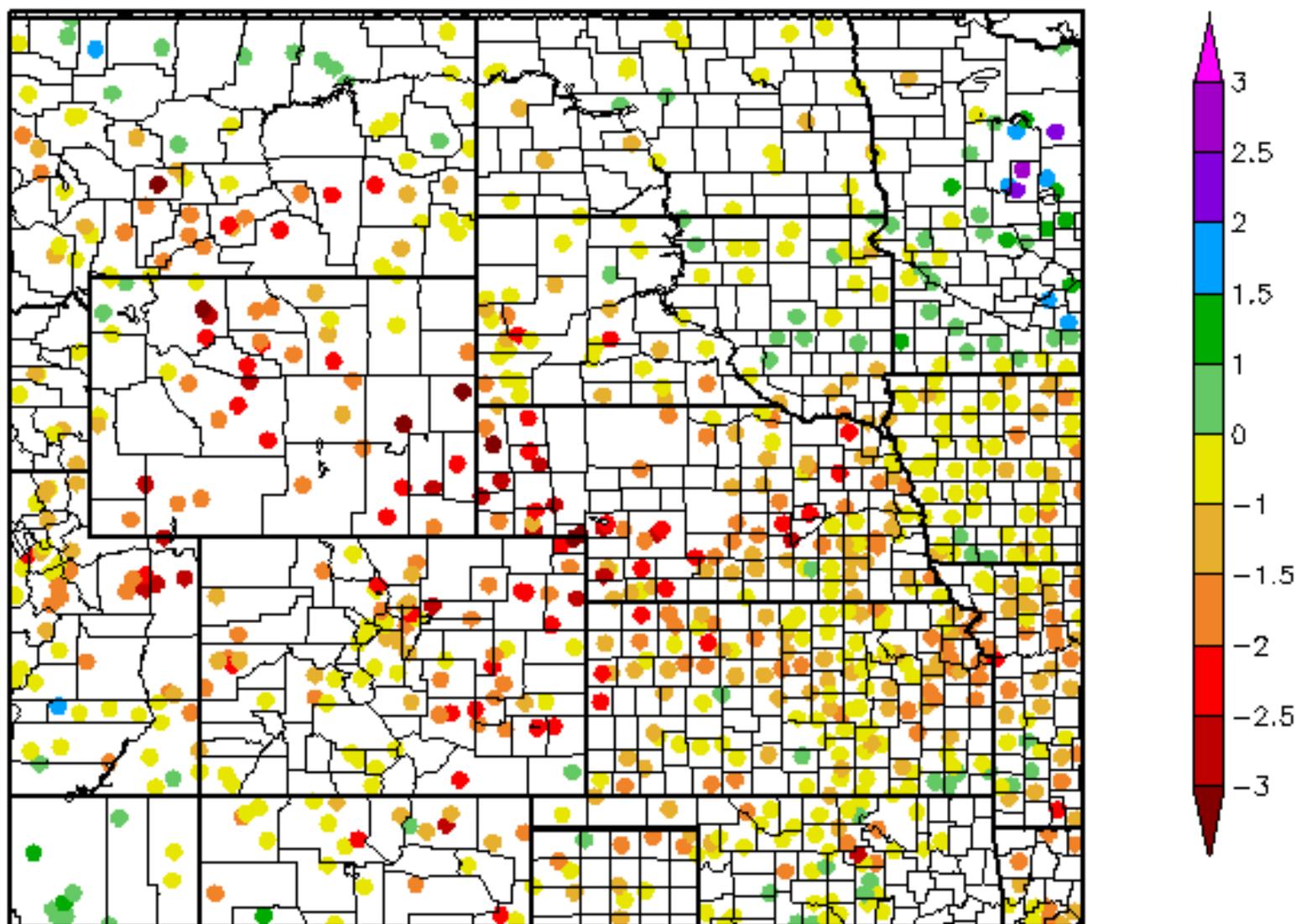
60 Day SPI

6/29/2012 - 8/27/2012

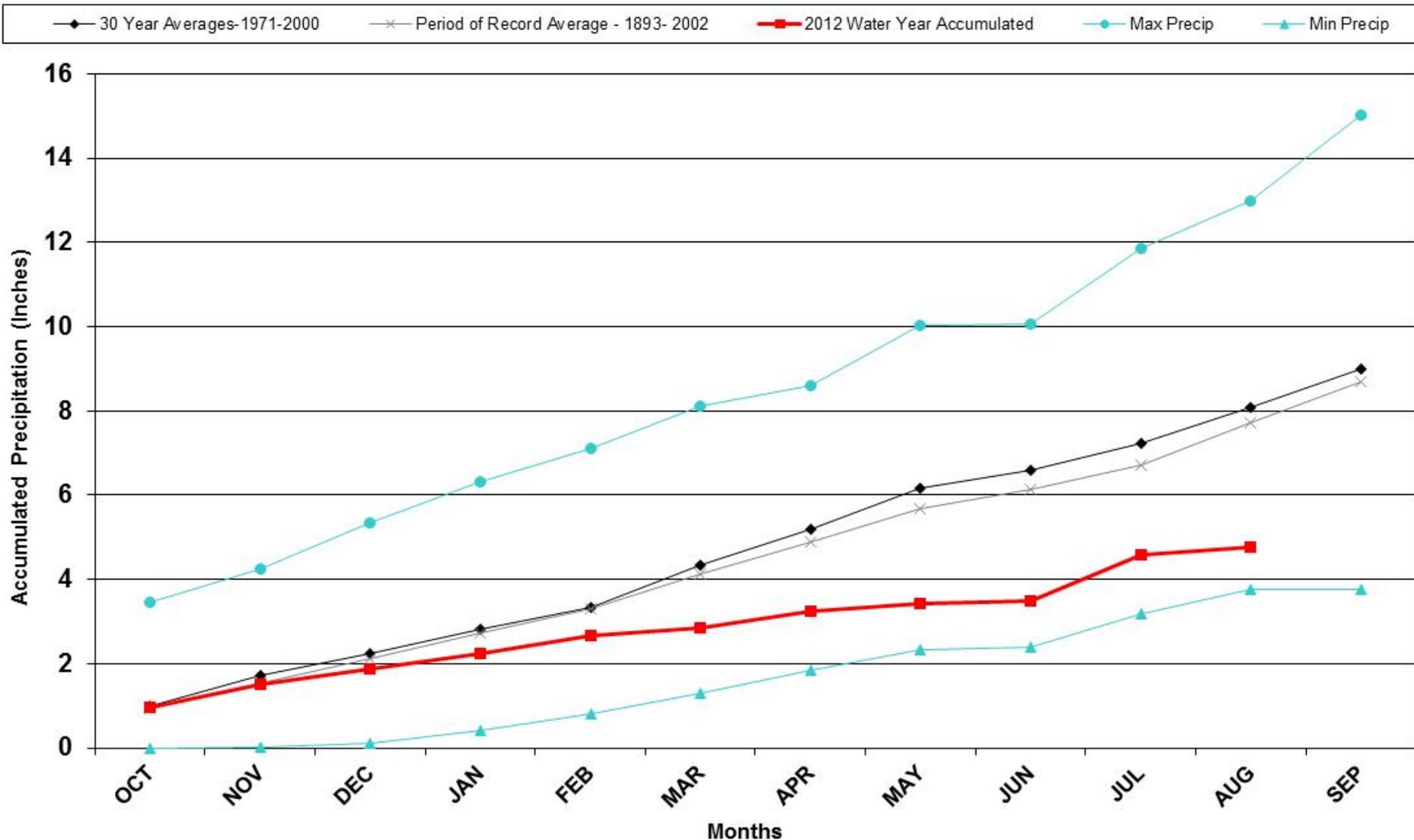


6 Month SPI

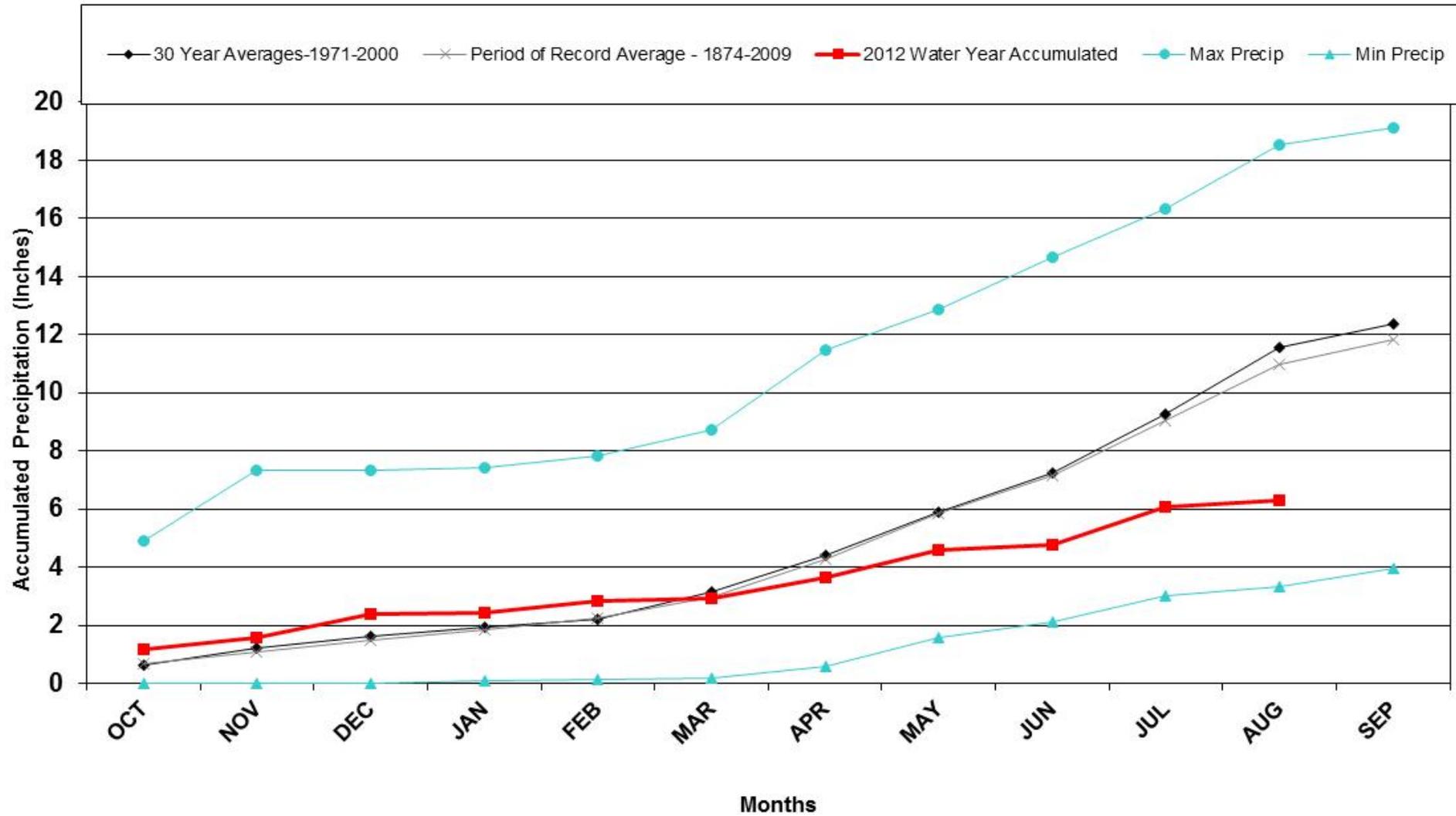
2/28/2012 - 8/27/2012



Grand Junction WSFO 2012 Water Year

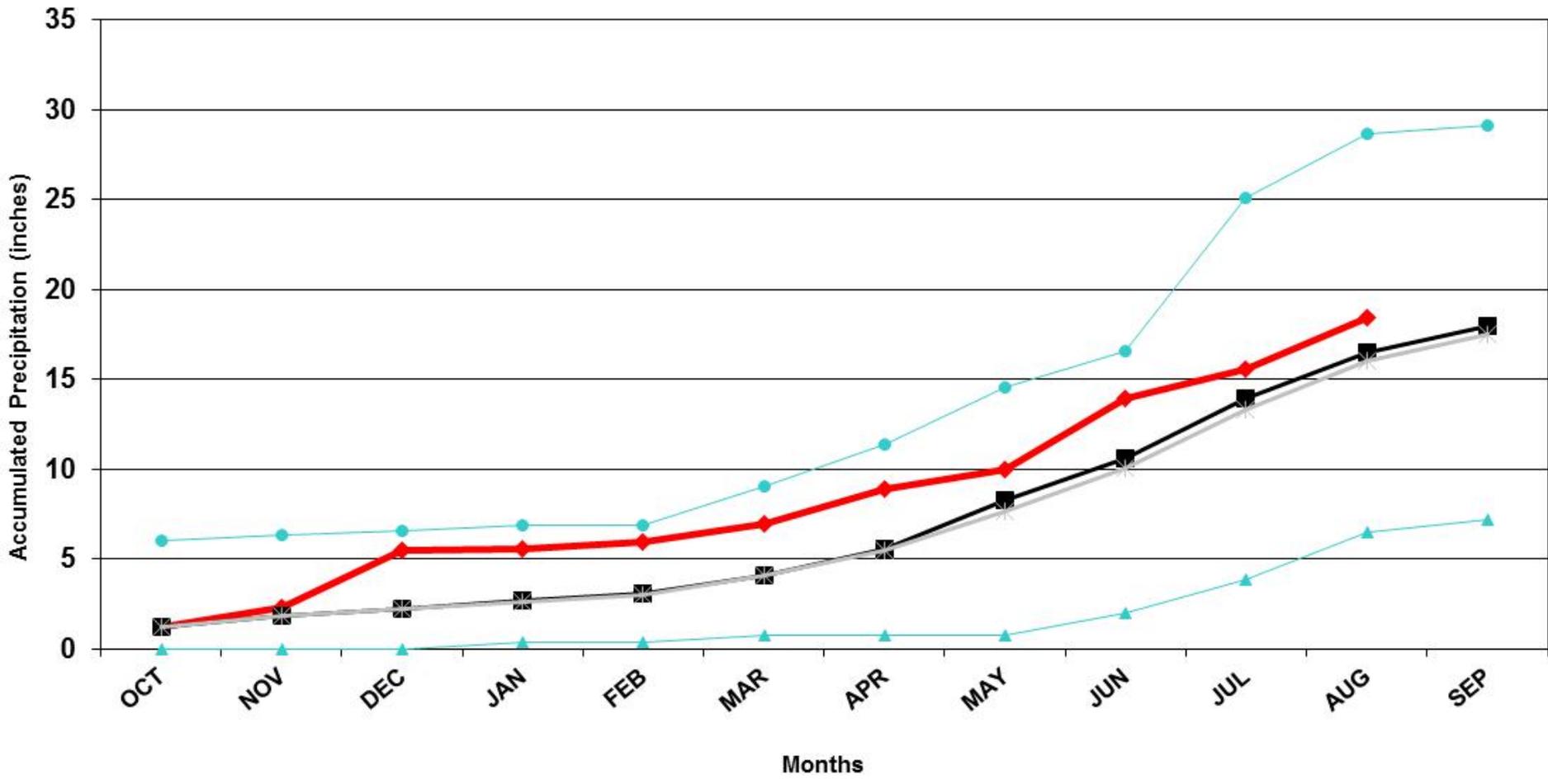


Pueblo WSO 2012 Water Year

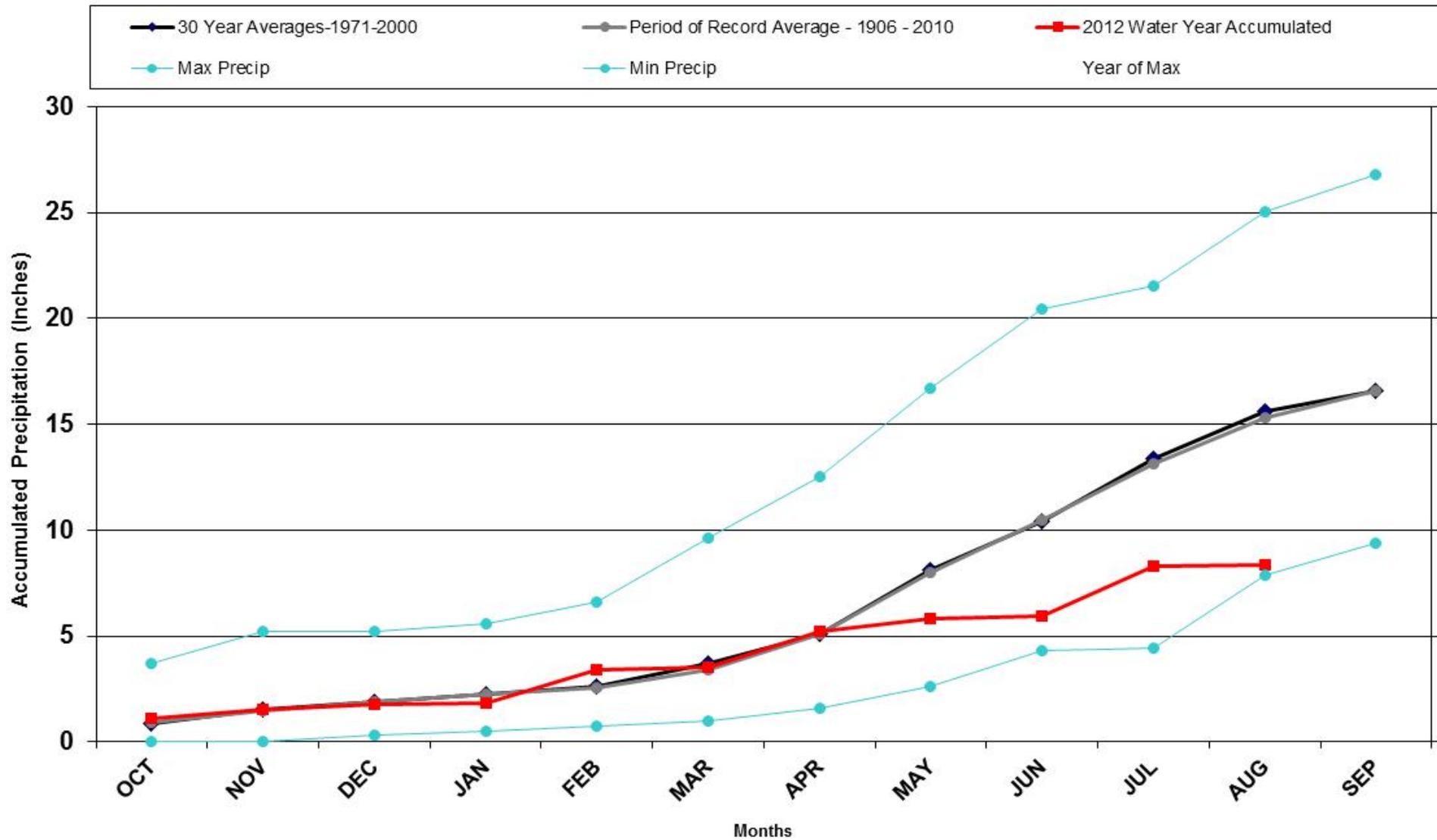


Walsh 2012 Water Year

2012 Water Year 30 Year Averages-1971-2000 Period of Record Average - 1968-2010 Max Precip Min Precip



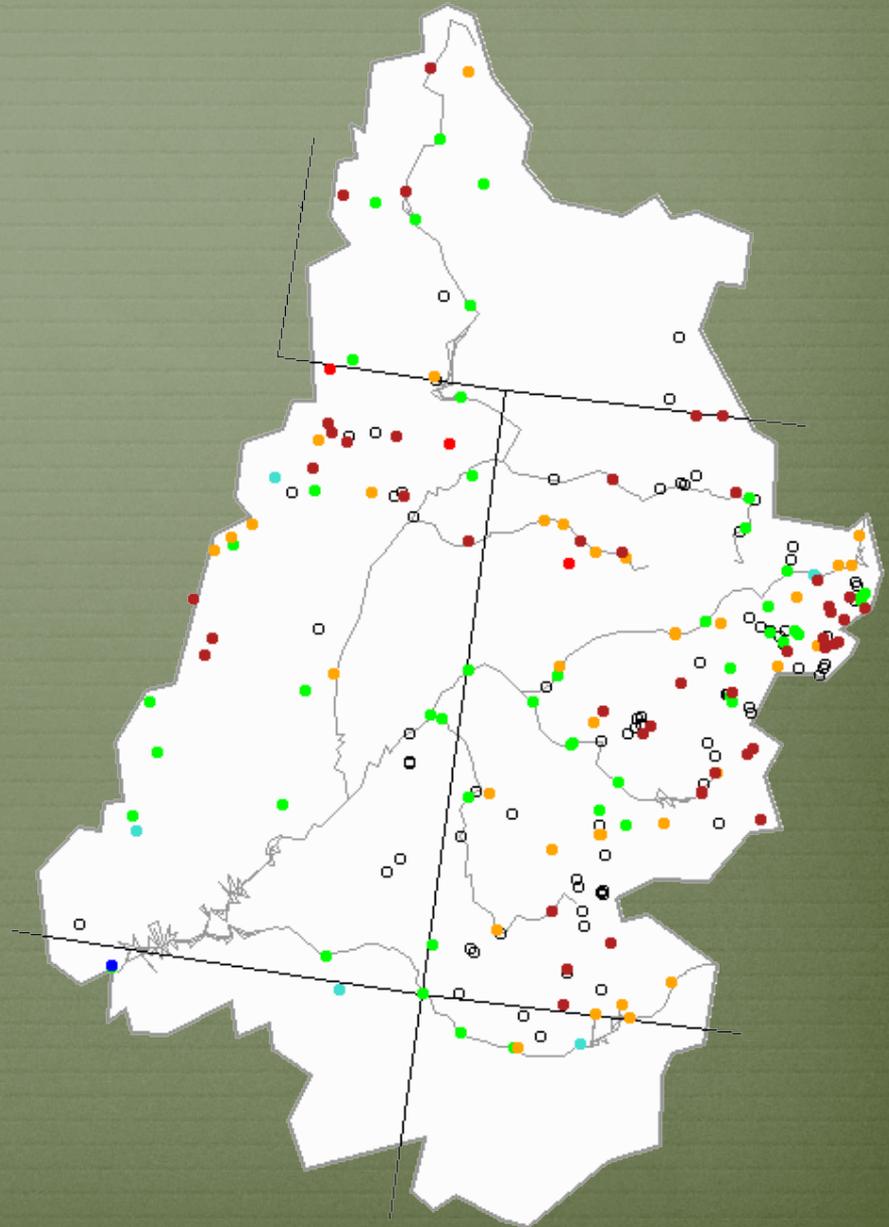
Akron 4E 2012 Water Year



Streamflow Update



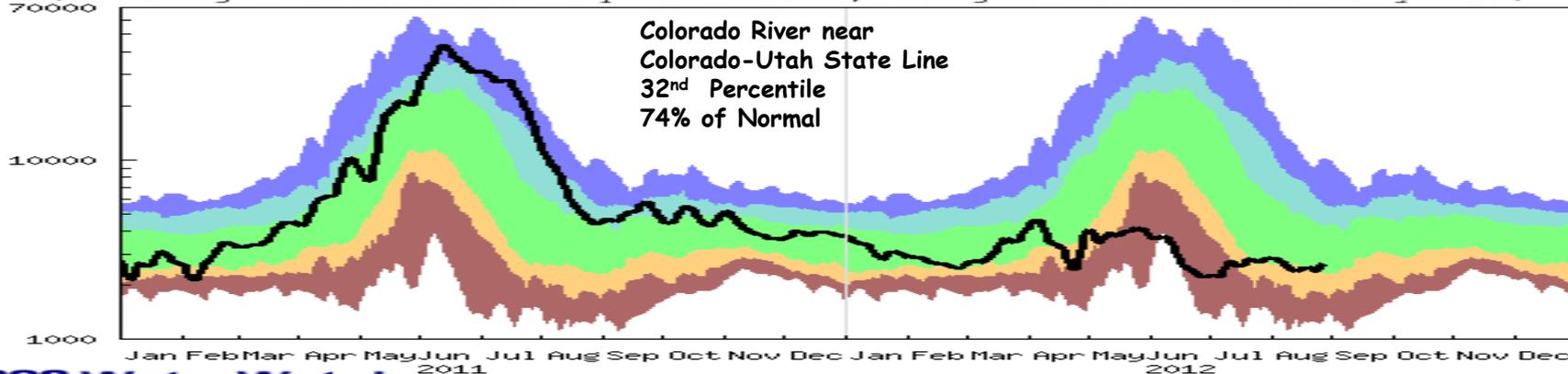
7-day average discharge compared to historical discharge for the day of the year (Aug 27th)



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		

Duration hydrograph of 7-day average streamflow for USGS 09163500
 (Drainage Area: 17843 square miles, Length of Record: 61 years)

7-day average discharge, in cubic feet per second

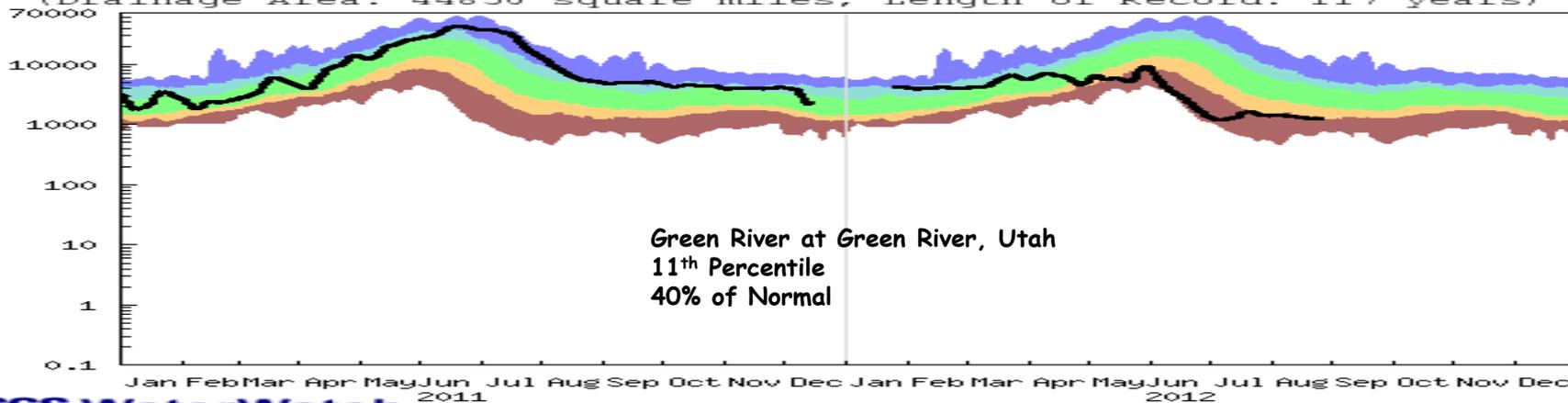


USGS WaterWatch

Last updated: 2012-08-28

Duration hydrograph of 7-day average streamflow for USGS 09315000
 (Drainage Area: 44850 square miles, Length of Record: 117 years)

7-day average discharge, in cubic feet per second

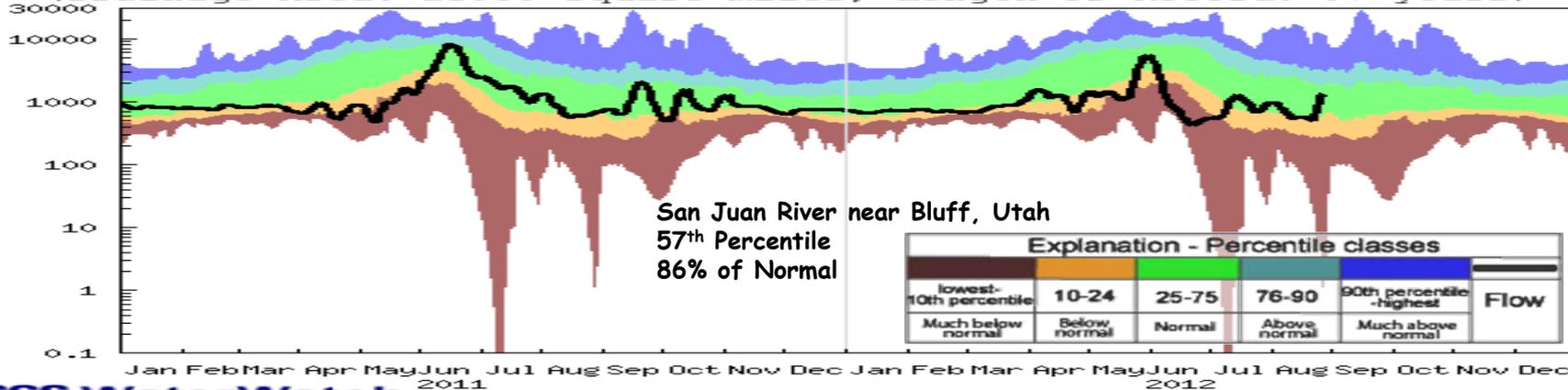


USGS WaterWatch

Last updated: 2012-08-28

Duration hydrograph of 7-day average streamflow for USGS 09379500
 (Drainage Area: 23000 square miles, Length of Record: 97 years)

7-day average discharge, in cubic feet per second

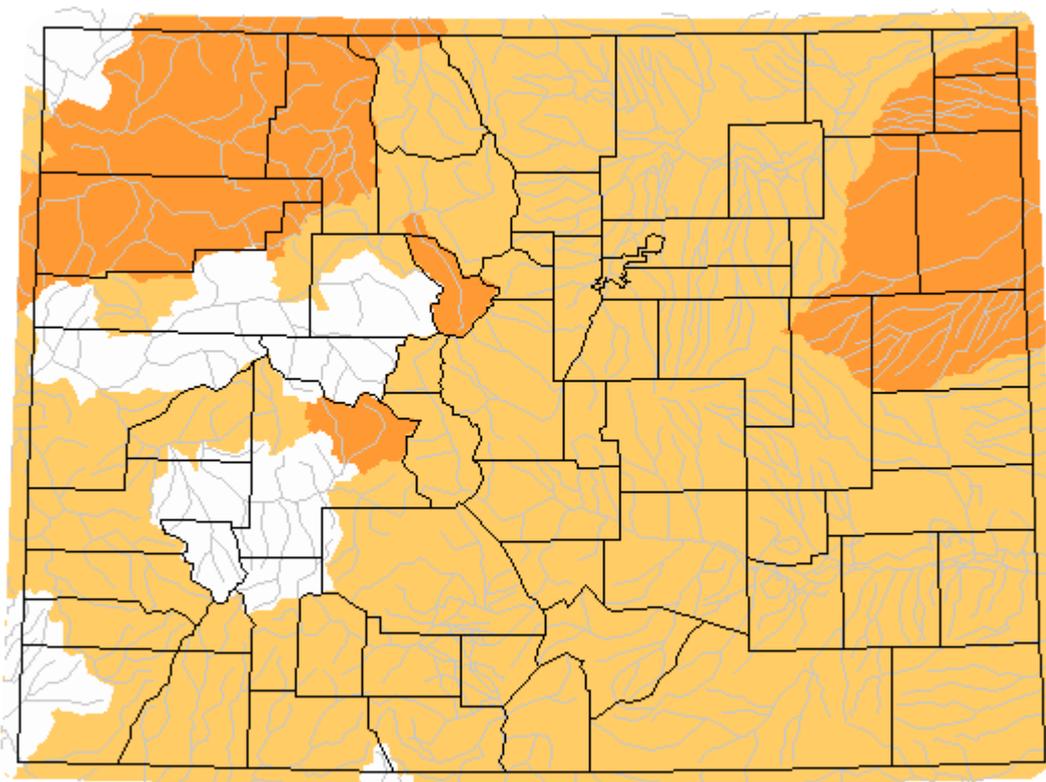


USGS WaterWatch

Last updated: 2012-08-28

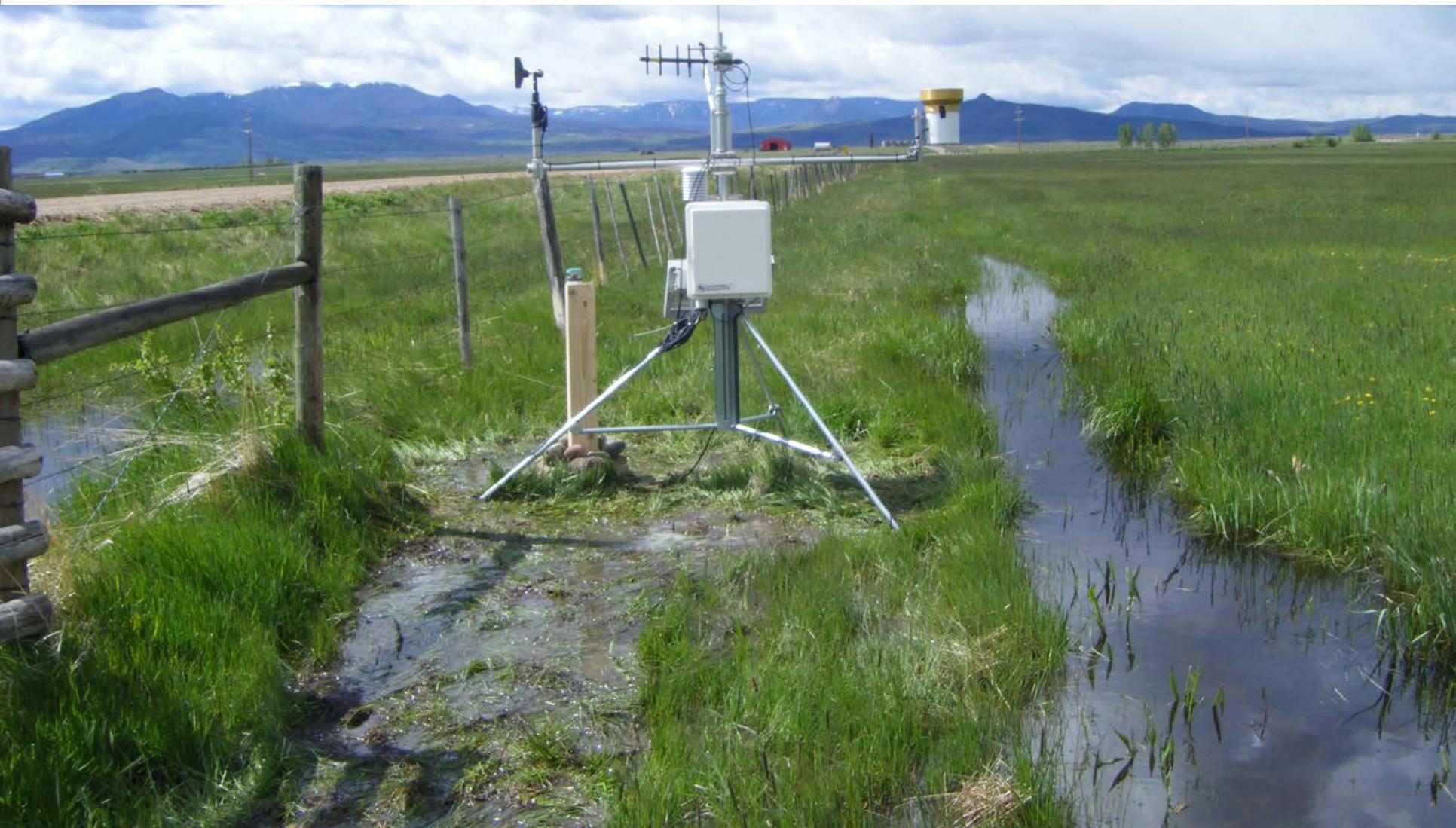
7-day average streamflow compared to historical streamflow

Monday, August 27, 2012



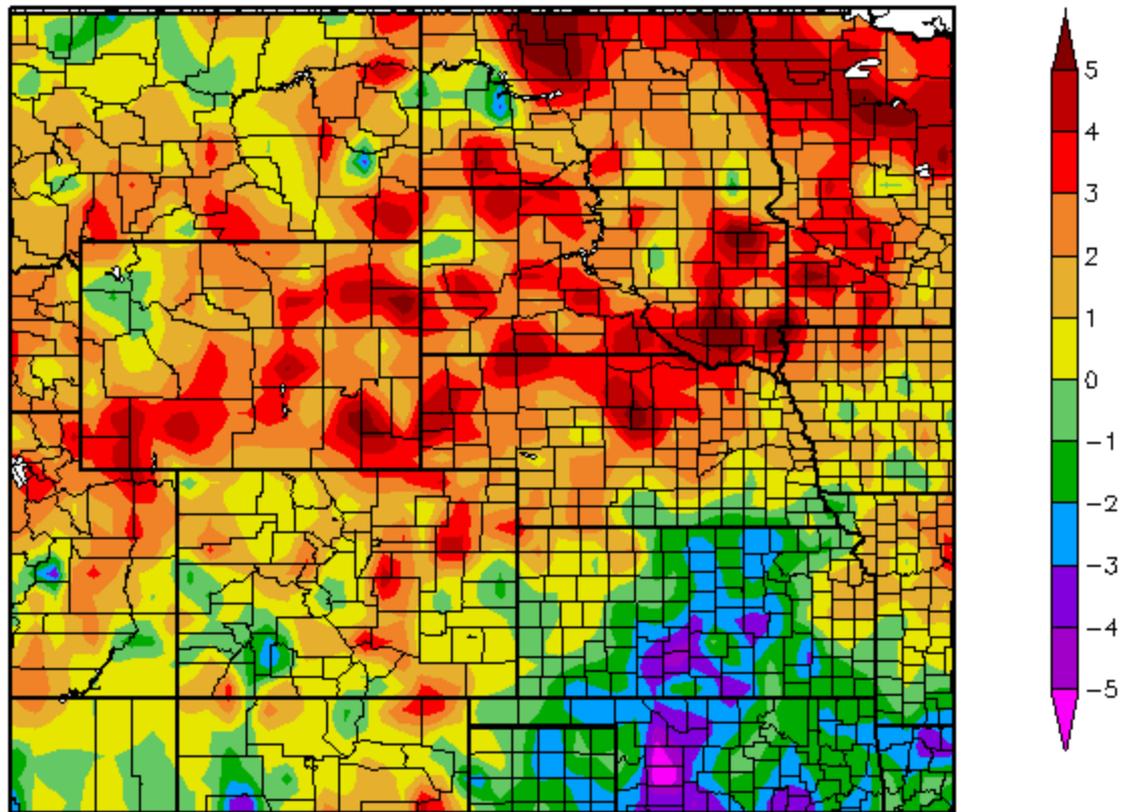
Explanation - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Water Demand



Temperature Departure from Normal 08/21/2012 – 08/27/2012

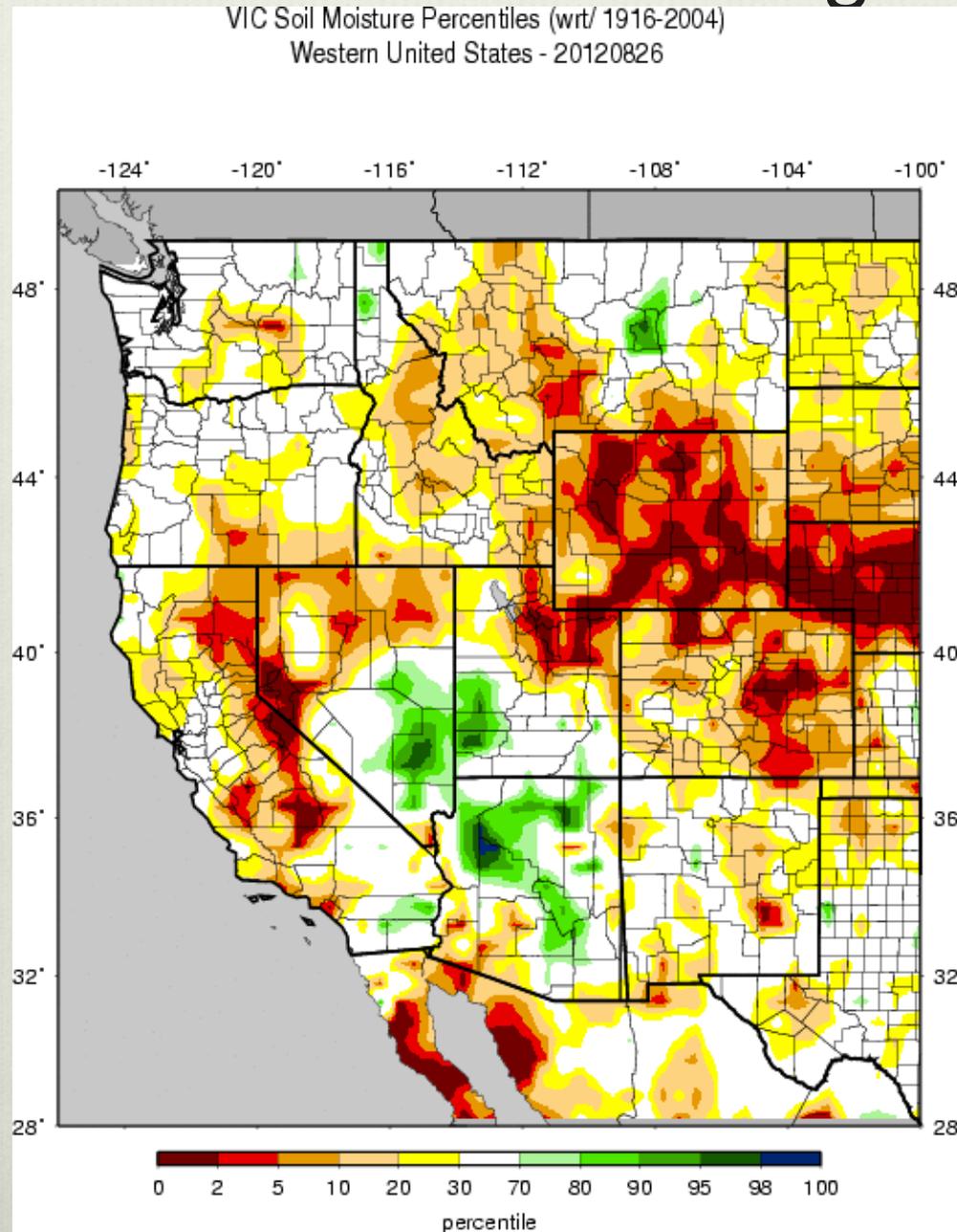
Departure from Normal Temperature (F)
8/21/2012 – 8/27/2012



Generated 8/28/2012 at HPRCC using provisional data.

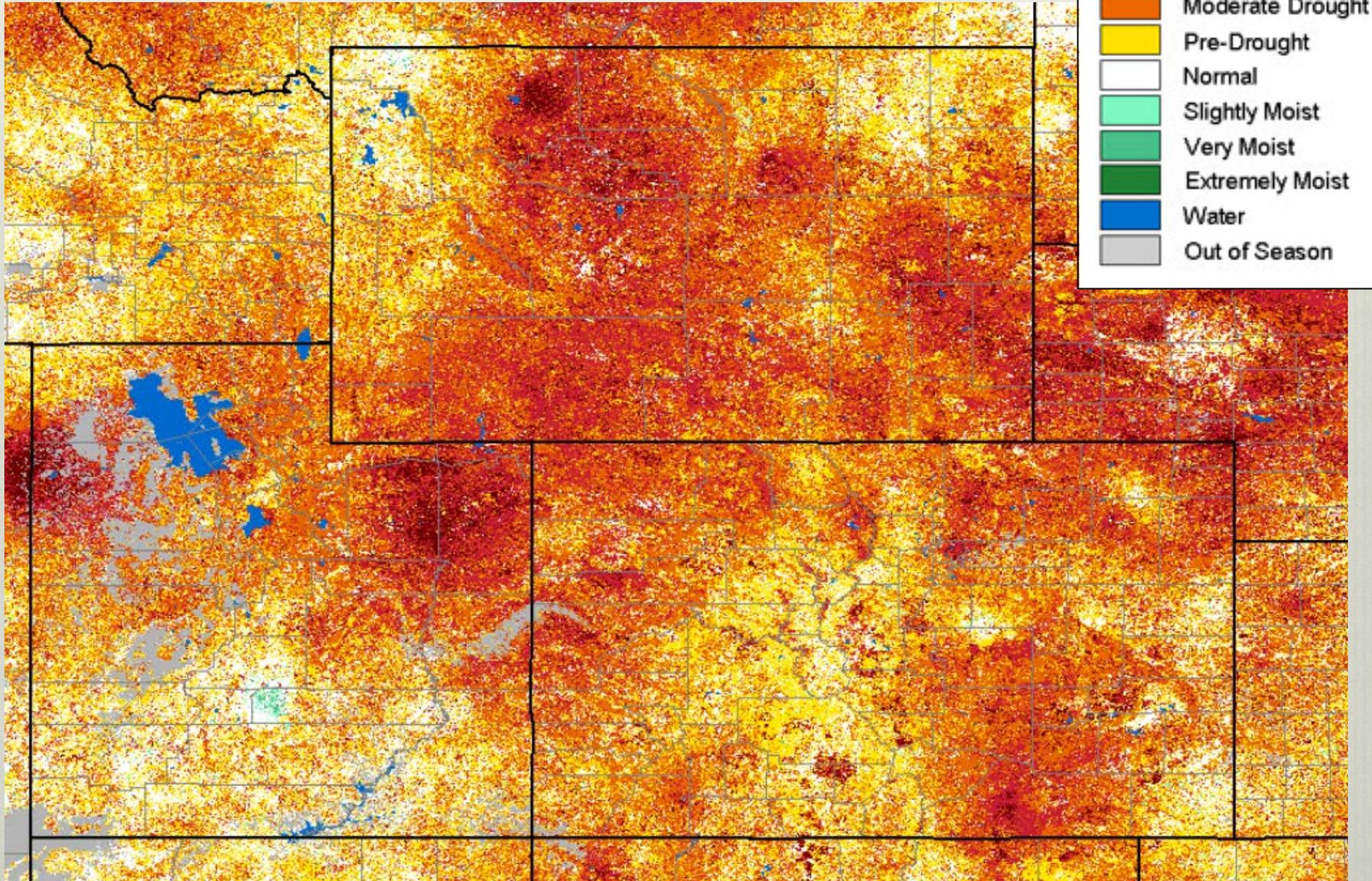
Regional Climate Centers

VIC Soil Moisture 26 August 12

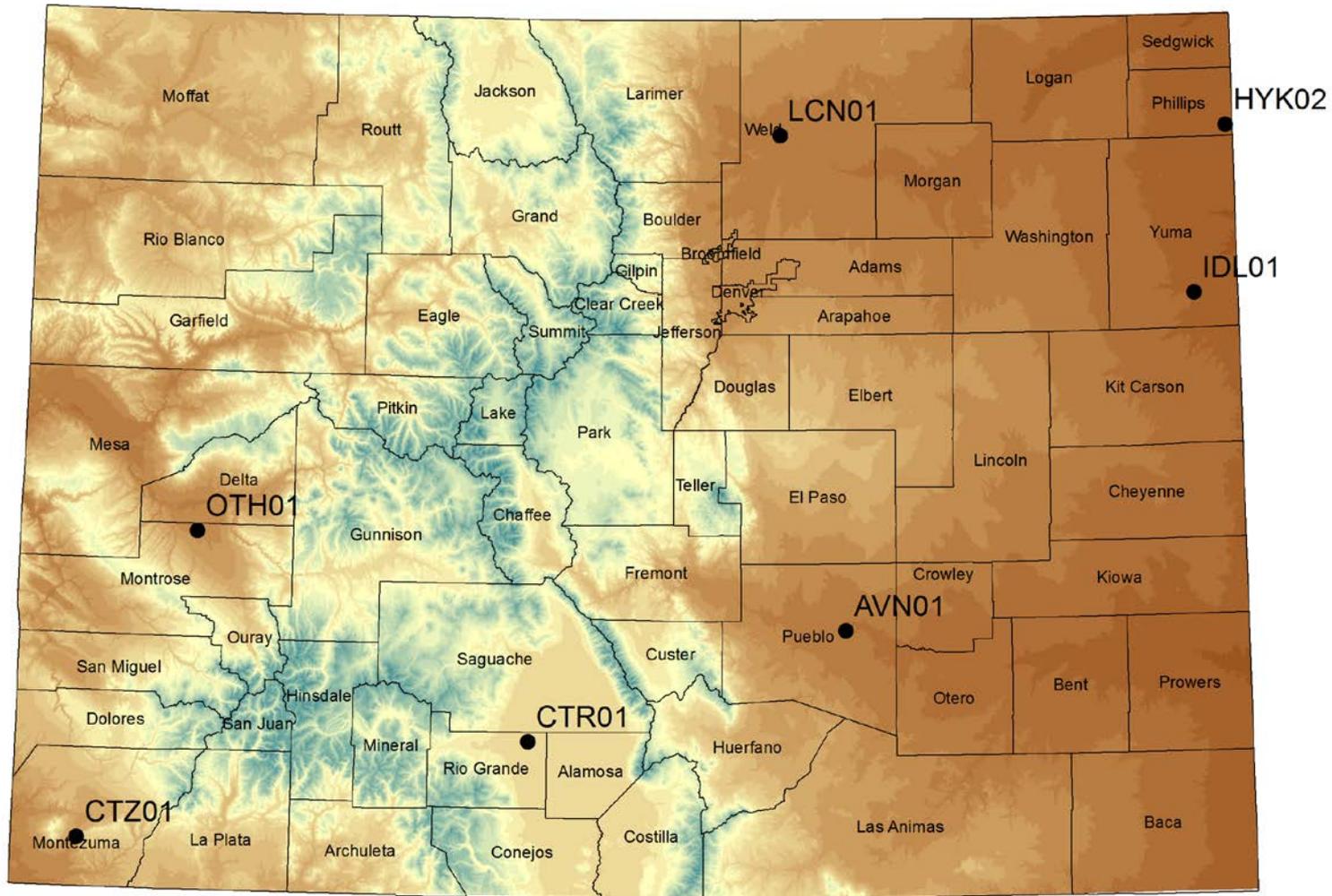


eMODIS VegDRI Vegetation

26 August 2012

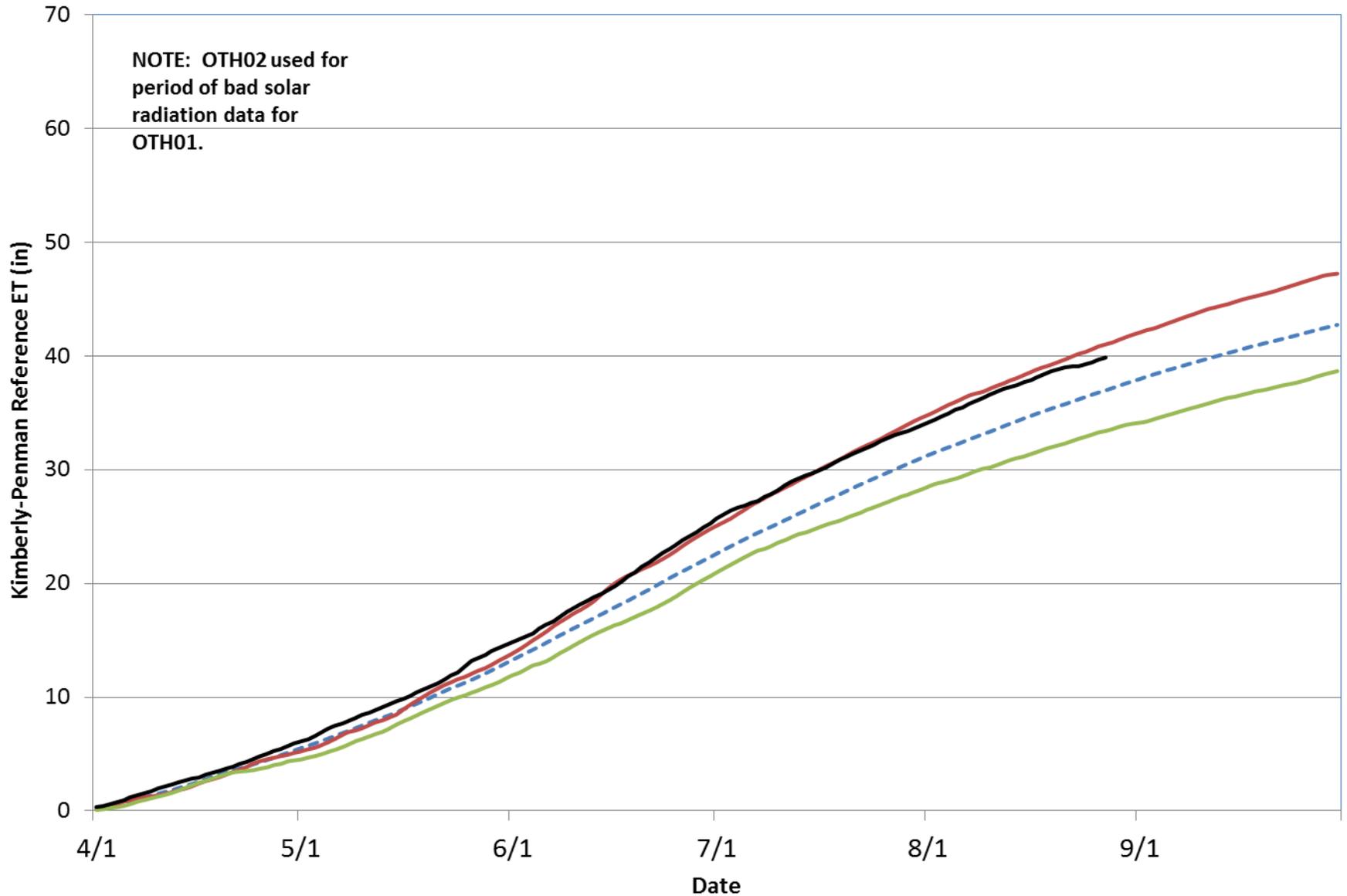


CoAgMet Reference Evapotranspiration Stations



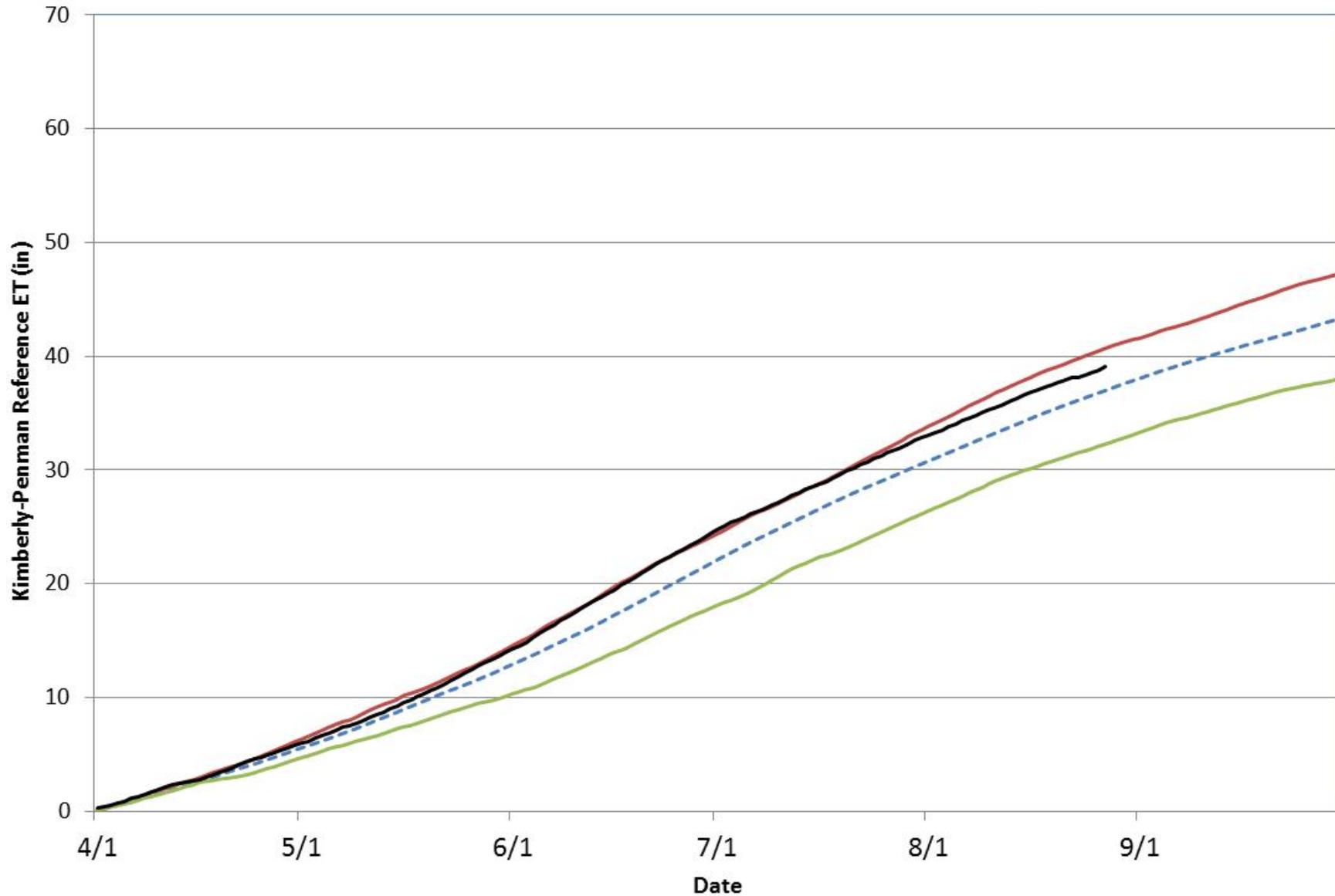
Olathe 1 & 2 Kimberly-Penman Reference ET (1993 - 2012)

--- Average — 1994 — 1999 — 2012



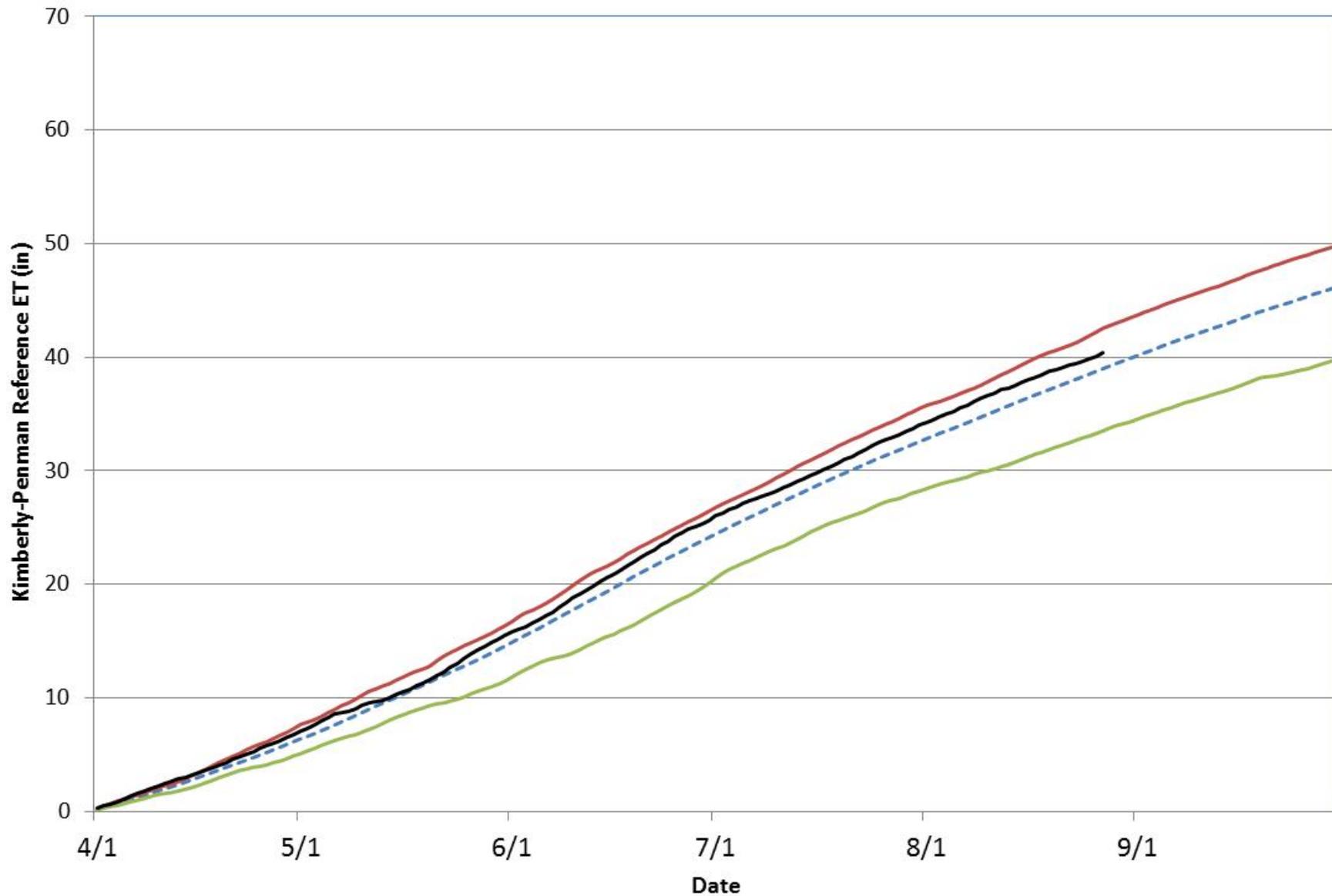
Cortez Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 2000 — 1995 — 2012



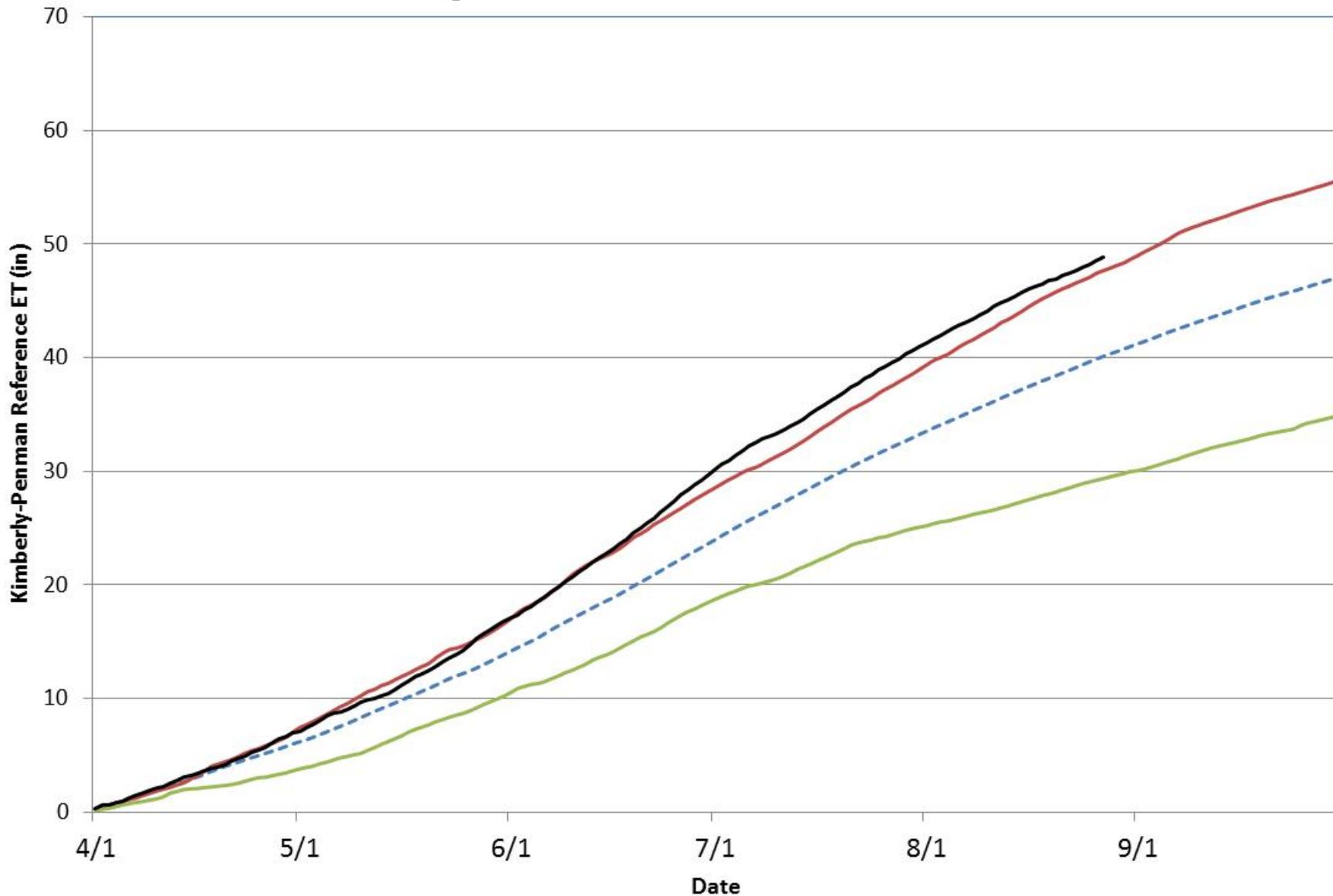
Center Kimberly-Penman Reference ET (1994 - 2012)

--- Average — 2002 — 1997 — 2012



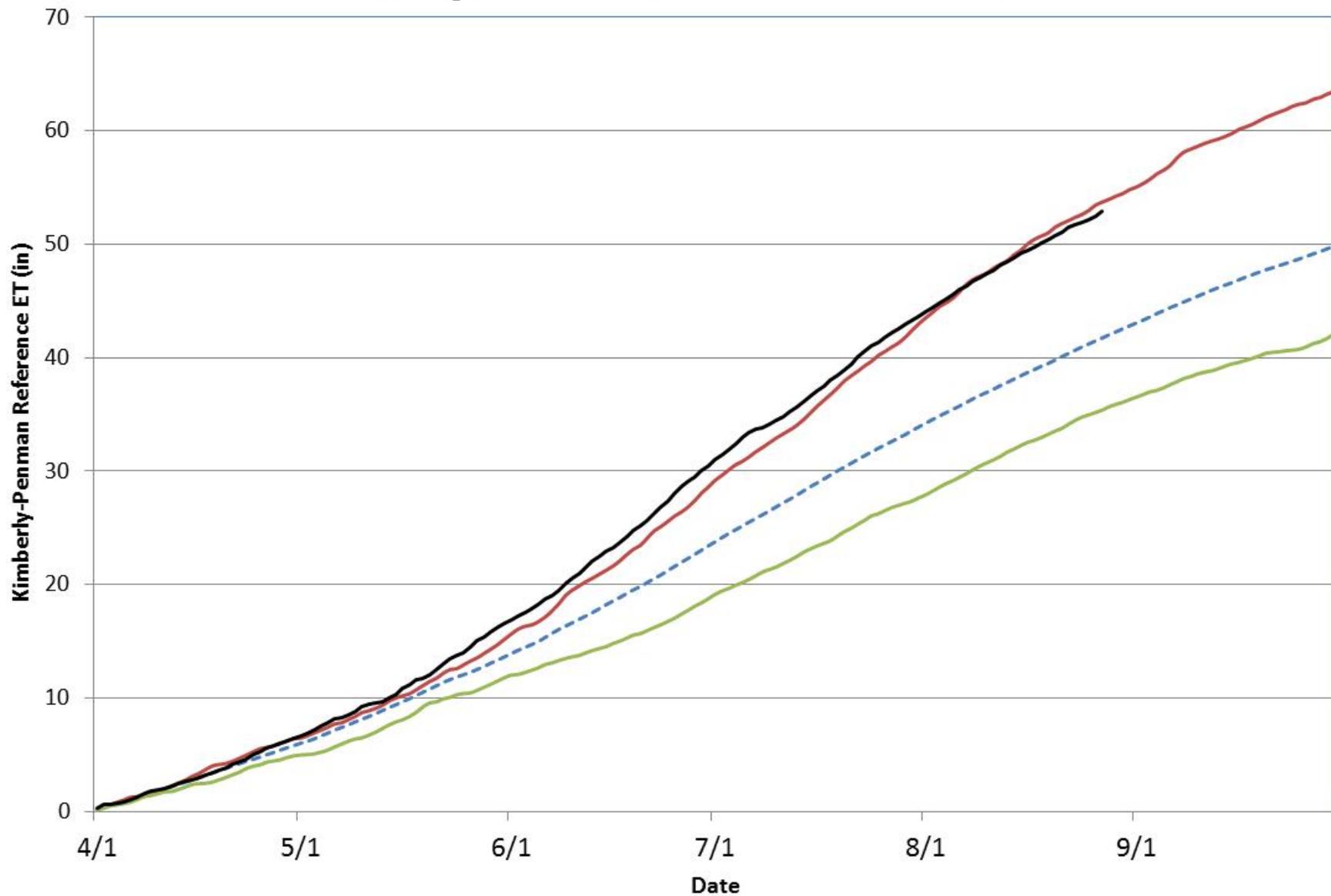
Avondale Kimberly-Penman Reference ET (1993 - 2012)

--- Average — 2002 — 1998 — 2012



Idalia Kimberly-Penman Reference ET (1992 - 2012)

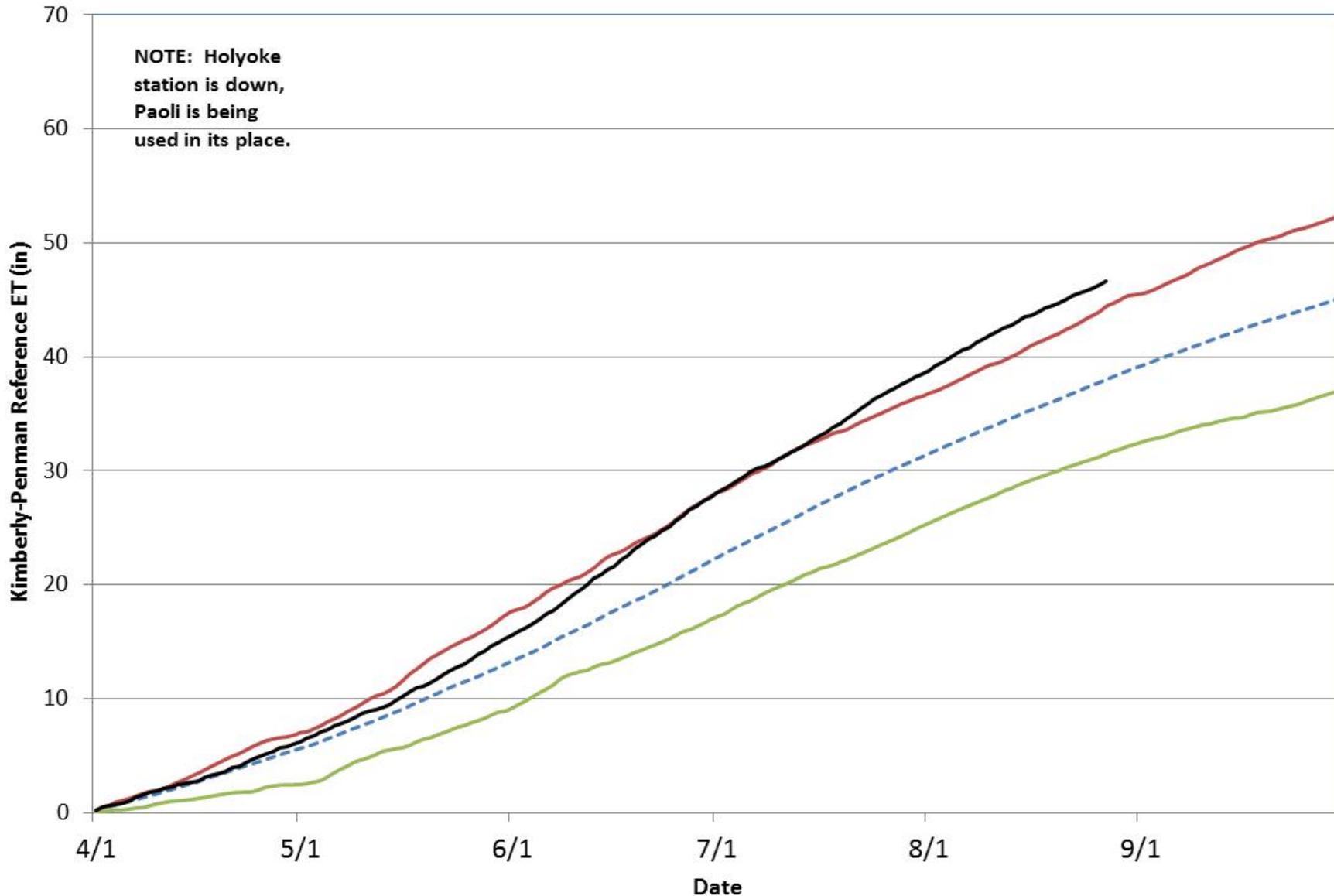
--- Average — 2002 — 2009 — 2012



Holyoke Kimberly-Penman Reference ET (1992 - 2012)

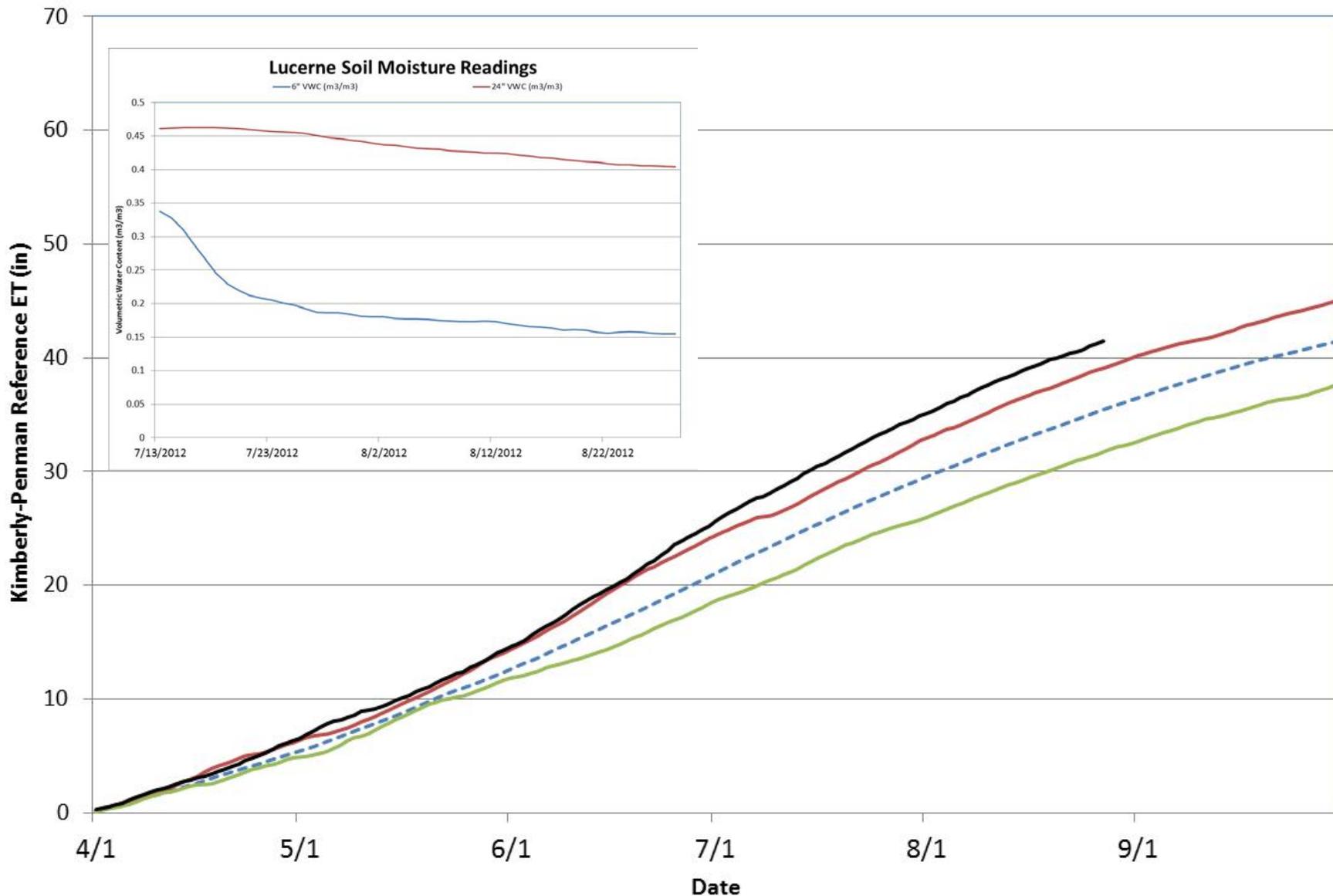
--- Average — 1994 — 1999 — 2012

NOTE: Holyoke station is down, Paoli is being used in its place.



Lucerne Kimberly-Penman Reference ET (1992 - 2012)

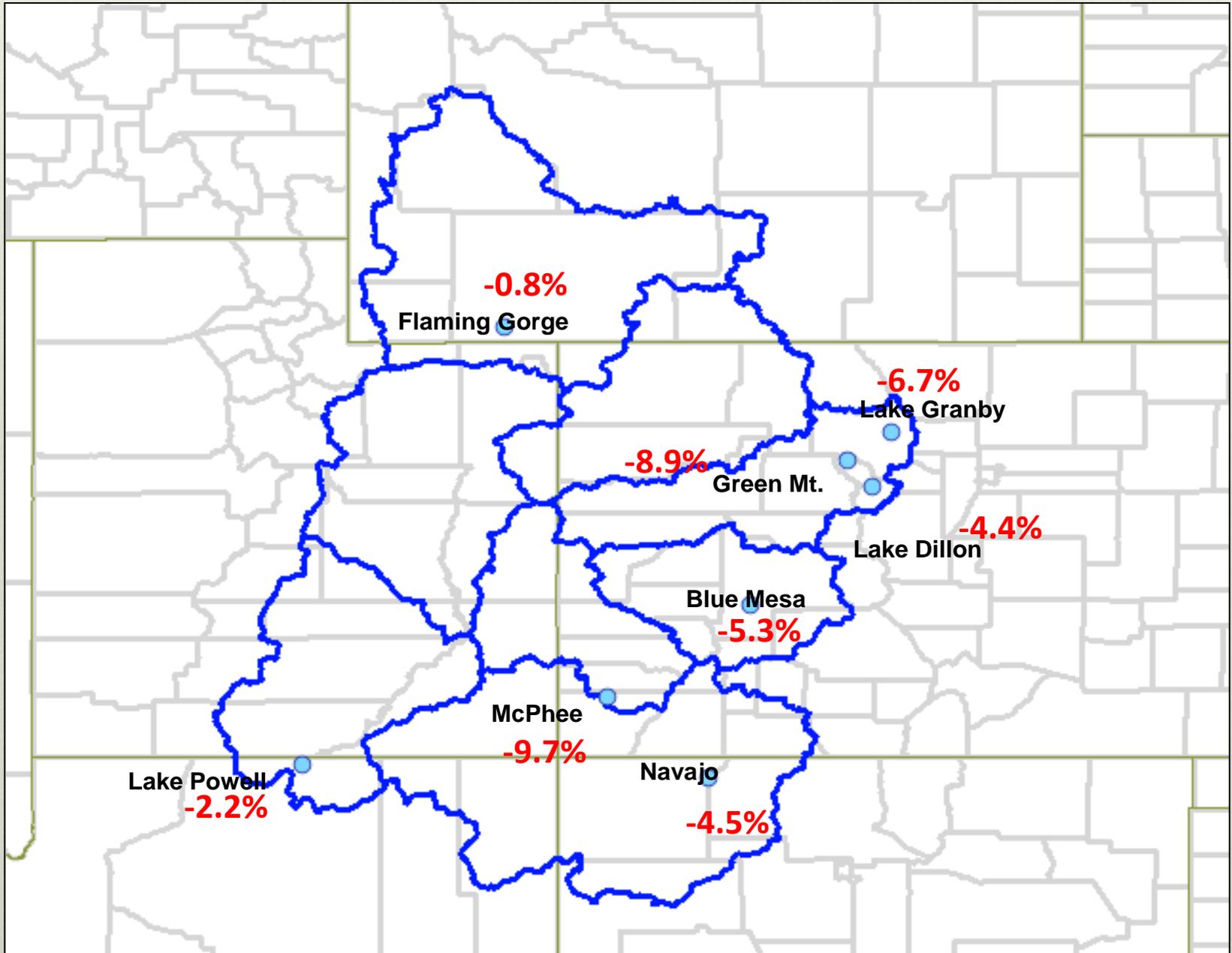
--- Average — 2006 — 2009 — 2012



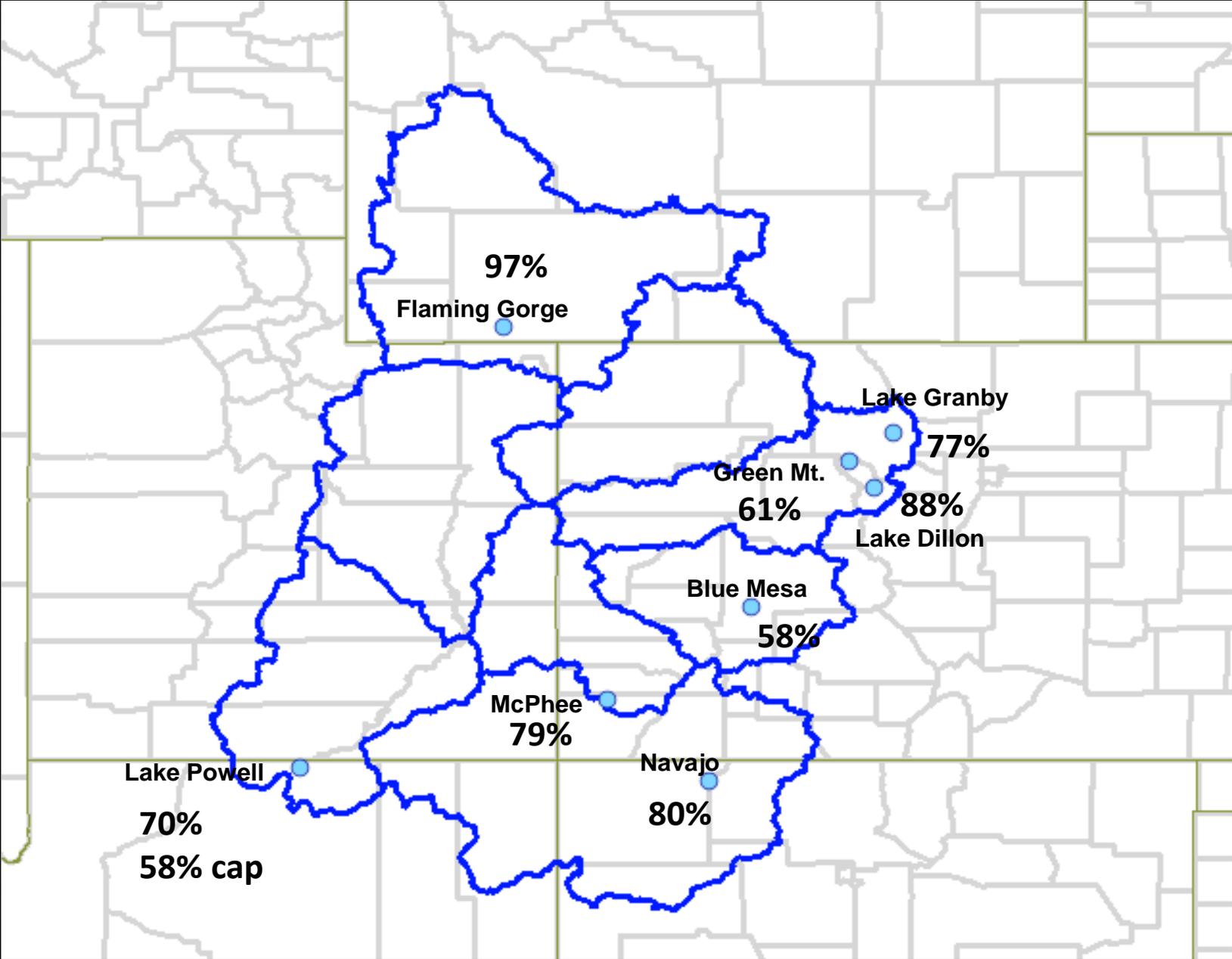
Reservoir Update



August to Date Reservoir Storage Volume Changes



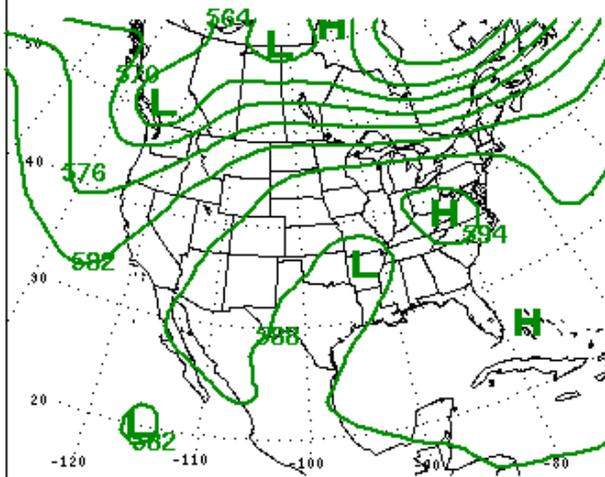
August Percent of Average Reservoir Storage Volume



Precipitation Forecast



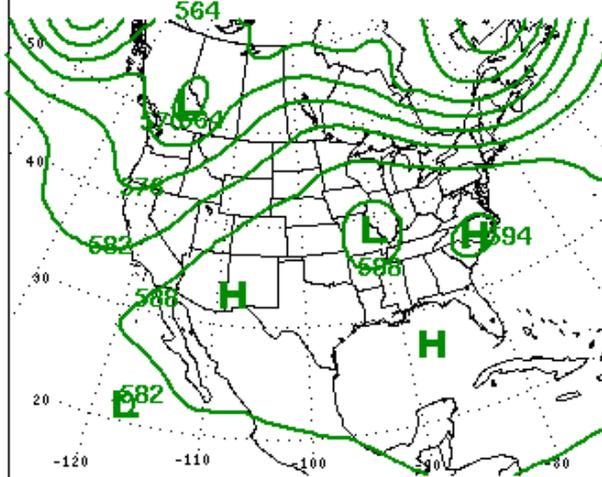
Day 3



HPC DAY 3 500 MB FCST (GREEN)
 ISSUED: 1135Z TUE AUG 28 2012
 VALID: 12Z FRI AUG 31 2012
 FCSTR: RAUSCH
 DOC/NOAA/NWS/NCEP/HPC



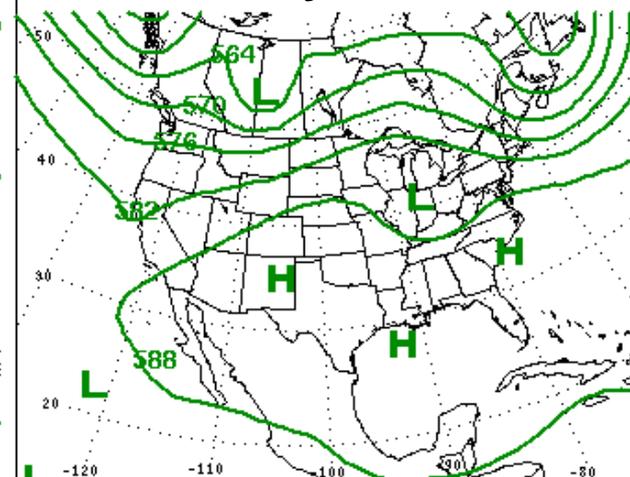
Day 4



HPC DAY 4 500 MB FCST (GREEN)
 ISSUED: 1135Z TUE AUG 28 2012
 VALID: 12Z SAT SEP 01 2012
 FCSTR: RAUSCH
 DOC/NOAA/NWS/NCEP/HPC



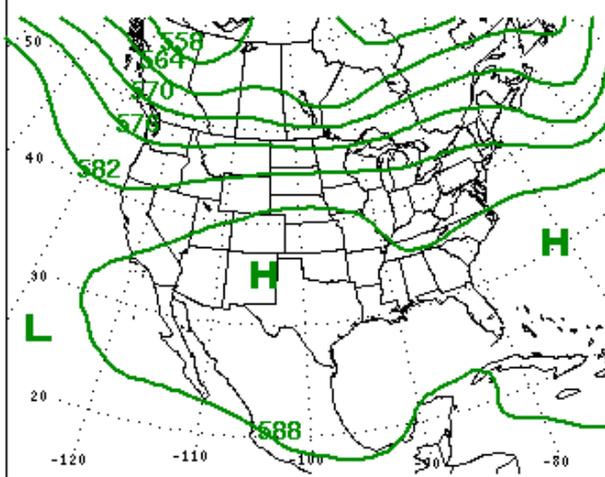
Day 5



HPC DAY 5 500 MB FCST (GREEN)
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 VALID: 12Z SUN SEP 02 2012
 FCSTR: RAUSCH
 DOC/NOAA/NWS/NCEP/HPC



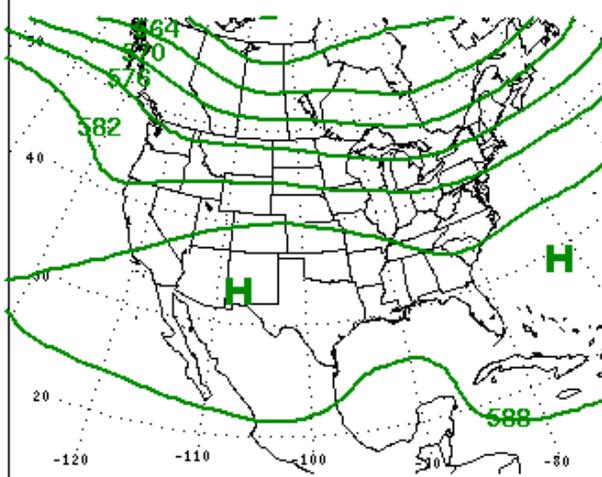
Day 6



HPC DAY 6 500 MB FCST (GREEN)
 ISSUED: 1135Z TUE AUG 28 2012
 VALID: 12Z MON SEP 03 2012
 FCSTR: RAUSCH
 DOC/NOAA/NWS/NCEP/HPC

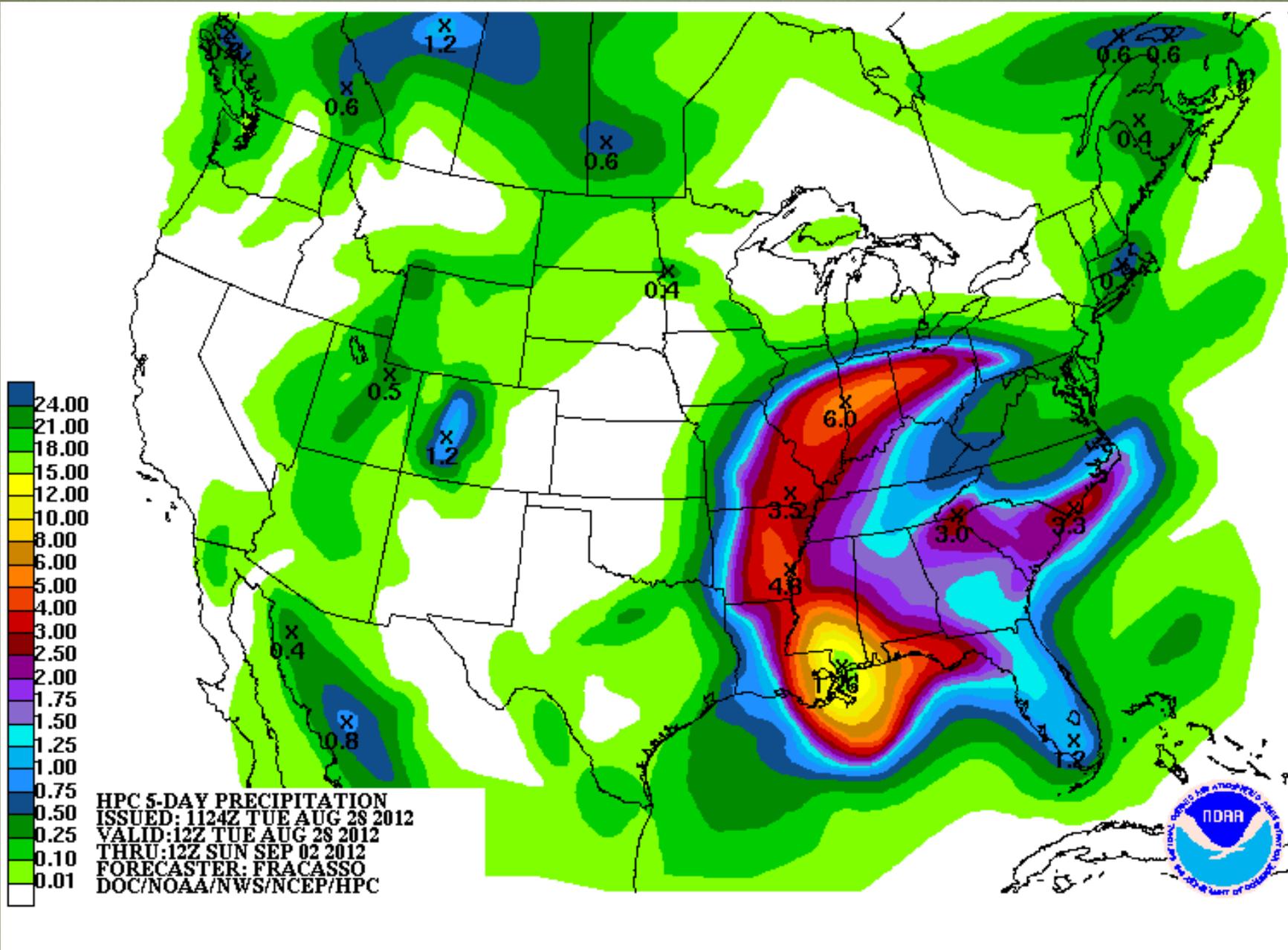


Day 7

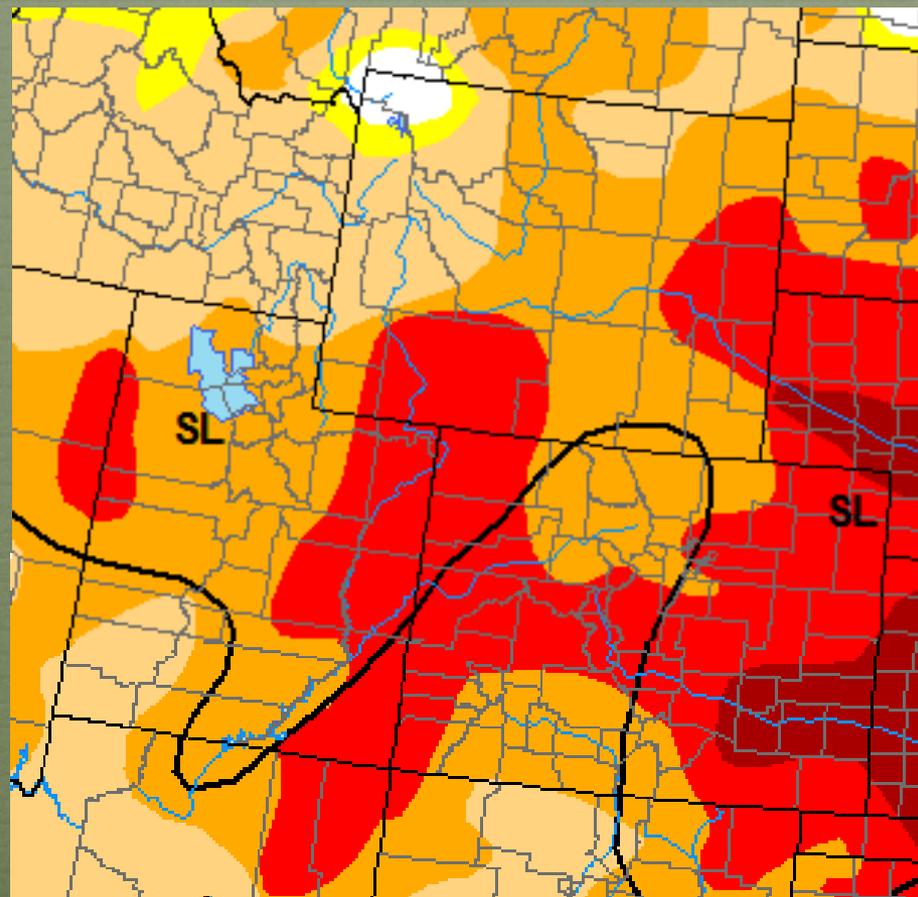


HPC DAY 7 500 MB FCST (GREEN)
 ISSUED: 1135Z TUE AUG 28 2012
 VALID: 12Z TUE SEP 04 2012
 FCSTR: RAUSCH
 DOC/NOAA/NWS/NCEP/HPC





Recommendations



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NIDIS - UPPER COLORADO BASIN PILOT PROJECT

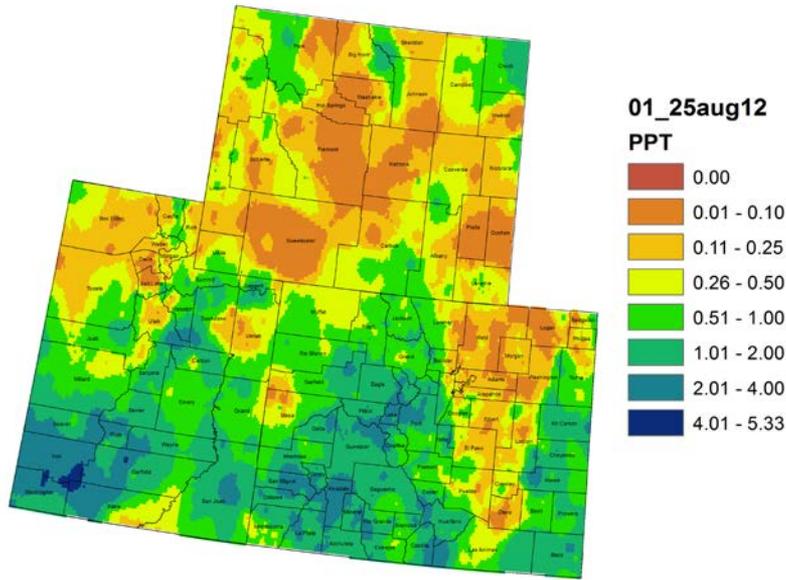
For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 28, 2012

Colorado, Utah and Wyoming Month to Date Precipitation (in)
1 - 25 August 2012



Snotel Water Year Precipitation Percentile Ranking for
27 August 2012 (Stations with 15+ years of data only)

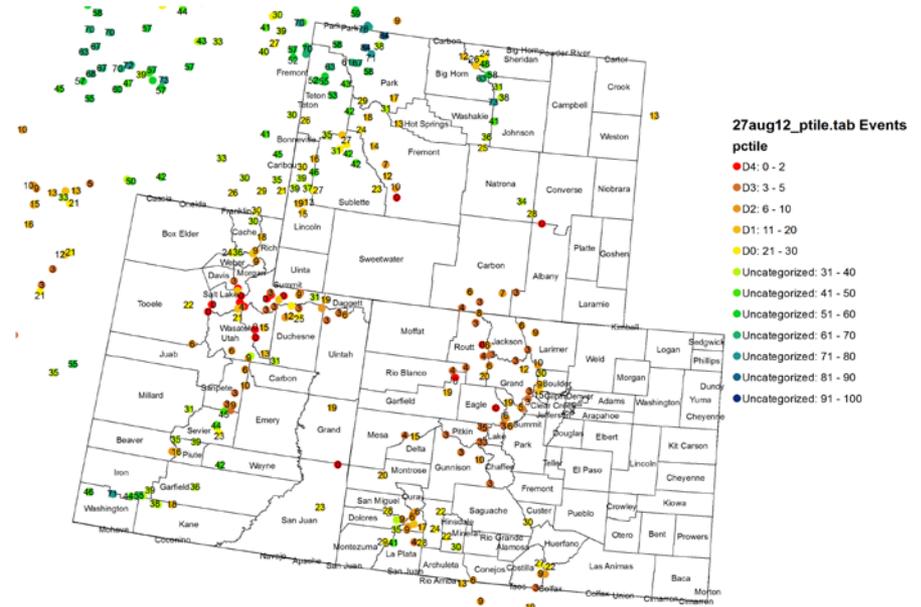


Fig. 1: August month-to-date precipitation in inches.

Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 - 30% is Drought Monitor D0 category).

Precipitation

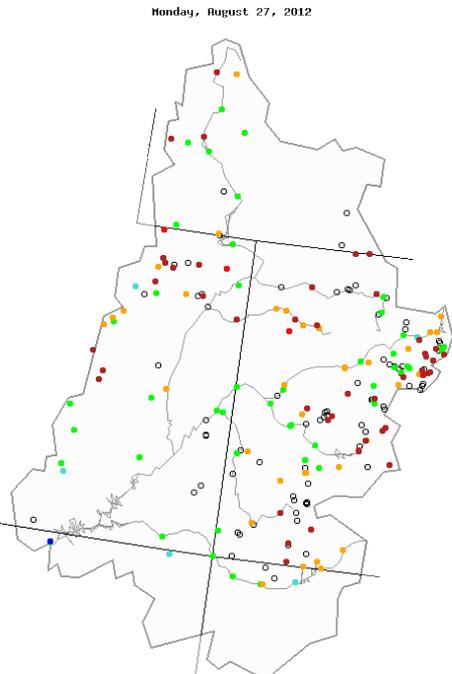
For the month of August so far, precipitation in the Upper Colorado River Basin (UCRB) has been mostly limited to the central and southern mountains, receiving between 1 and 2 inches of precipitation, with areas up to 4 inches (Fig. 1). The rest of the basin has been drier, receiving less than 1 inch of precipitation. Southwest Wyoming is still very dry with less than 0.25 inches for August. East of the basin, most of CO has remained dry receiving less than 1 inch of precipitation. Parts of eastern CO and just east of the Continental Divide have received between 0.5 and 2 inches with a few isolated areas in eastern CO up to 3 inches.

Water-year-to-date (WYTD), SNOTEL precipitation percentiles remain low for the Yampa and Gunnison basins in CO, and the Wasatch range in UT, with many sites reporting in the lowest 10th percentile or below (Fig. 2). The northern mountains of CO are also dry, with most sites reporting precipitation percentiles in the teens and single digits. SNOTEL percentiles in the Upper Green basin in WY are near to just below normal, around the 20th to 40th percentile with a few dropping into the teens, and percentiles in the San Juan basin are in the teens and 20s with a few into the 30s.

Streamflow

As of August 27th, about 37% (up from 32% last week) of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 5% of the gages in the UCRB are recording above normal flows, while about 36% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. Much below normal flows are concentrated in the Colorado River headwaters and Gunnison River headwaters and Middle Green in NE Utah. Near normal flows are concentrated around the Upper Green River, lower San Juan River and Colorado River just above Lake Powell. The remainder of the basin is mostly in the below normal flows range.

There were some increases in flows at three key gages in the UCRB last week (Fig. 4). Flows on the Colorado River near the CO-UT state line are in the normal range at the 32nd (up from 26th last week) percentile. Flows on the Green River at Green River, UT are in the below normal range at the 11th (up from 7th) percentile. Flows on the San Juan River near Bluff, UT bumped up to normal flows at the 57th percentile.



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		

Fig. 3: 7-day average discharge compared to historical discharge for Aug 27th.

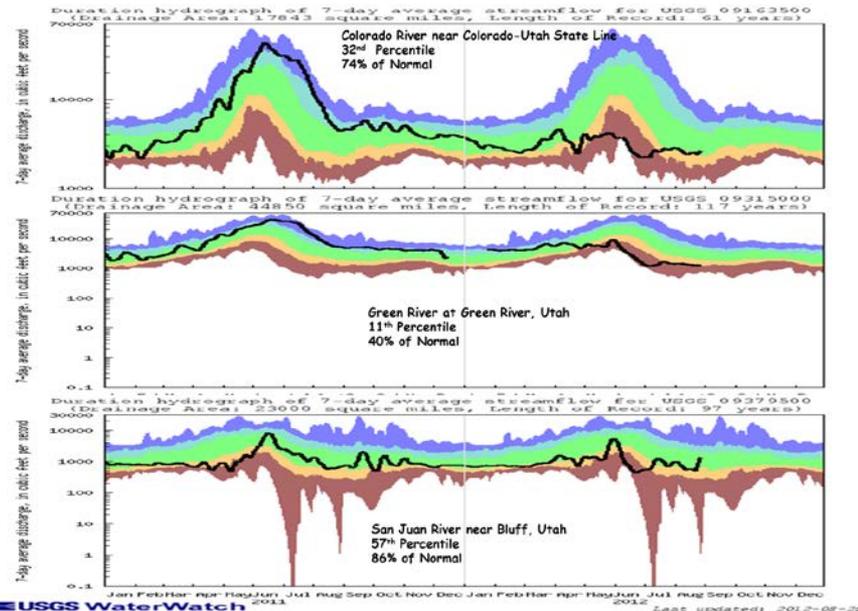


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, temperatures across most of the UCRB were near to slightly above (1 to 3 degrees) normal. Temperatures 1 to 3 degrees below normal also spotted the basin, mainly in the northern San Juan Mountains. SW Wyoming was warmer with temperatures 3 to 5 degrees above normal. East of the basin, the rest of CO experienced temperatures 2 to 4 degrees above normal with southeastern CO near to slightly below (1 to 2 degrees) normal. Satellite vegetation conditions show the driest vegetation over northwest CO and northeast UT, extending into southern WY (Fig. 5). Very dry vegetation is also showing up over northeast CO and along the Arkansas valley in southeast CO. Reference ET rates throughout the basin have been above the average ET rates with some stations reporting the highest year on record although current daily rates have been near average for this time of year. East of the basin, reference ET rates continue to be very high with some of the highest seasonal accumulations observed at many sites (Fig. 6).

For the month of August, all of the reservoirs have seen volume decreases with McPhee and Green Mountain seeing the largest decreases. Volume decreases are normal for this time of year, though all reservoirs are seeing larger decreases than what is normal for this time of year with the exception of Flaming Gorge in SW Wyoming, decreasing less than 1%. All of the major reservoirs are below their August storage averages, with Blue Mesa at 58% of average, Lake Granby at 77% of average, and Lake Powell currently at 70% of average.

Precipitation Forecast

A large area of high pressure will remain firmly entrenched across the southern US throughout the upcoming week. This pattern will lead to mostly dry conditions across much of the UCRB with the exception of the highest mountain peaks in central and southern CO where weak pulses of monsoonal moisture will help fuel a few showers and thunderstorms. While this activity could result in precipitation accumulations of up to one inch through Friday, extremely dry air in the low levels will keep most of the meaningful precipitation to isolated areas along mountain tops. By Saturday a weak disturbance will move across the area and may help trigger a few more showers before quickly moving east of the basin on Sunday. This disturbance will be followed by brisk westerly flow aloft that will usher in much dryer air for early next week, effectively shutting off any monsoonal moisture source and ending precipitation chances basin wide by Monday. Eastern Colorado will remain dry and hot for the next 5 days, with a slight chance of precipitation after the weekend.

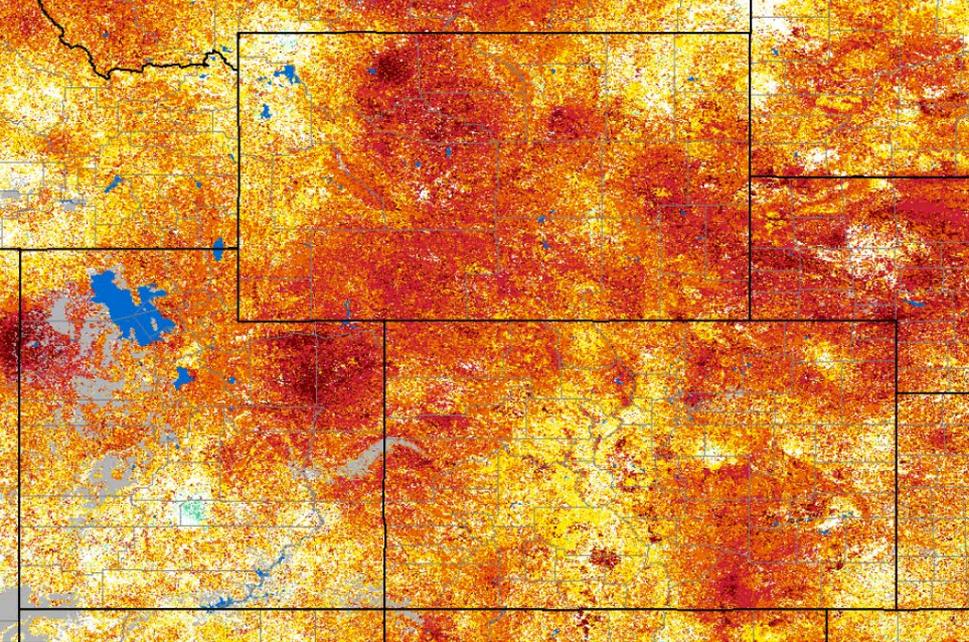


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of Aug 26th.

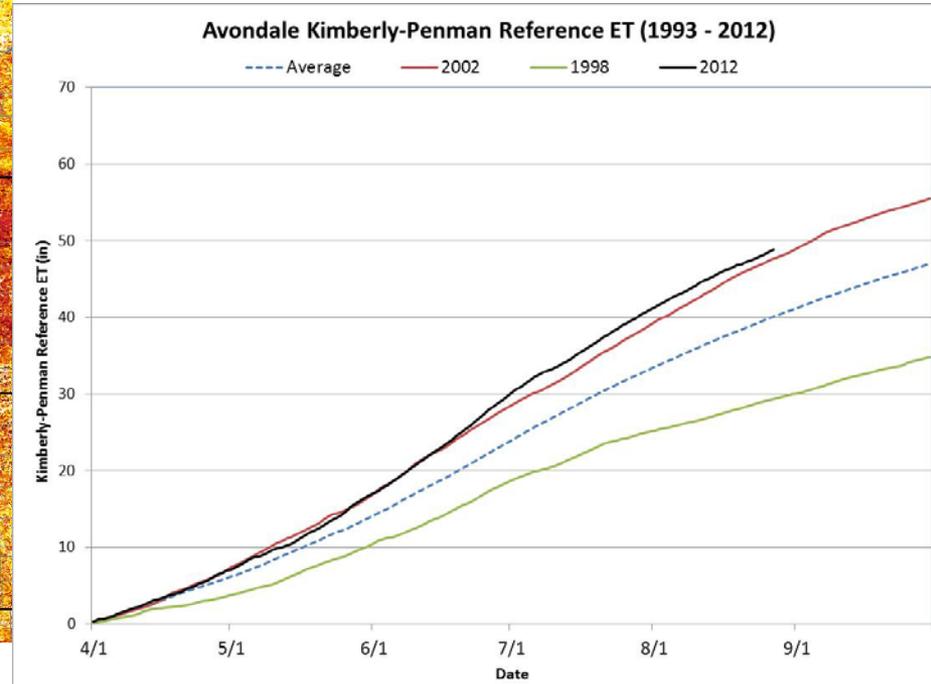
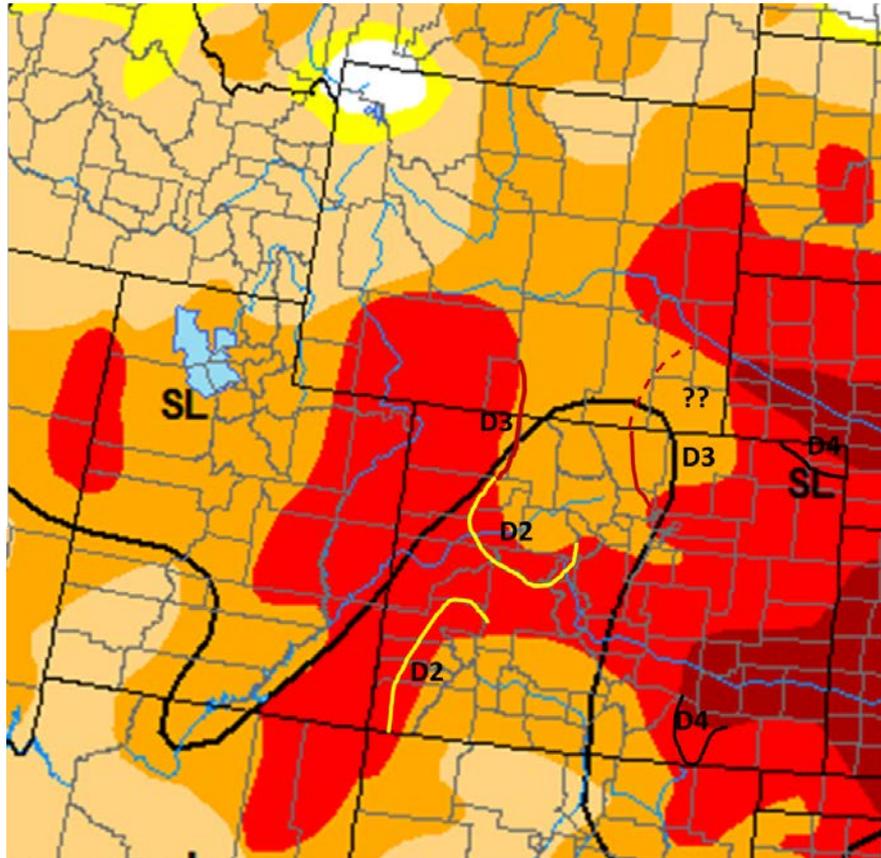


Fig. 6: Accumulated reference ET (black line) at Avondale, CO in the eastern region, compared to the max year (red), min year (green), and average (dashed line).

Drought and Water Discussion



Drought – Exceptional	0 to 2 (D4)
Drought – Extreme	2 to 5 (D3)
Drought – Severe	5 to 10 (D2)
Drought – Moderate	10 to 20 (D1)
Abnormally Dry	20 to 30 (D0)

Drought categories and their associated percentiles

Fig. 7: August 27st draft of U.S. Drought Monitor for the UCRB with recommendations.

UCRB: A slight nudging of the D3 in northwest CO east to the Moffat County line is the only recommended degradations for the UCRB (Fig 7, red line). Improvements of the D3 to D2 are recommended in the central mountains and southwest CO (Fig 7, yellow line) after beneficial rains this month.

Eastern CO: D4: Two expansions of D4 are recommended. The first in northeast CO in Logan, Sedwick and Phillips County. The second in Las Animas County due to the low SPI at the Trinidad NWS Cooperative Weather Station (Fig 7, black lines).

D3: An expansion of D3 to cover all of Weld County and eastern Larimer County is recommended after a dry August (Fig 7, red line).

The rain the past week in eastern CO brought little or no improvements to vegetation conditions due to the existing dryness and continued high ET.