

**Summer
2012**



August 14th, 2012

NIDIS - UPPER COLORADO BASIN PILOT PROJECT

Weekly Climate, Water & Drought Assessment

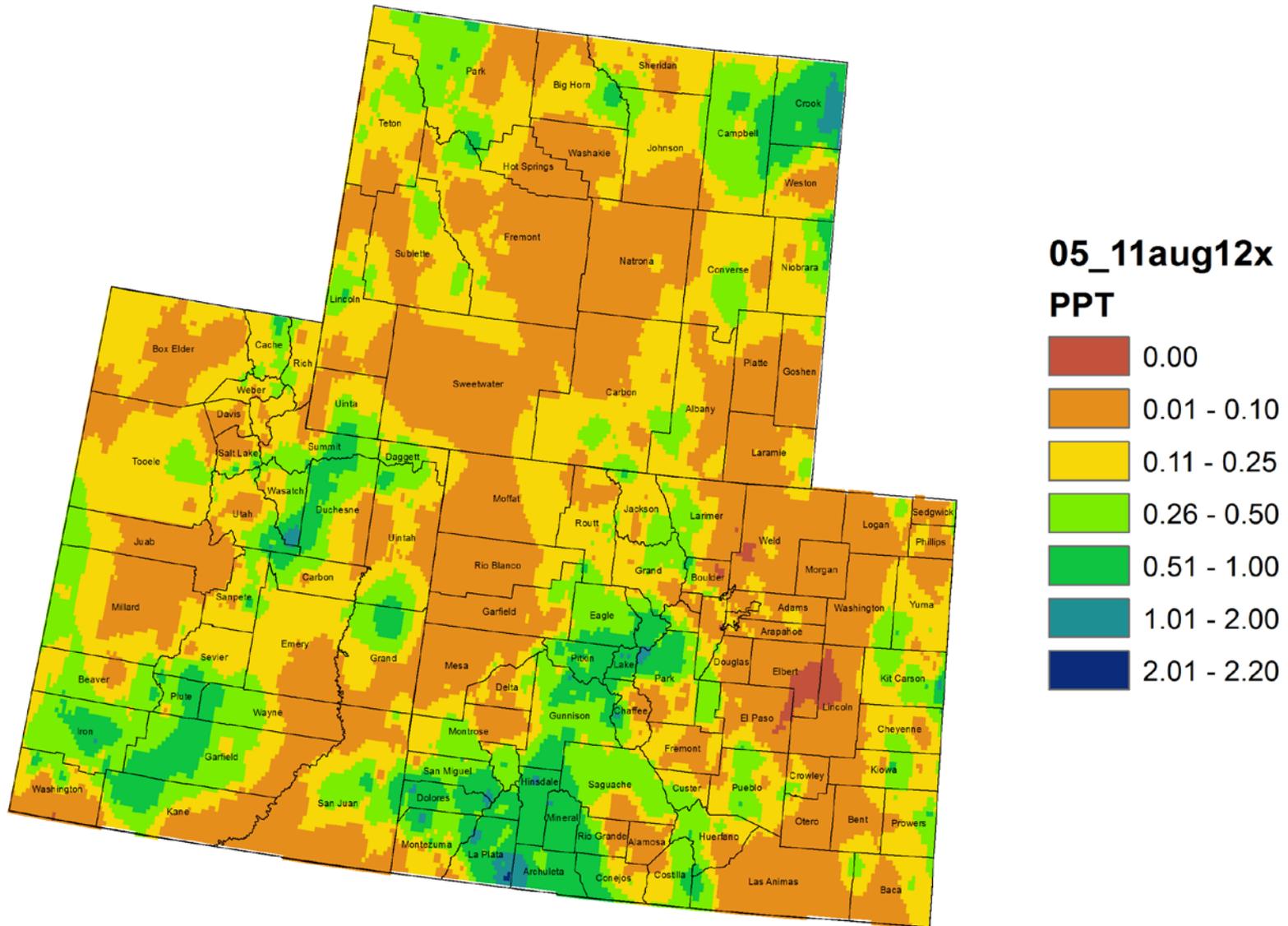
Today's Agenda

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

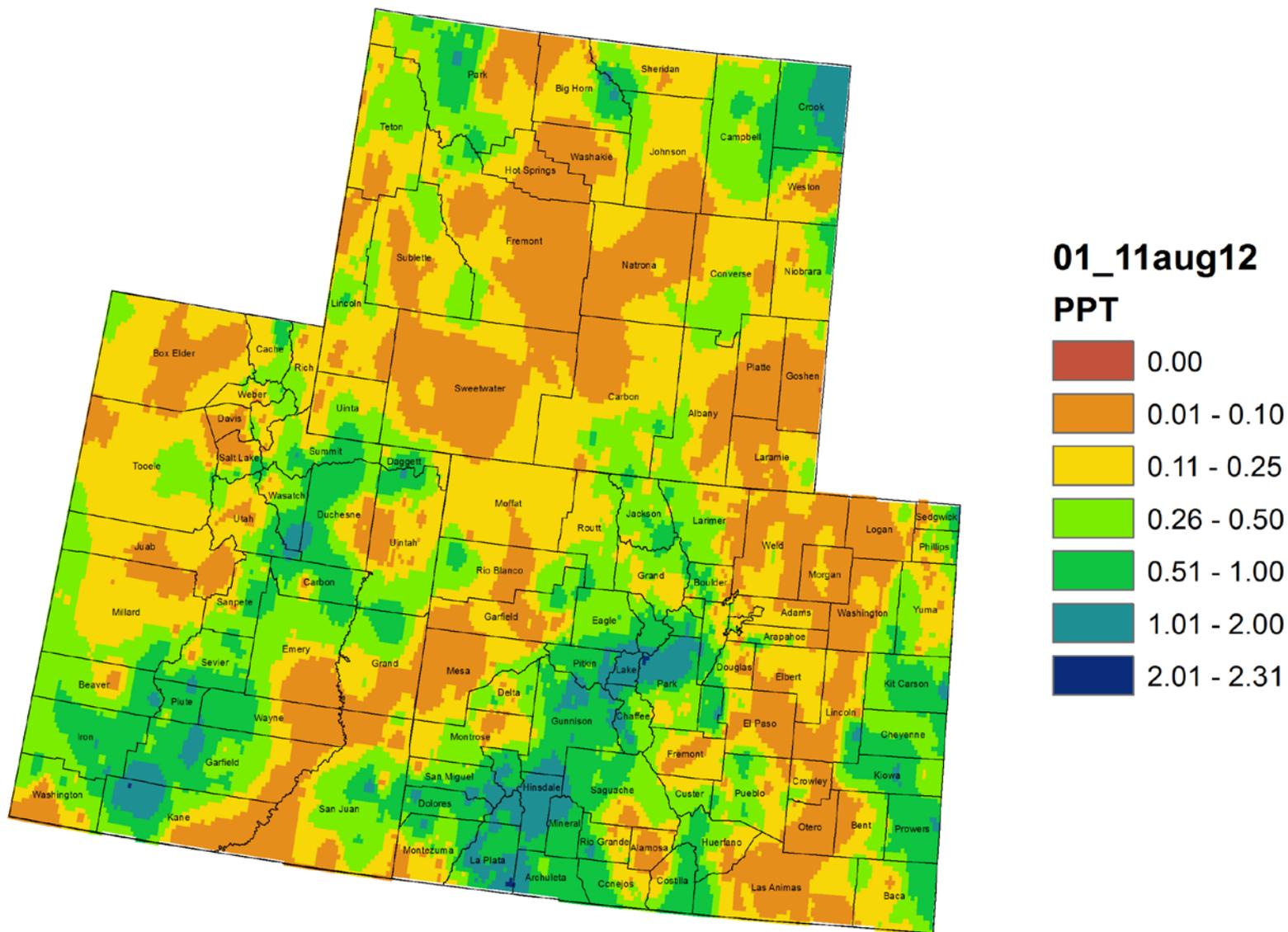
Precipitation/Snowpack Update



Colorado, Utah and Wyoming 7 Day Precipitation (in) 5 - 11 August 2012

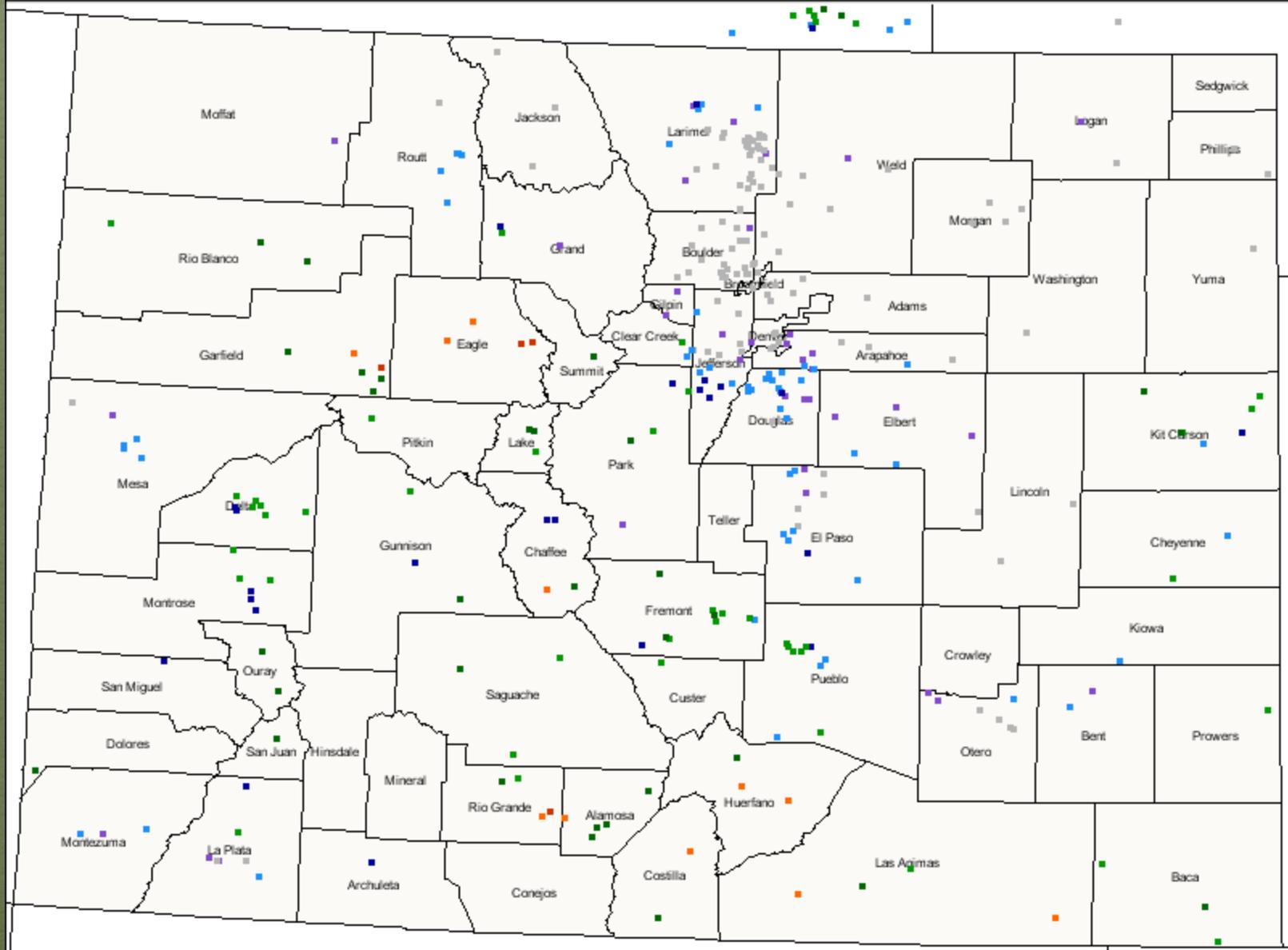


Colorado, Utah and Wyoming Month to Date Precipitation (in) 1 - 11 August 2012

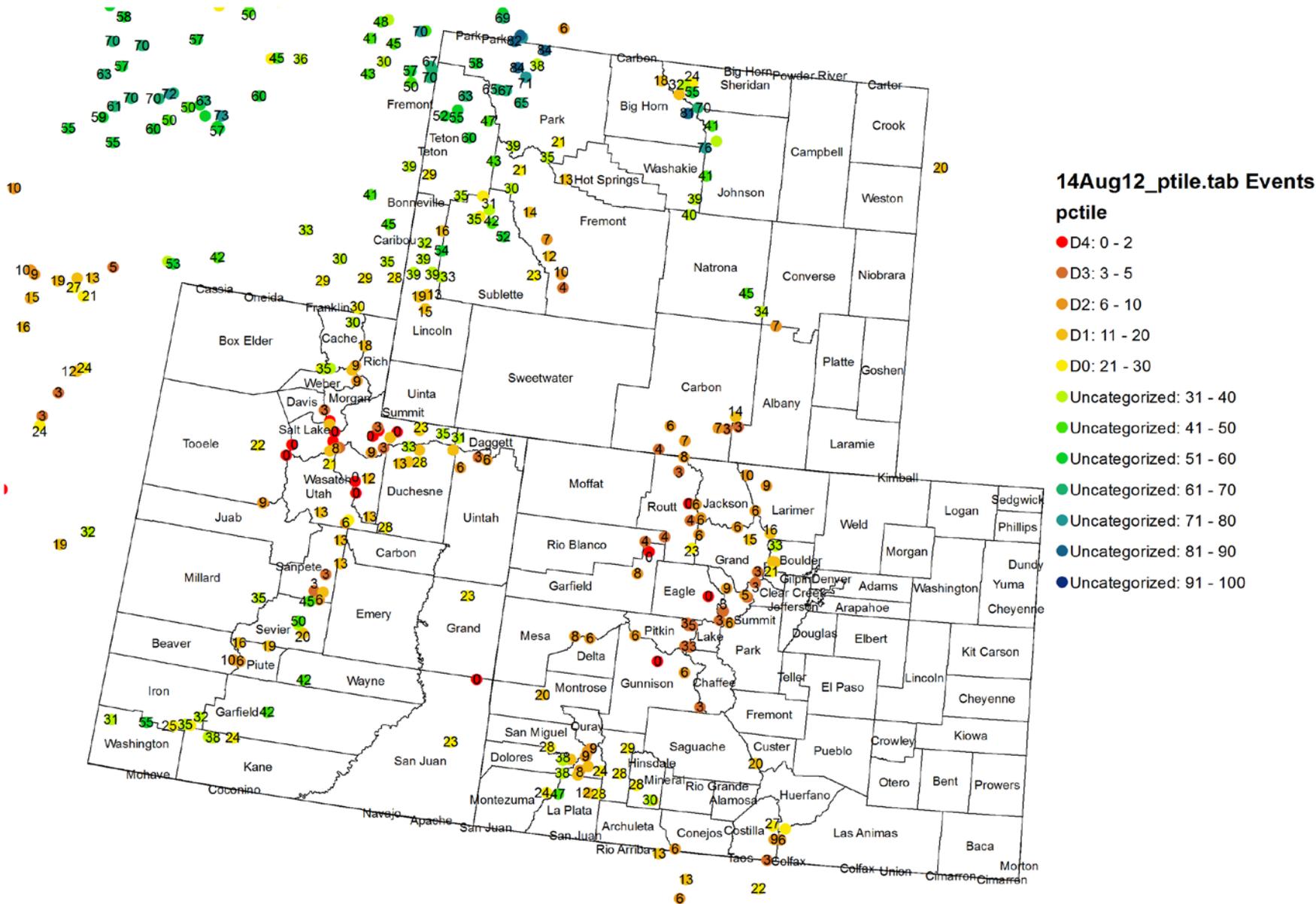


Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am

Colorado 8/14/2012

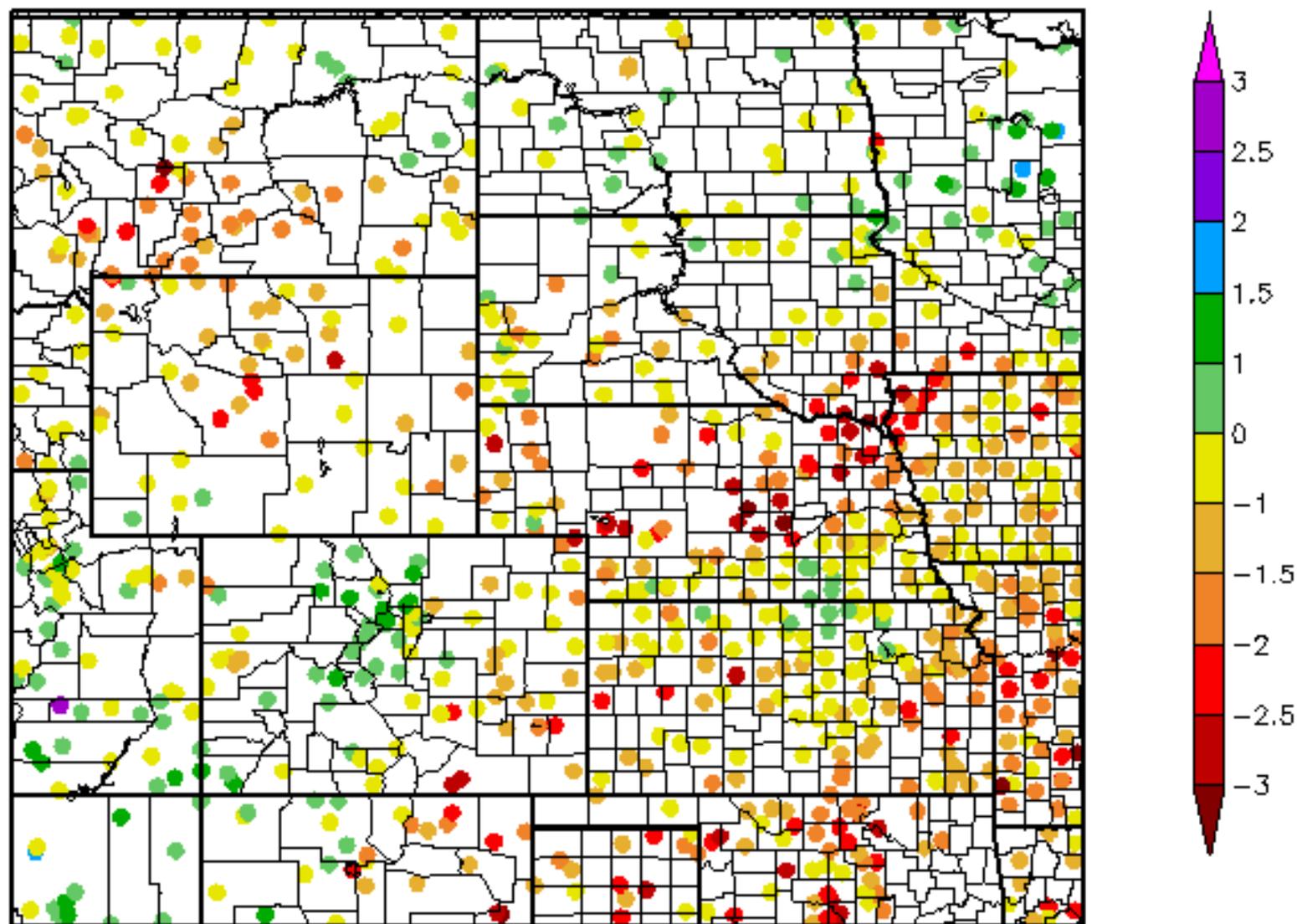


Snotel Water Year Precipitation Percentile Ranking for 14 August 2012 (Stations with 15+ years of data only)



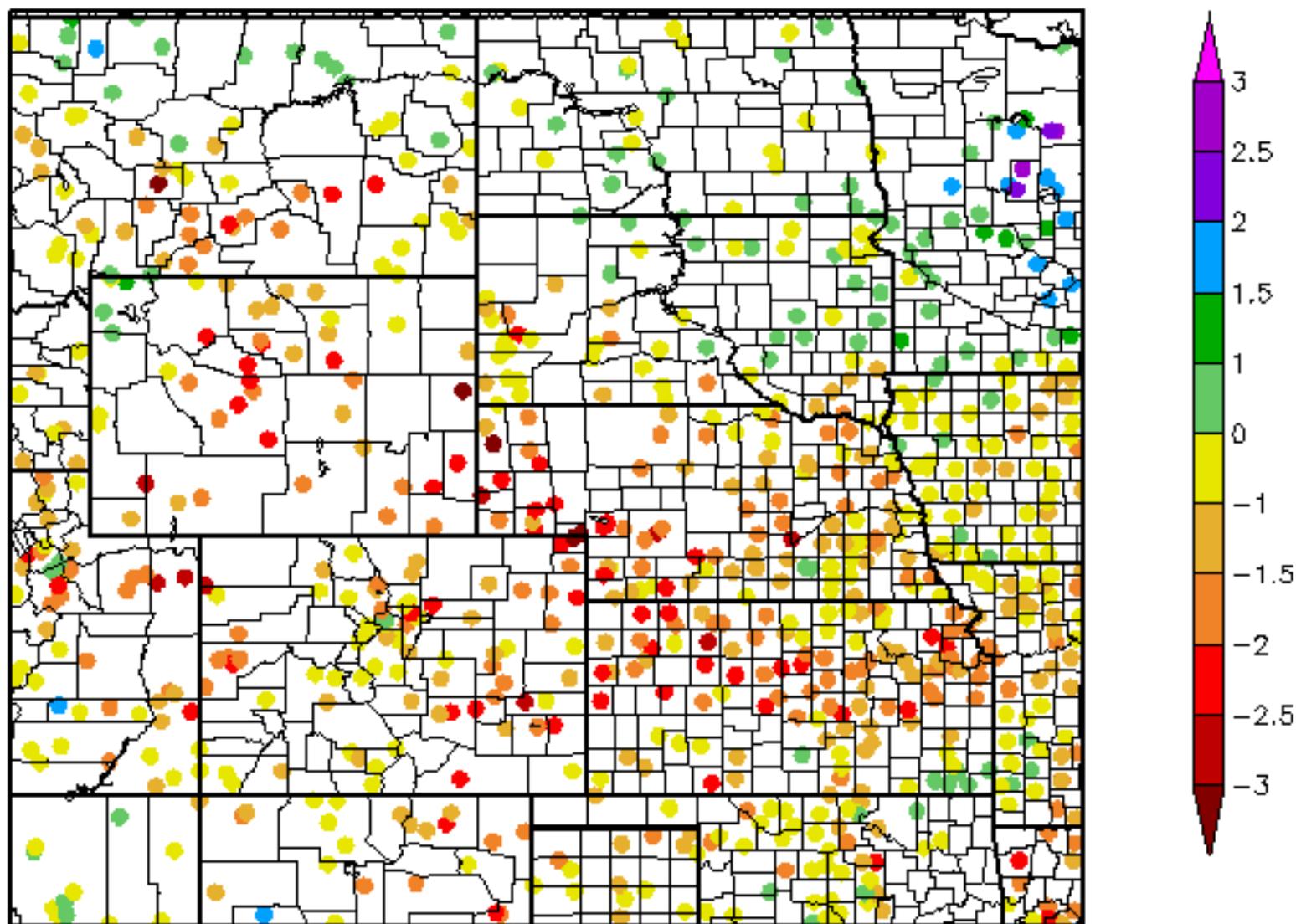
60 Day SPI

6/15/2012 – 8/13/2012



6 Month SPI

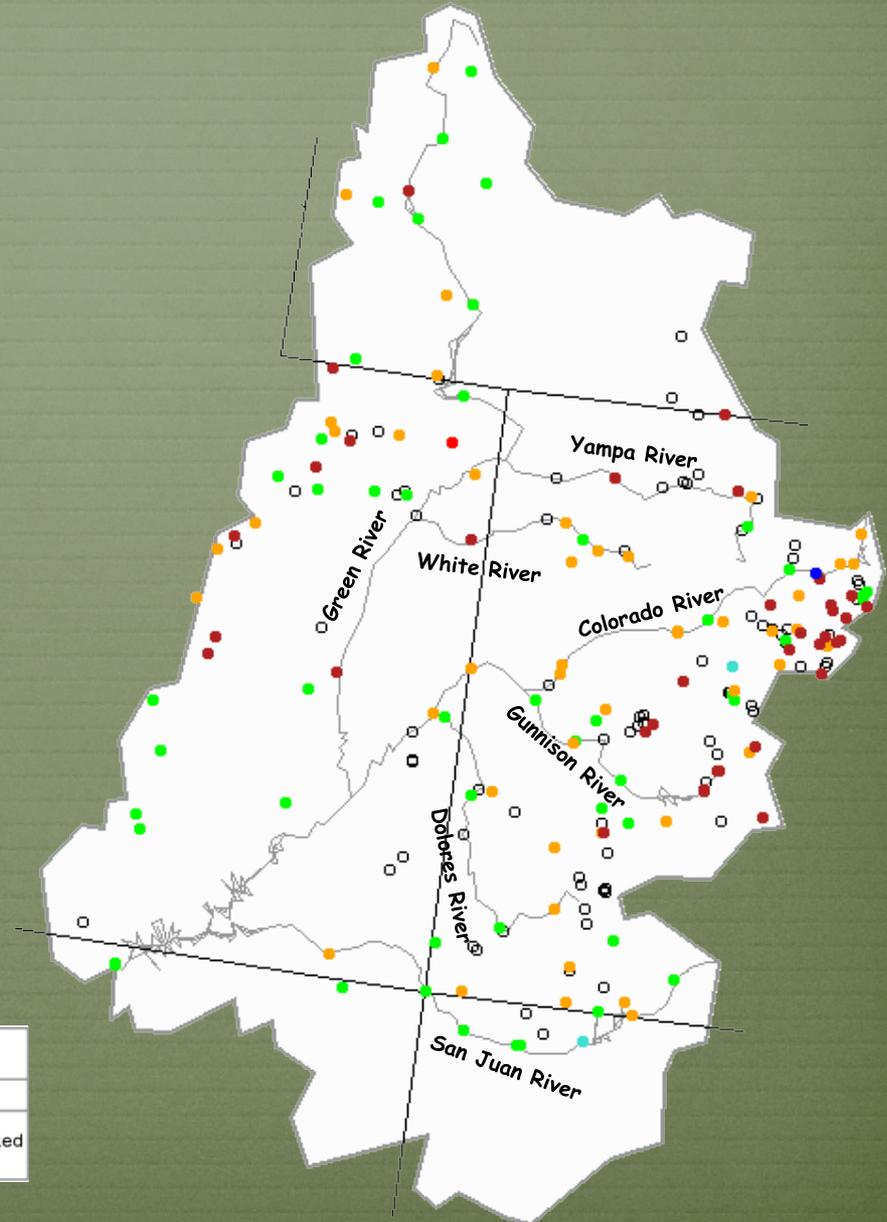
2/14/2012 - 8/13/2012



Streamflow Update

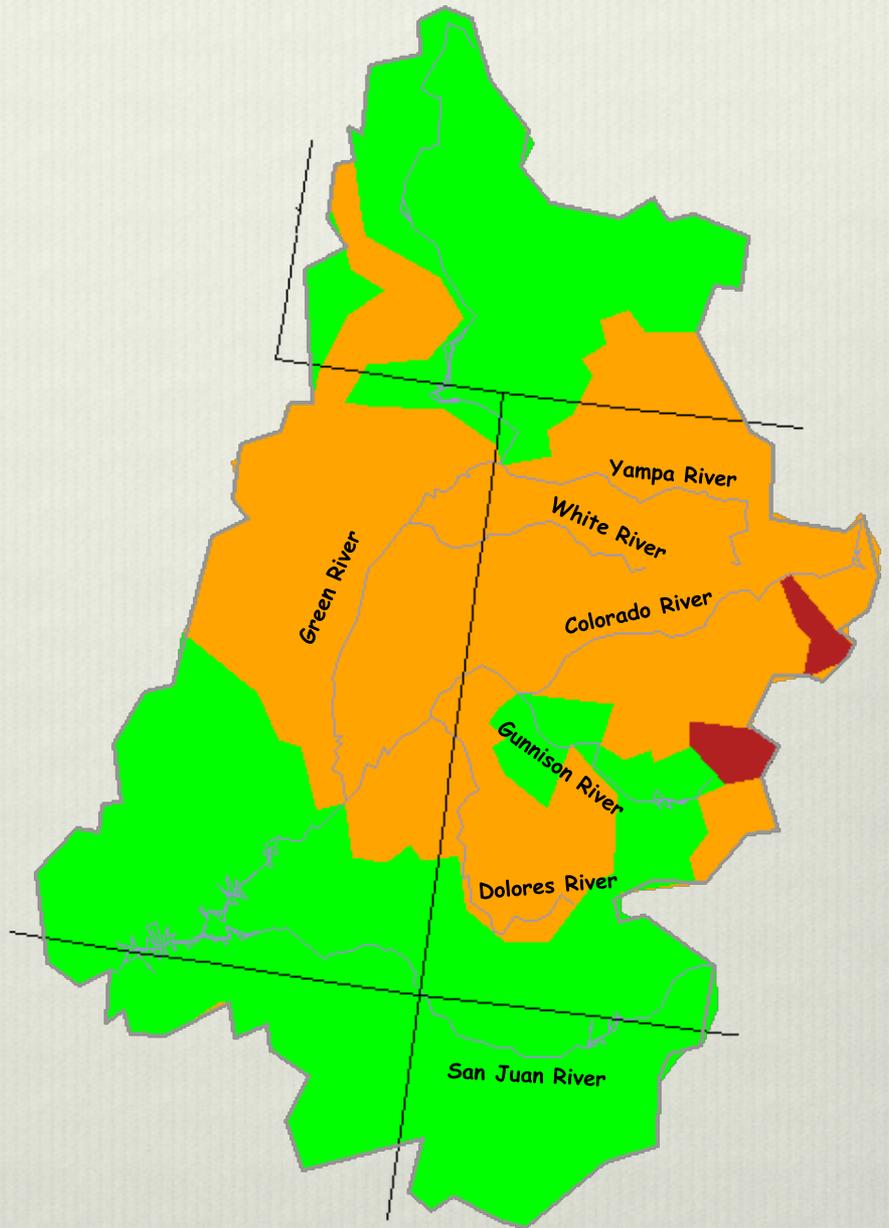


7-day average discharge compared to historical discharge for the day of the year (Aug 13th)

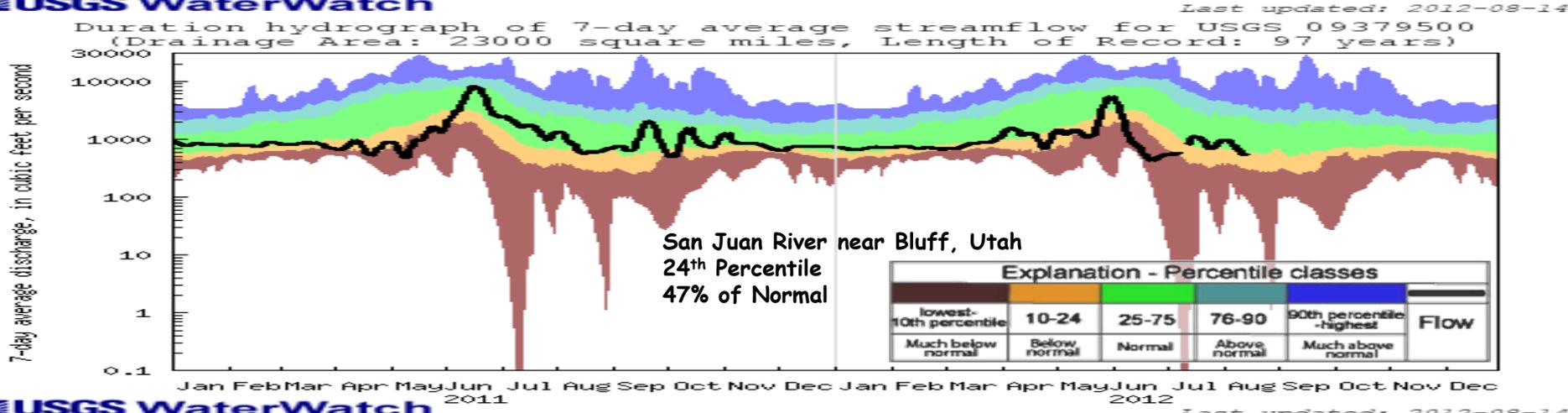
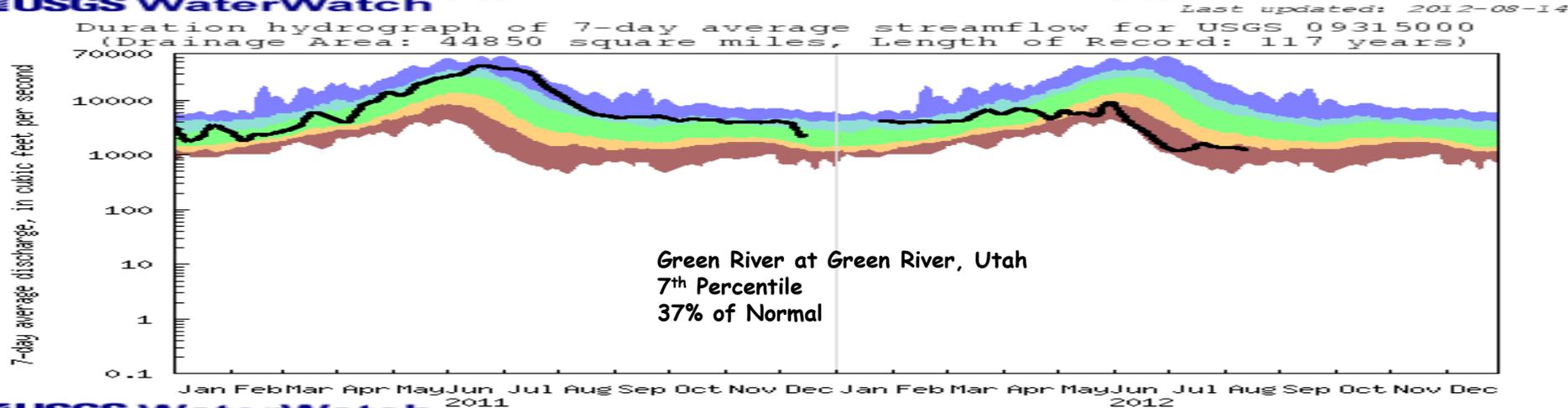
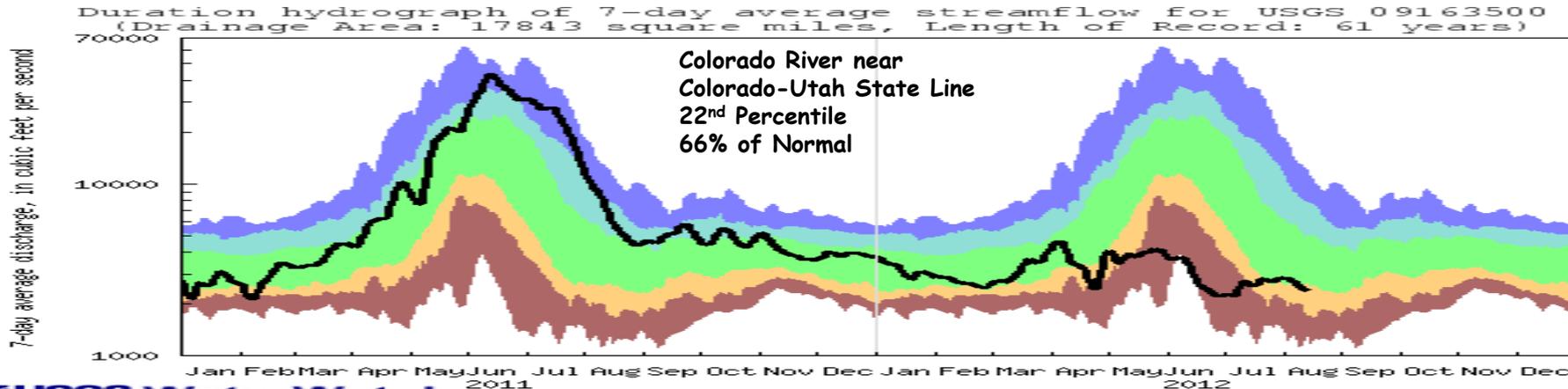


Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

7-day average discharge compared to historical discharge for the day of the year (Aug 13)

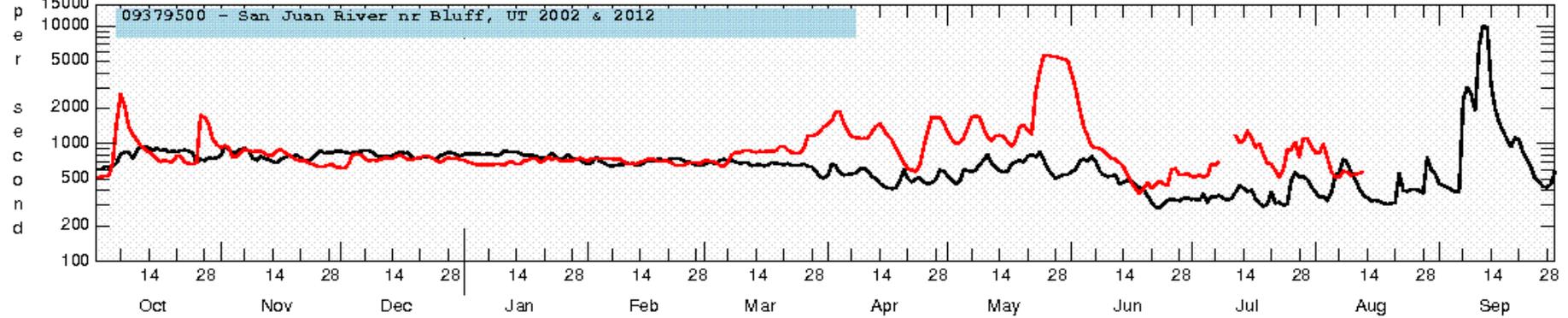
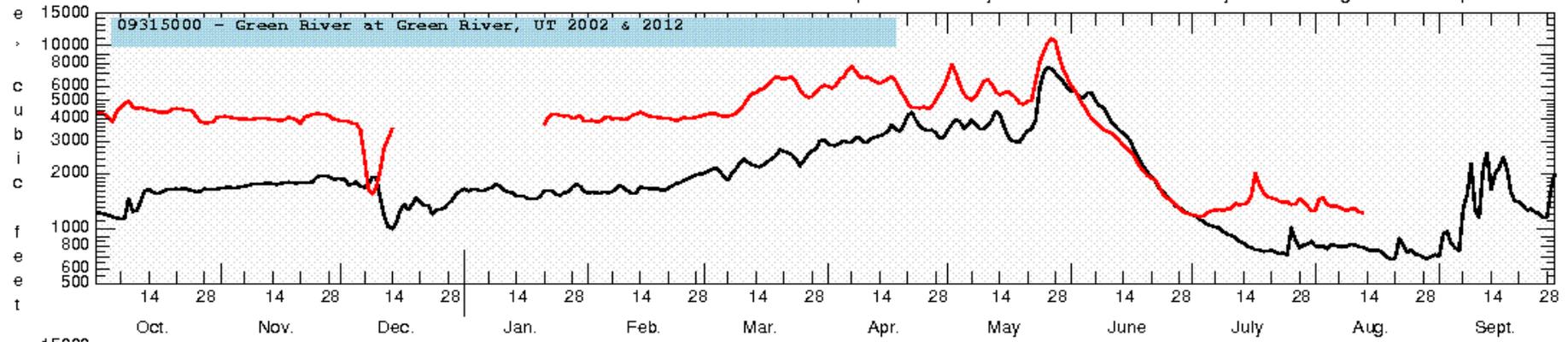
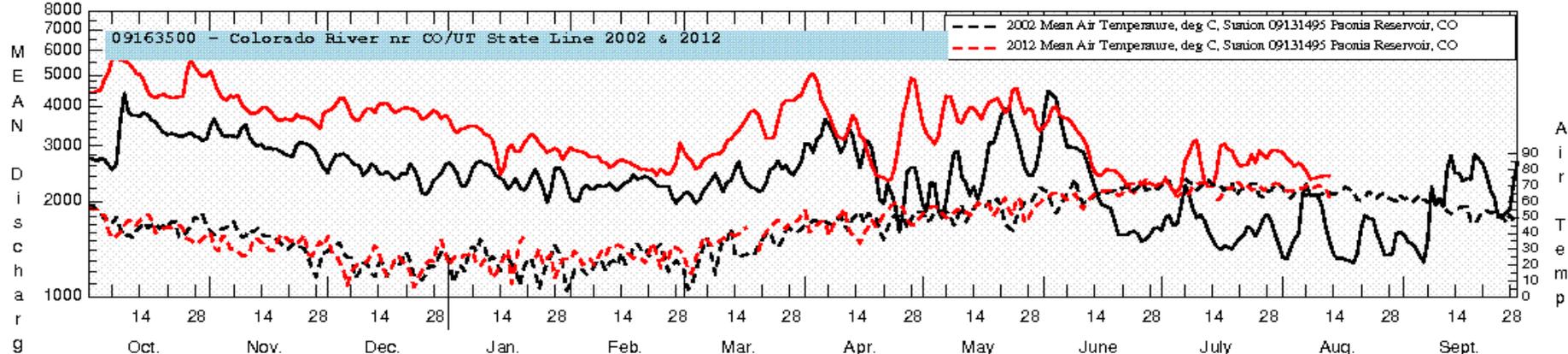


Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

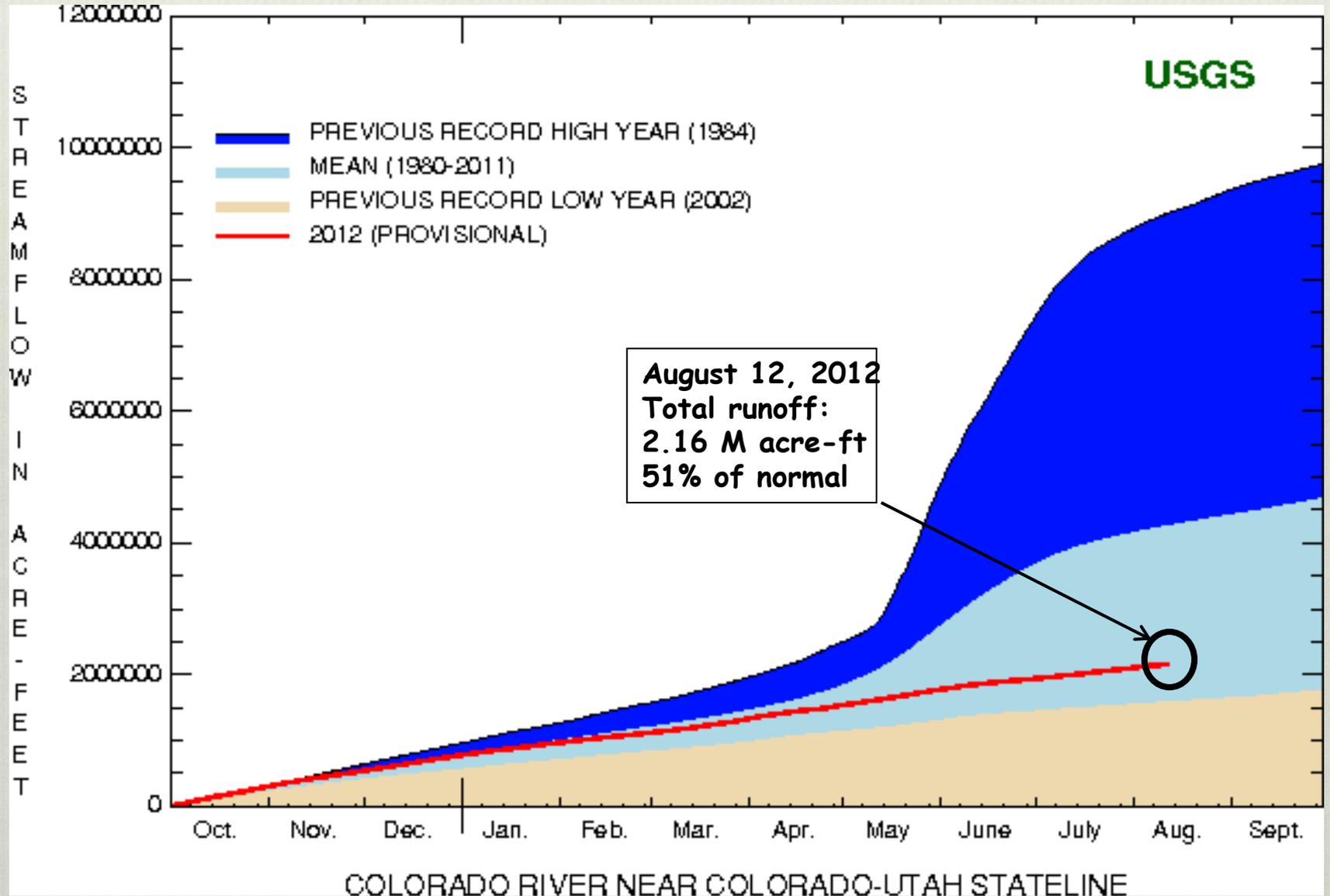


Colorado River Basin 2002 vs. 2012 Mean Daily Discharge Comparison at Select Stations

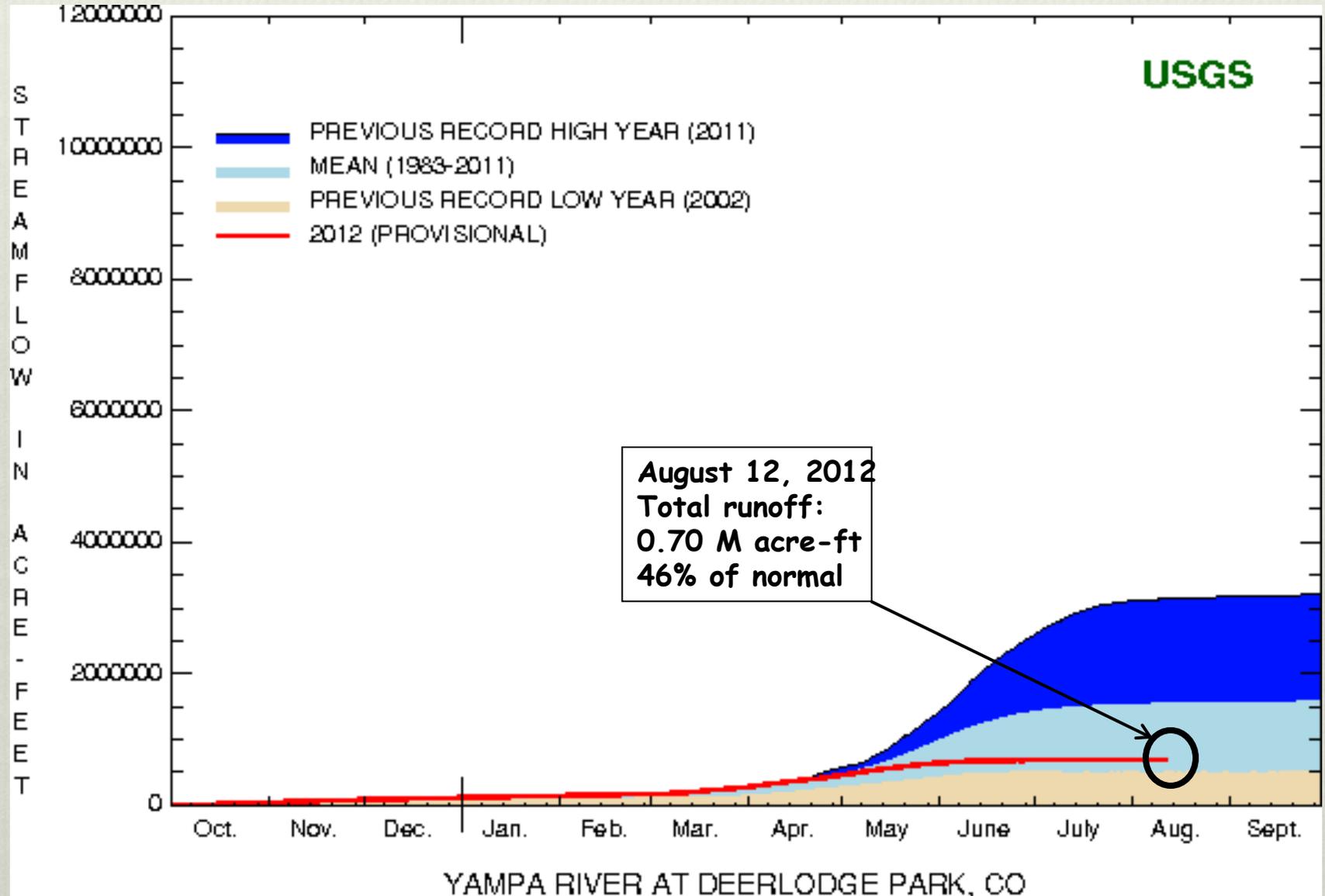
— Water Year 2002 Mean Daily Discharge
— Water Year 2012 Mean Daily Discharge (Provisional)



Total Streamflow Volume Colorado River nr CO/UT State Line Oct 1, 2011 to August 12, 2012

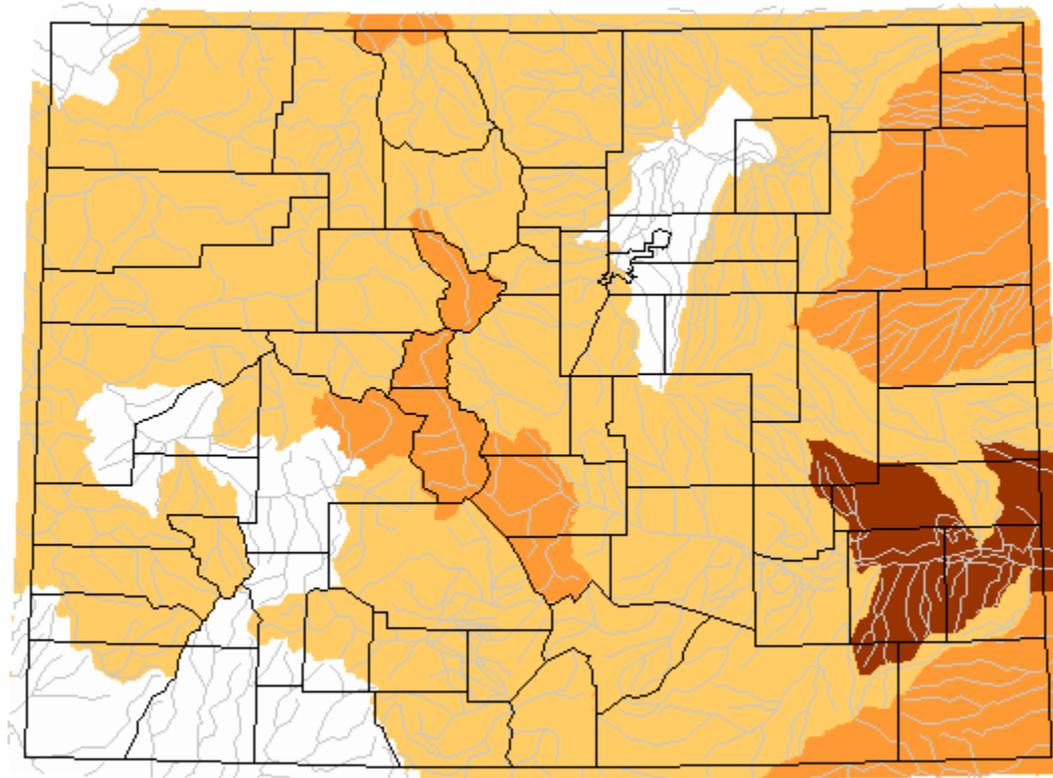


Total Streamflow Volume Yampa River at Deerlodge Park, CO Oct 1, 2011 to August 12, 2012



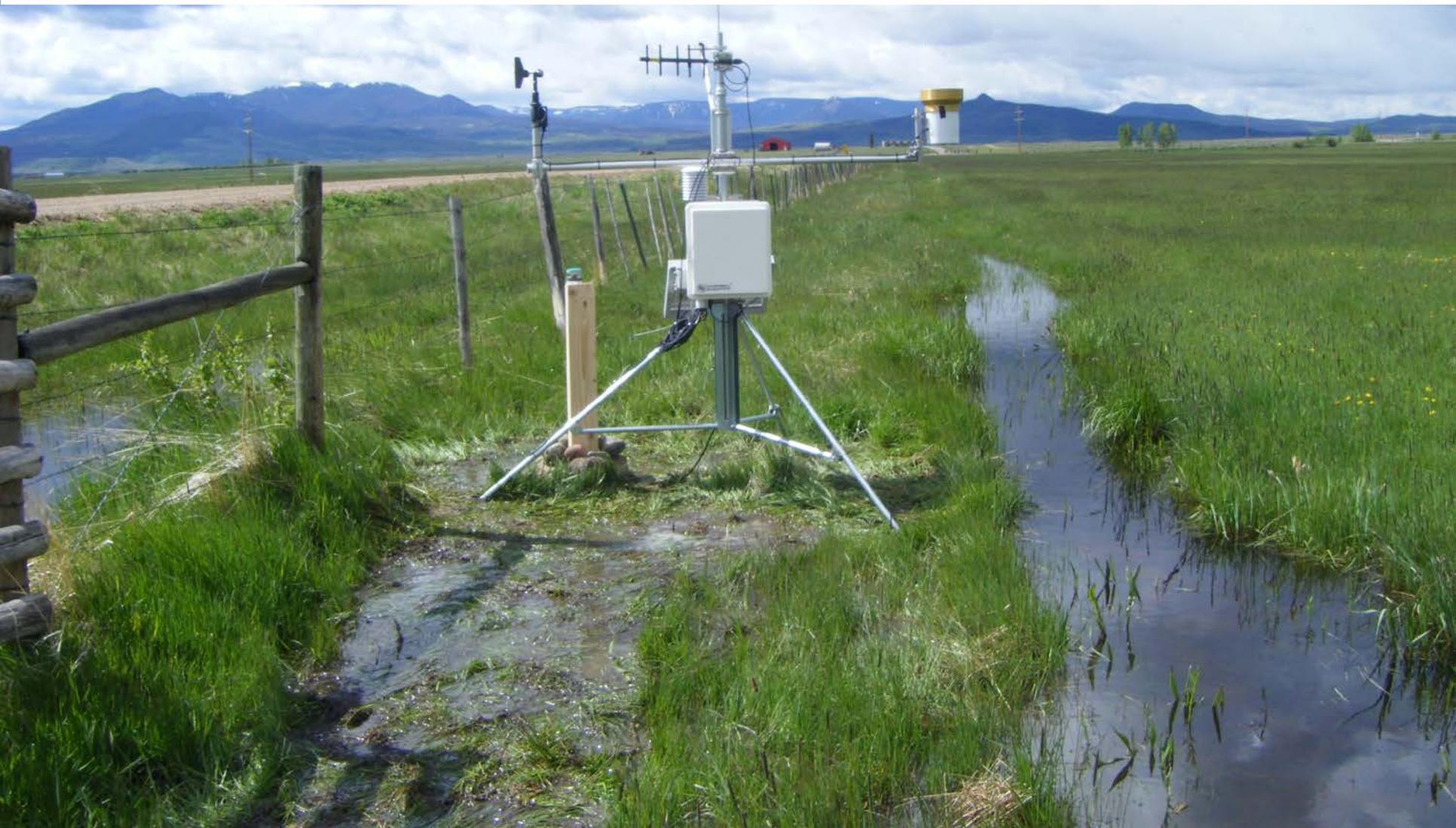
7-day average streamflow compared to historical streamflow

Monday, August 13, 2012



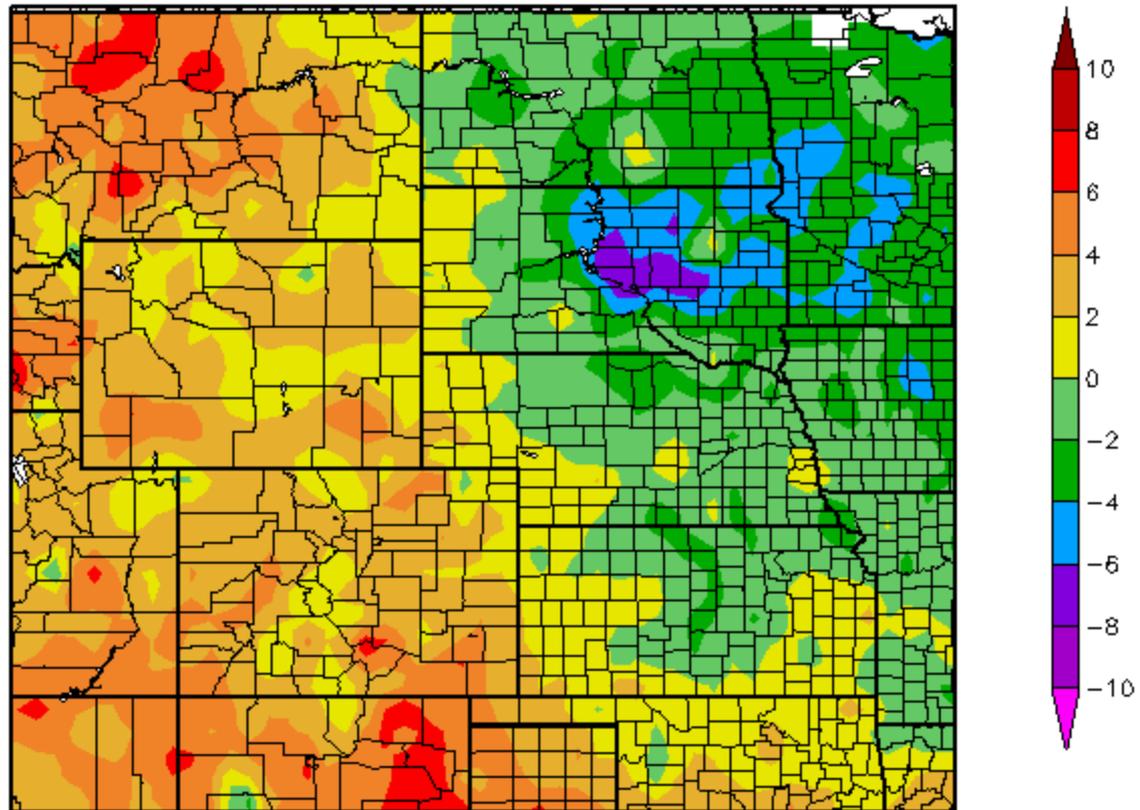
Explanation - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Water Demand



Temperature Departure from Normal 08/7/2012 – 08/13/2012

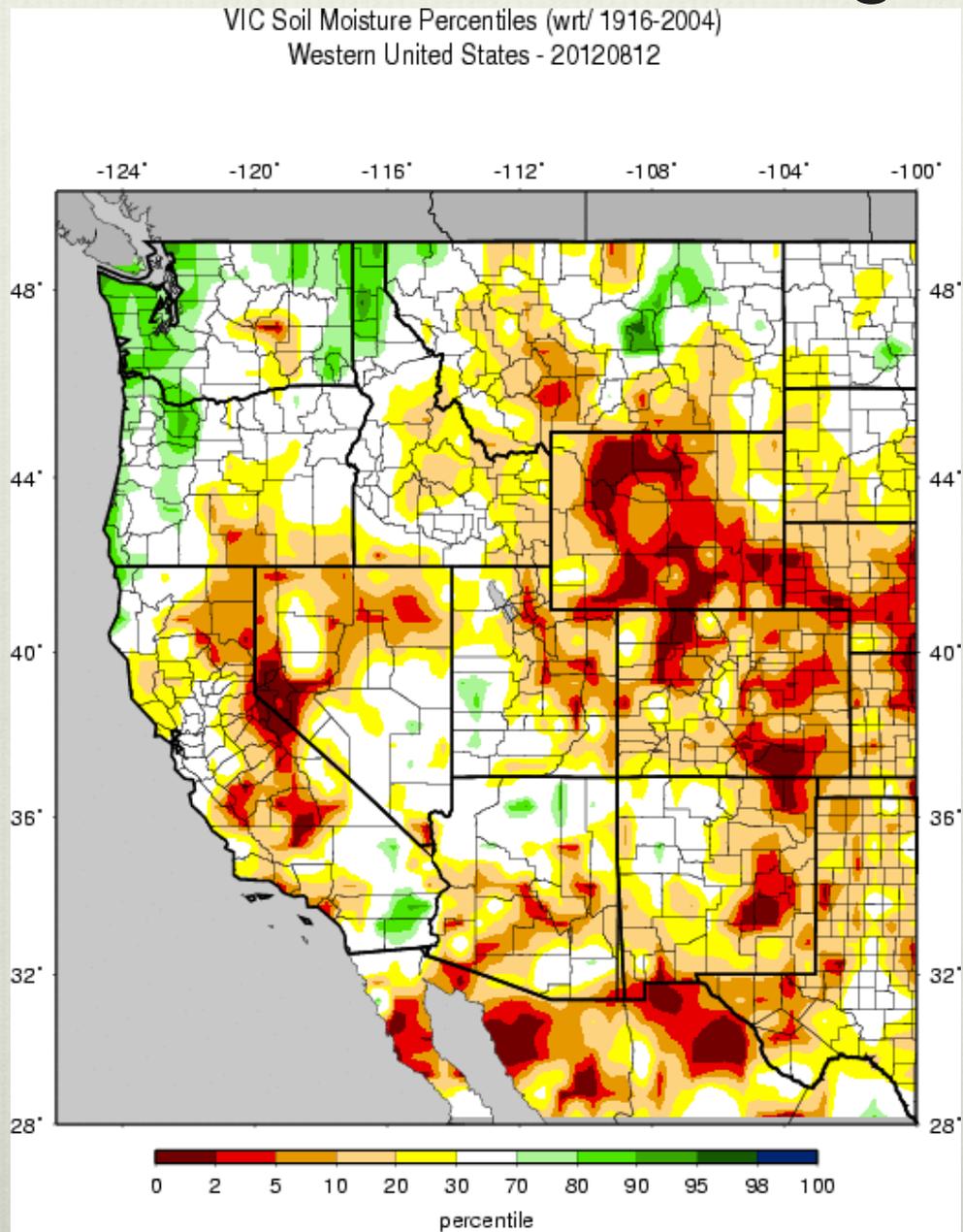
Departure from Normal Temperature (F)
8/7/2012 – 8/13/2012



Generated 8/14/2012 at HPRCC using provisional data.

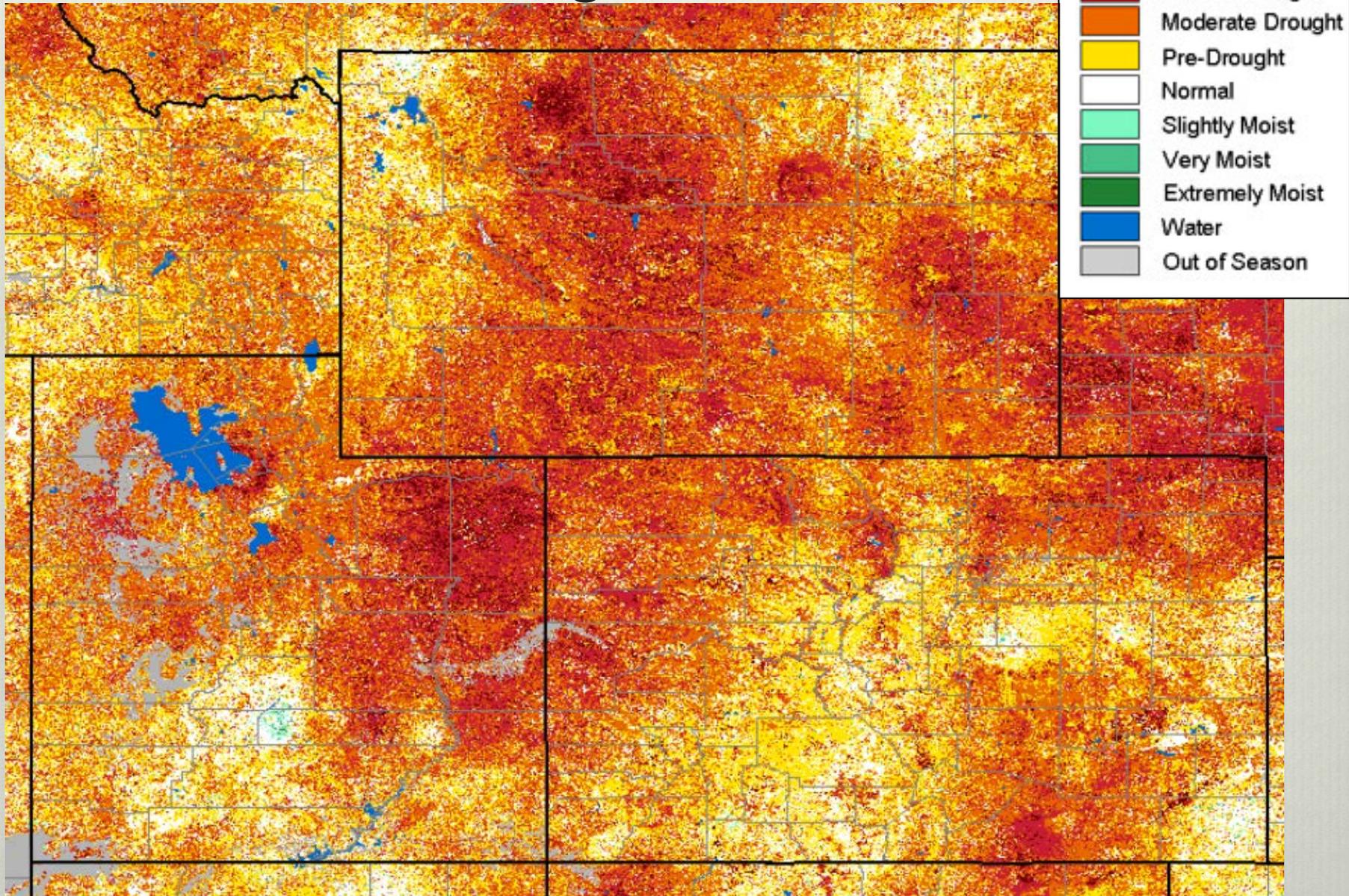
Regional Climate Centers

VIC Soil Moisture 12 August 12

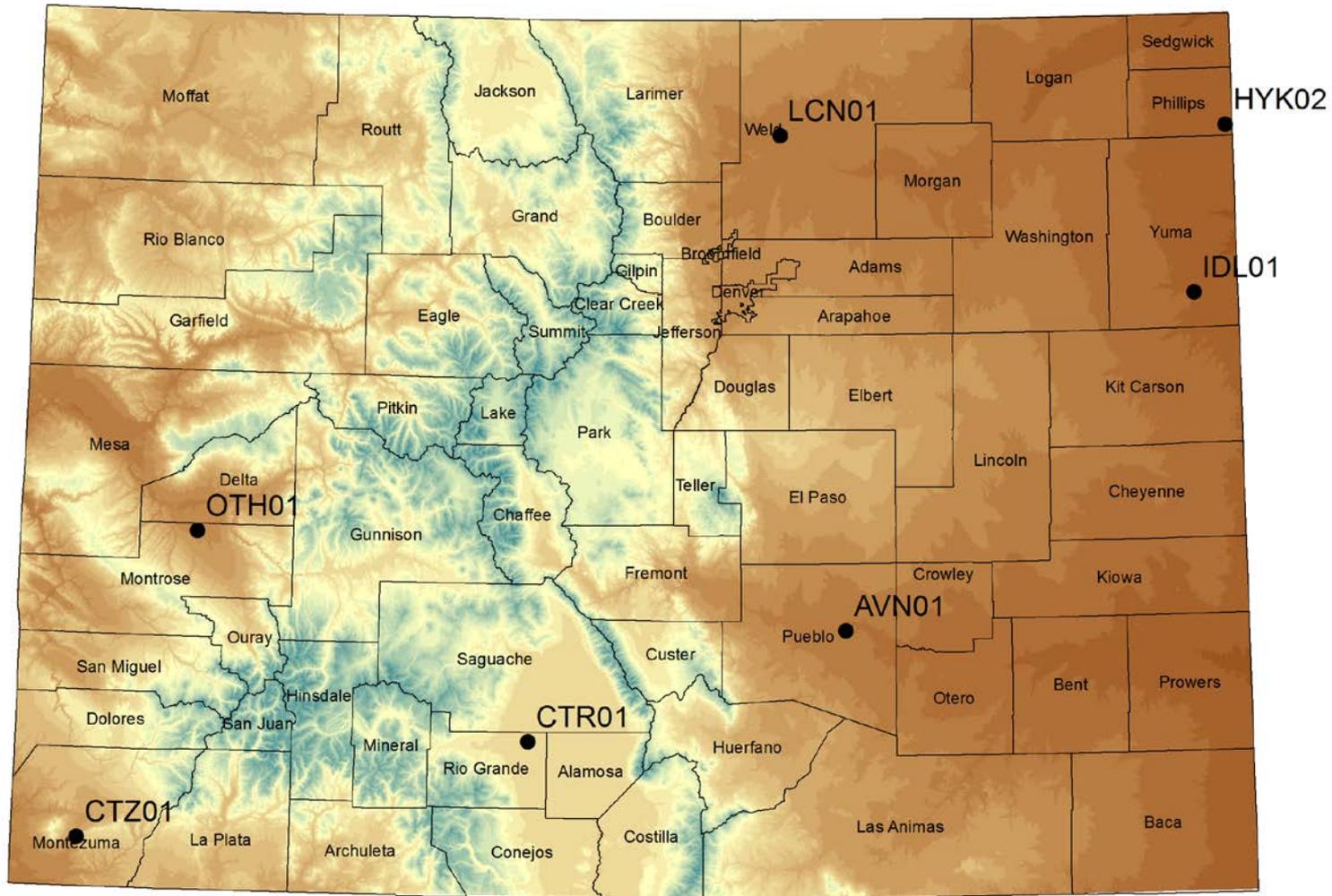


eMODIS VegDRI Vegetation

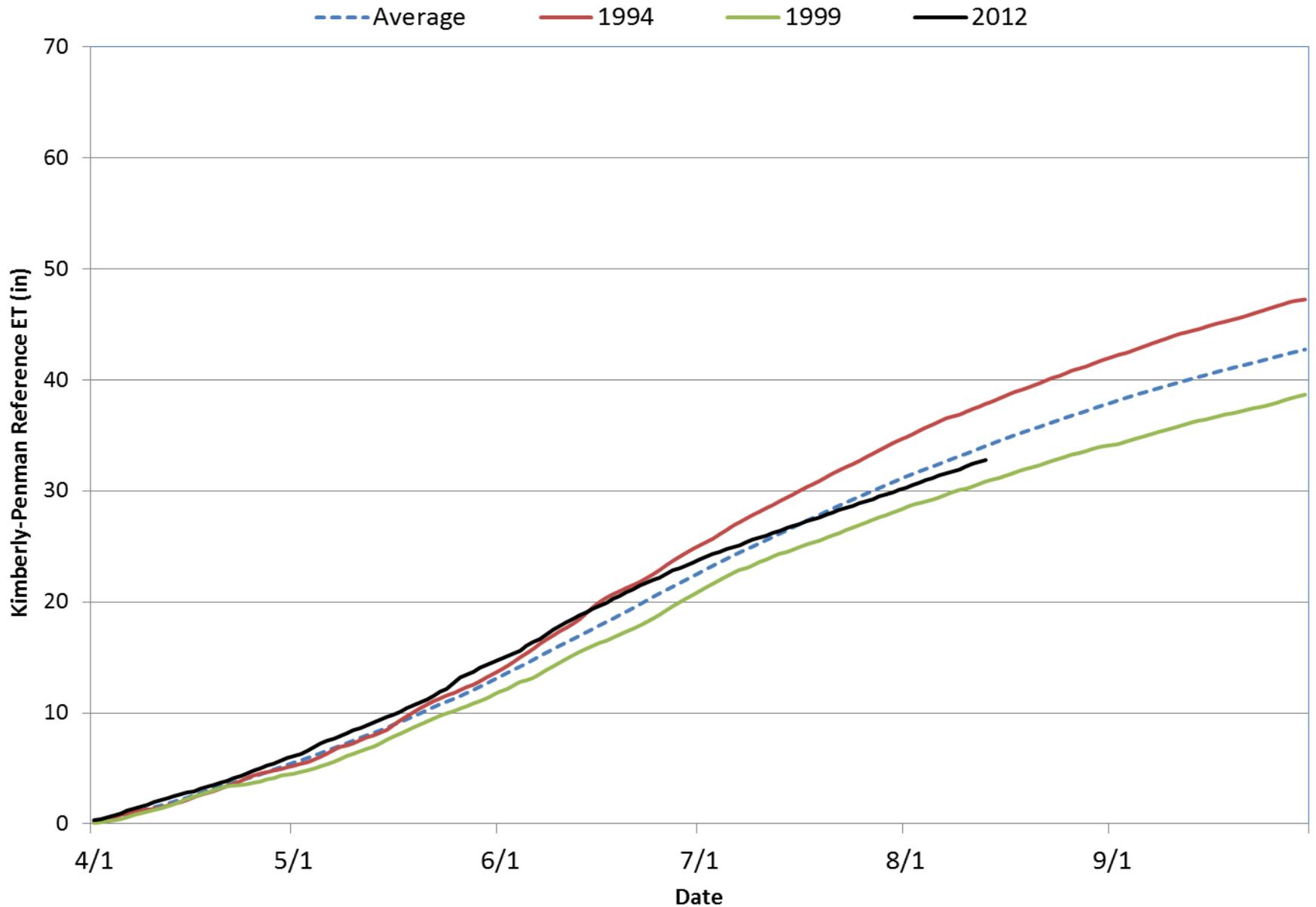
12 August 2012



CoAgMet Reference Evapotranspiration Stations

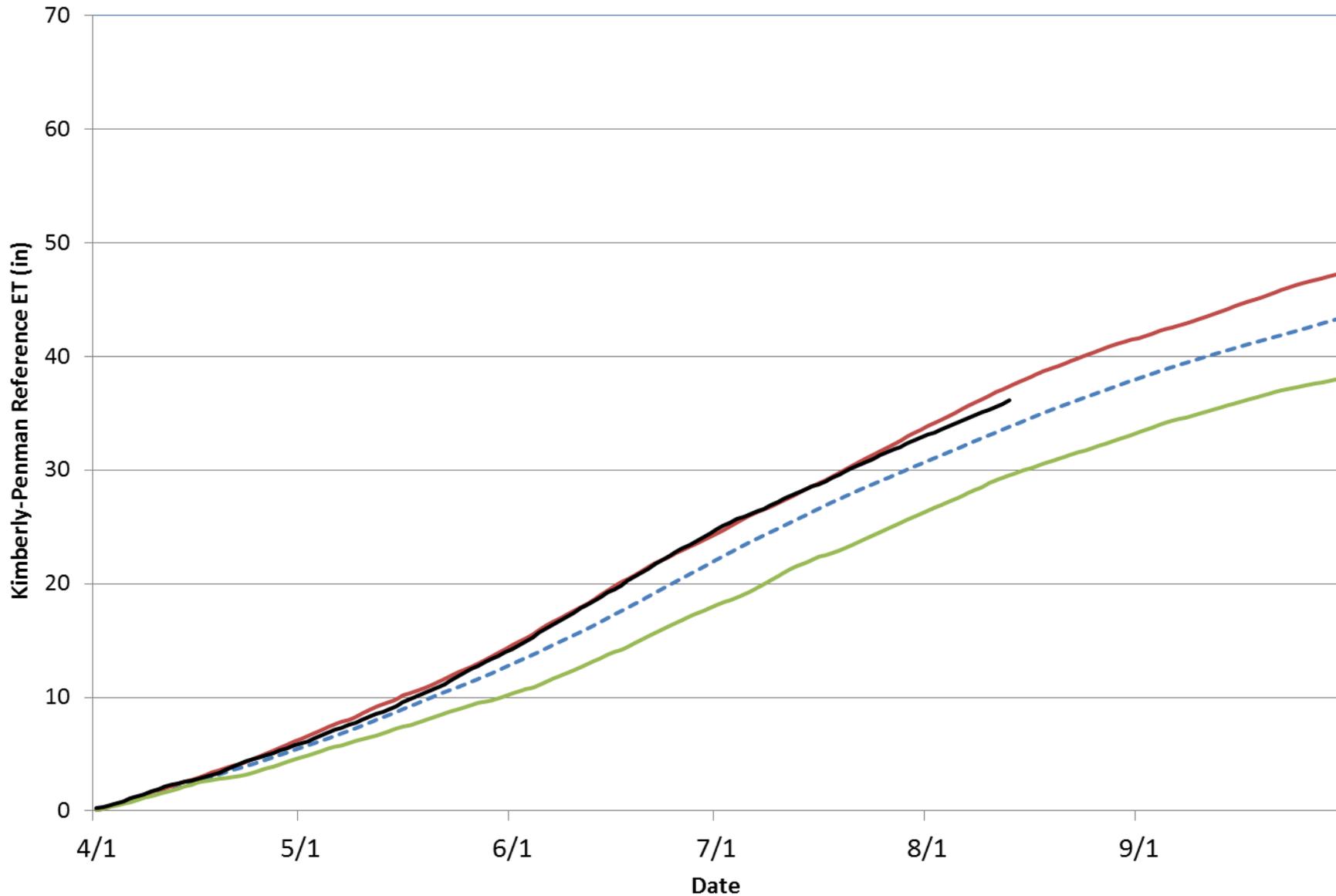


Olathe Kimberly-Penman Reference ET (1993 - 2012)



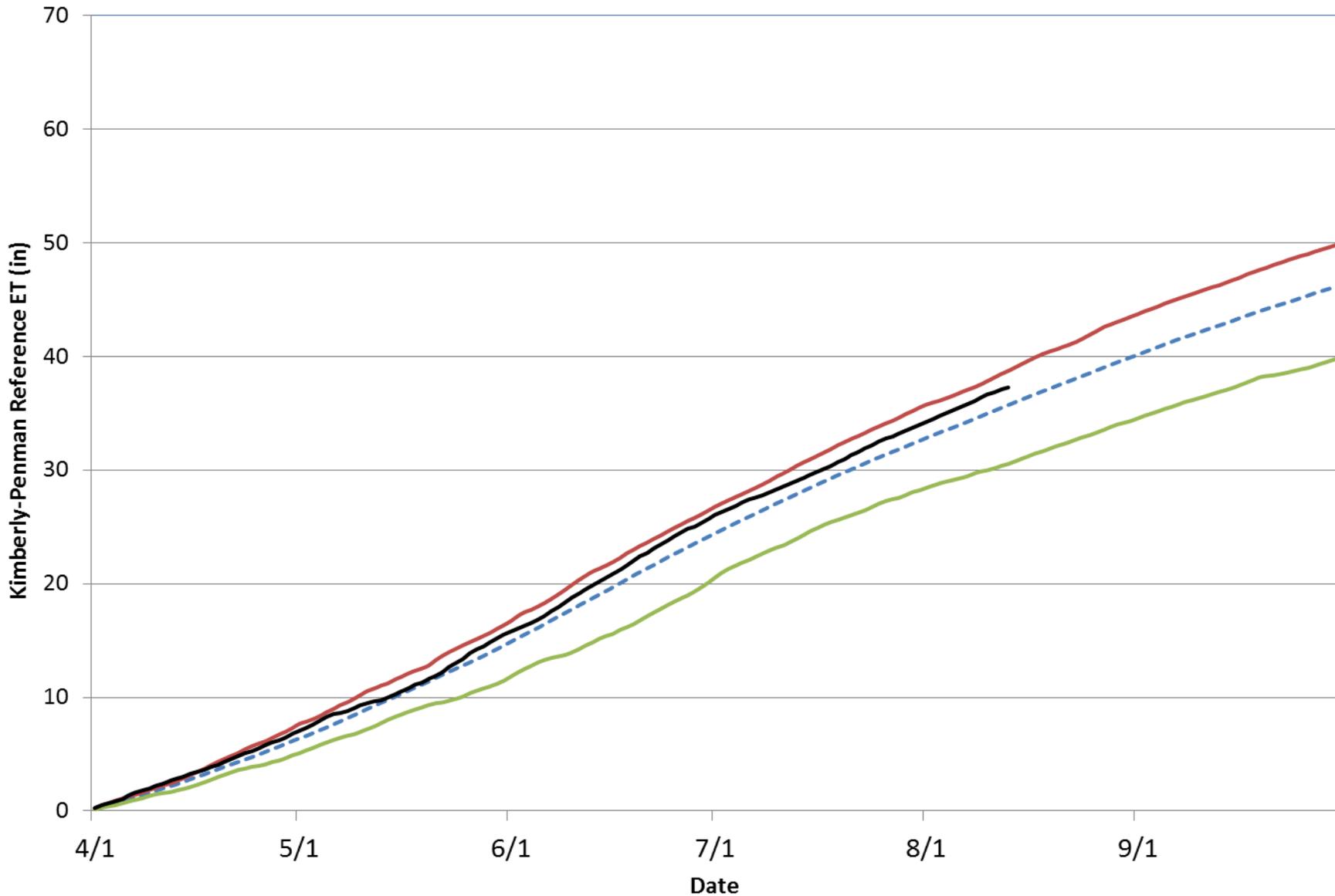
Cortez Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 2000 — 1995 — 2012



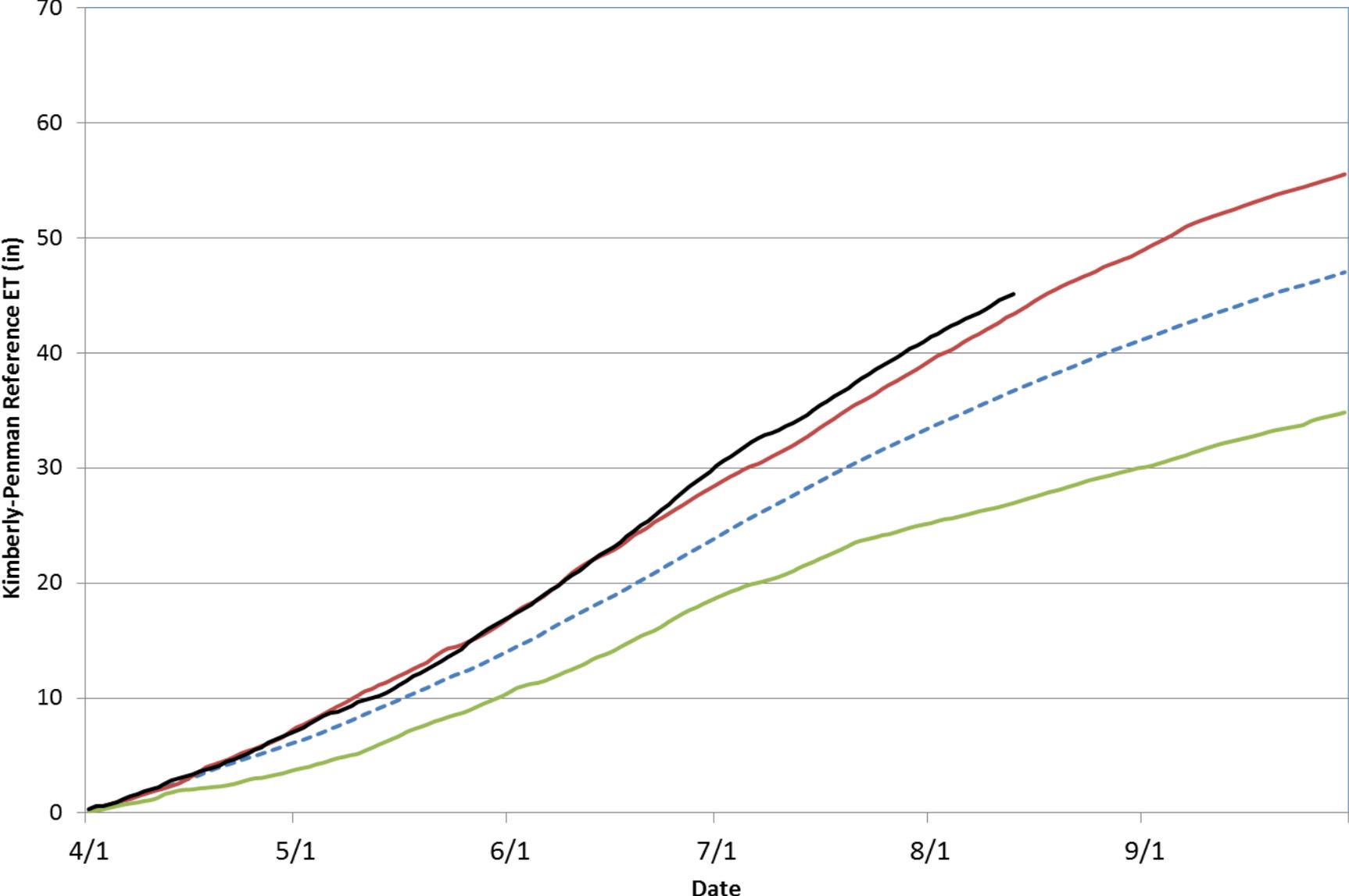
Center Kimberly-Penman Reference ET (1994 - 2012)

--- Average — 2002 — 1997 — 2012



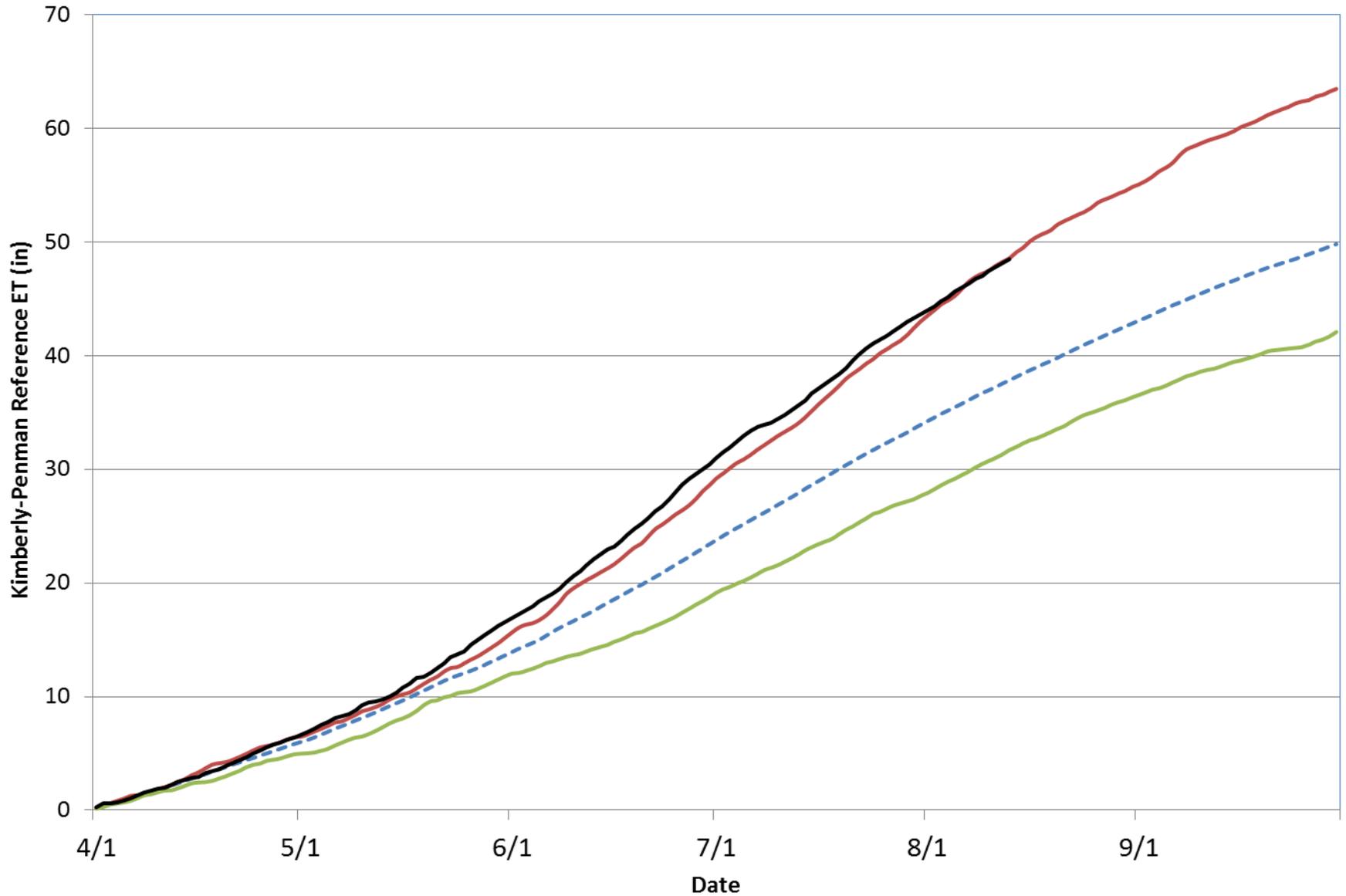
Avondale Kimberly-Penman Reference ET (1993 - 2012)

--- Average — 2002 — 1998 — 2012

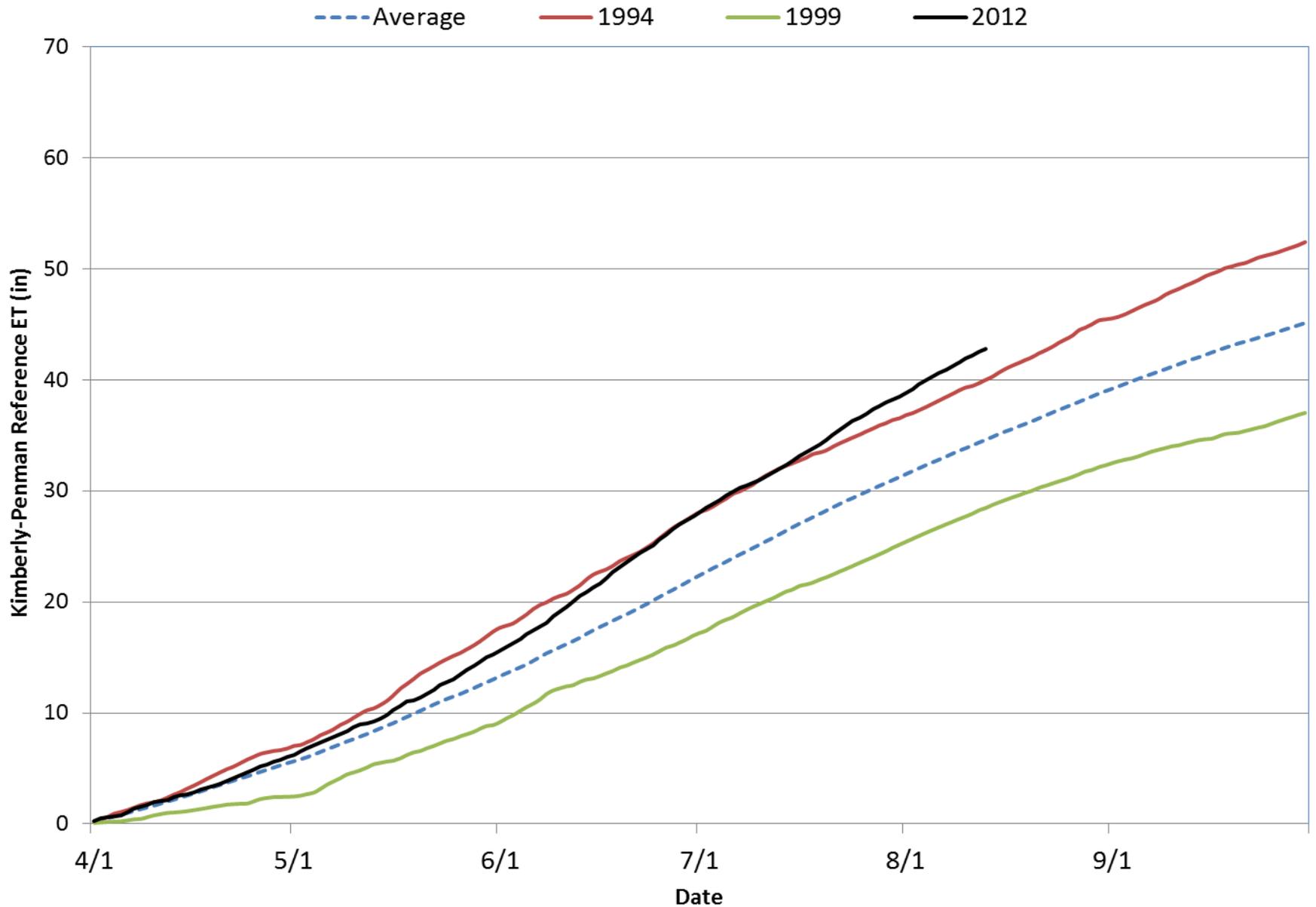


Idalia Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 2002 — 2009 — 2012

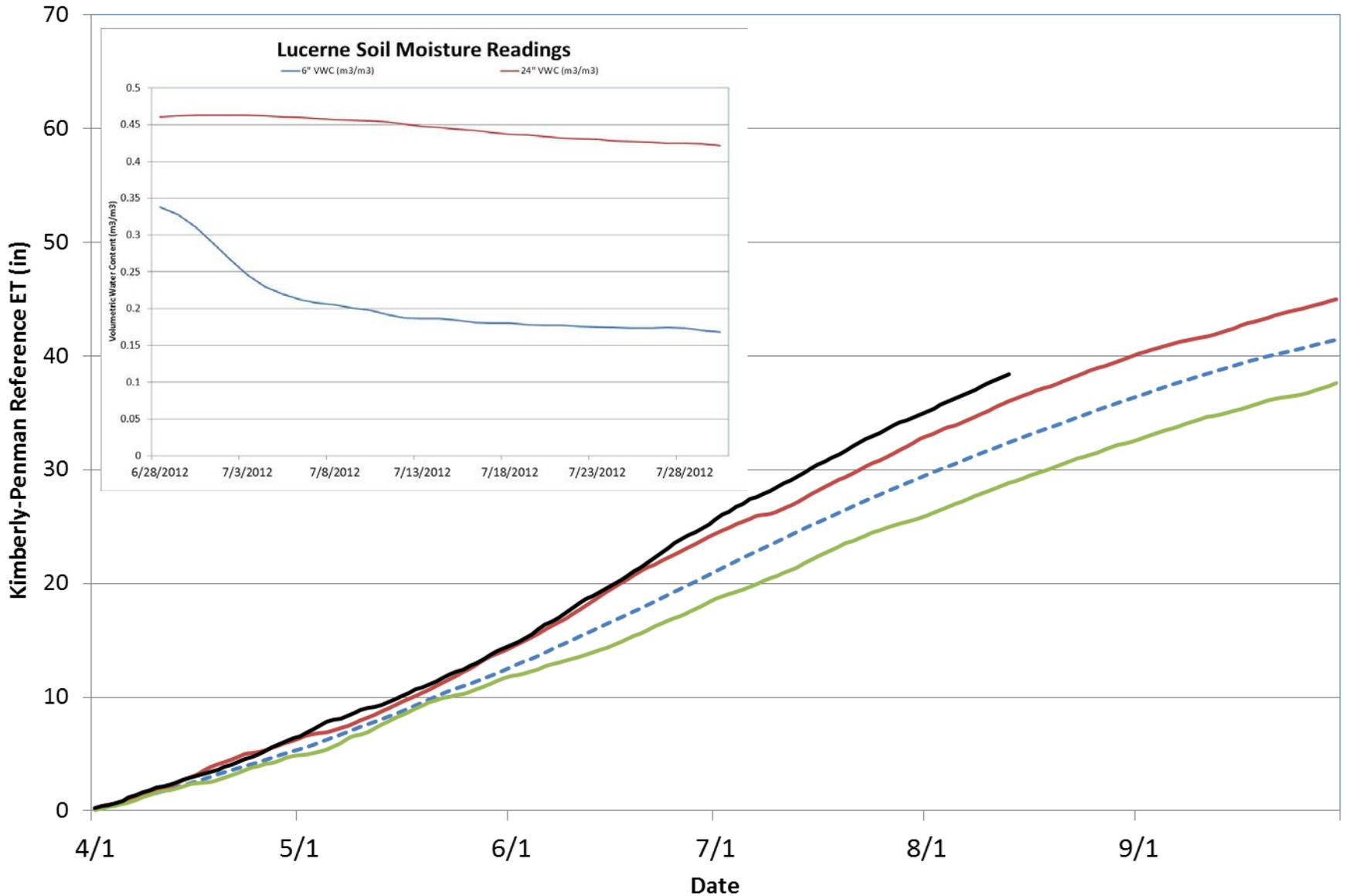


Holyoke Kimberly-Penman Reference ET (1992 - 2012)



Lucerne Kimberly-Penman Reference ET (1992 - 2012)

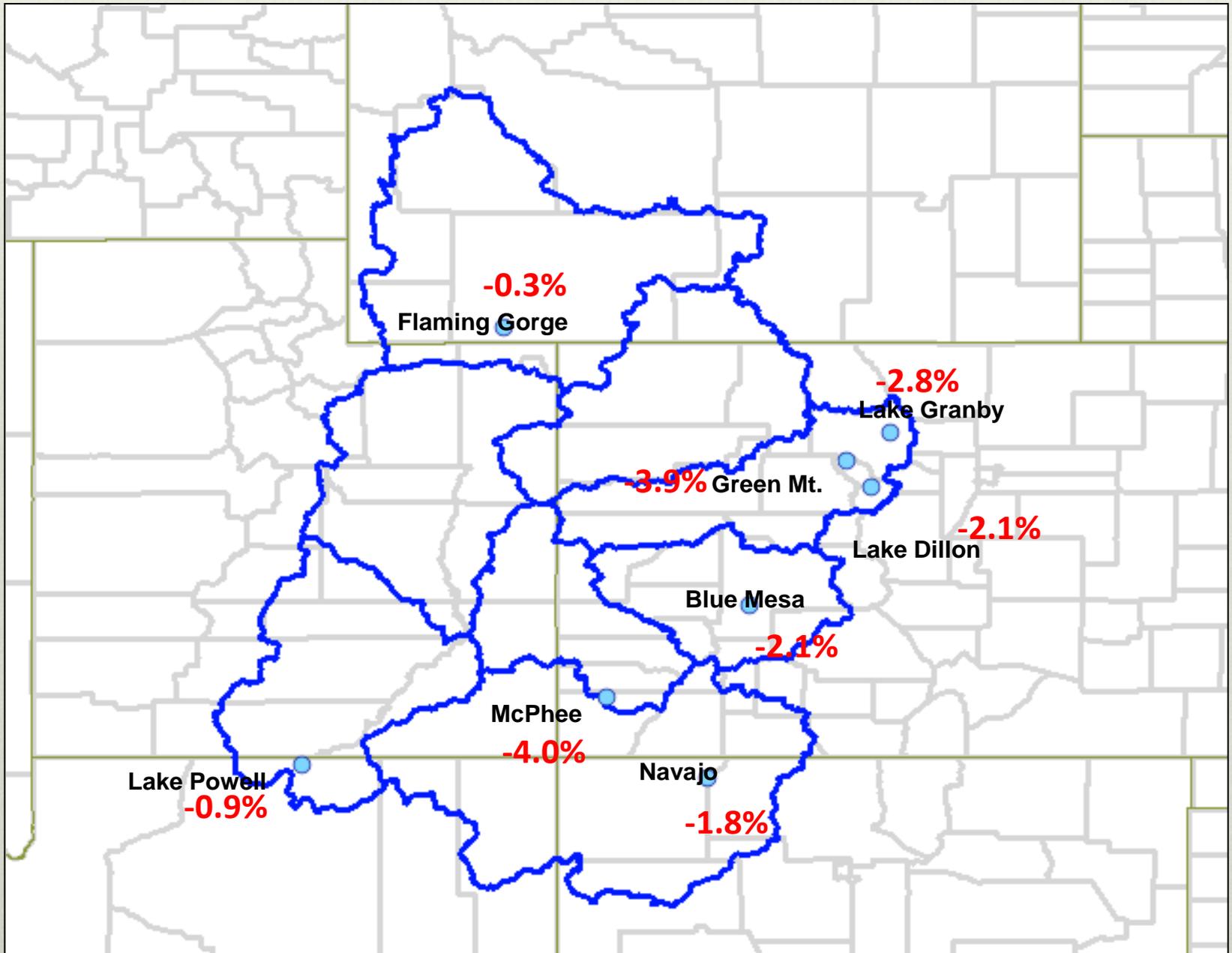
--- Average — 2006 — 2009 — 2012



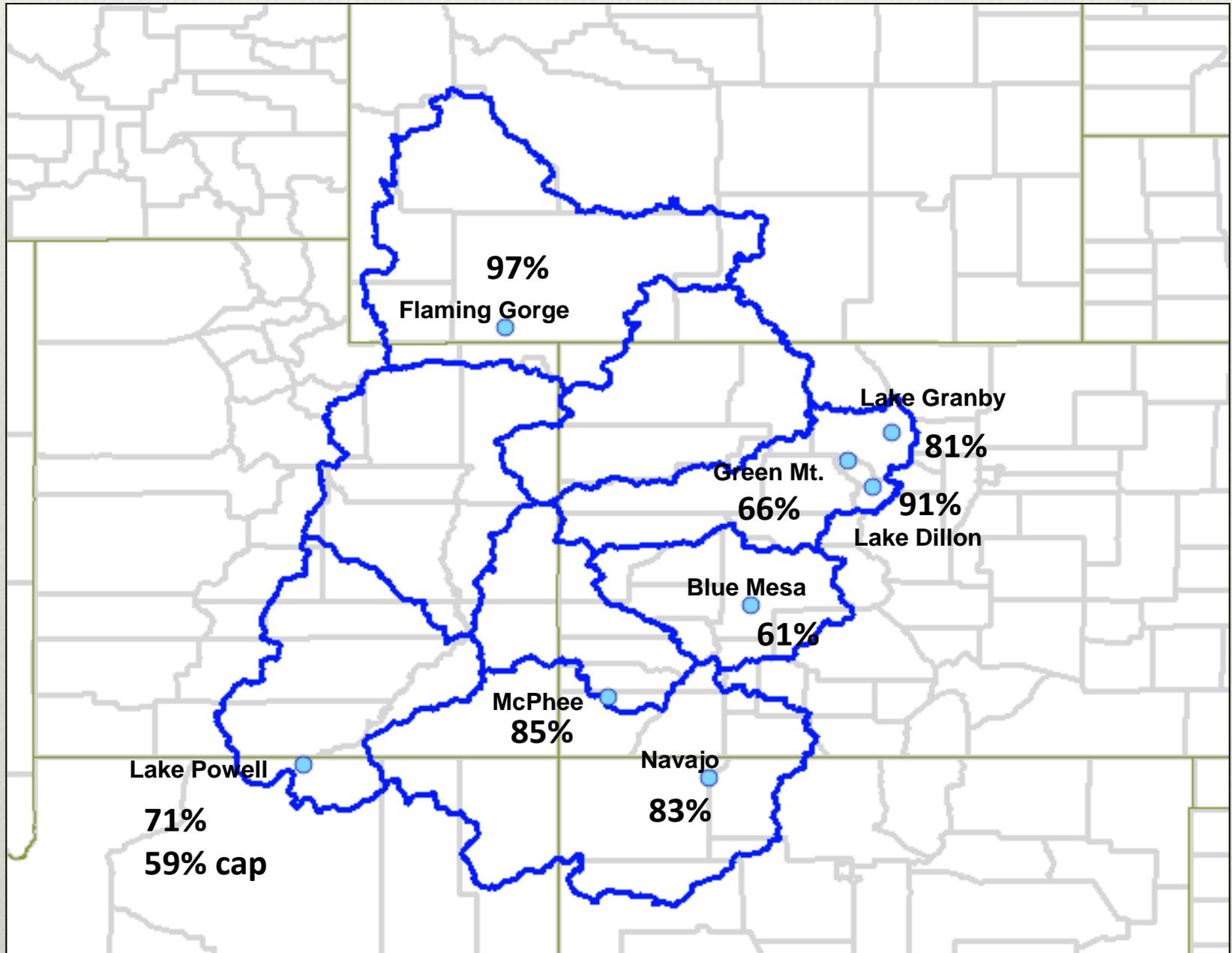
Reservoir Update



August to Date Reservoir Storage Volume Changes



August Percent of Average Reservoir Storage Volume



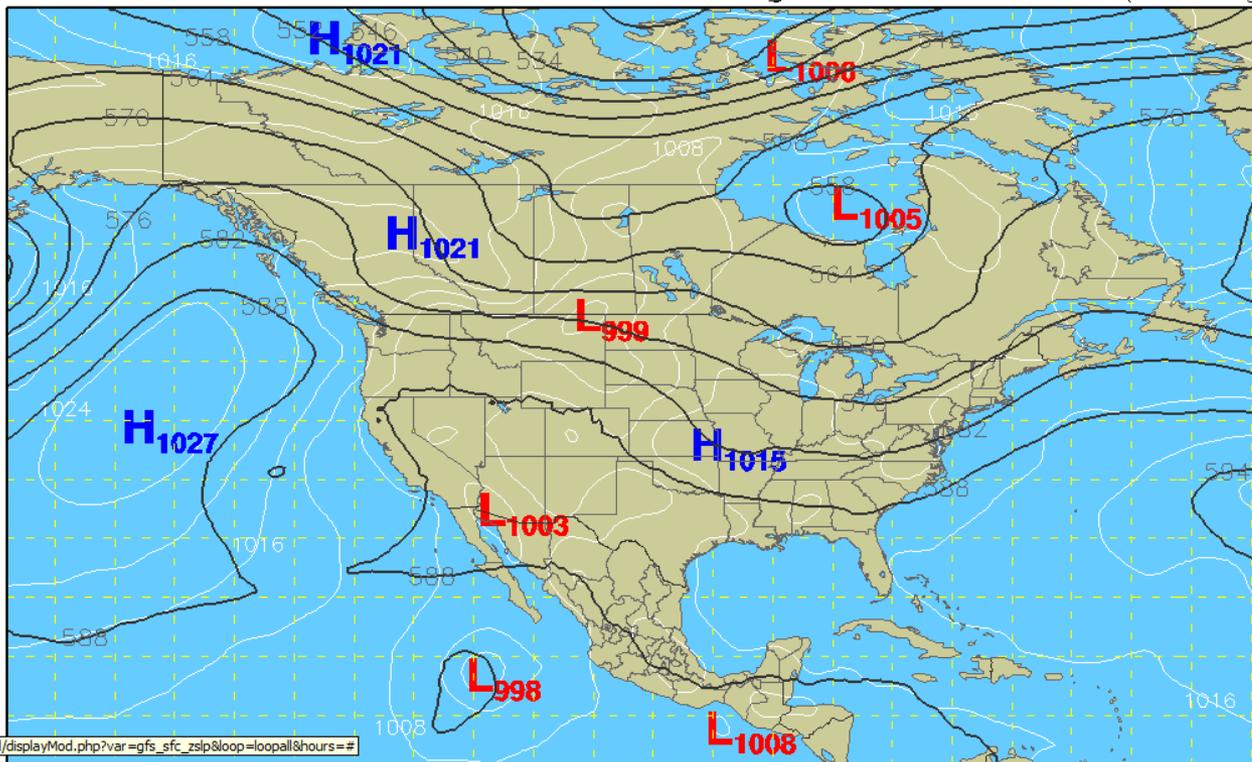
Precipitation Forecast



MSLP (mb) / 500 mb Heights (dm)

24-hour forecast valid 0000 UTC Wed 15 Aug 2012

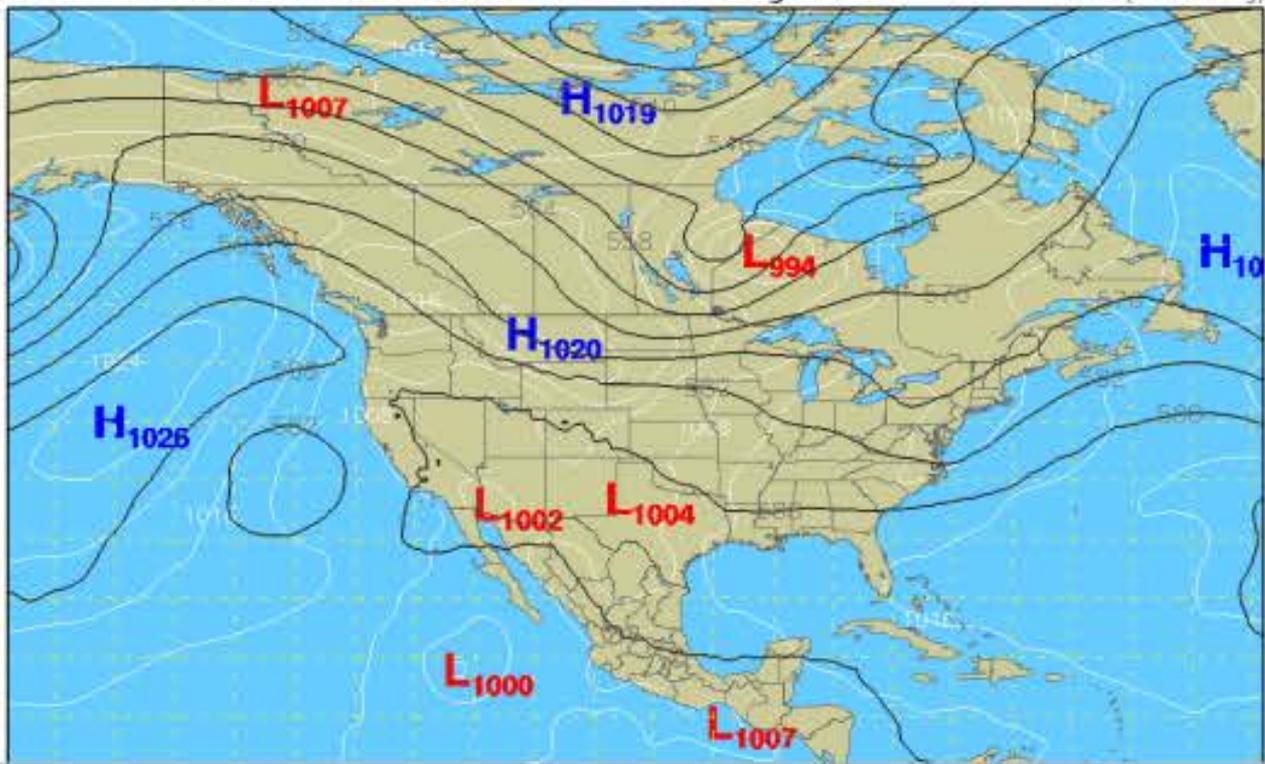
GFS (00z 14 Aug)



MSLP (mb) / 500 mb Heights (dm)

48-hour forecast valid 0000 UTC Thu 16 Aug 2012

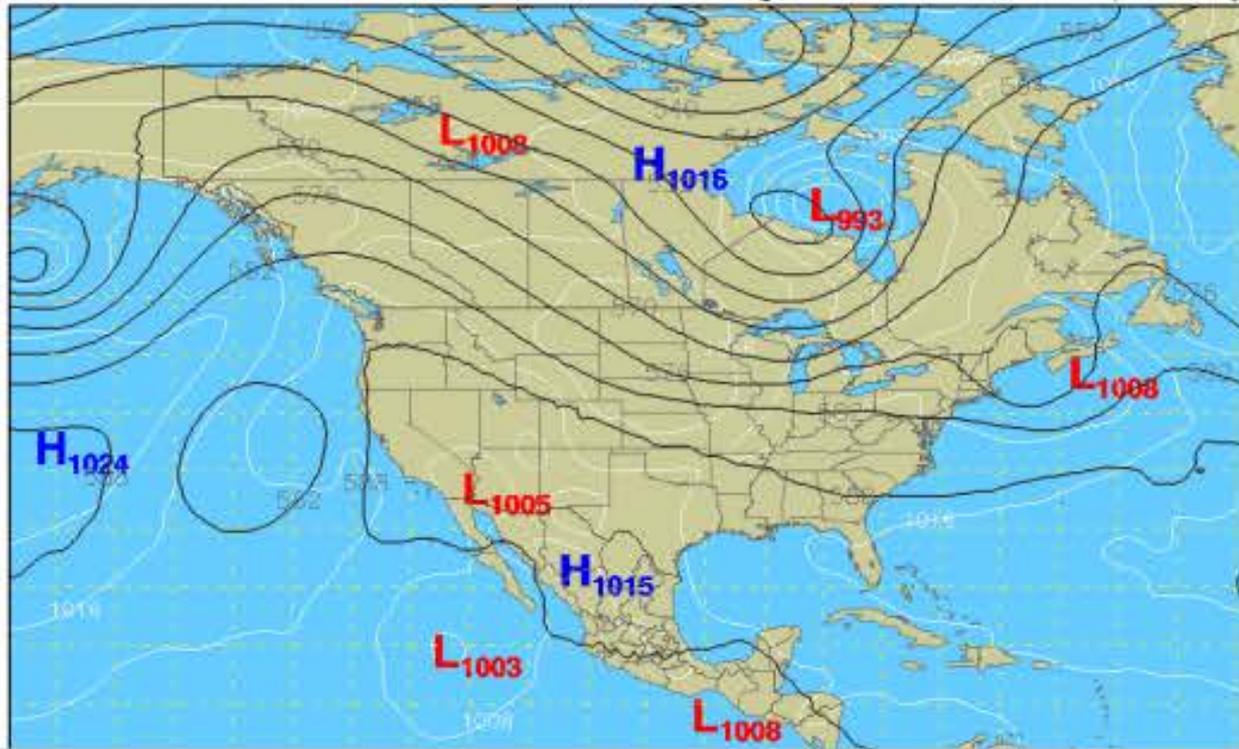
GFS (00z 14 Aug)



MSLP (mb) / 500 mb Heights (dm)

72-hour forecast valid 0000 UTC Fri 17 Aug 2012

GFS (00z 14 Aug)



Unread: 13 Total: 1014

Audio PreView Subjected... Storm Runtime analysis Recycle bin

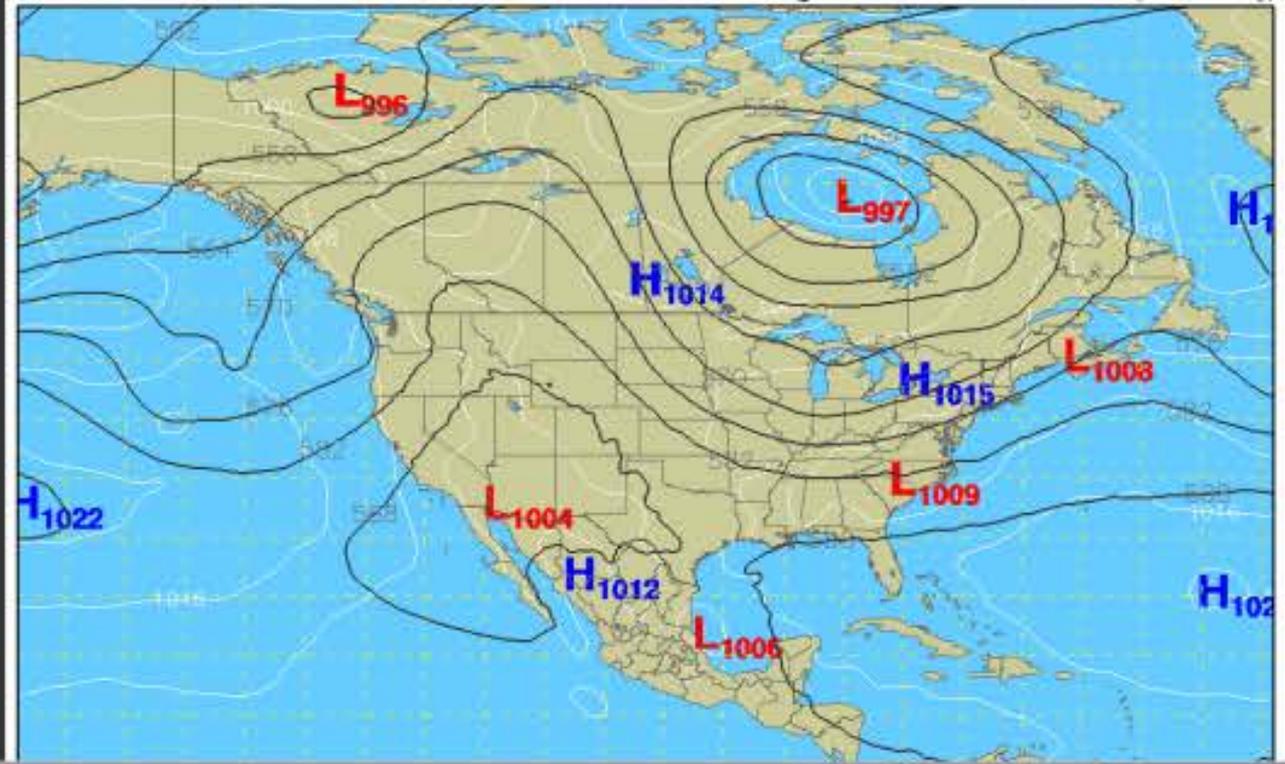
Resistor - Microsoft PowerPoint

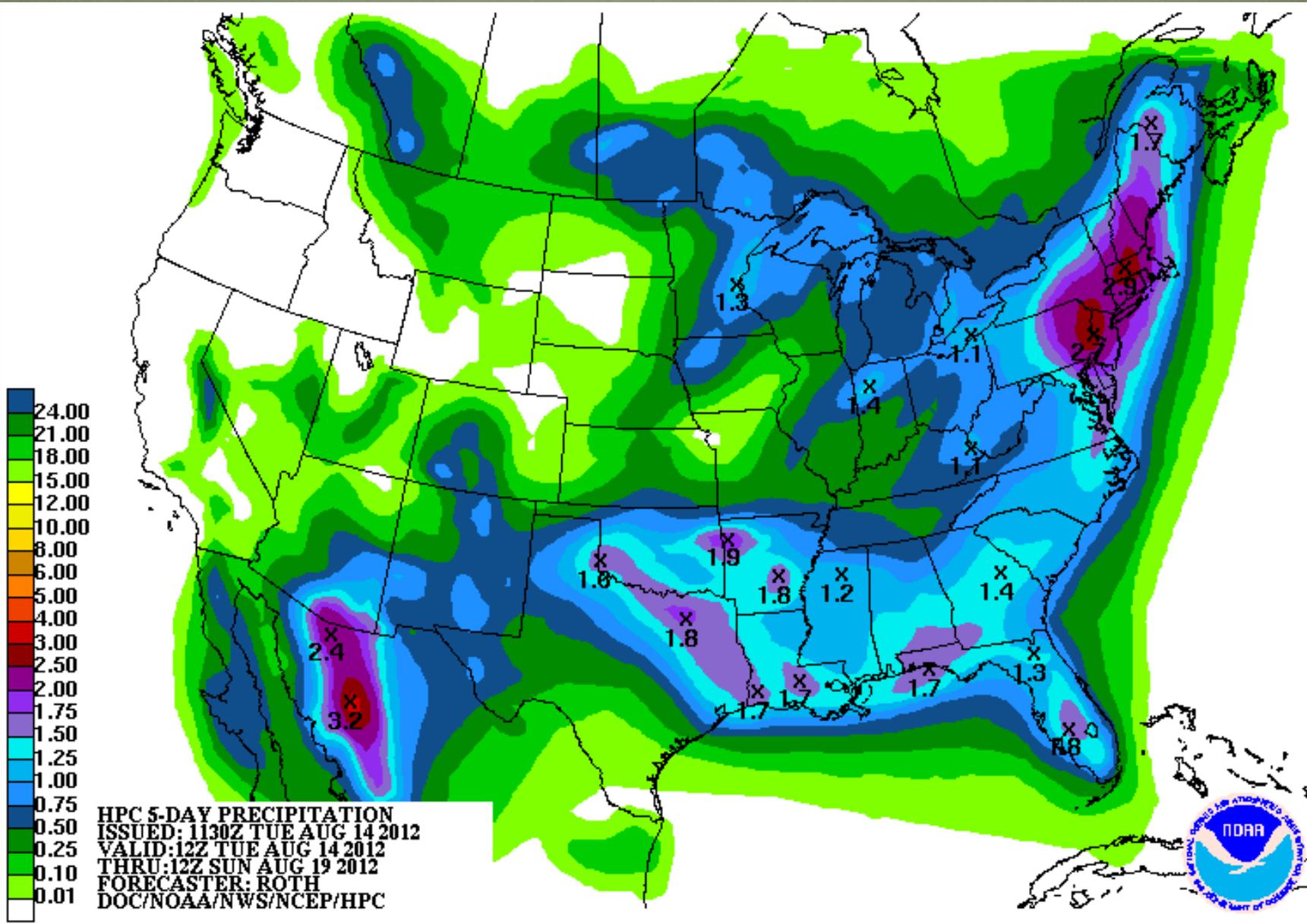
10/10/12

MSLP (mb) / 500 mb Heights (dm)

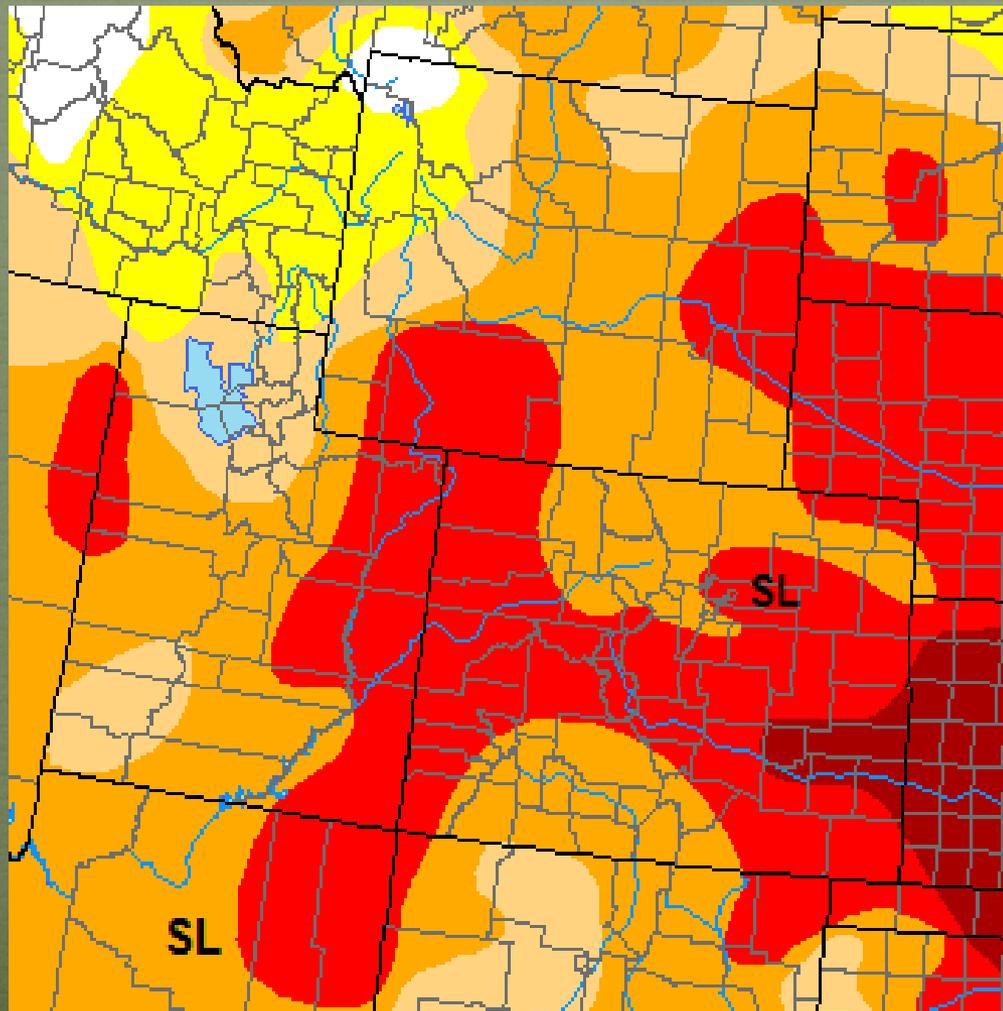
120-hour forecast valid 0000 UTC Sun 19 Aug 2012

GFS (00z 14 Aug)





Recommendations



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FORT COLLINS, CO 80523

970 - 491 - 8545

NIDIS - UPPER COLORADO BASIN PILOT PROJECT

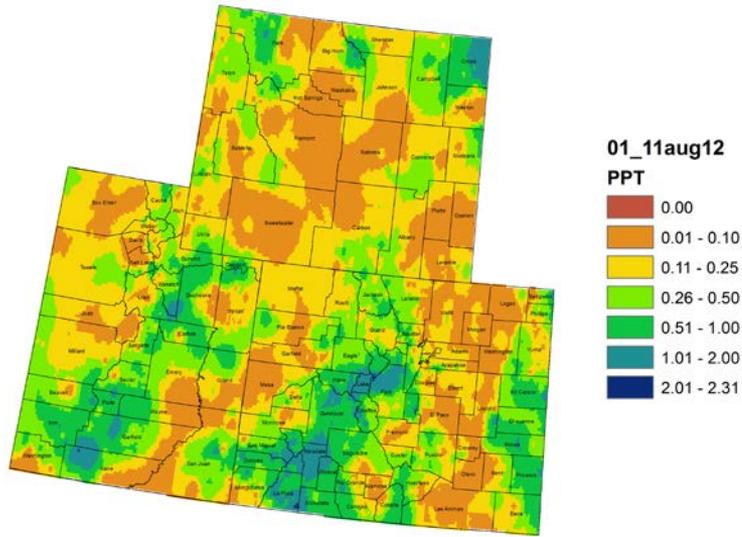
F o r m o r e i n f o r m a t i o n

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

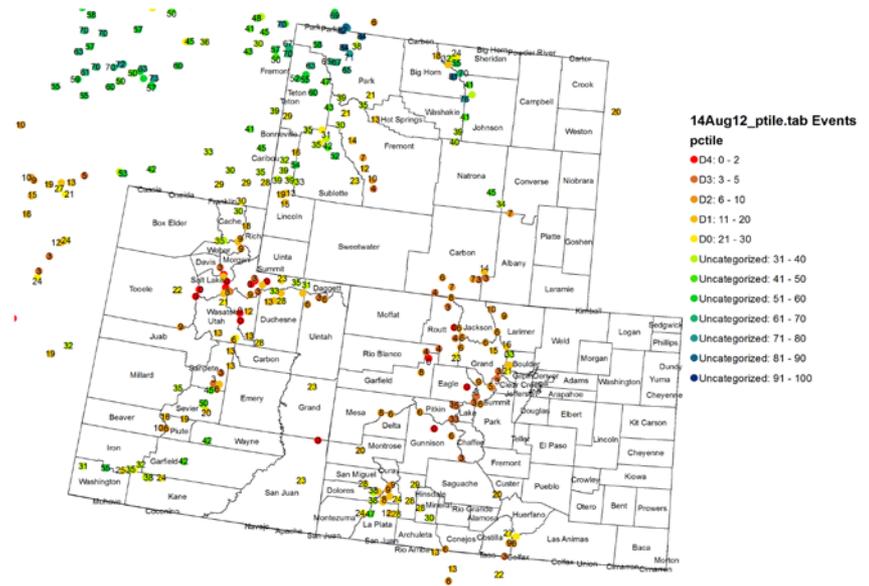
August 14, 2012

Colorado, Utah and Wyoming Month to Date Precipitation (in)
1 - 11 August 2012



01_11aug12
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 - 2.31

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



14Aug12_ptile.tab Events
ptile
● D4: 0 - 2
● D3: 3 - 5
● D2: 6 - 10
● D1: 11 - 20
● D0: 21 - 30
● Uncatagorized: 31 - 40
● Uncatagorized: 41 - 50
● Uncatagorized: 51 - 60
● Uncatagorized: 61 - 70
● Uncatagorized: 71 - 80
● Uncatagorized: 81 - 90
● Uncatagorized: 91 - 100

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 0.5 and 2 inches of precipitation (Fig. 1). The rest of the basin has been drier, receiving less than half an inch of precipitation with isolated areas in the basin receiving up to one inch. East of the basin, most of CO has remained dry receiving less than 0.25 inches of precipitation. Parts of eastern CO and just east of the Continental Divide have received between 0.25 and 1 inch.

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 normal, around the 30th to 50th percentile, and percentiles in the San Juan basin are in the teens and 20s with a few into the 30s.

Streamflow

As of August 13th, about 38% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). About 1% of the gauges in the UCRB are recording above normal flows, while about 30% 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 region and upper Gunnison River. Near normal flows are concentrated around the Upper Green River, 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 only minor changes 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 below normal range at the 22nd percentile. Flows on the Green River at Green River, UT are still in the much below normal range at the 7th percentile. Flows on the San Juan River near Bluff, UT are just below normal at the 24th percentile.

Monday, August 13, 2012

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 13th.

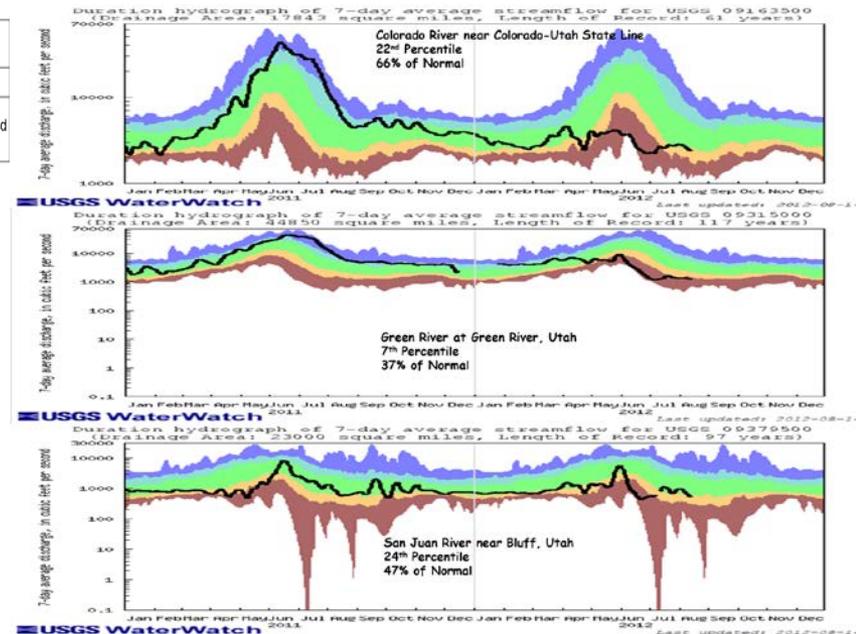
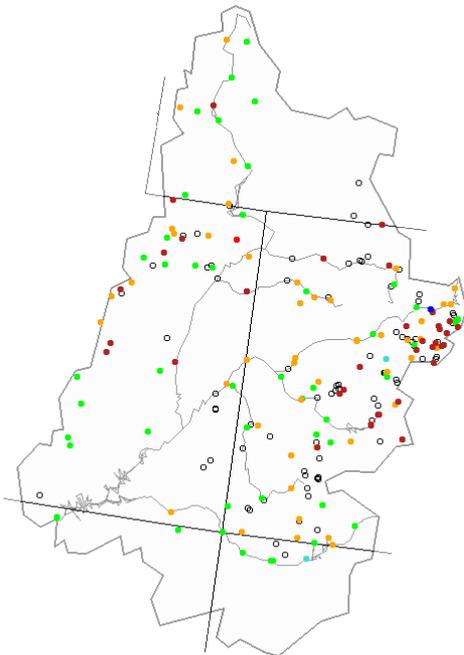


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week, temperatures across the UCRB were near average to slightly above average, in the 2 to 4 degree above average range with a few areas in the Four Corners and southwest WY up to 6 degrees above average. East of the basin, the rest of CO experienced temperatures 2 to 4 degrees above average with eastern CO near average for the week. Satellite vegetation conditions show the driest vegetation over northwest CO and northeast UT, with dry conditions 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 stabilized over the past couple weeks, with near normal 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 so far, 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. All of the major reservoirs are below their August storage averages, with Blue Mesa at 61% of average, Green Mountain at 66% of average, and Lake Powell currently at 71% of average.

Precipitation Forecast

The weather pattern for the up coming week will feature a large ridge over the great basin flanked on either side by deep troughs of low pressure. This pattern will result in a northwesterly flow aloft which will begin to usher in a drier and more stable air mass over the northern half of the basin while lingering sub-tropical moisture persists over the south. Meanwhile, a potent upper level disturbance rotating around the eastern low pressure trough will send a strong cold front south along the eastern edge of the UCRB. Expect this energy to trigger some precipitation over northern sections despite the lack of deep moisture, and should even help increase the coverage of convection over southern areas as the tail end of the system brushes past. Precipitation amounts will be greatest over the southern CO mountains where accumulations of 0.50 inches are possible through Friday, with a decrease in precipitation amounts to the north and west. Isolated areas of wet snow are not out of the question across the highest peaks in the north given the amount of cold air associated with the passing disturbance on Thursday. Forecast models continue to advertise a persistence of this pattern through the weekend and into early next week, with an ongoing chance of light showers and thunderstorms across the extreme south while drier, more fall like conditions prevail in the north.

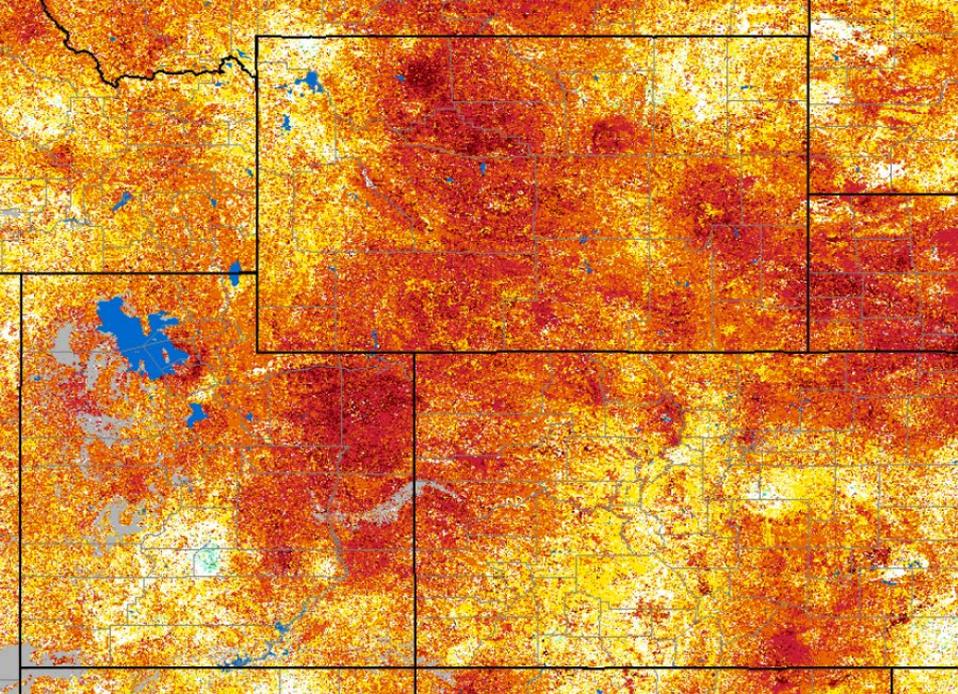


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of Aug 12th.

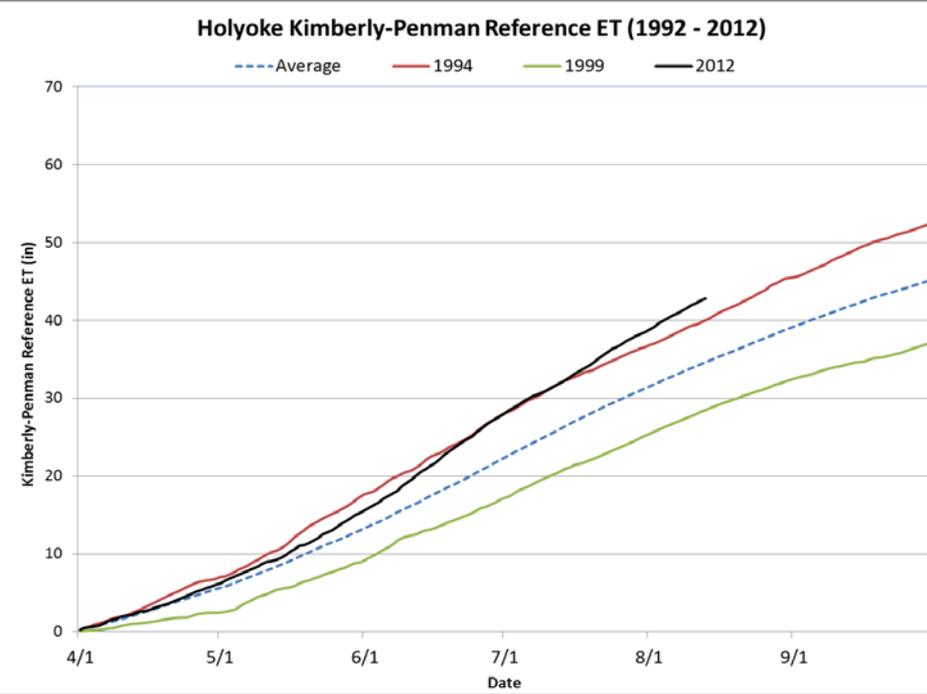
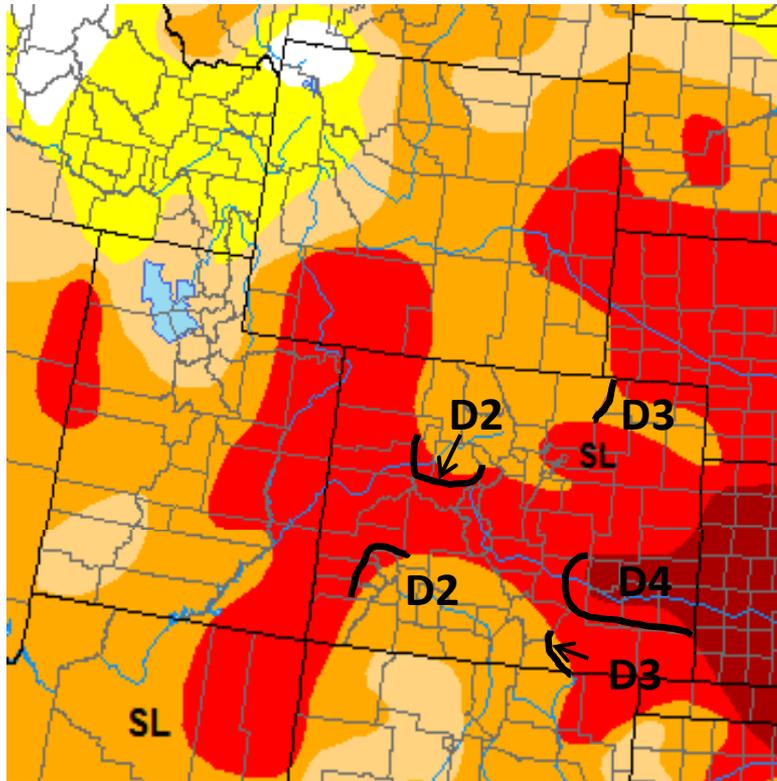


Fig. 6: Accumulated reference ET (black line) at Holyoke, CO in the northeast region, compared to the max year (red), min year (green), and average (dashed line).

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 13th draft of U.S. Drought Monitor for the UCRB with recommendations.

UCRB: With beneficial precipitation in Garfield and Eagle counties improvements are suggested from D3 to D2 (See Fig. 7). Improvement in Ouray, San Miguel and Dolores Counties are also suggested. Status quo is recommended for the rest of the basin. Eastern Utah received some spotty precipitation, however not enough for any improvements.

Eastern CO: An expansion of D3 in northeast CO is recommended to fill in the D2 in NE Weld County, Morgan, Logan, Washington, Phillips and Yuma Counties. Little precipitation has fallen in the area and crops continues to show stress. A slight expansion of D3 west in Las Animas County is also suggested.

D4: A further expansion of D4 west into Pueblo County and south into Otero, Bent and Prowers counties due to continued dryness and much above normal temperature is recommended.