

**Summer
2012**



August 21st, 2012

NIDIS - UPPER COLORADO BASIN PILOT PROJECT

Weekly Climate, Water & Drought Assessment

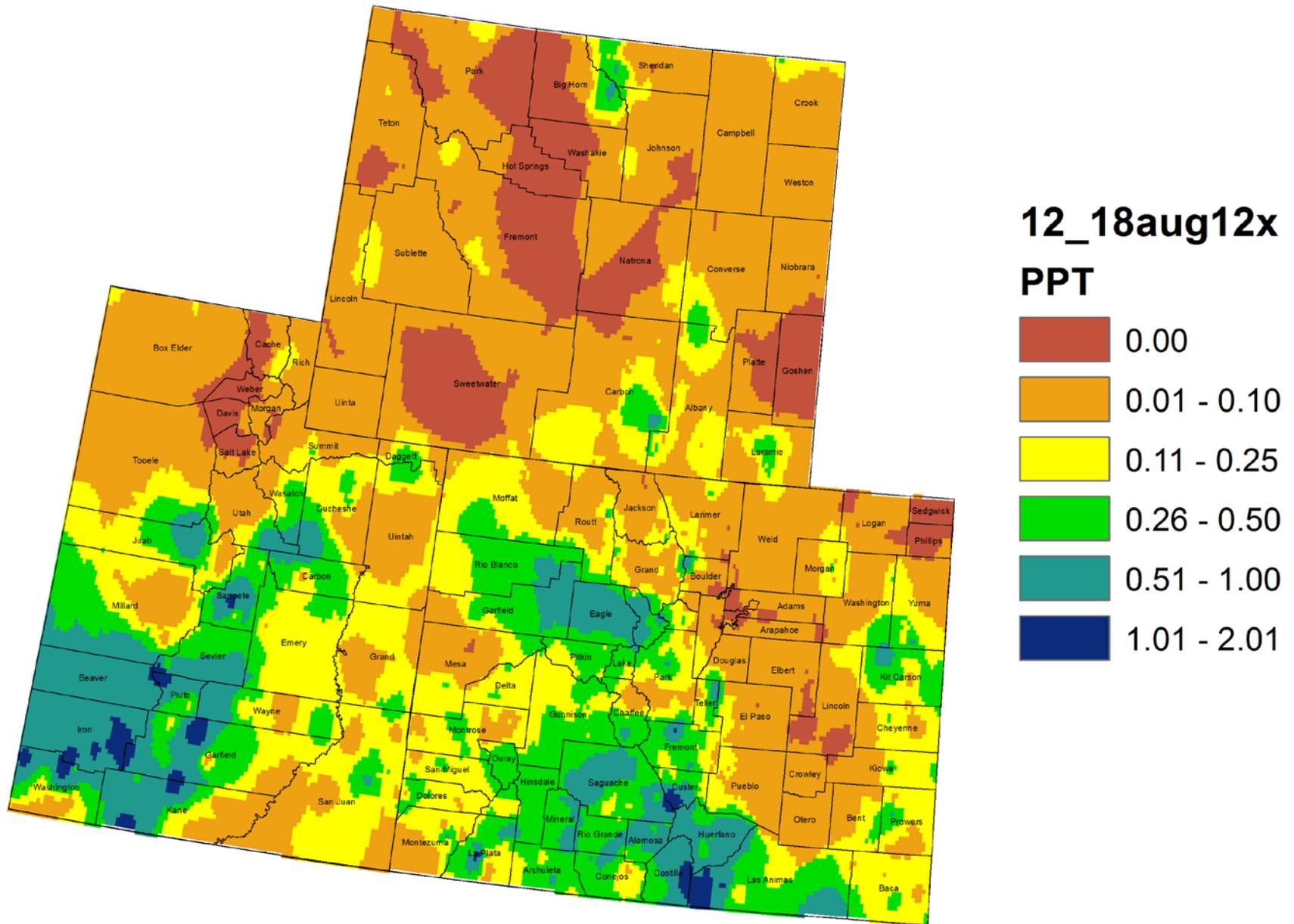
Today's Agenda

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

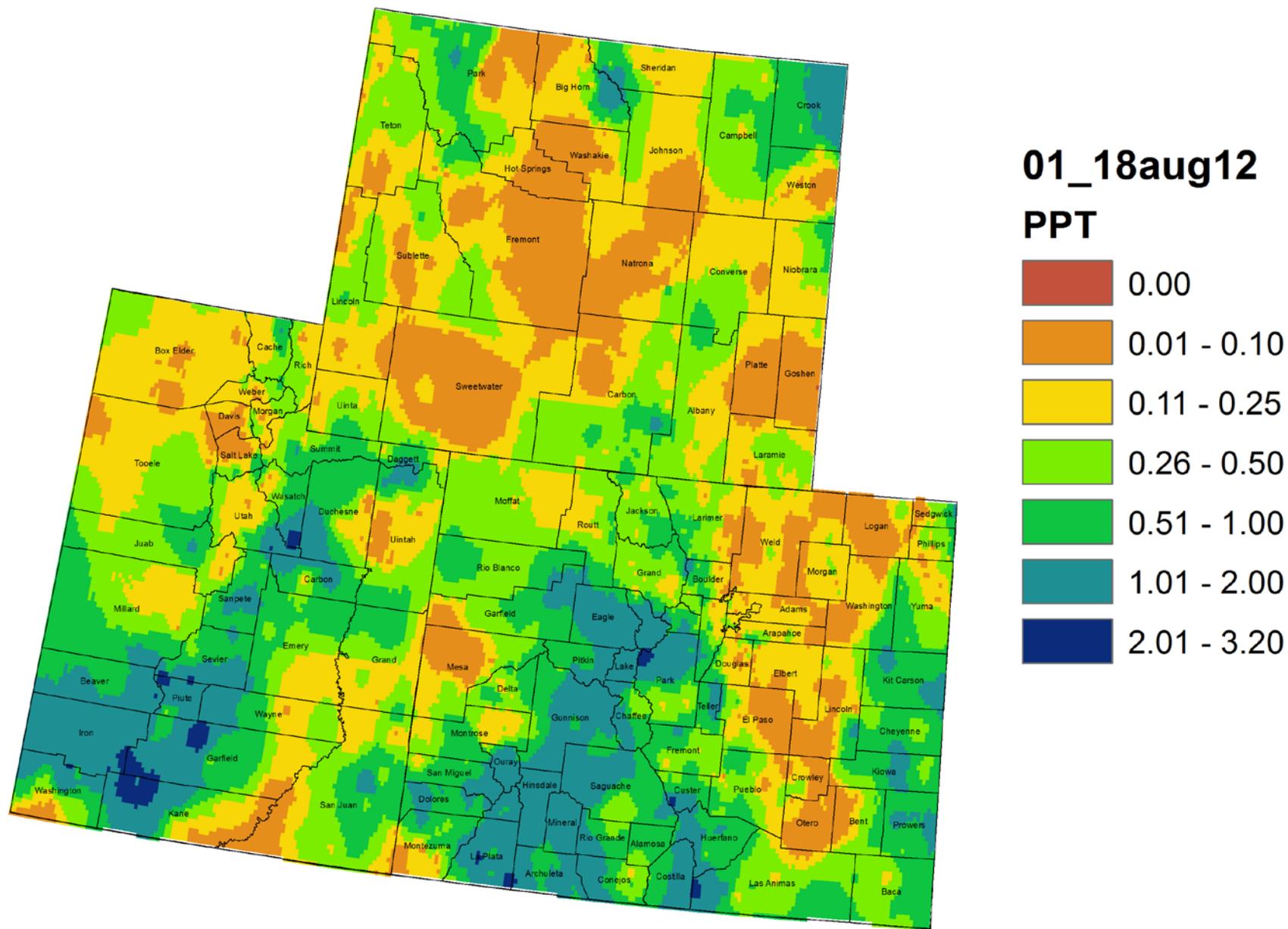
Precipitation/Snowpack Update



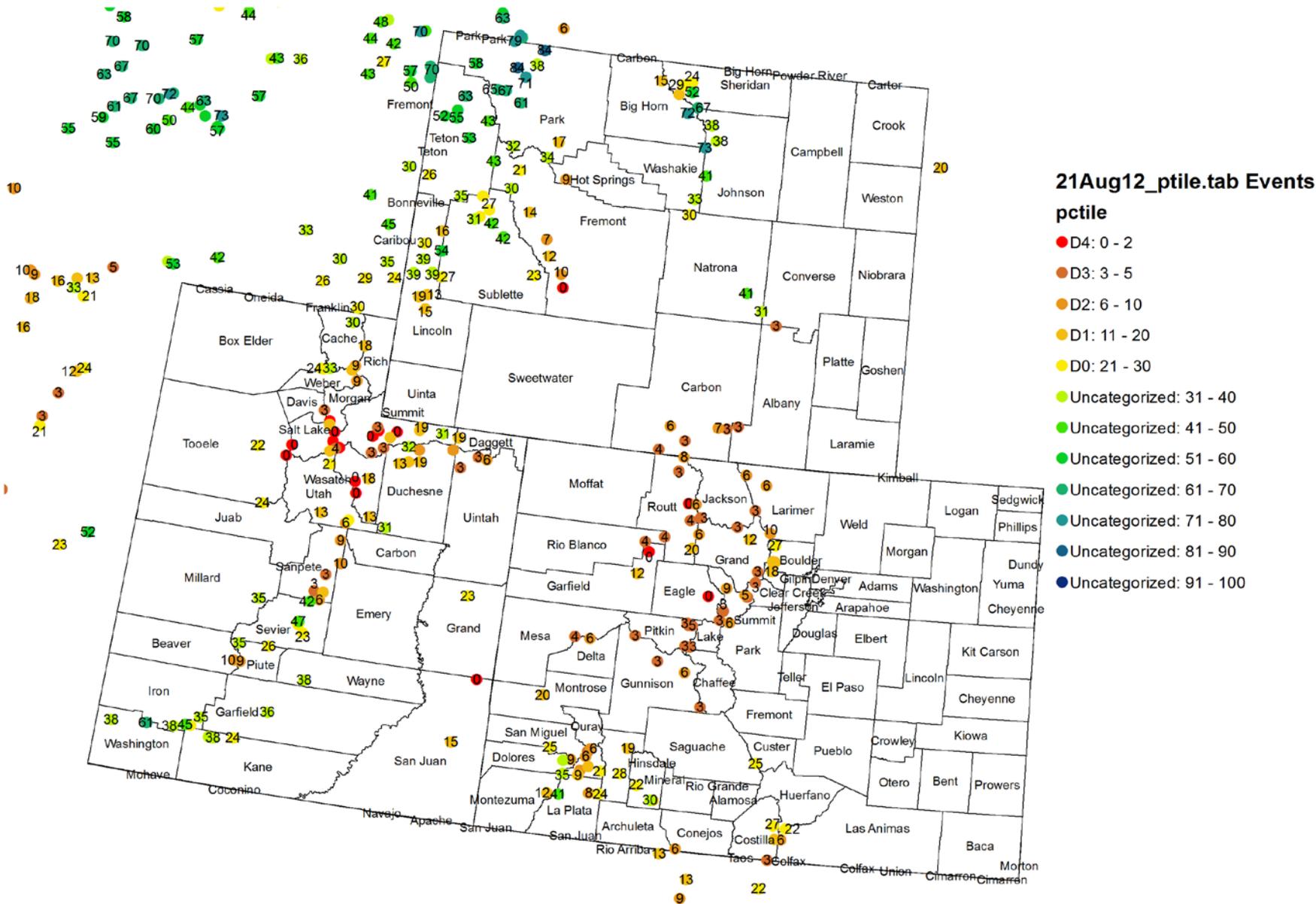
Colorado, Utah and Wyoming 7 Day Precipitation (in) 12 - 18 August 2012



Colorado, Utah and Wyoming Month to Date Precipitation (in) 1 - 18 August 2012

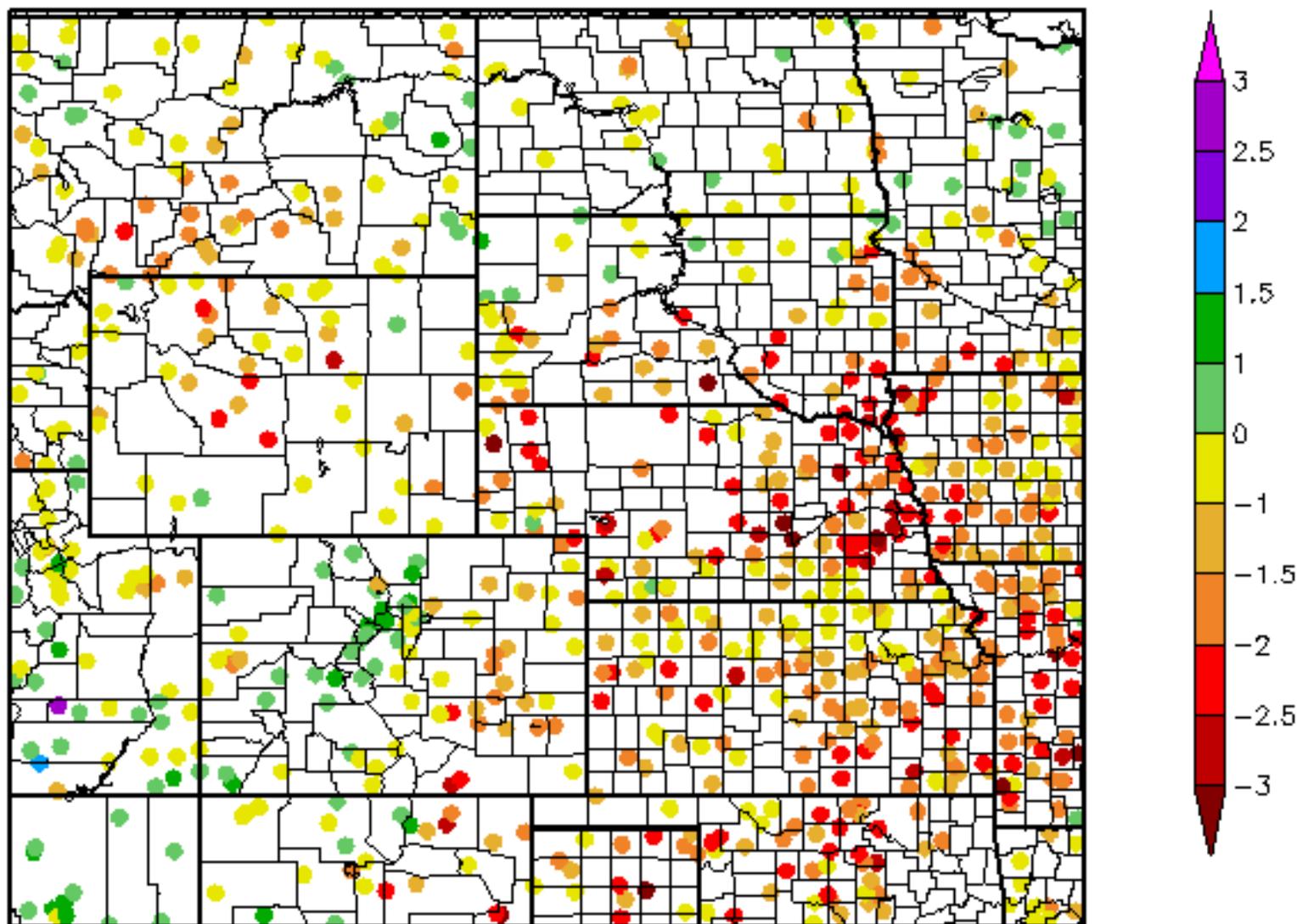


Snotel Water Year Precipitation Percentile Ranking for 21 August 2012 (Stations with 15+ years of data only)



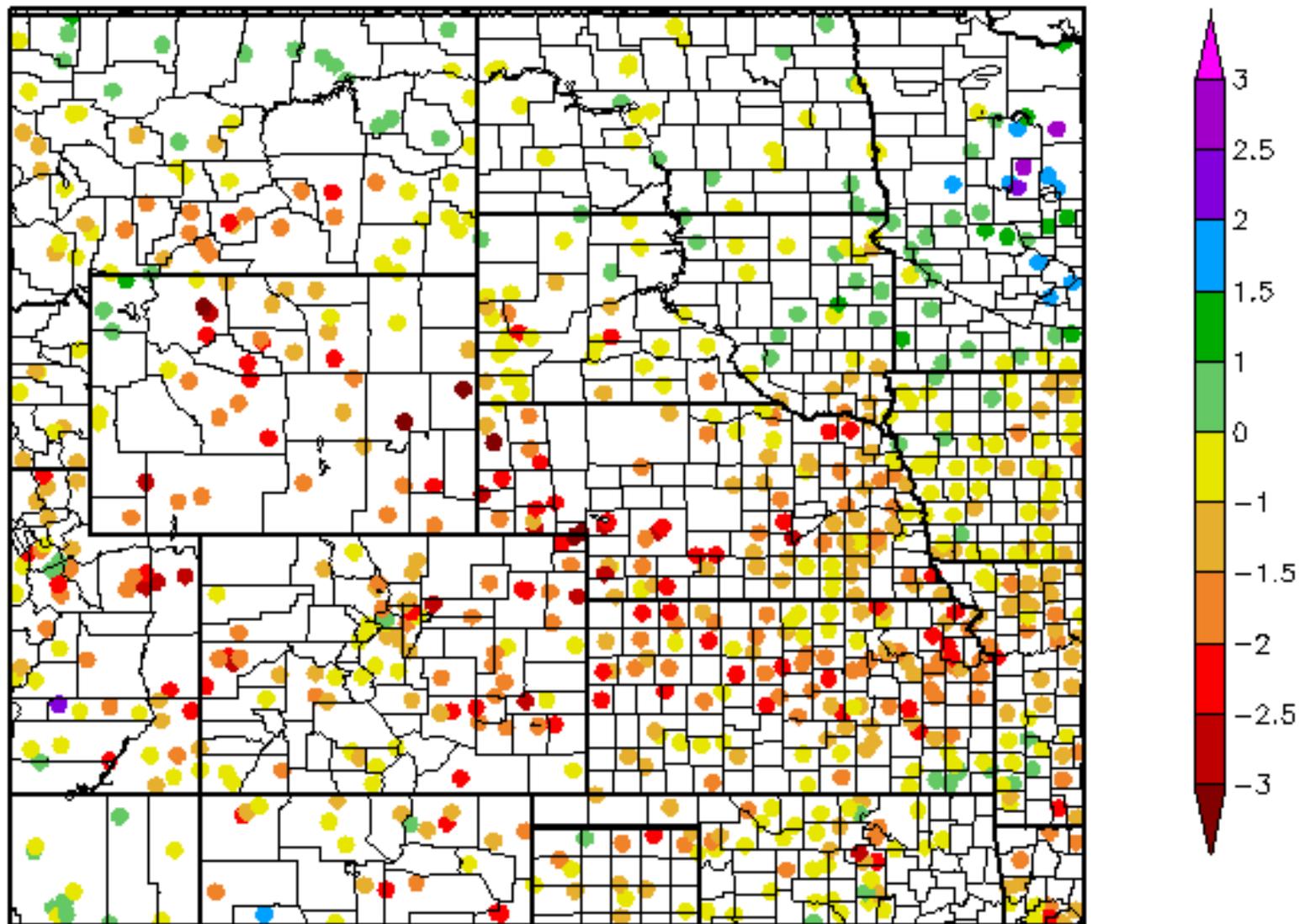
60 Day SPI

6/22/2012 - 8/20/2012



6 Month SPI

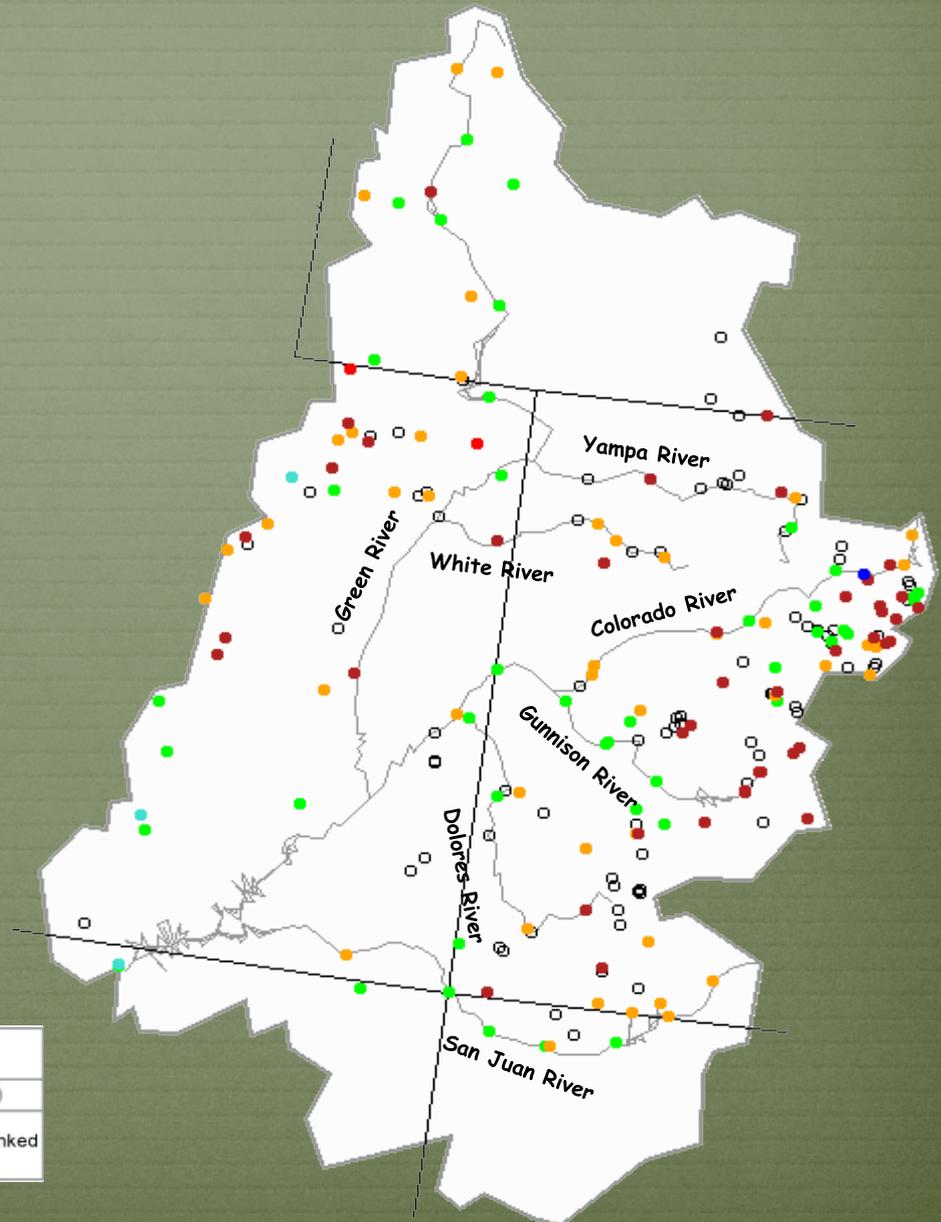
2/21/2012 - 8/20/2012



Streamflow Update

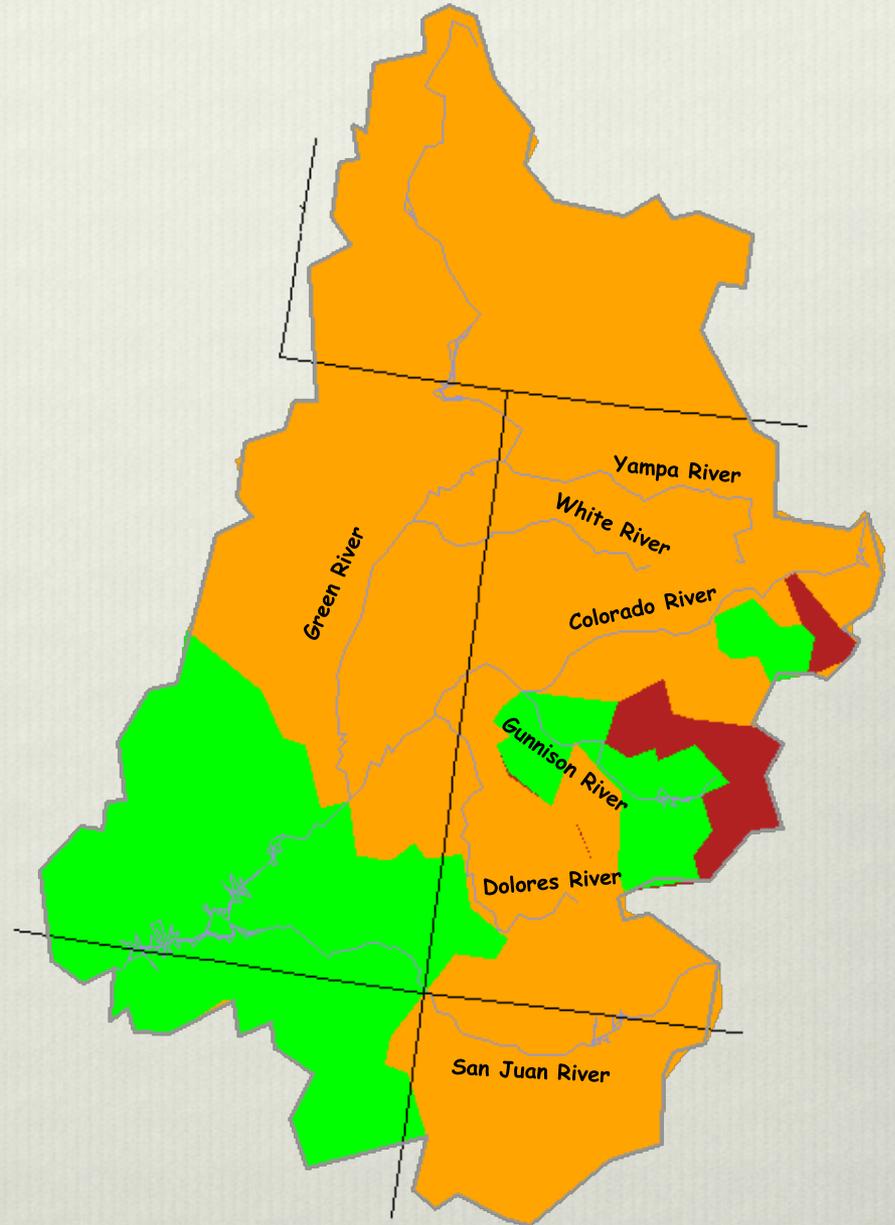


7-day average discharge compared to historical discharge for the day of the year (Aug 19th)

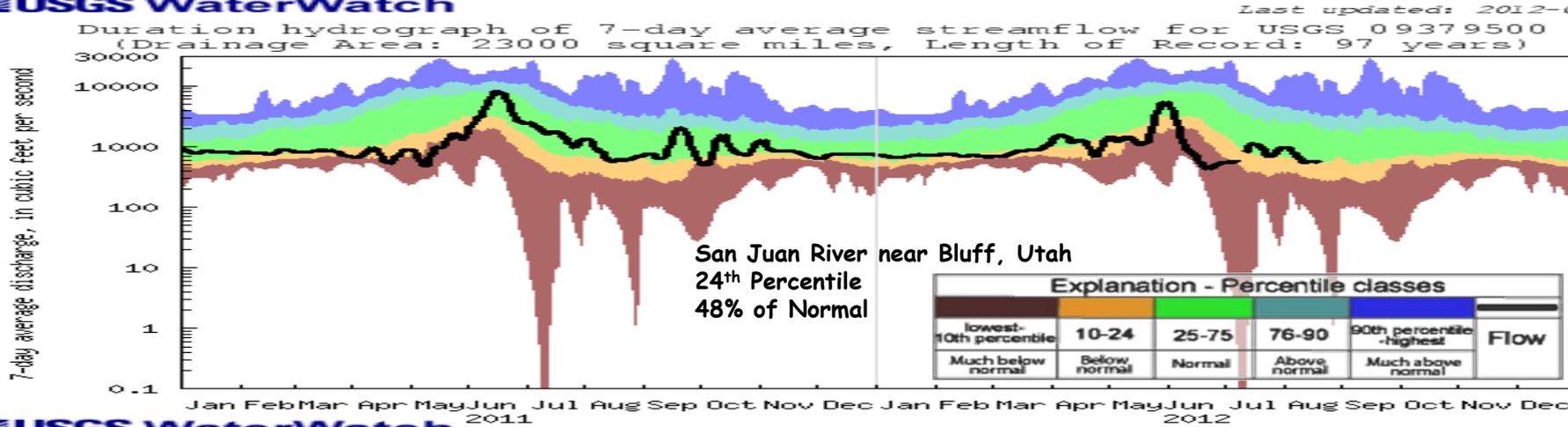
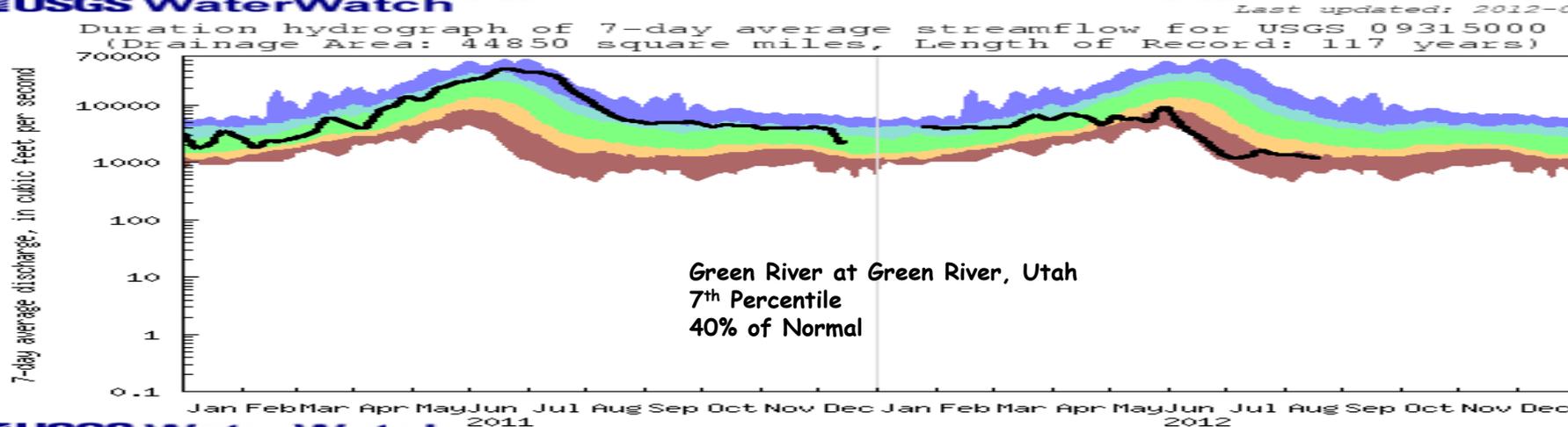
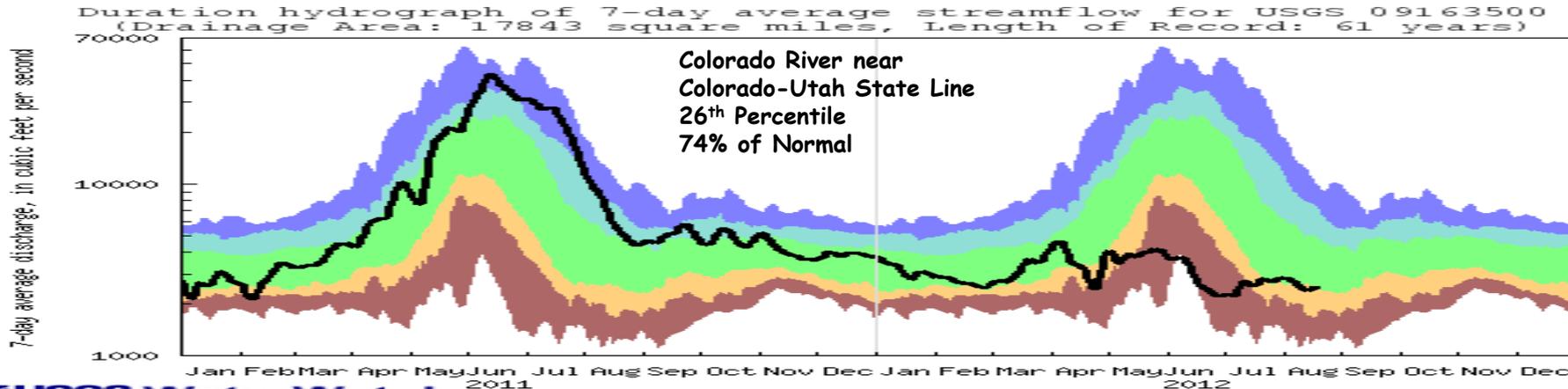


Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

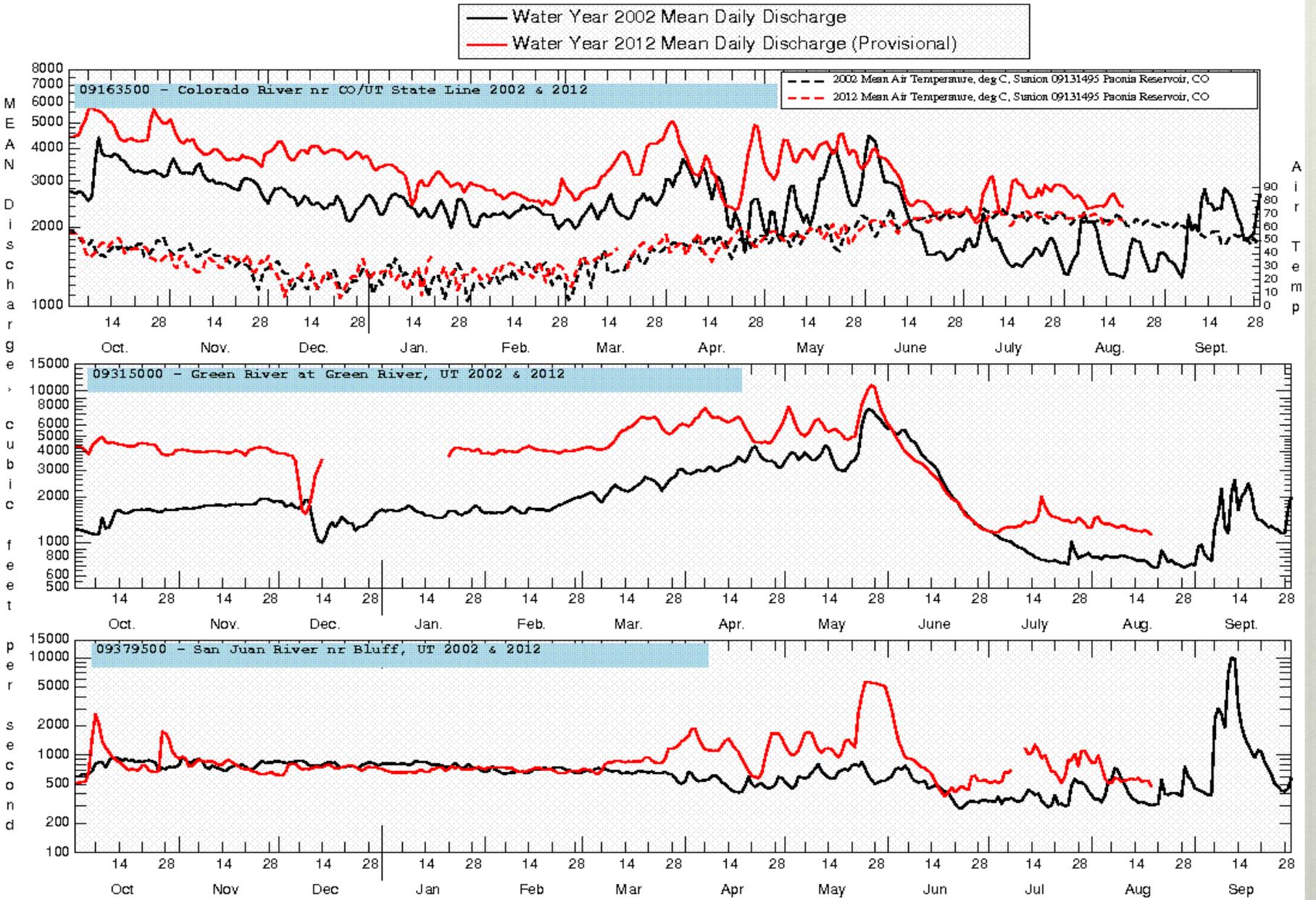
7-day average discharge compared to historical discharge for the day of the year (Aug 19)



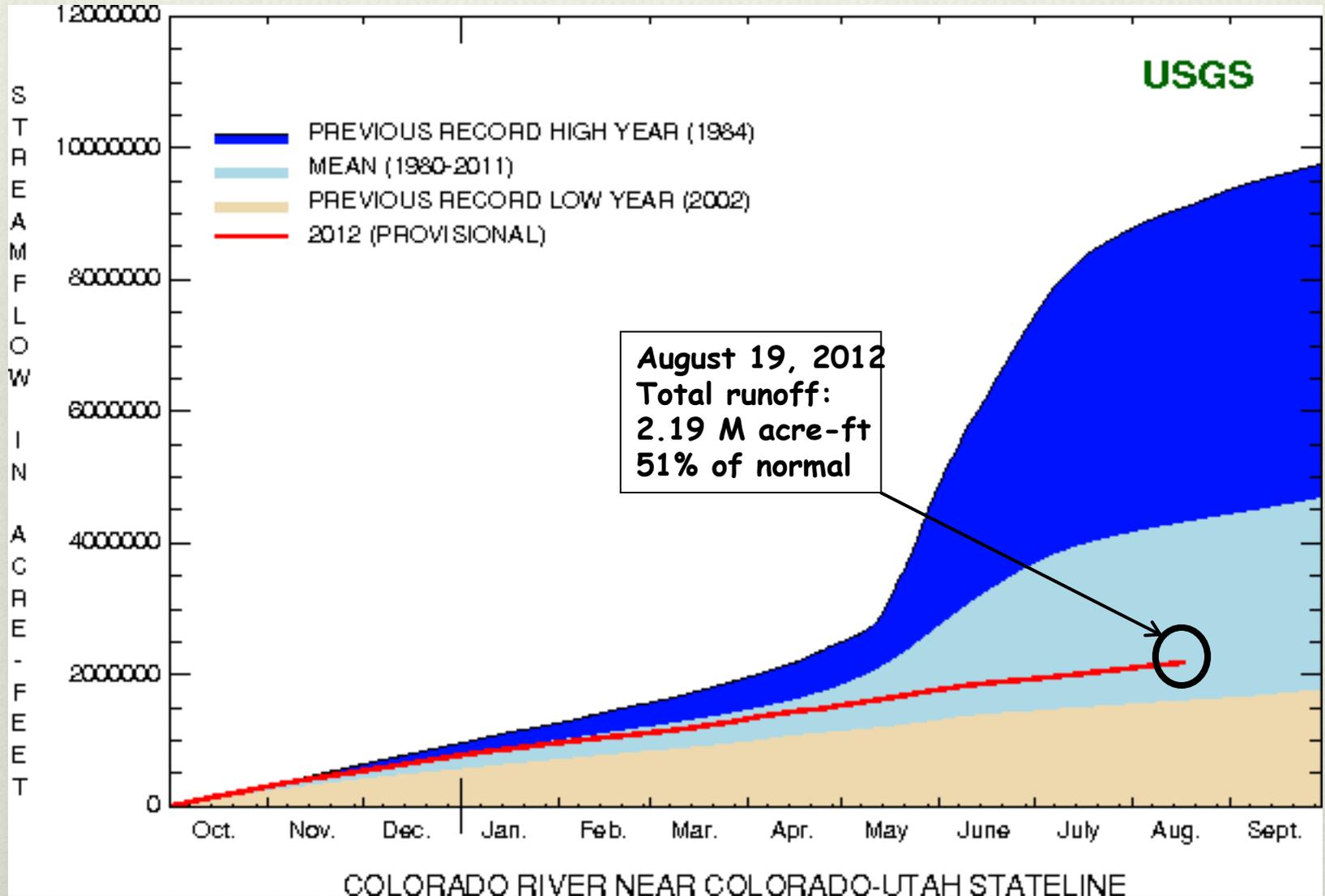
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



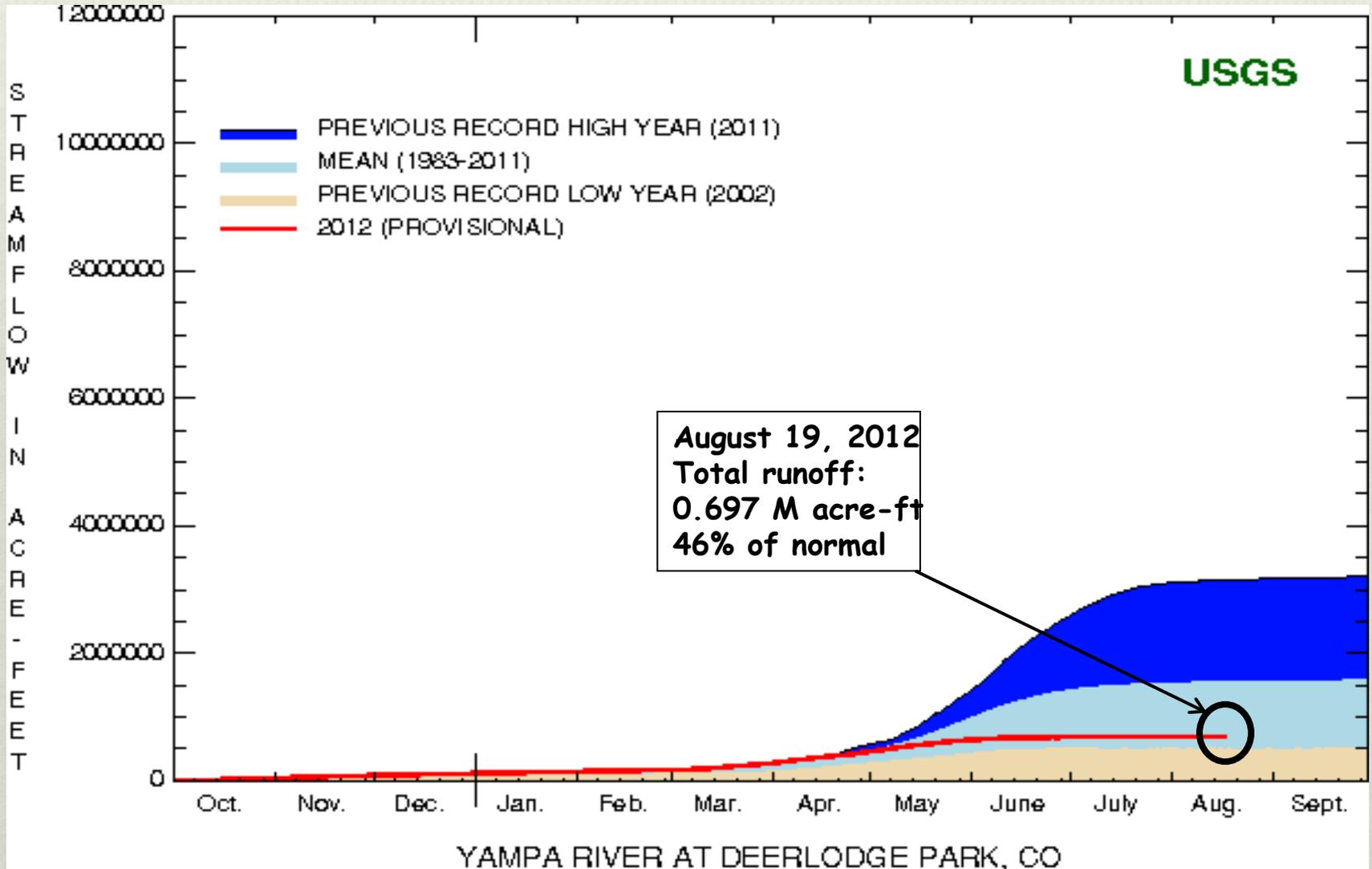
Colorado River Basin 2002 vs. 2012 Mean Daily Discharge Comparison at Select Stations



Total Streamflow Volume Colorado River nr CO/UT State Line Oct 1, 2011 to August 19, 2012

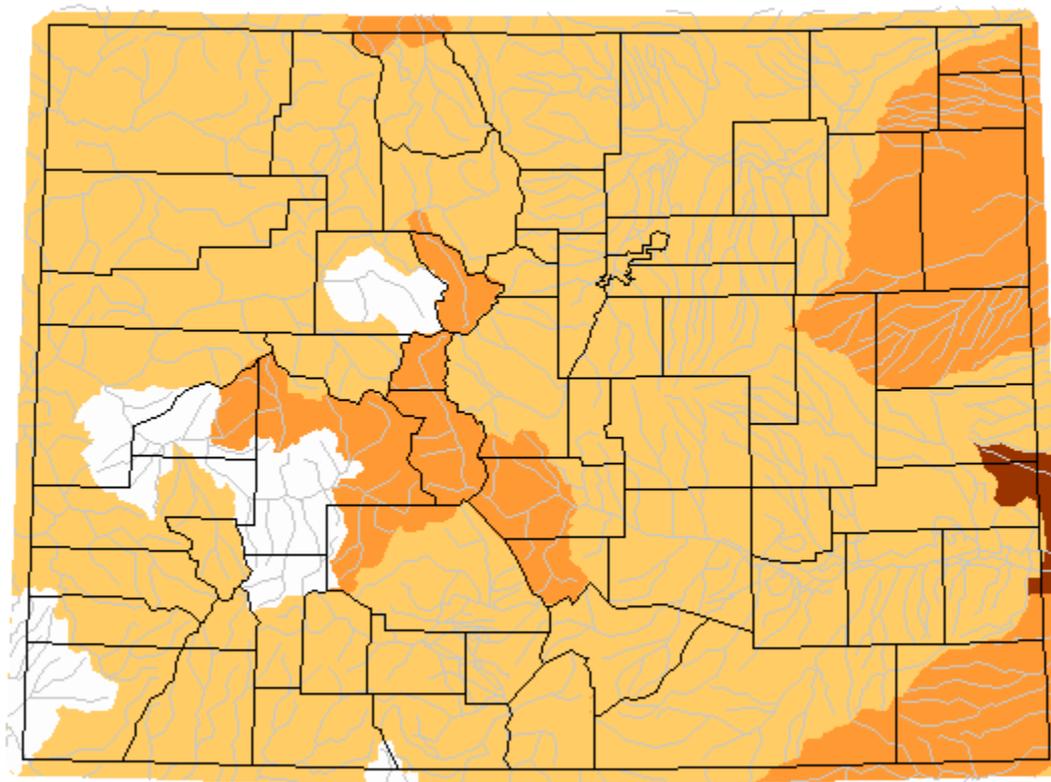


Total Streamflow Volume Yampa River at Deerlodge Park, CO Oct 1, 2011 to August 19, 2012



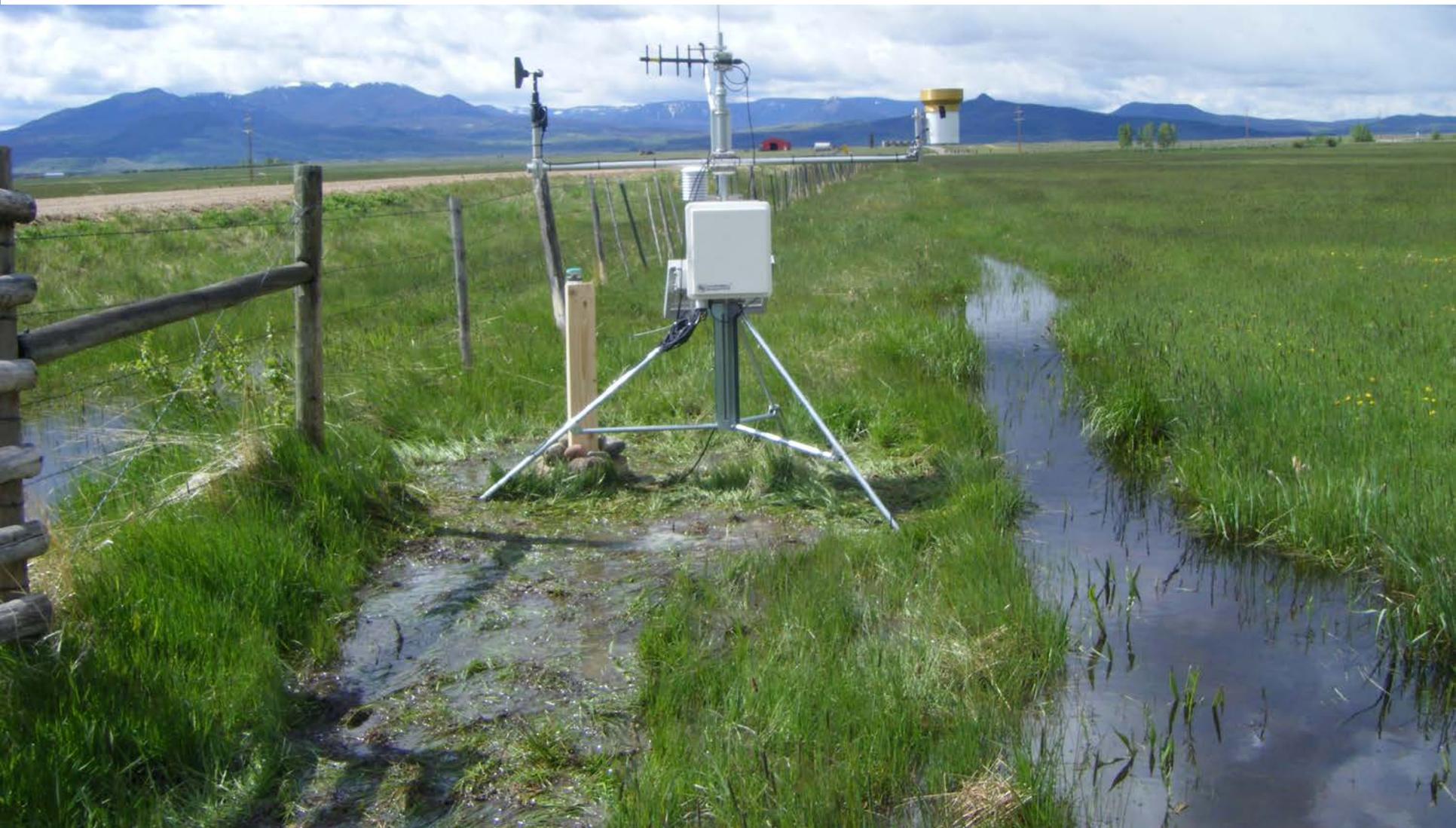
7-day average streamflow compared to historical streamflow

Sunday, August 19, 2012



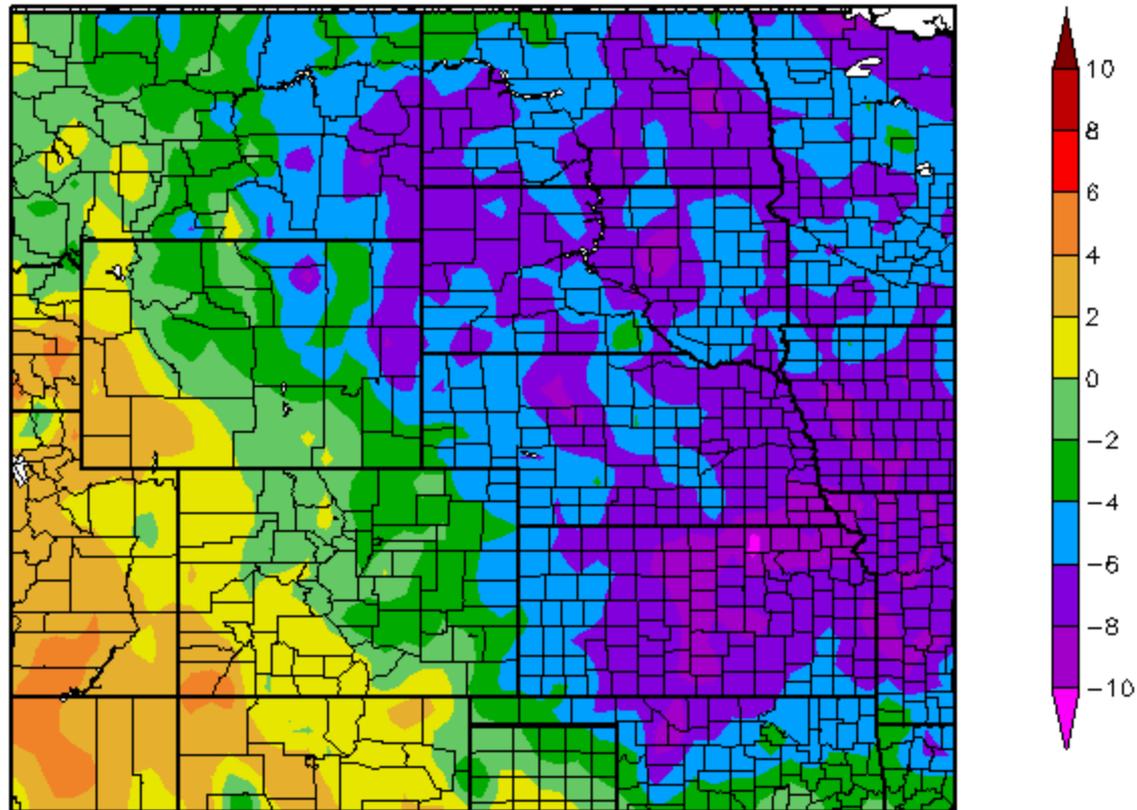
Explanation - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Water Demand



Temperature Departure from Normal 08/14/2012 – 08/20/2012

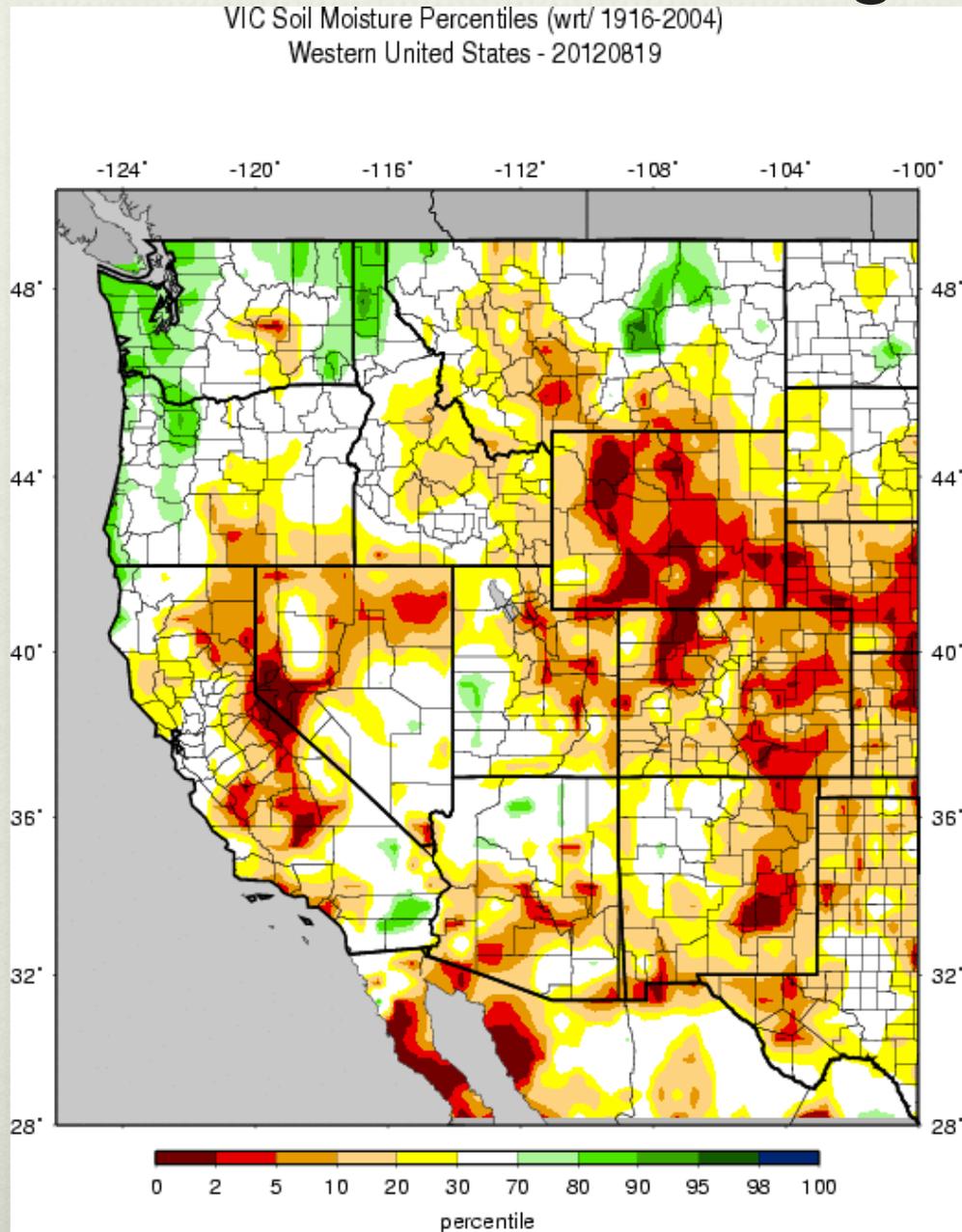
Departure from Normal Temperature (F)
8/14/2012 – 8/20/2012



Generated 8/21/2012 at HPRCC using provisional data.

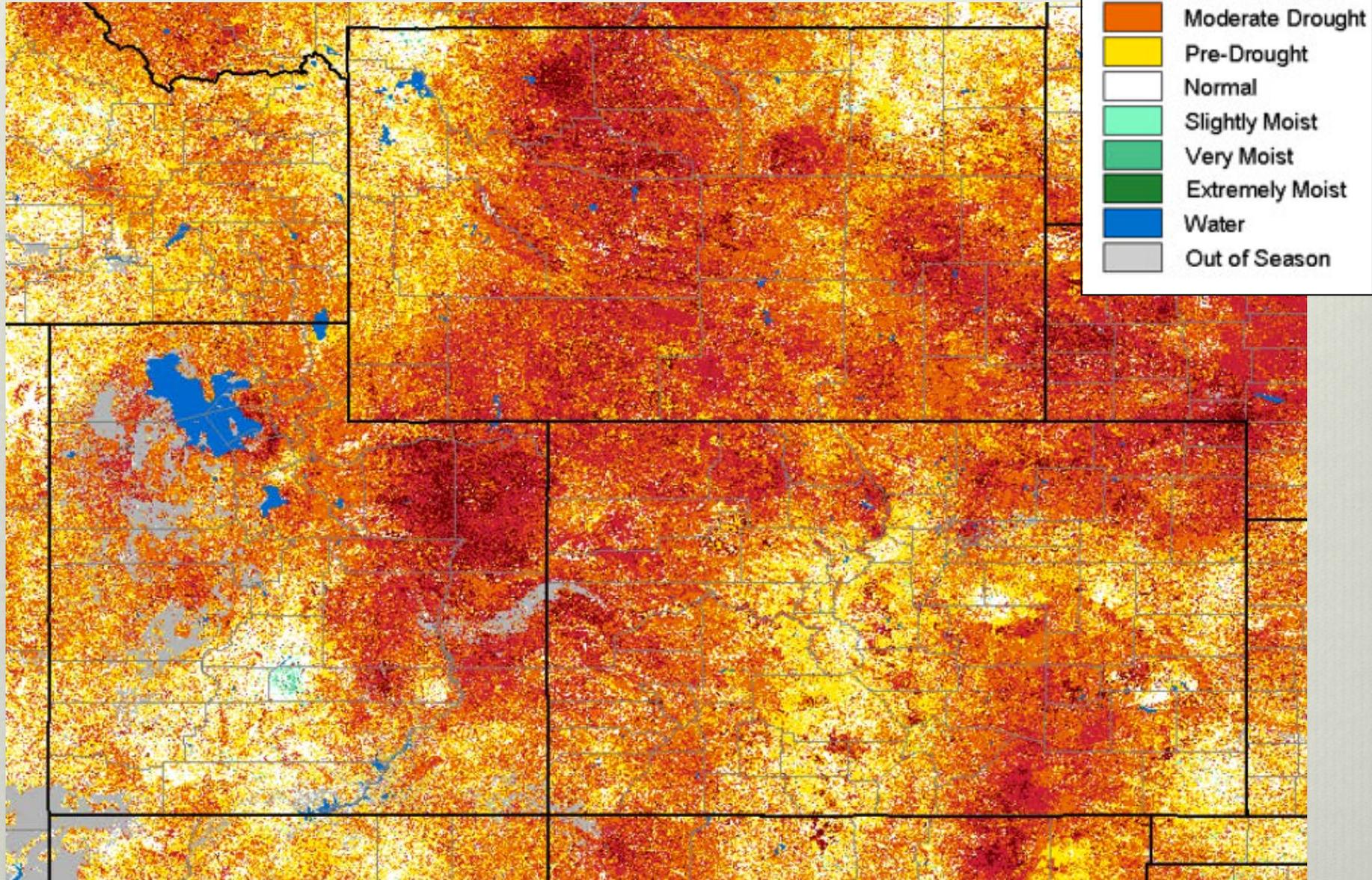
Regional Climate Centers

VIC Soil Moisture 19 August 12

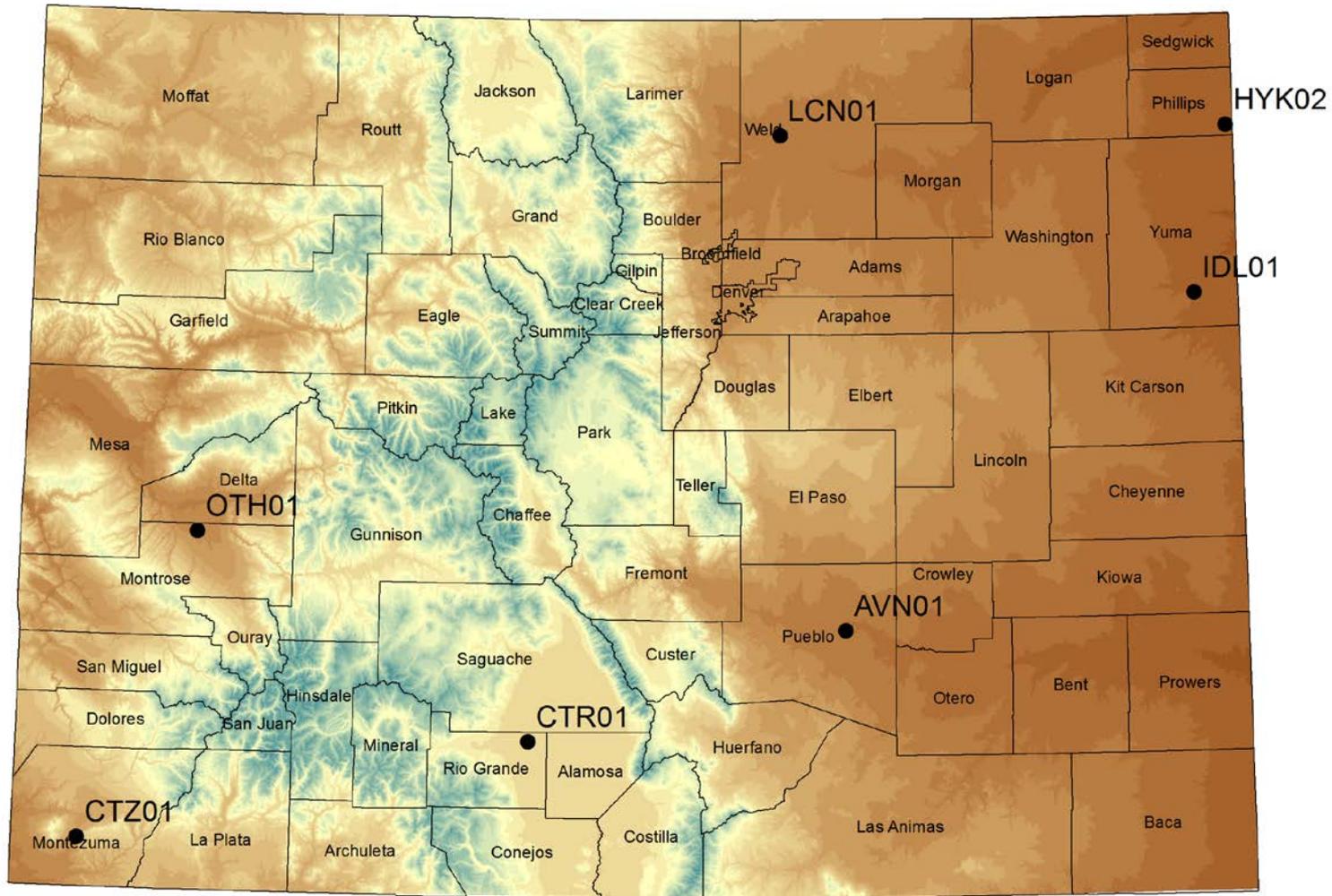


eMODIS VegDRI Vegetation

19 August 2012

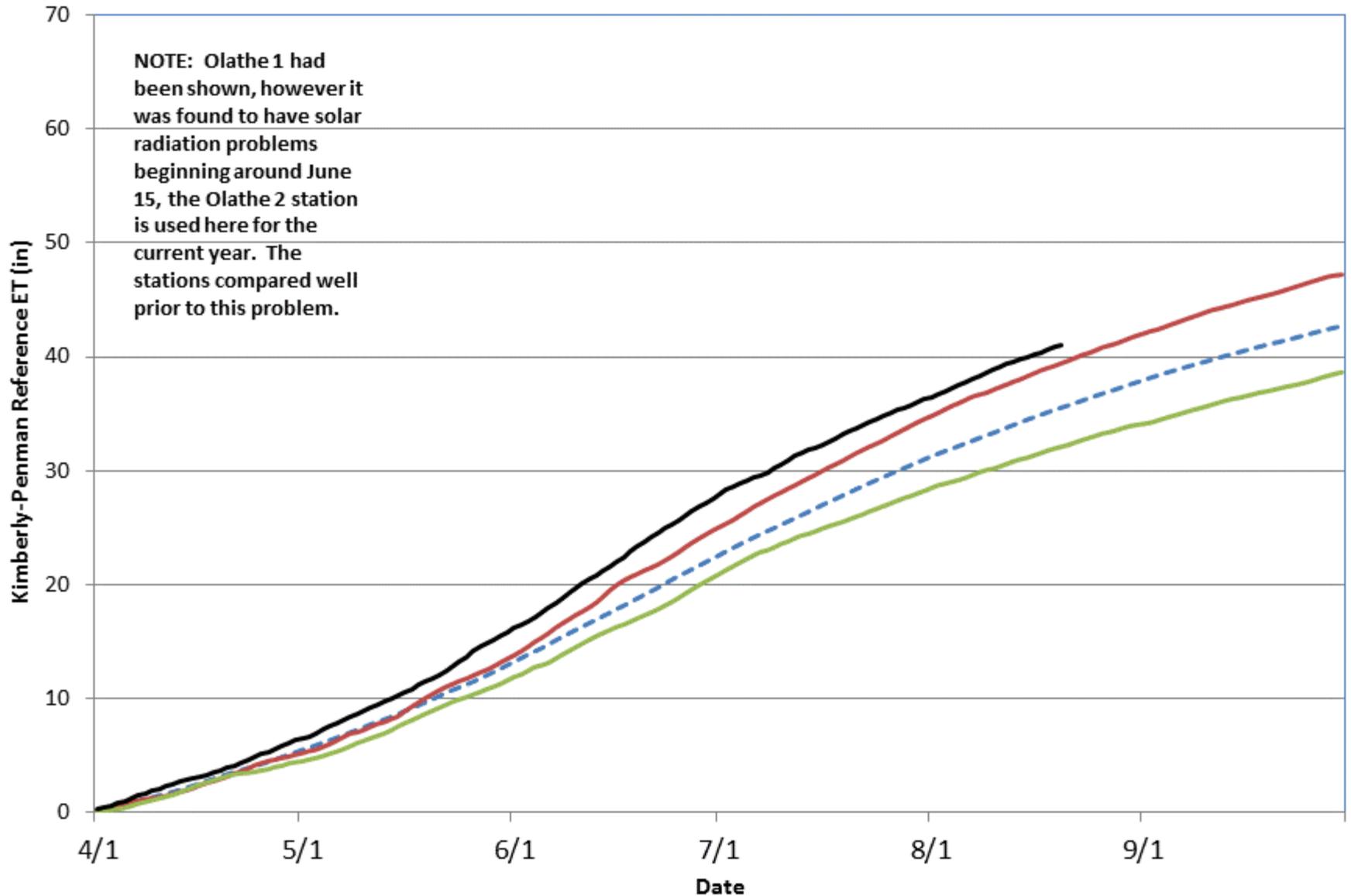


CoAgMet Reference Evapotranspiration Stations



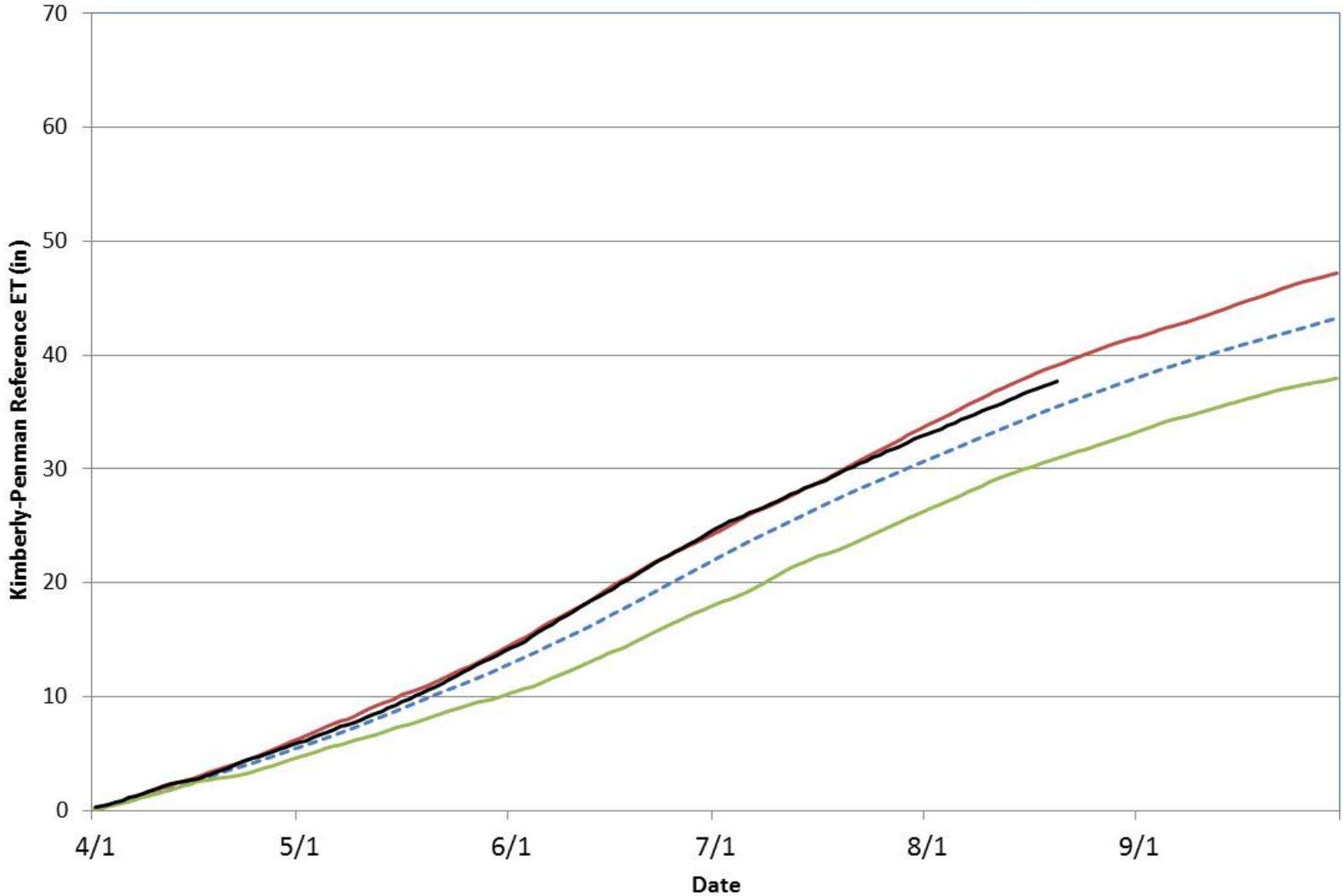
Olathe 2 Kimberly-Penman Reference ET (1993 - 2012)

--- Average — 1994 — 1999 — 2012



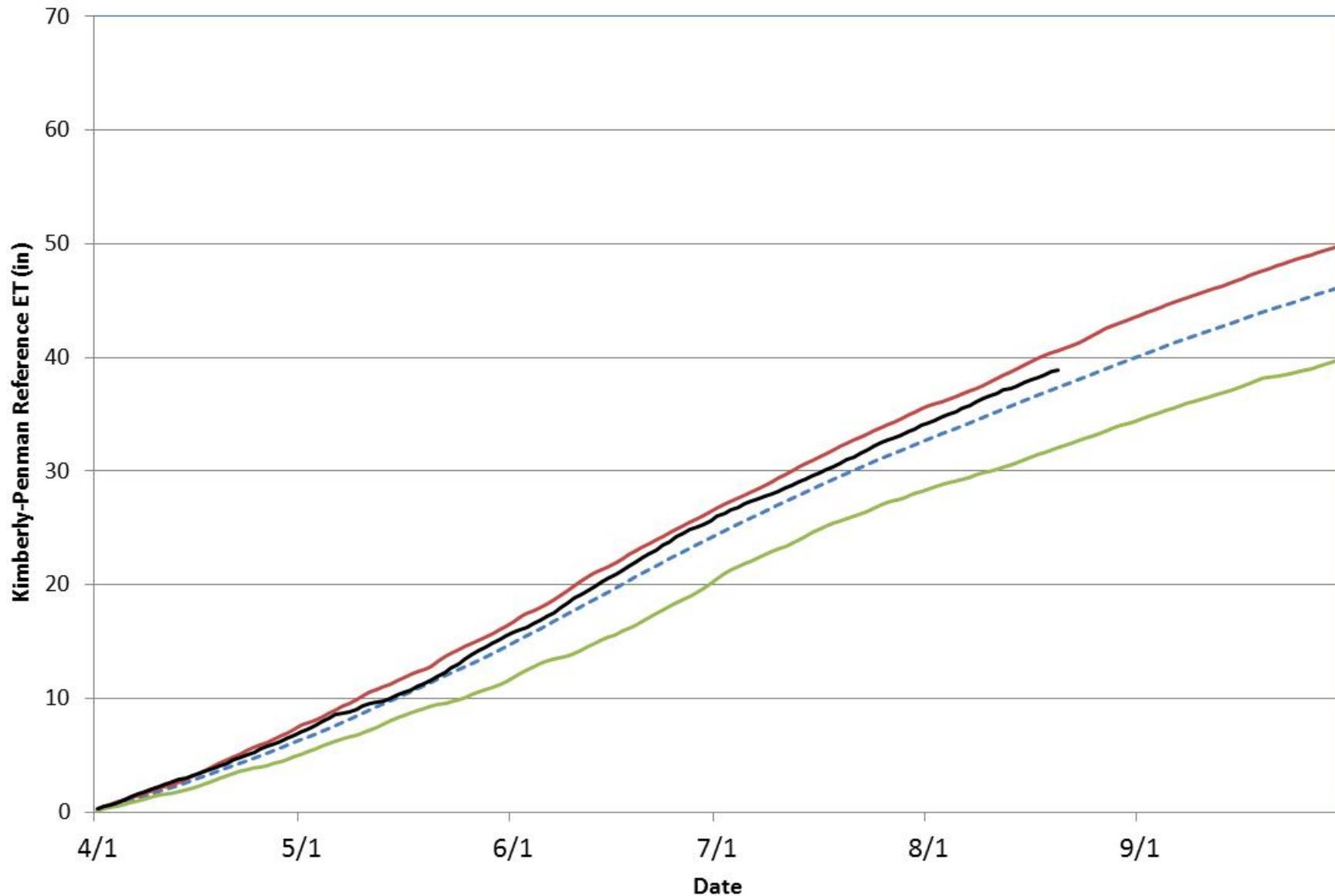
Cortez Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 2000 — 1995 — 2012



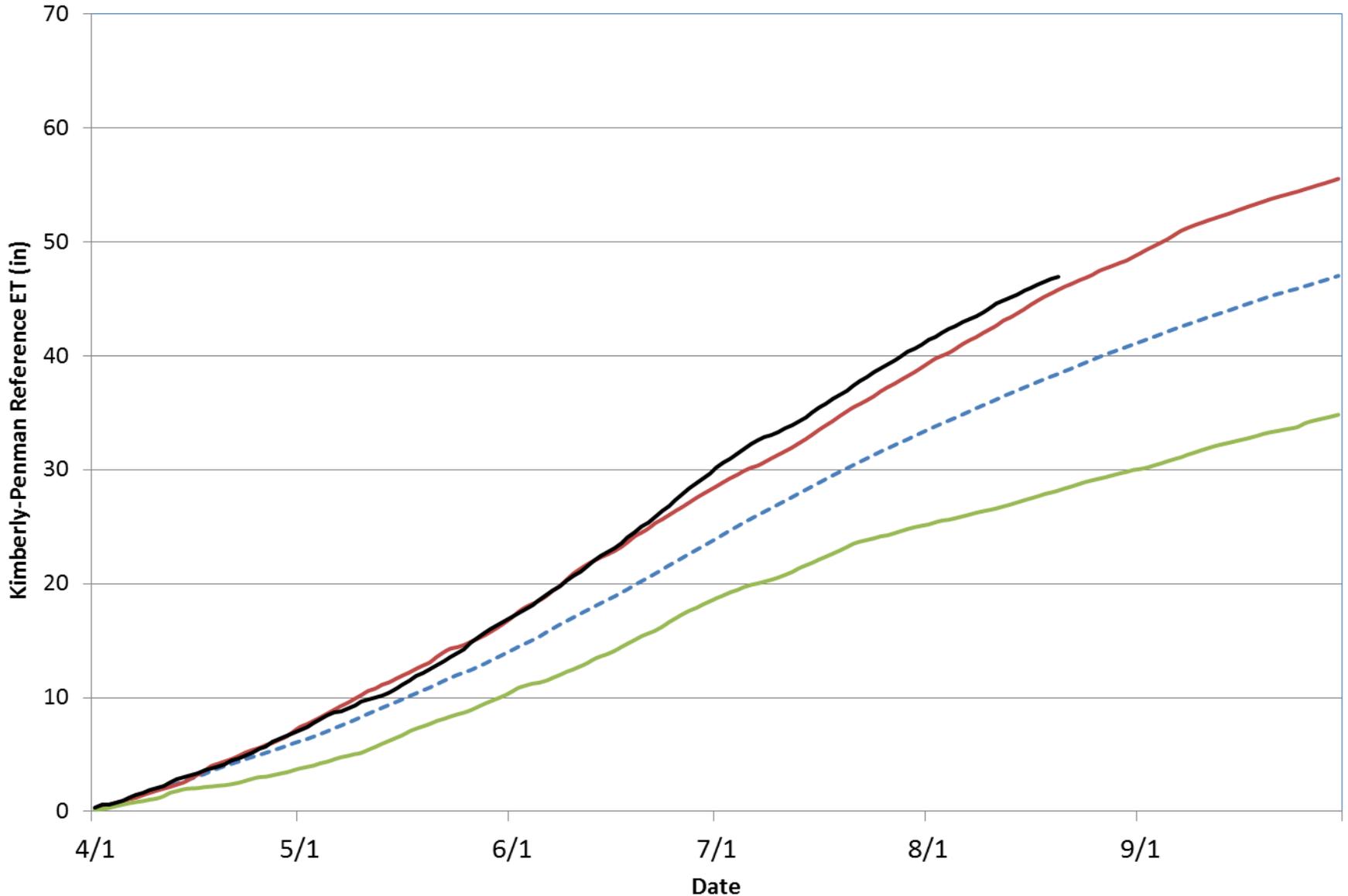
Center Kimberly-Penman Reference ET (1994 - 2012)

--- Average — 2002 — 1997 — 2012



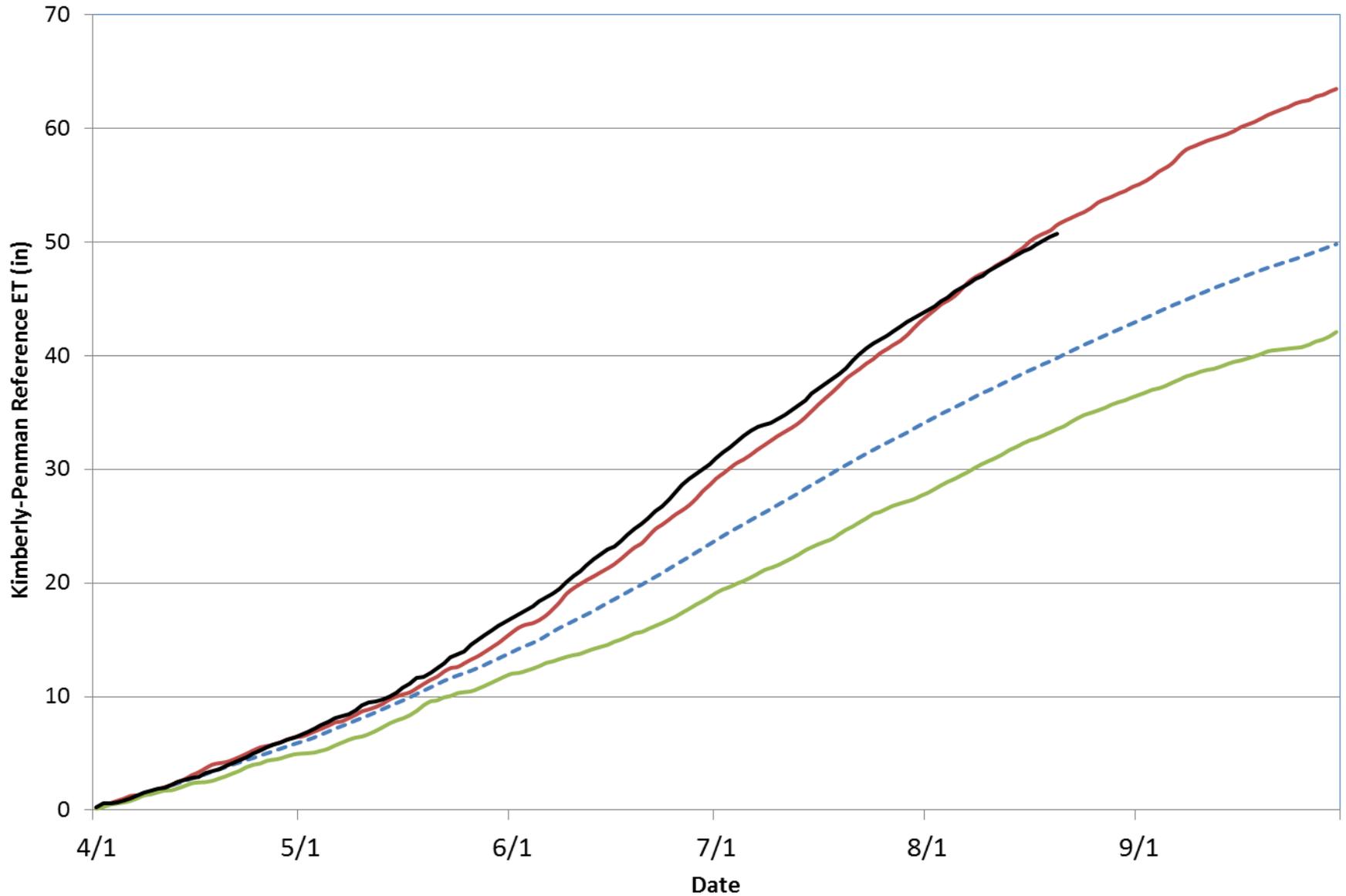
Avondale Kimberly-Penman Reference ET (1993 - 2012)

--- Average — 2002 — 1998 — 2012



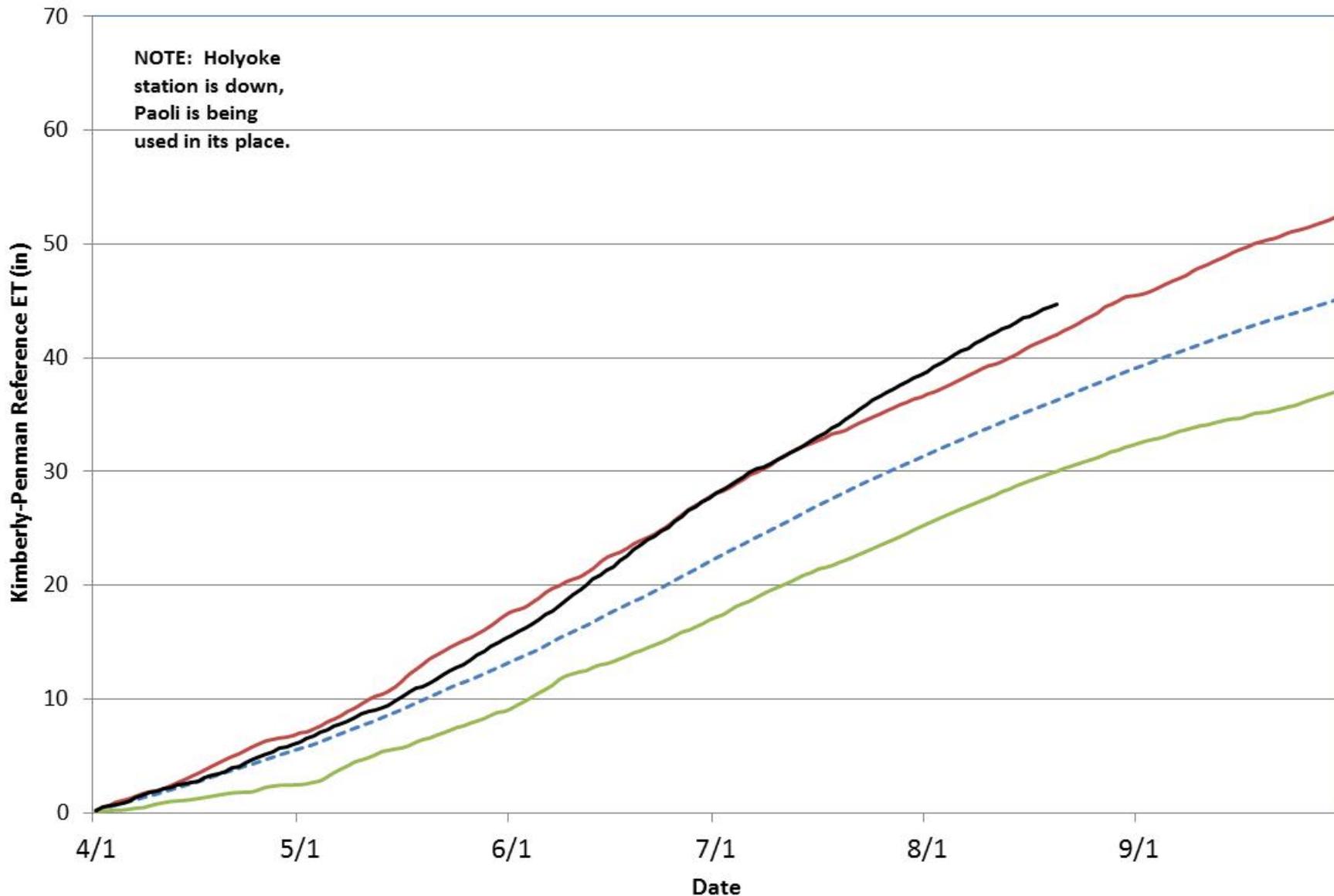
Idalia Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 2002 — 2009 — 2012



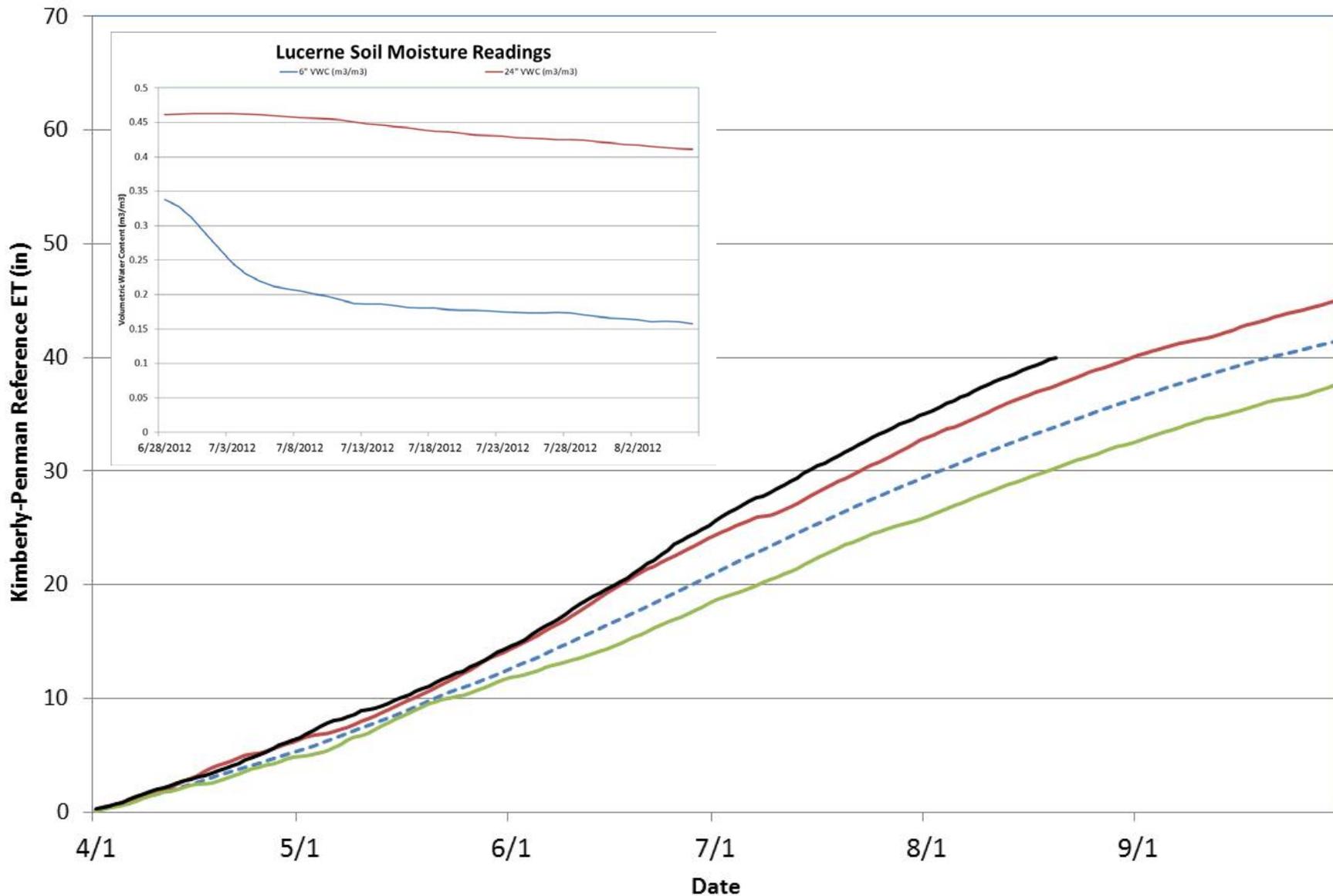
Holyoke Kimberly-Penman Reference ET (1992 - 2012)

--- Average — 1994 — 1999 — 2012



Lucerne Kimberly-Penman Reference ET (1992 - 2012)

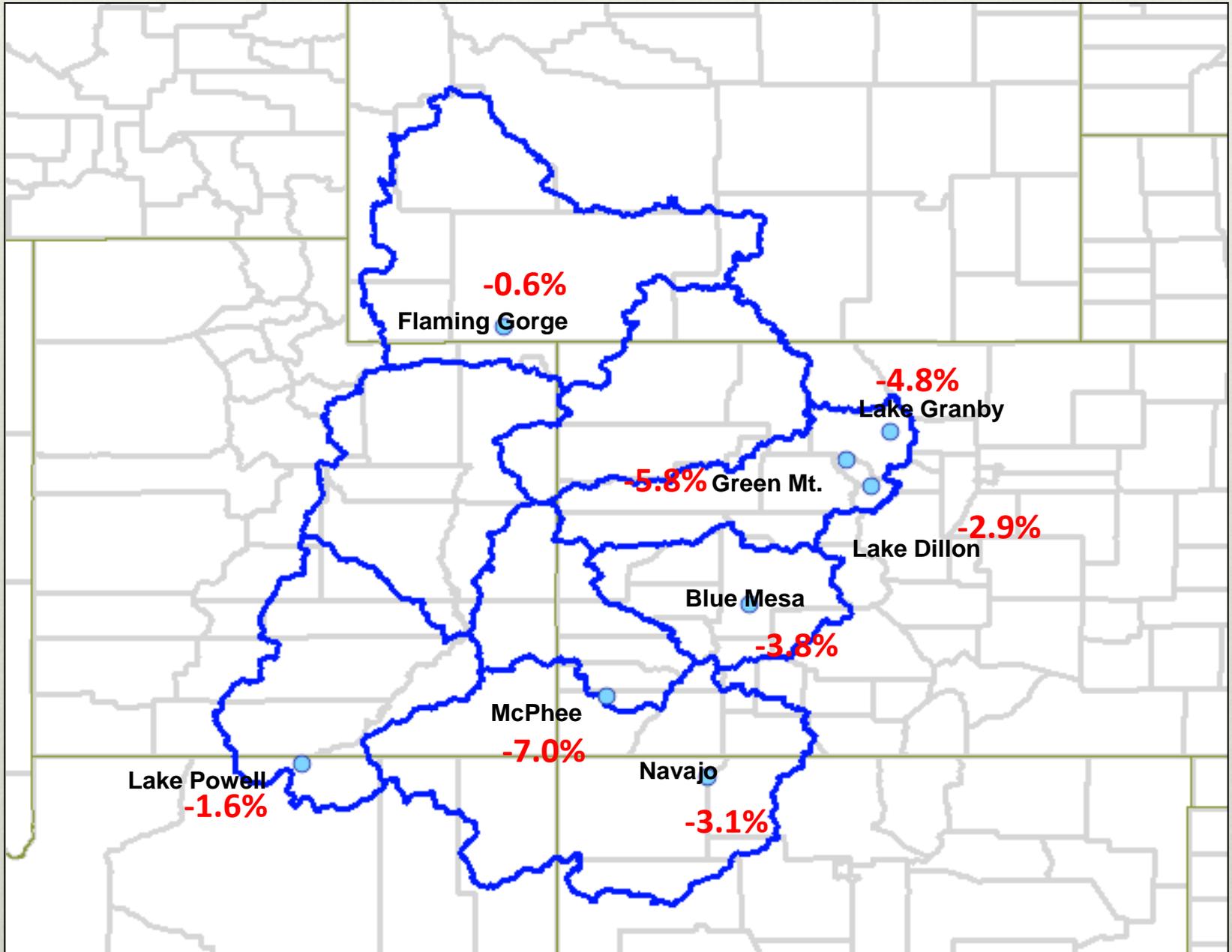
--- Average — 2006 — 2009 — 2012



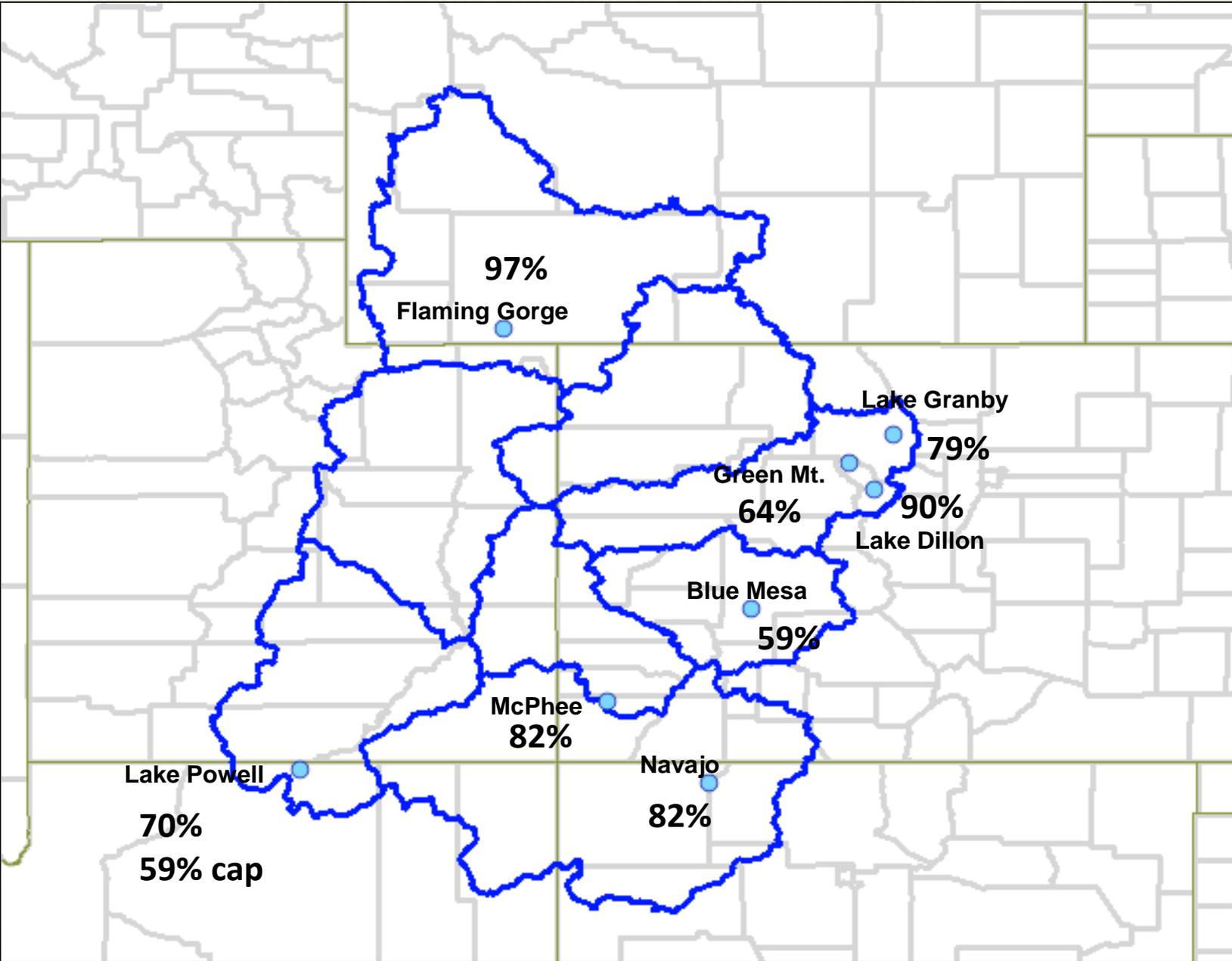
Reservoir Update



August to Date Reservoir Storage Volume Changes



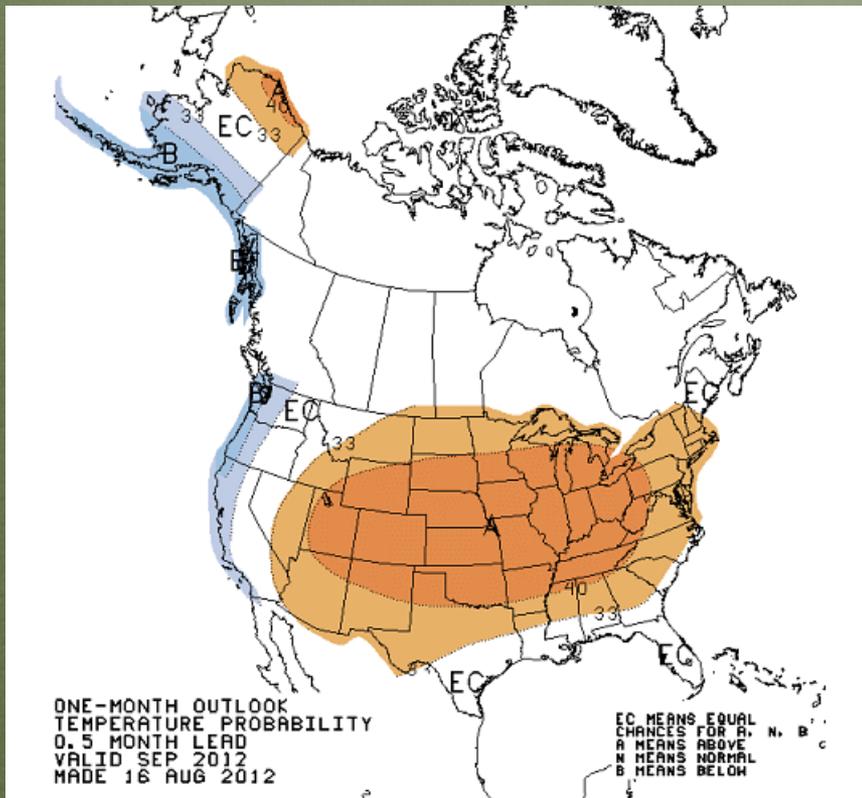
August Percent of Average Reservoir Storage Volume



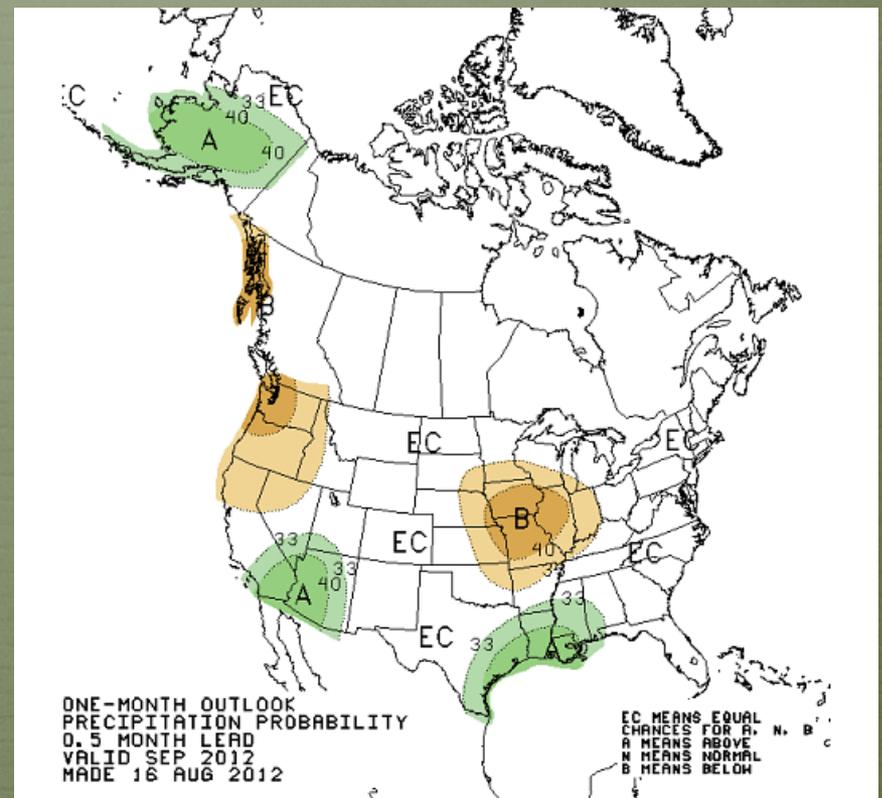
Precipitation Forecast



CPC:1 Month Outlook

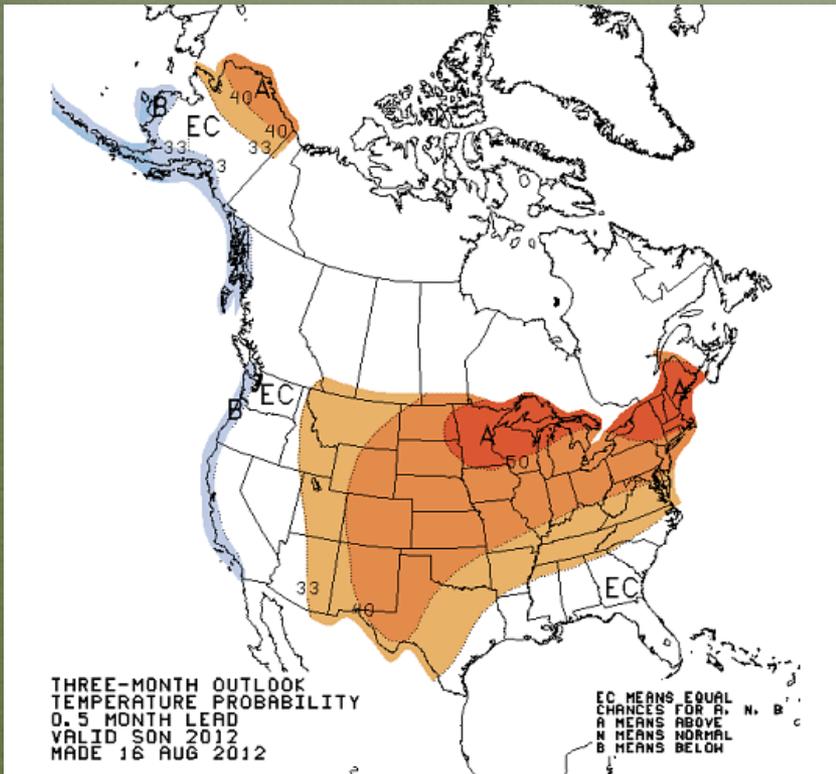


Temperature

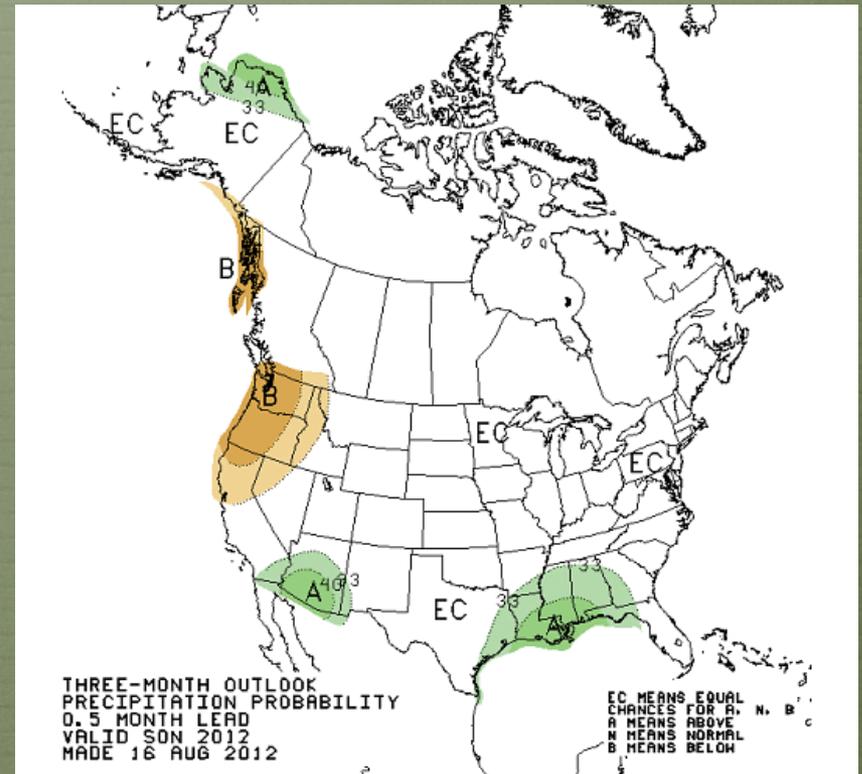


Precipitation

CPC:3 Month Outlook

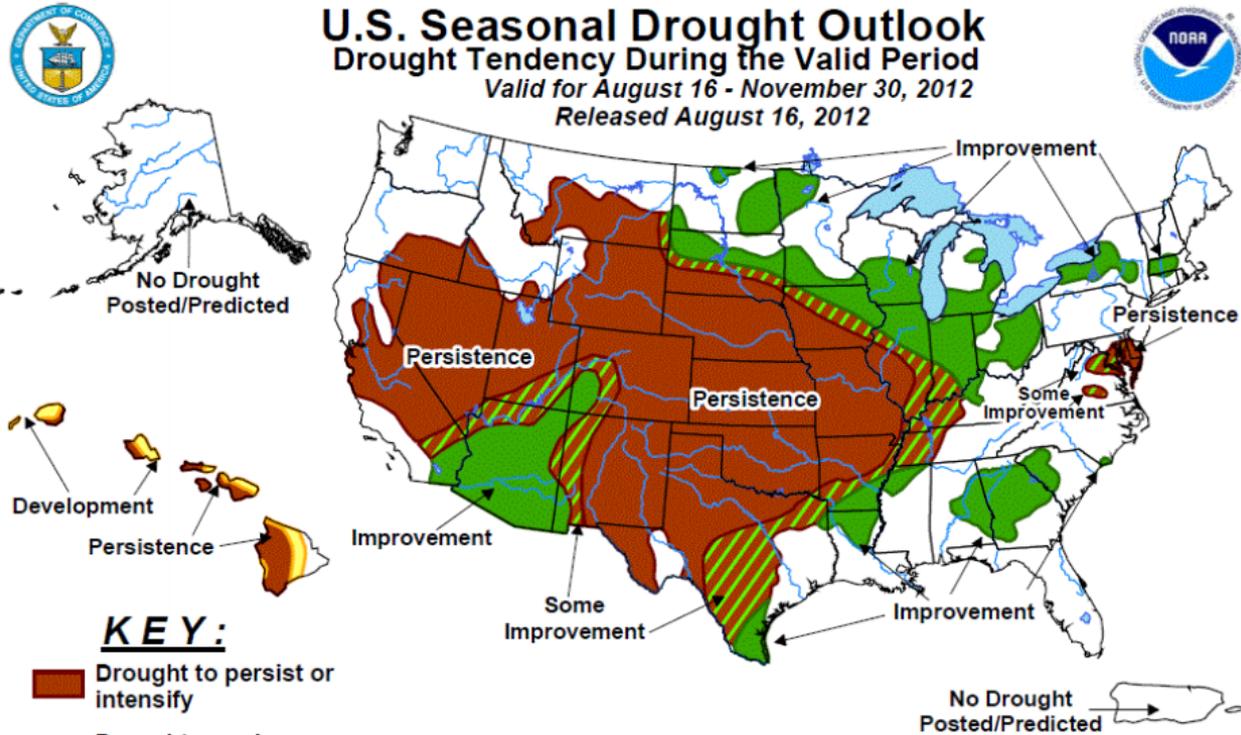


Temperature



Precipitation

Seasonal Drought Outlook



U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
 Valid for August 16 - November 30, 2012
 Released August 16, 2012

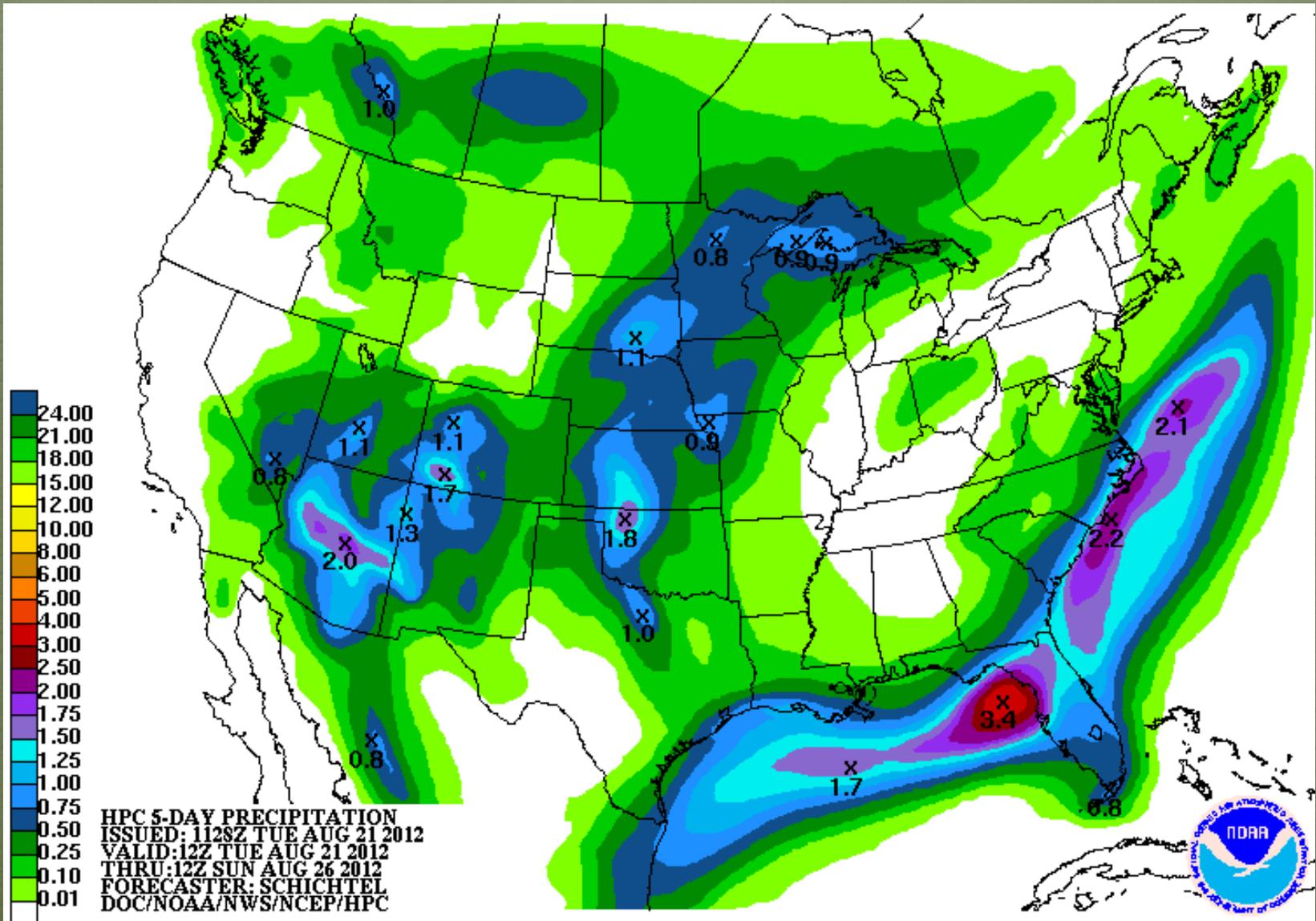


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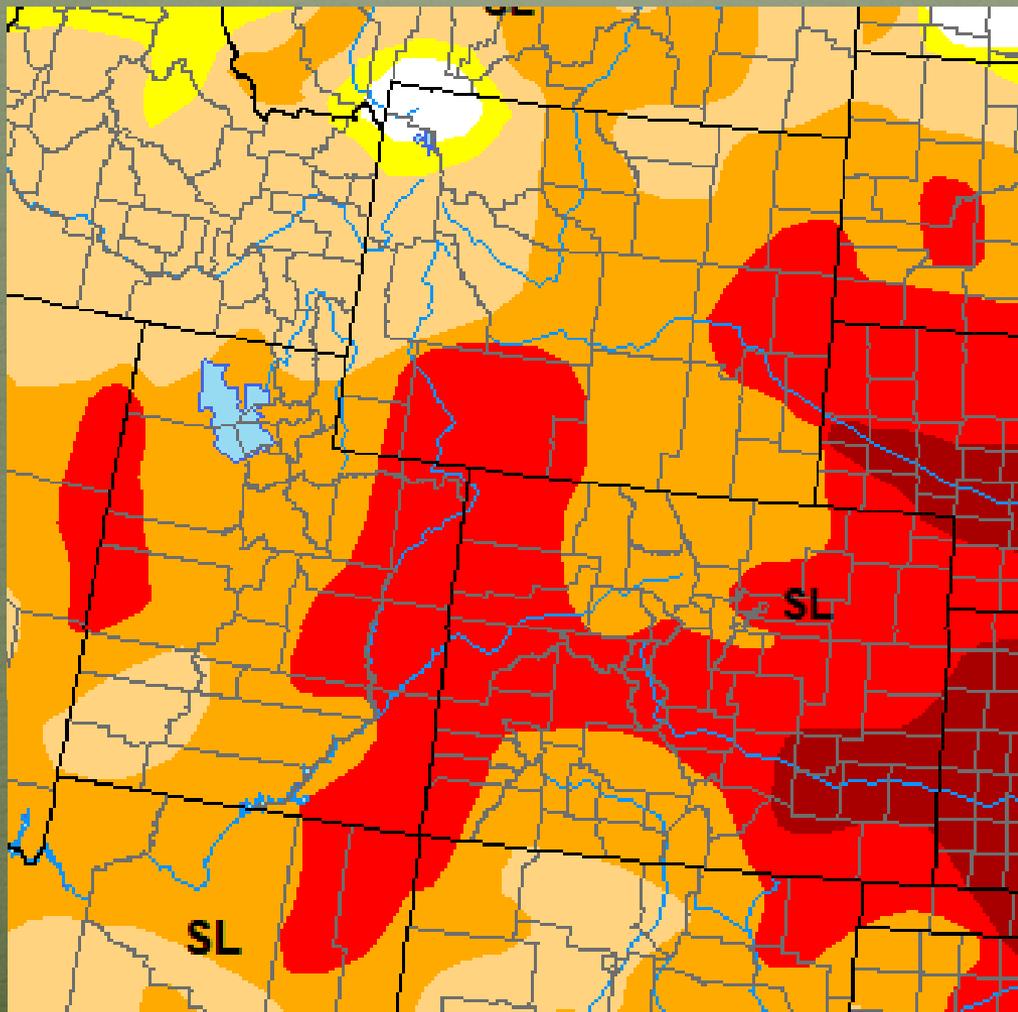
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

The Week Ahead



Recommendations



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CONTACT:

COLORADO CLIMATE CENTER

COLORADO STATE UNIVERSITY

FORT COLLINS, CO 80523

970 - 491 - 8545

NIDIS - UPPER COLORADO BASIN PILOT PROJECT

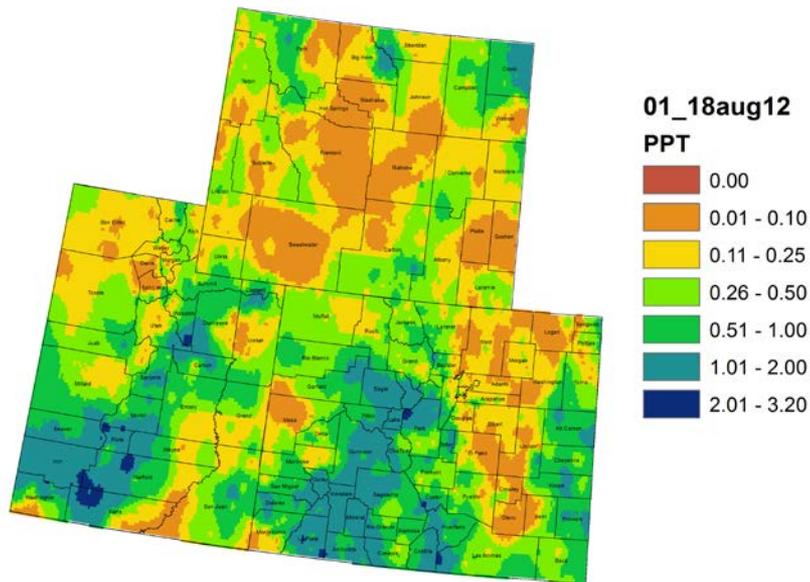
F o r m o r e i n f o r m a t i o n

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

August 21, 2012

Colorado, Utah and Wyoming Month to Date Precipitation (in)
1 - 18 August 2012



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

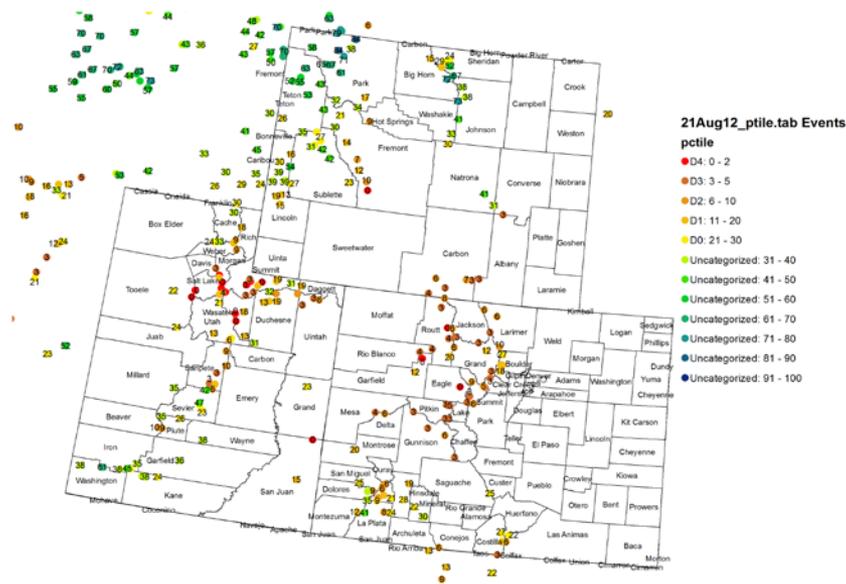


Fig. 1: August month-to-date precipitation in inches.

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 some isolated areas up to 3 inches (Fig. 1). The rest of the basin has been drier, receiving less than half an inch of precipitation with isolated areas receiving up to 1 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 with a few isolated areas in eastern CO up to 2 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 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 20th, about 32% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 3). No gauges in the UCRB are recording above normal flows, while about 35% 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.

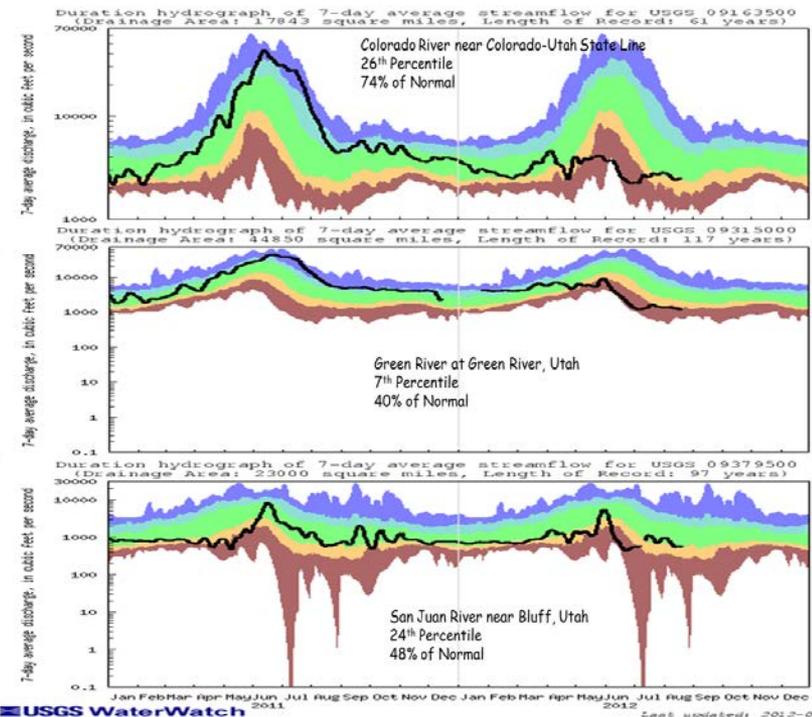
There were only minor changes in flows at three key gages in the UCRB last week (Fig. 4). Flows on the Colorado River near the CO-UT state line are just in the normal range at the 26th percentile. Flows on the Green River at Green River, UT are still in the much below normal range at the 7th percentile. Flows on the San Juan River near Bluff, UT are just below normal at the 24th percentile.

Monday, August 20, 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 20th.

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 normal with the eastern side of the basin slightly below (2 to 4 degrees) normal and the western side slightly above normal. The Four Corners area and SW Wyoming were 2 to 6 degrees above normal. East of the basin, the rest of CO experienced temperatures 2 to 4 degrees below normal with eastern CO up to 6 degrees below normal 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 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 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 59% of average, Lake Granby at 79% of average, and Lake Powell currently at 70% of average.

Precipitation Forecast

Upper level high pressure will gradually shift eastward from its present location over the Four Corners through the middle of the week. Moist sub-tropical air rotating clockwise around the high will begin to impinge upon southern portion of the UCRB, and gradually spread northward on Thursday. In addition, a weak area of low pressure will move across the four corners region and aid in shower development. Expect shower activity to be on the increase for much of the week, with the best chance of precipitation from the San Juan Mountains, northward along the west slope of Colorado where rainfall amounts exceeding 1.5 inches will be possible through Saturday. Elsewhere amounts will generally remain between 0.5 to 1.0 inch. By late Saturday the flow aloft will transition to a more westerly component and begin to advect drier air over the basin from the northwest. Shower activity will be on the decline with a lingering chance of showers over the far southern portions through the weekend.

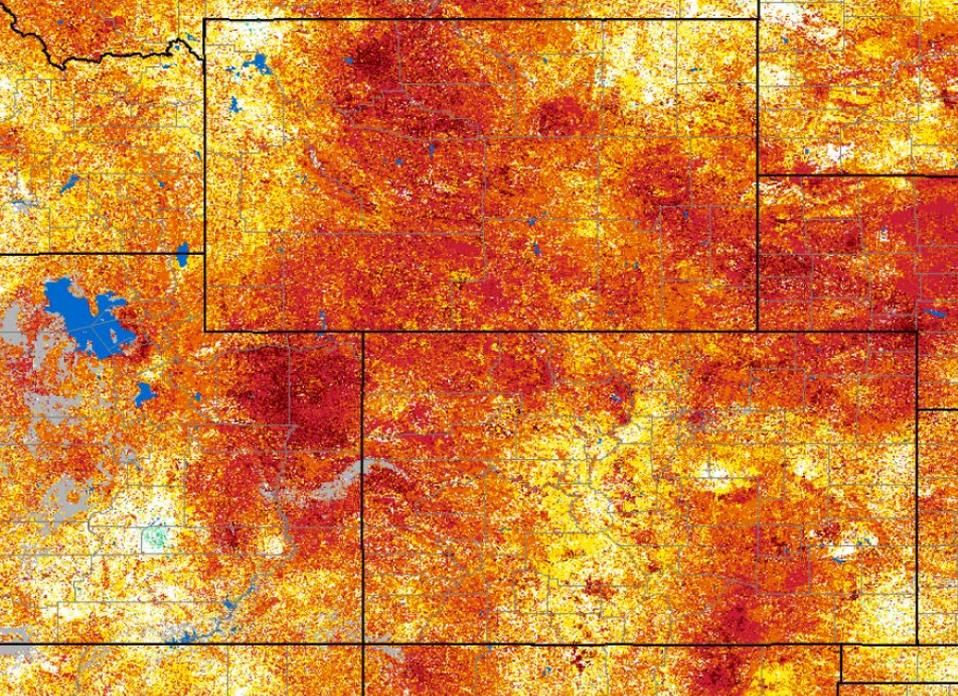


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of Aug 19th.

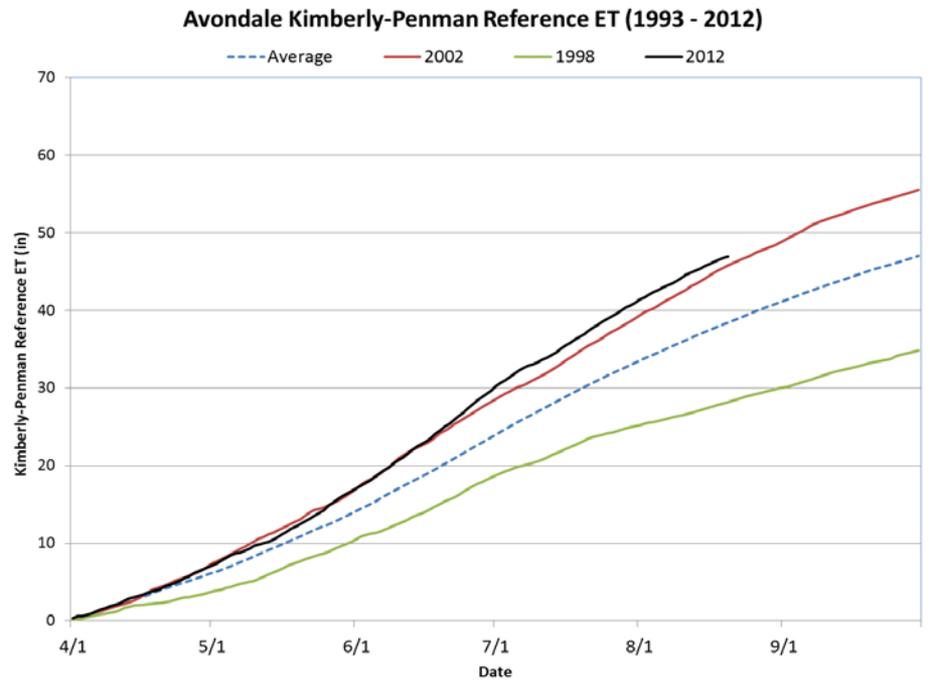
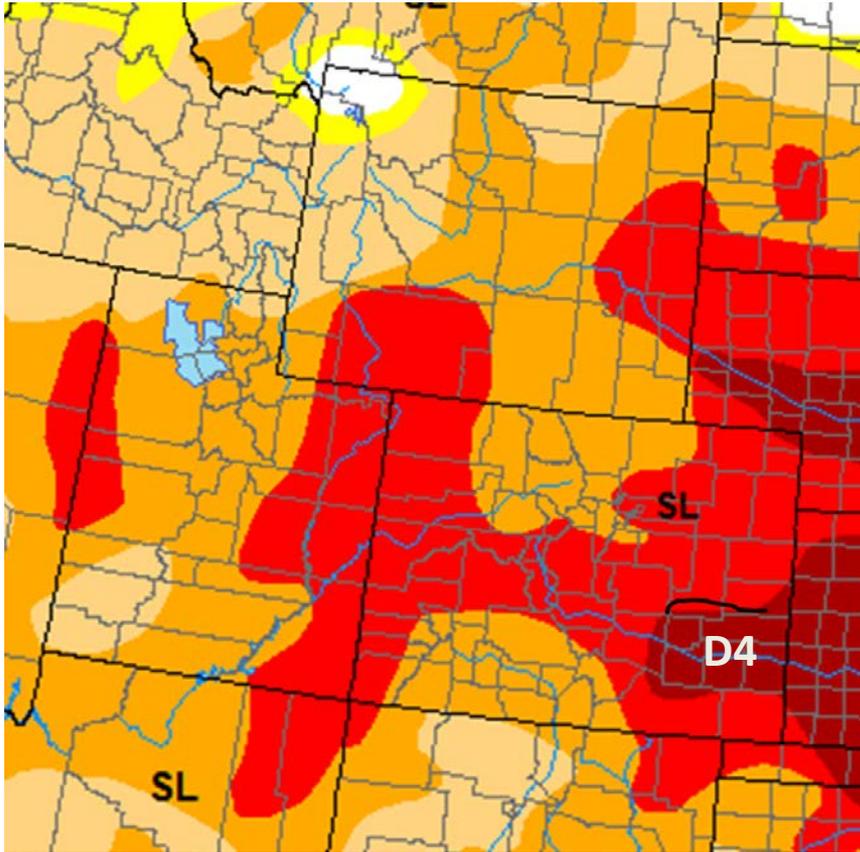


Fig. 6: Accumulated reference ET (black line) at Avondale, CO in the eastern region, compared to the max year (red), min year (green), and average (dashed line).

Drought and Water Discussion



Drought Category	Percentile Range	Code
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 21st draft of U.S. Drought Monitor for the UCRB with recommendations.

UCRB: Status quo for the UCRB is recommended for the Drought Monitor. There was some discussion about some more improvements in SW CO and the Four Corners area, but the decision to hold off was made.

Eastern CO: Only an expansion of the D4 into southern Lincoln and Cheyenne counties is recommended this week (Fig. 7). There have been impacts of the hot and dry weather in northeast CO, however it was decided to hold off on any further degradations in that area.