Spring 2010

Weekly Climate, Water & Drought Assessment

Today's Agenda

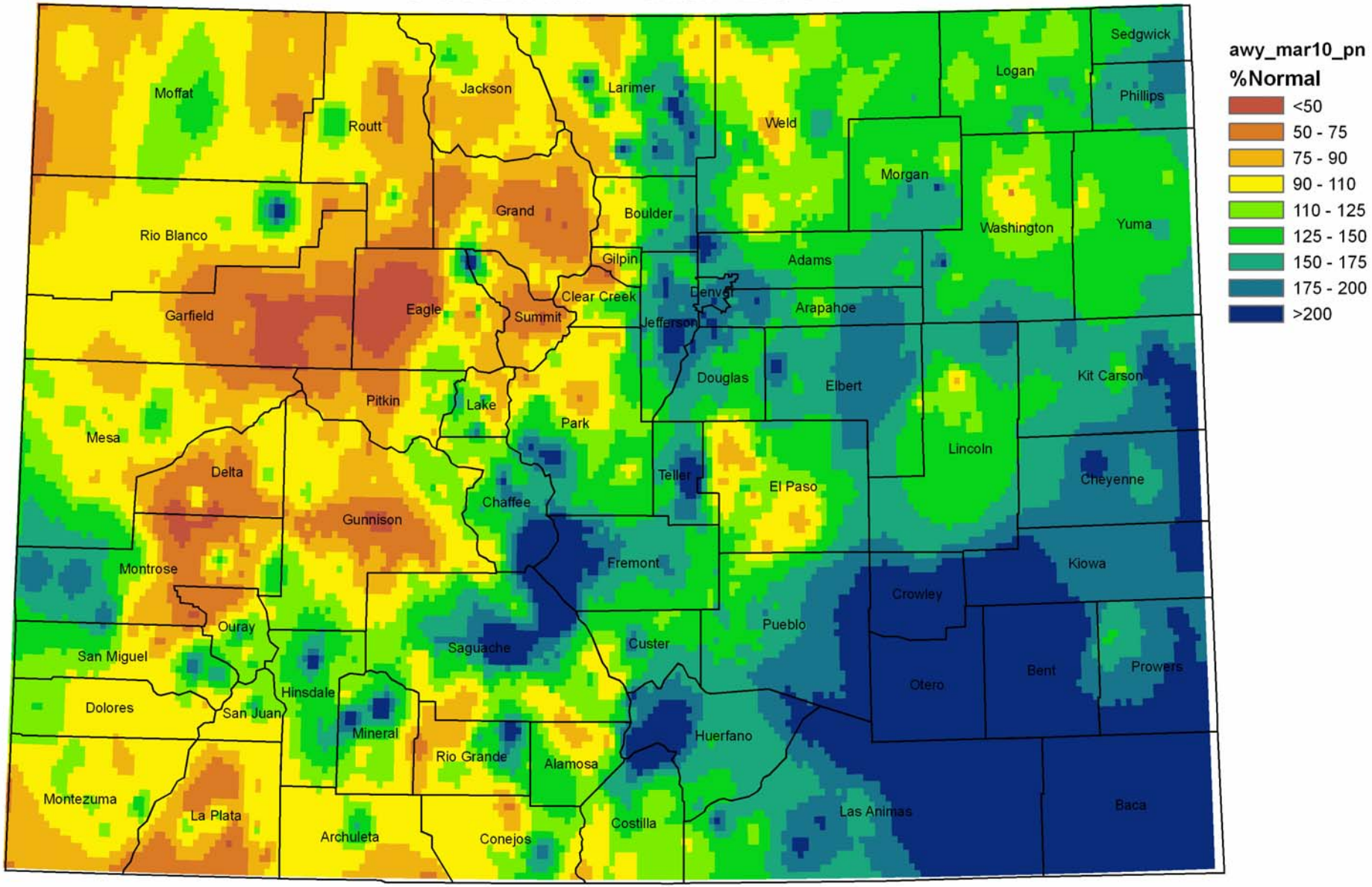
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

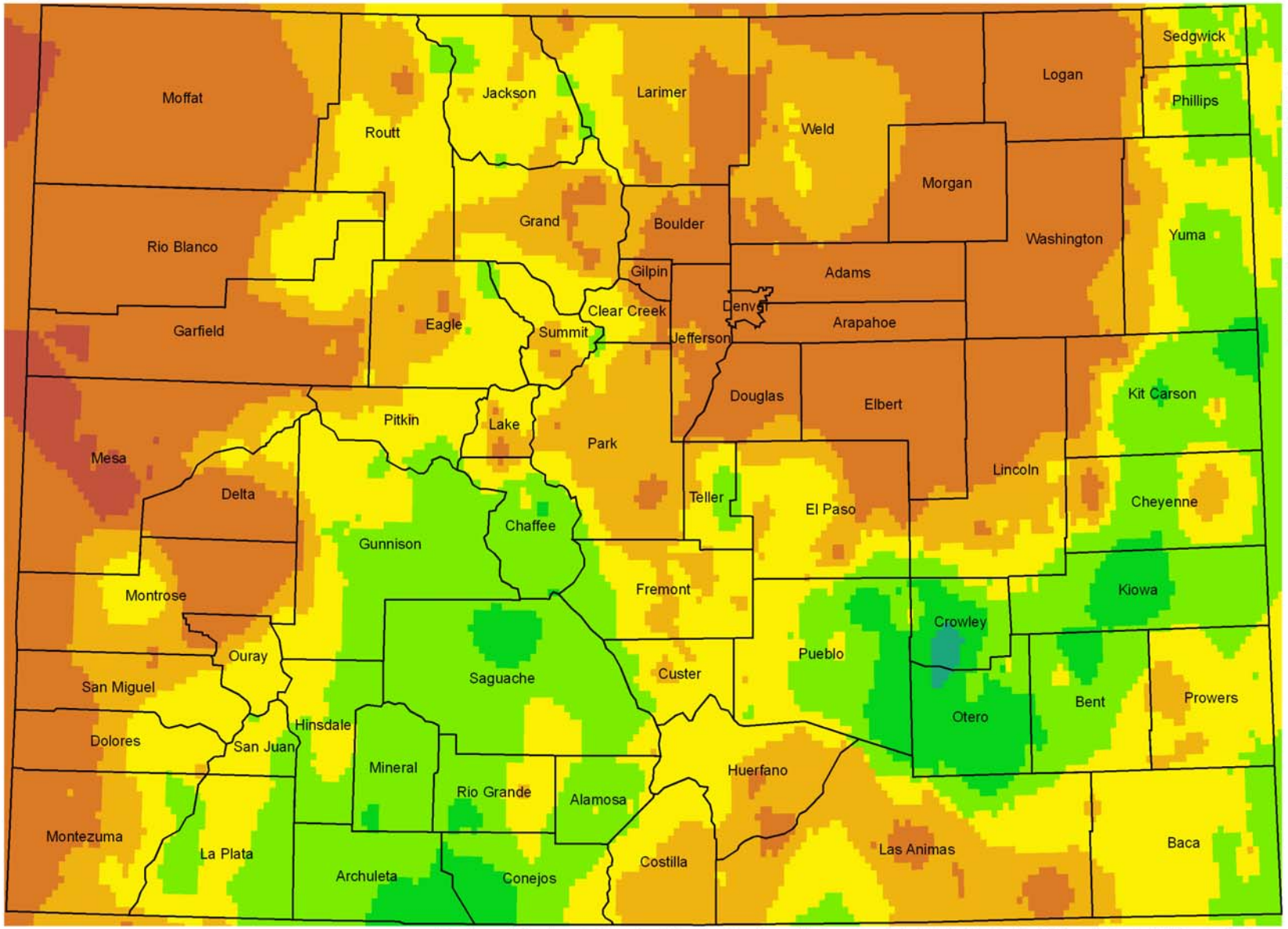
Precipitation/Snowpack Update

Water Year 2010 Precipitation as Percentage of Normal
Oct 2009 - Mar 2010



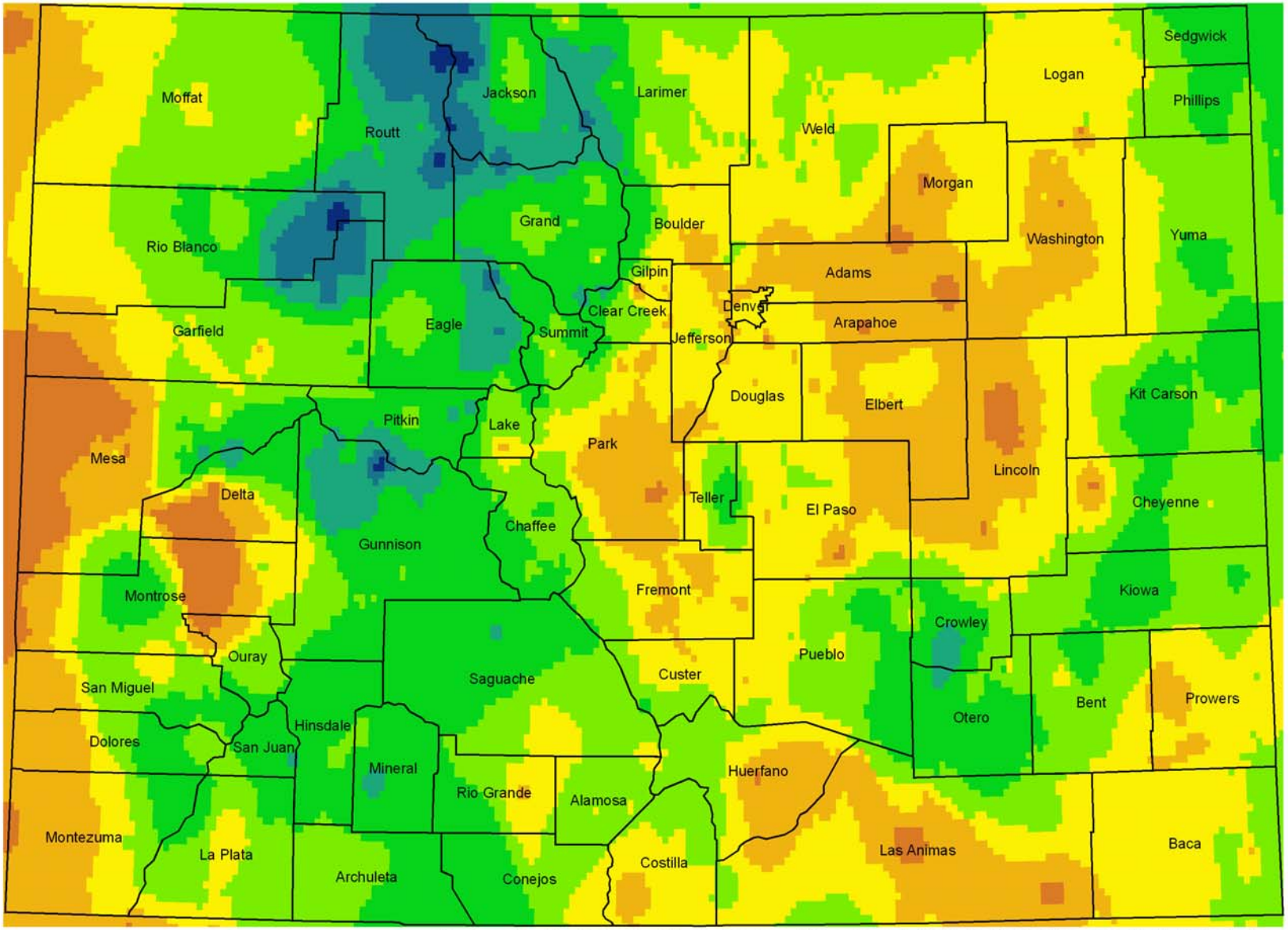
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado 7 Day Precipitation (in) 12 - 18 April 2010



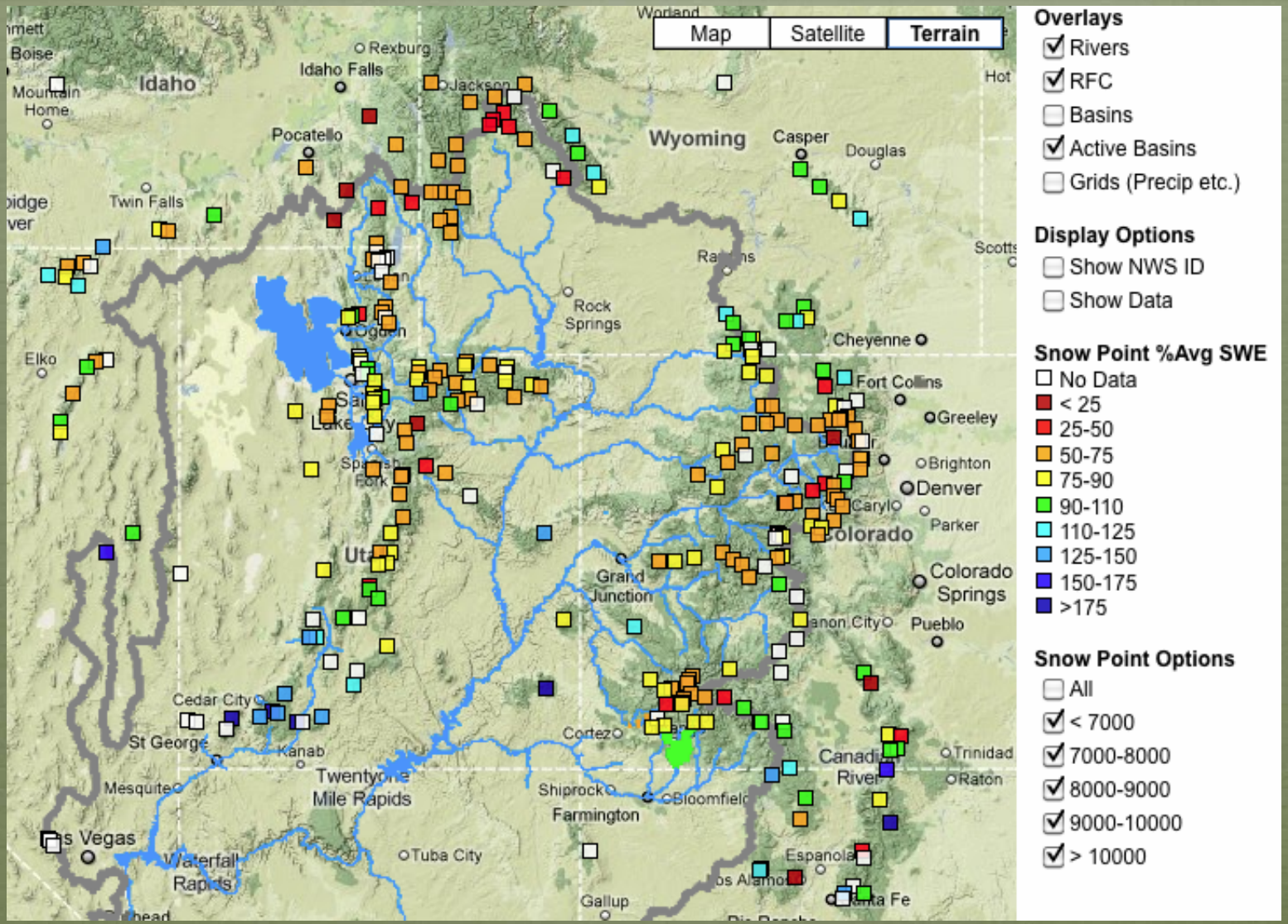
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Colorado Month To Date Precipitation
1 - 18 April 2010



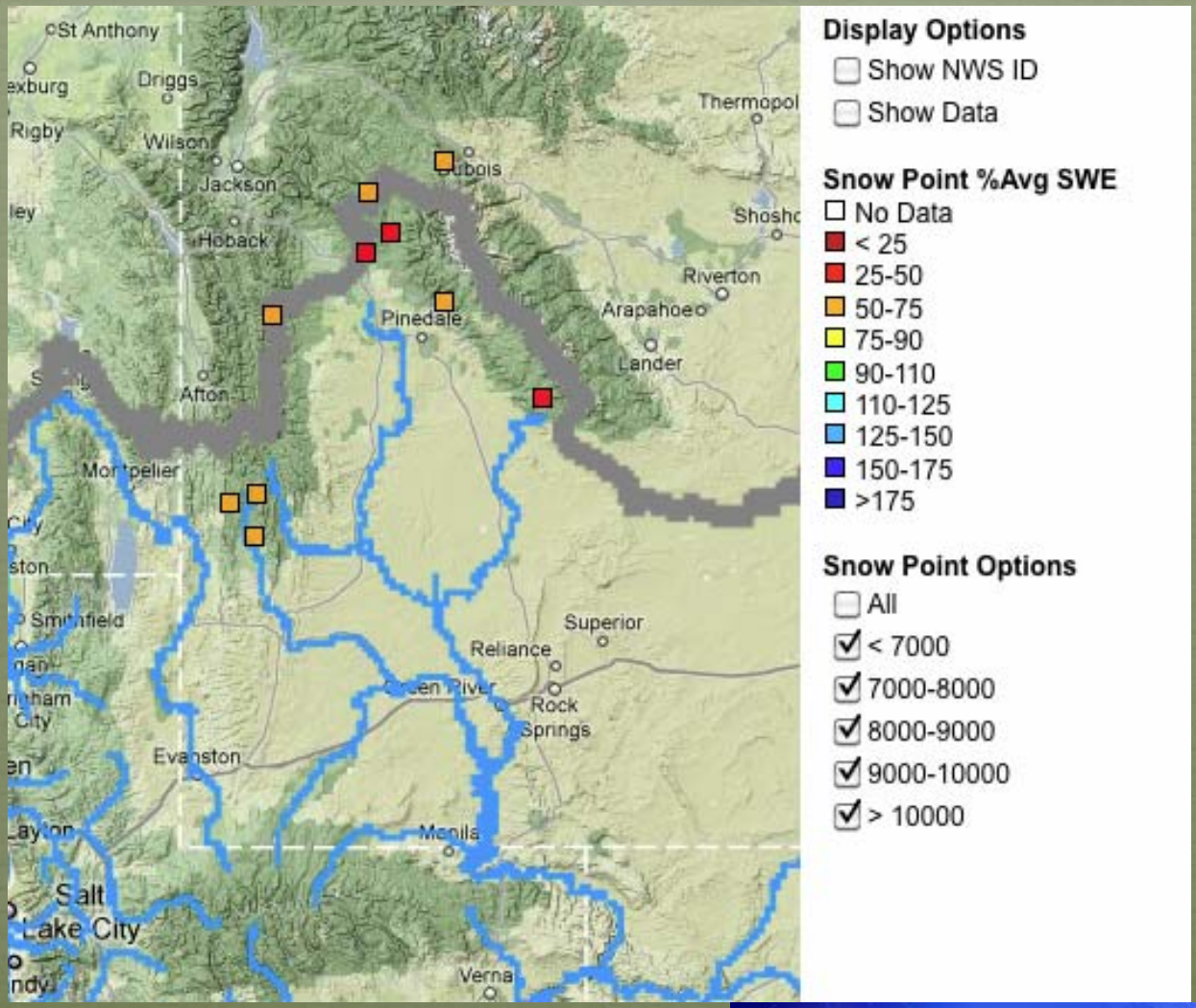
Produced by the Colorado Climate Center utilizing Snotel, NWS, CoCoRaHS and CoAgMet* Preliminary Precipitation Data
Analysis: Inverse Distance Weighting
*Summer only

Upper Colorado River Basin

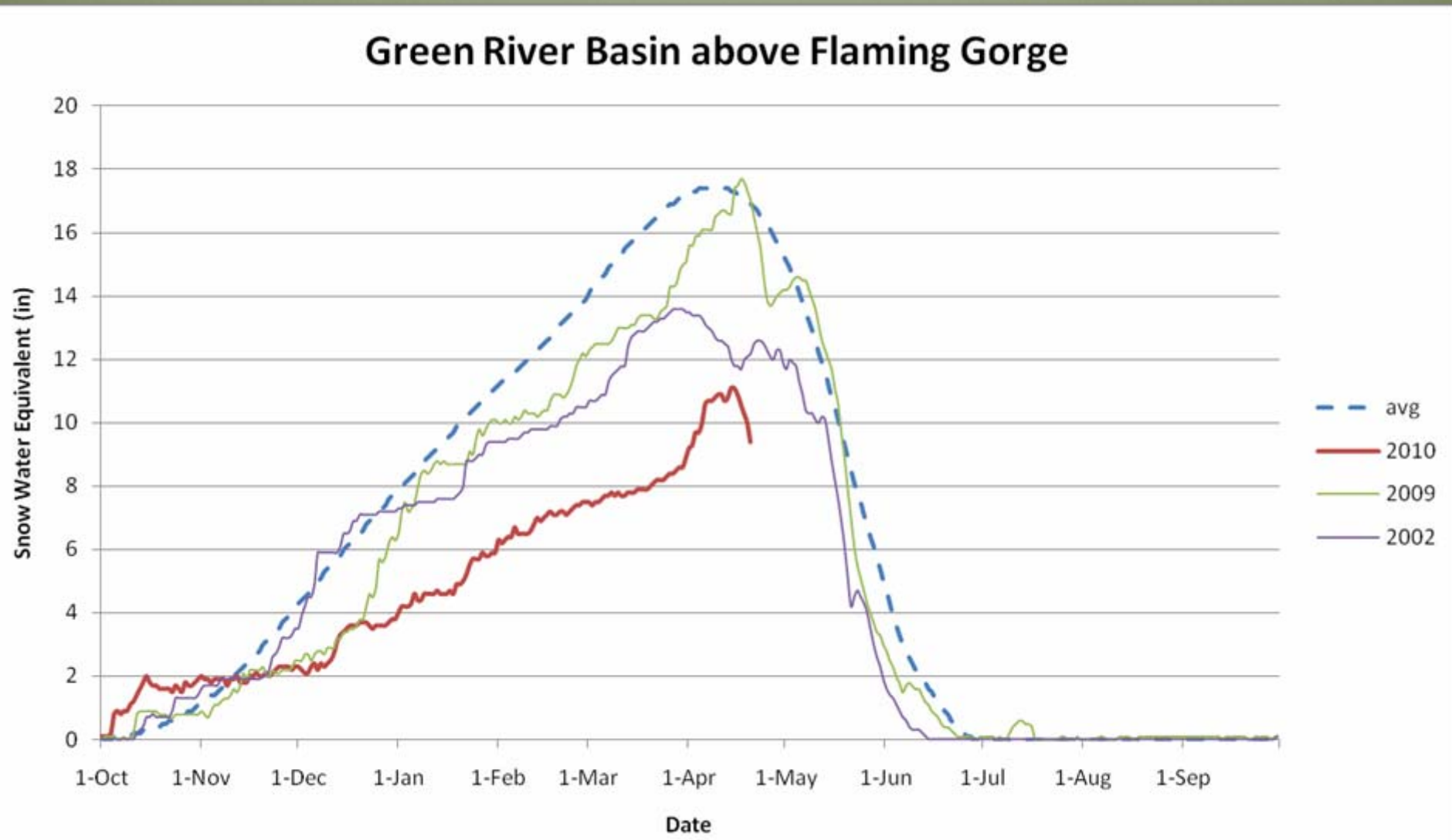


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

Green River Basin above Flaming Gorge

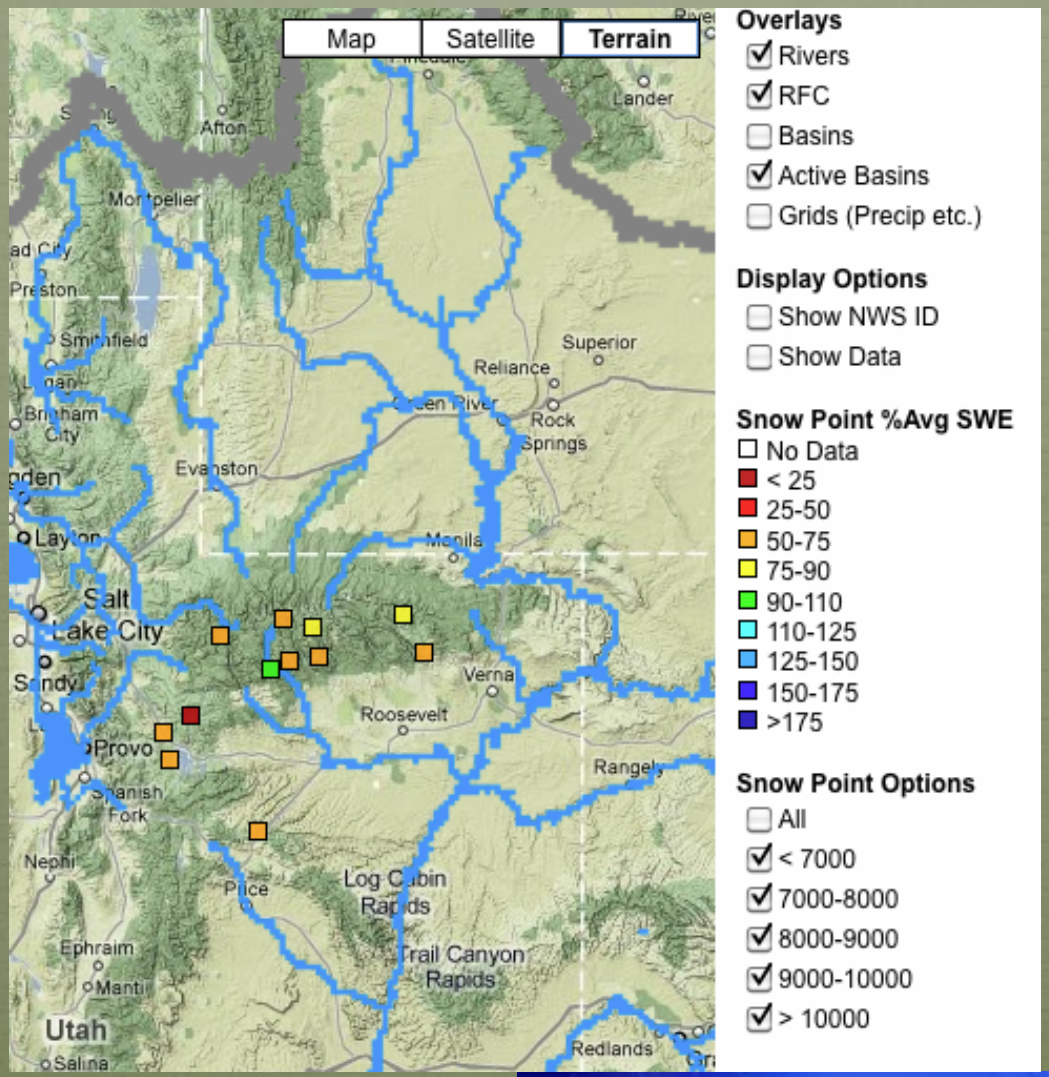


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

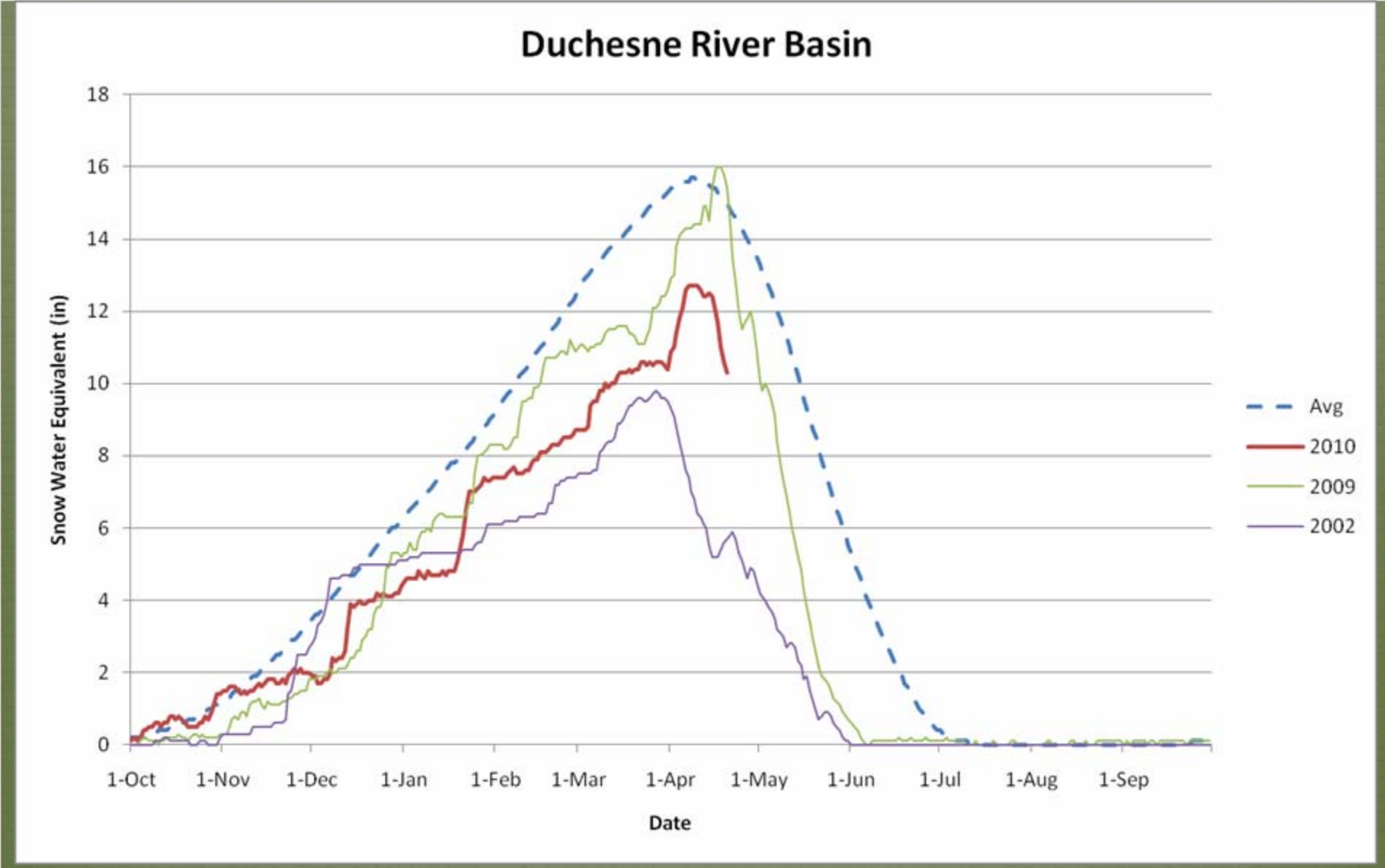


Basin Snowpack: 55%

Duchesne River Basin

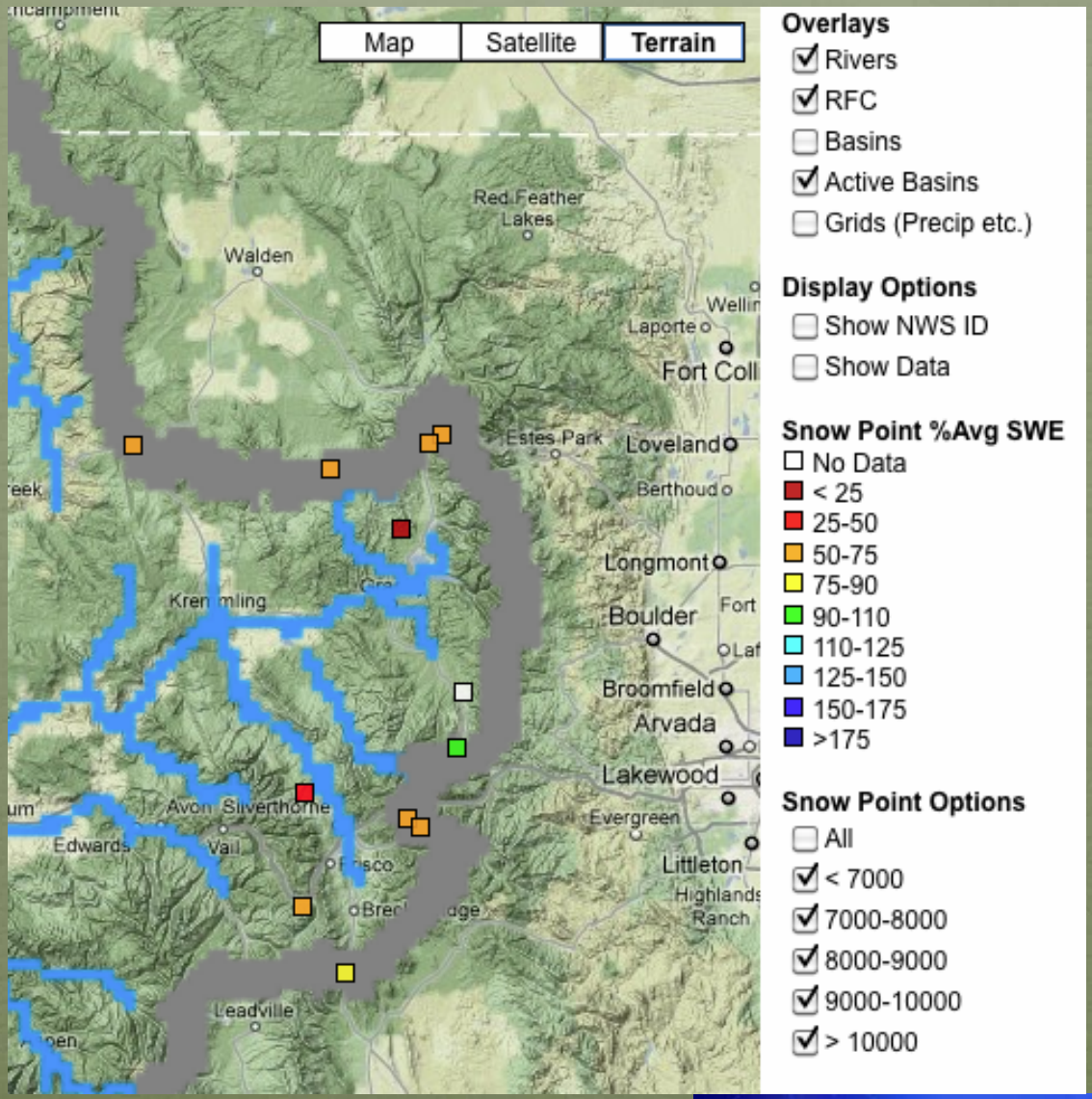


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

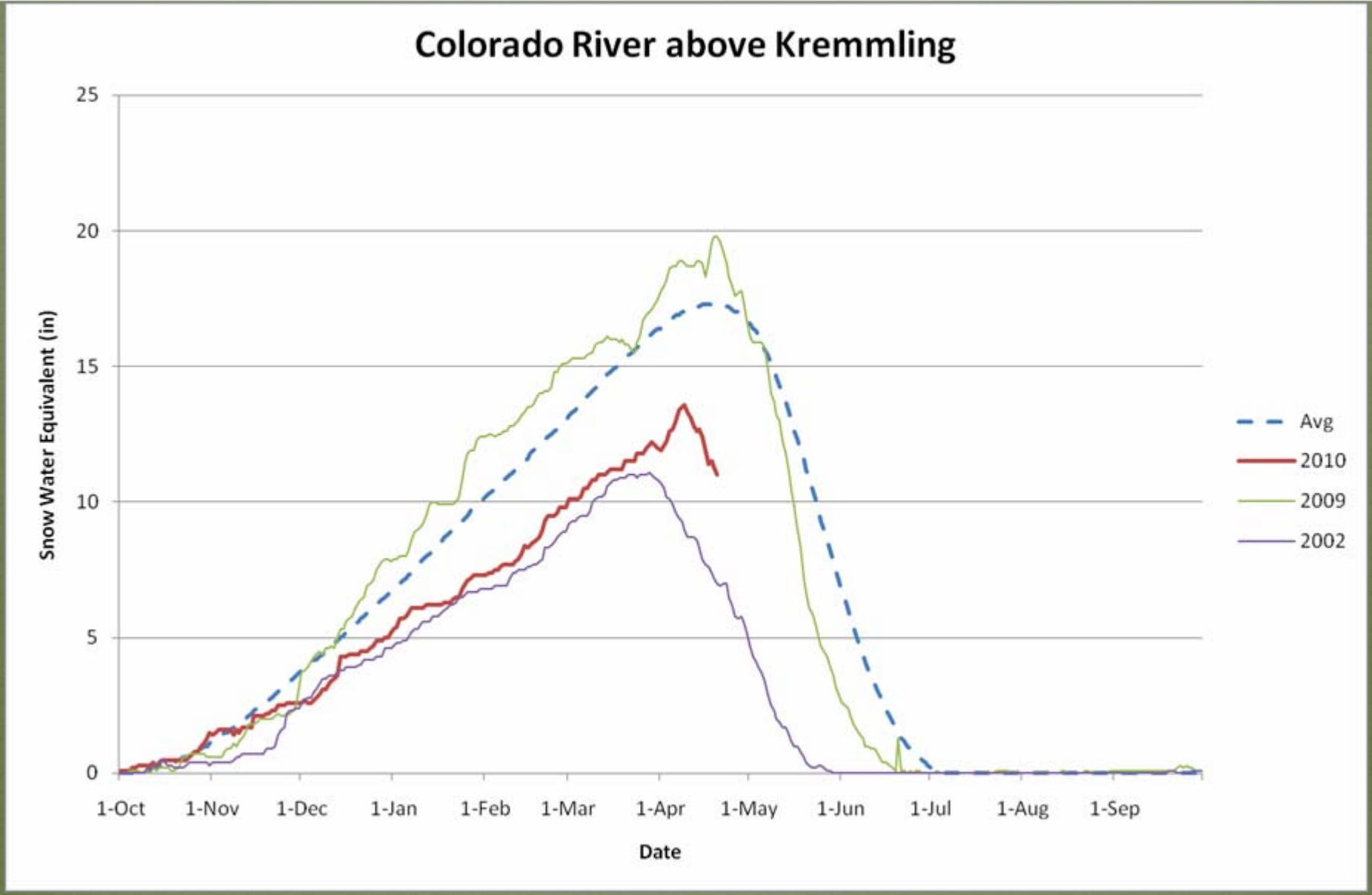


Basin snowpack: 67%

Upper Colorado above Kremmling

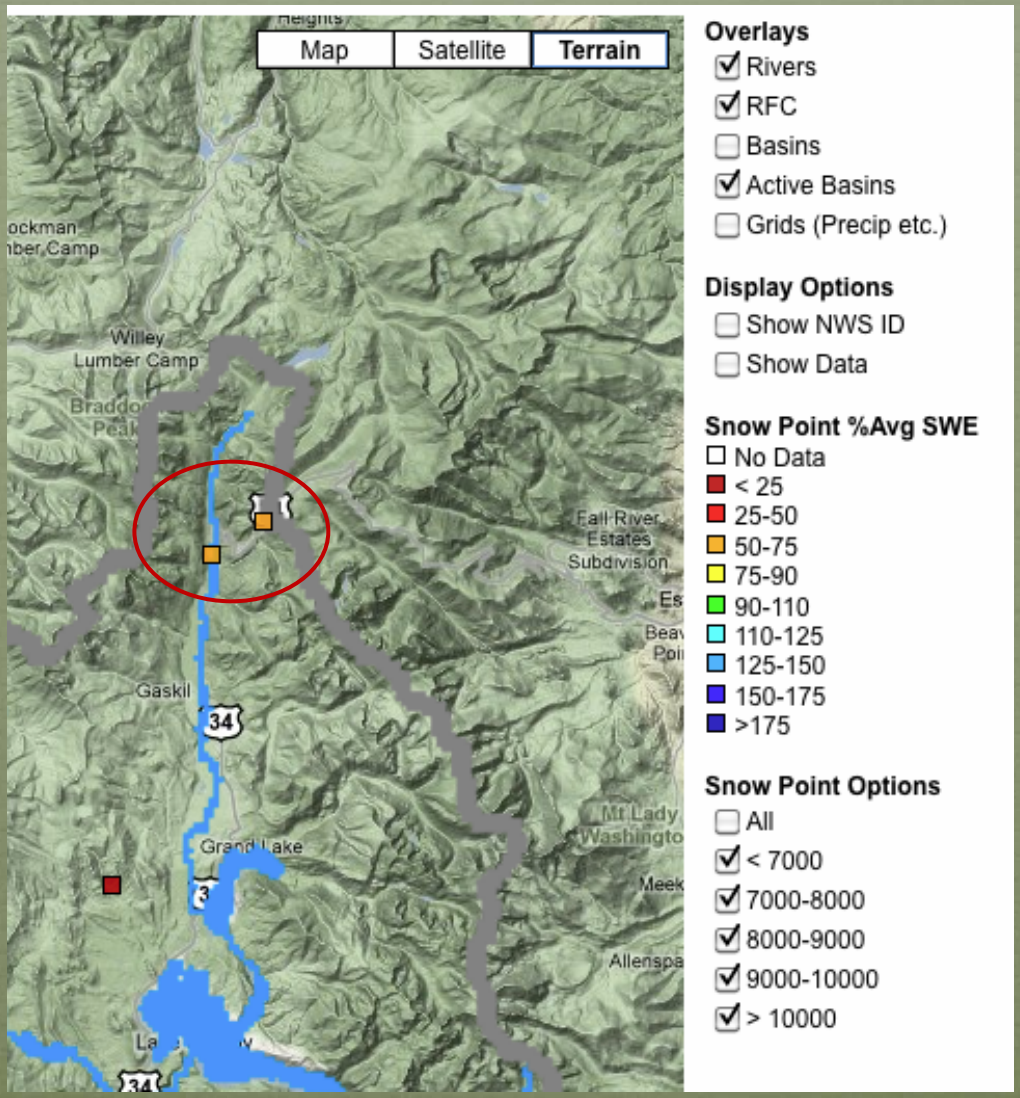


NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

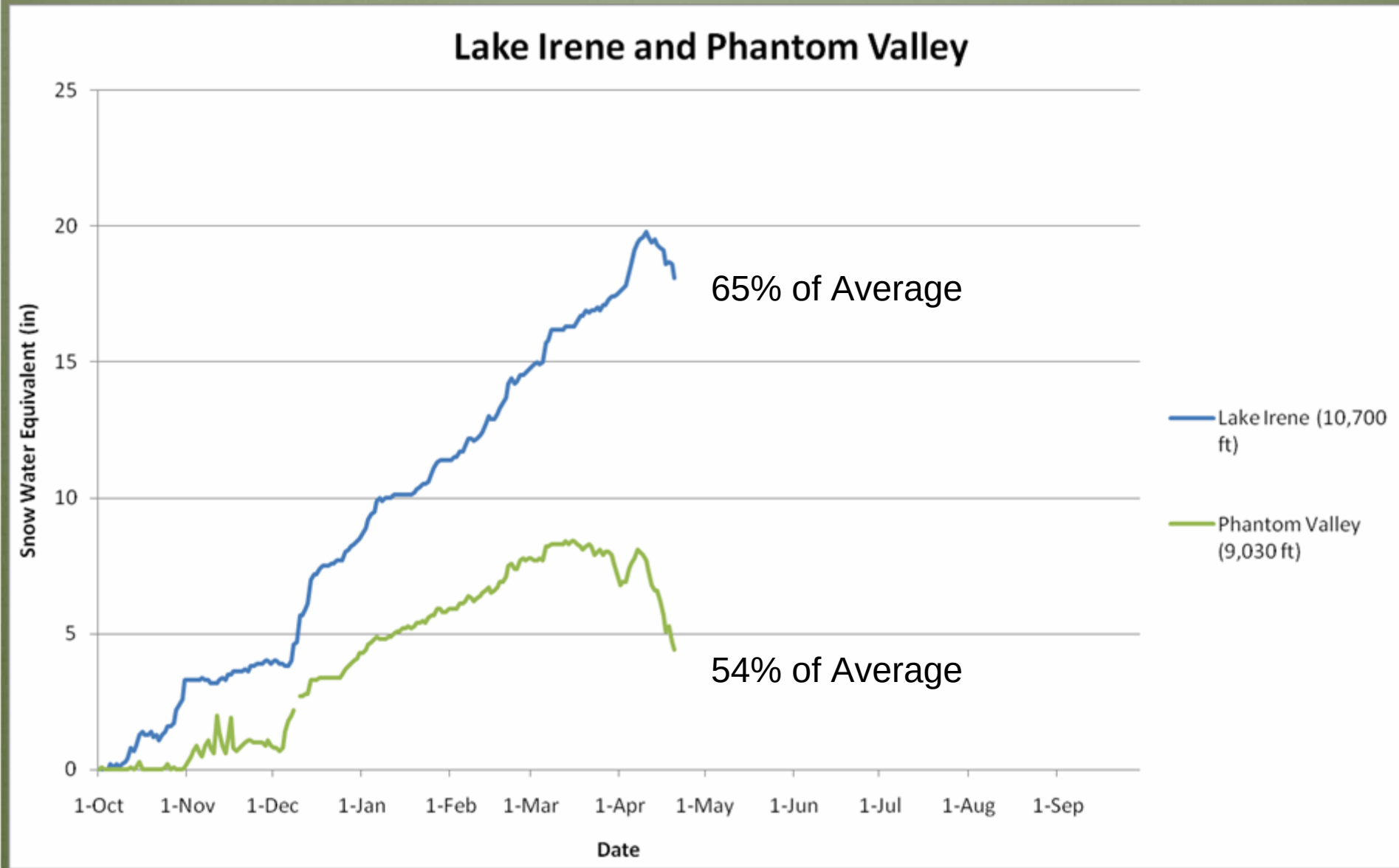


Basin Snowpack: 66%

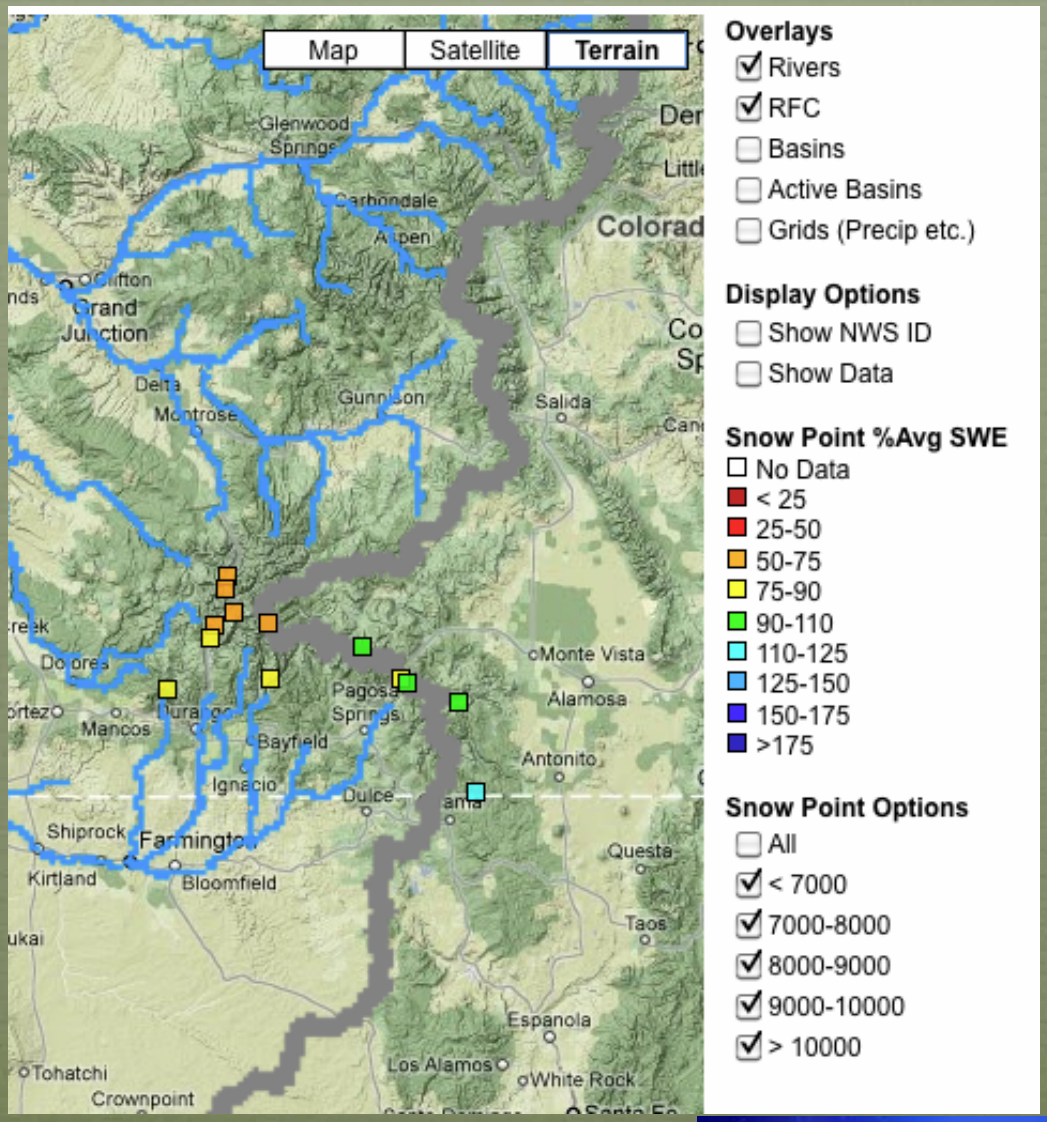
Lake Irene and Phantom Valley



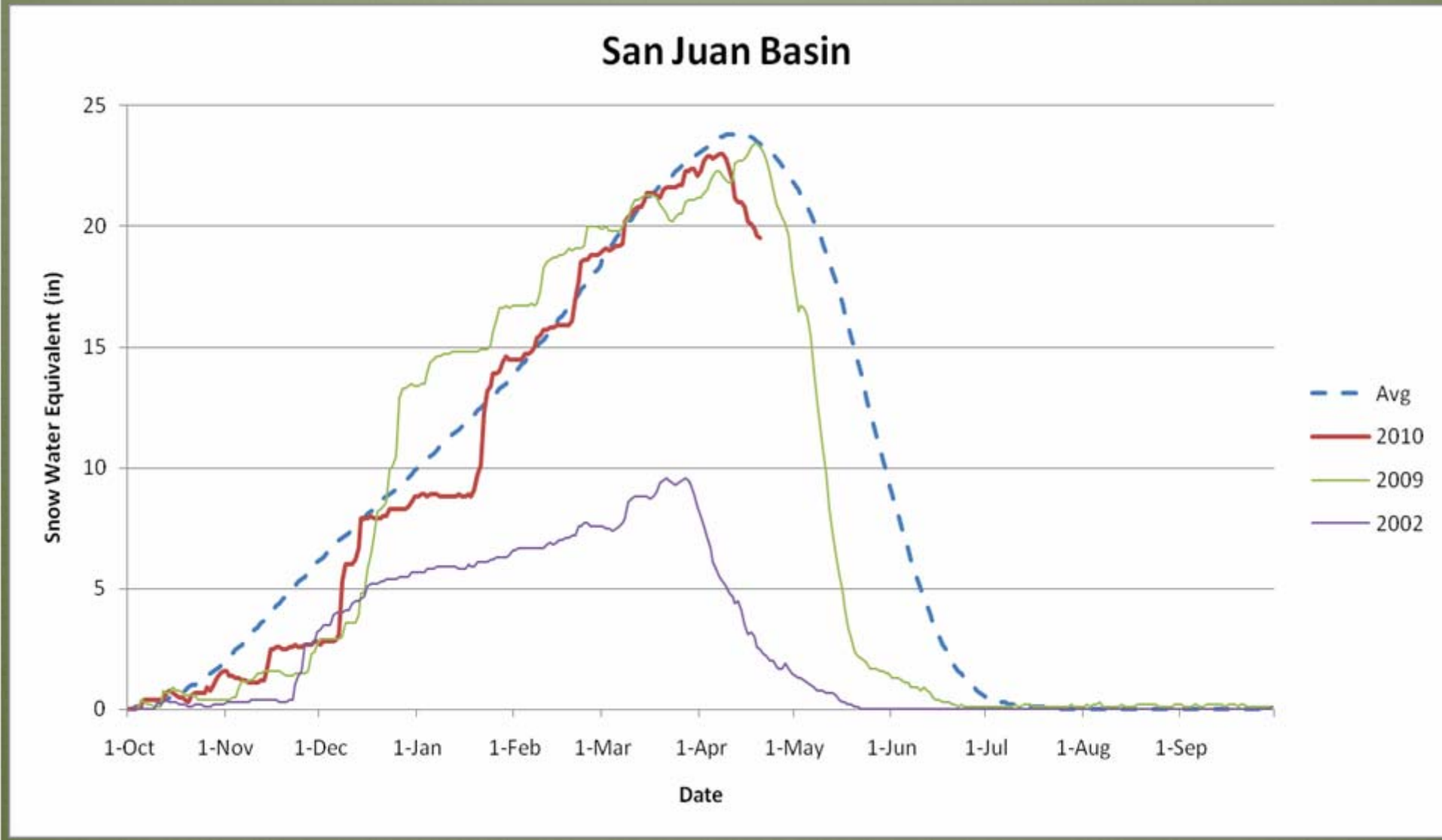
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center


Lake Irene and Phantom Valley
Snow Water Equivalent (in)
25
20
15
10
5
0
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
65% of Average
54% of Average
Lake Irene (10,700 ft)
Phantom Valley (9,030 ft)

San Juan Basin



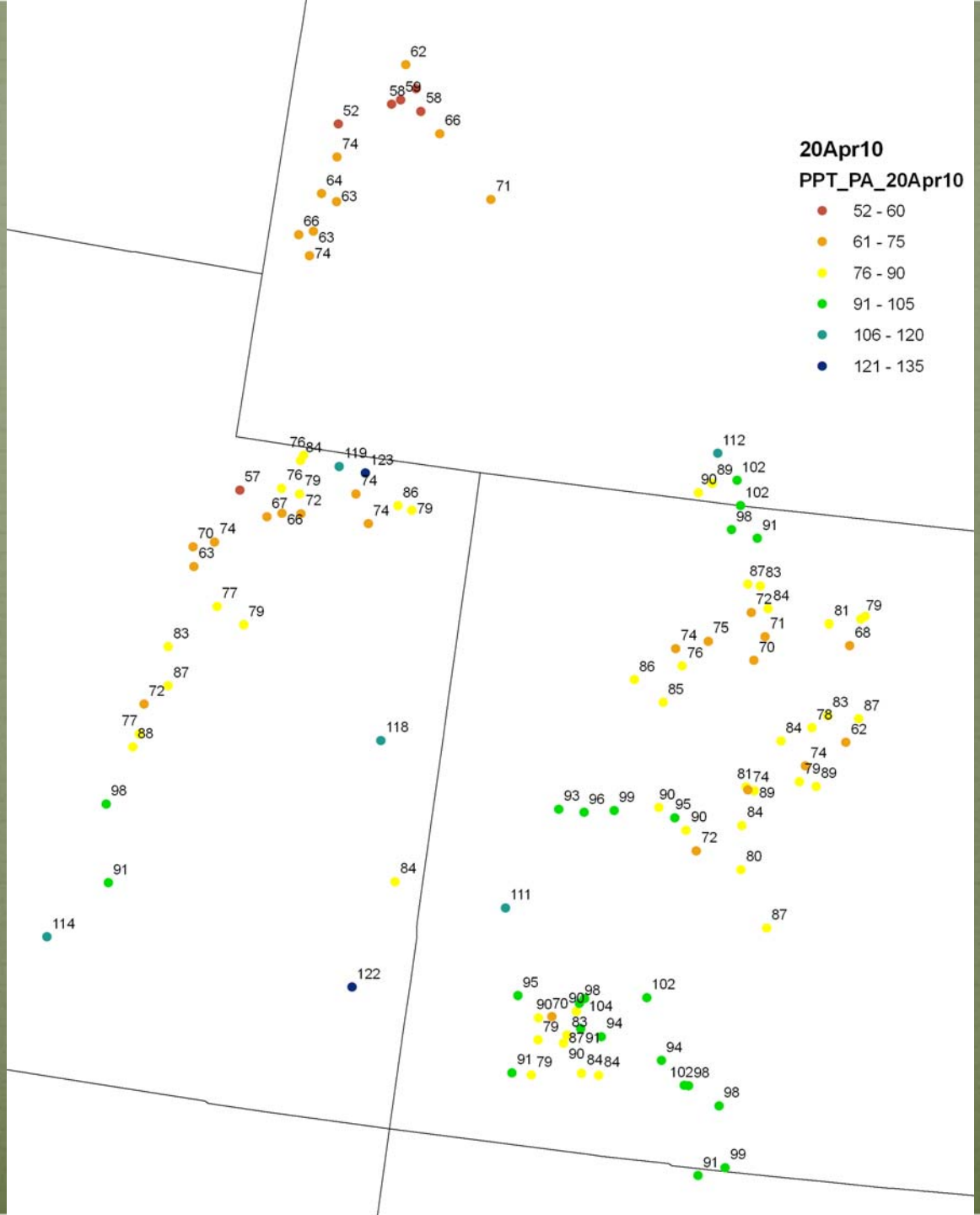
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center



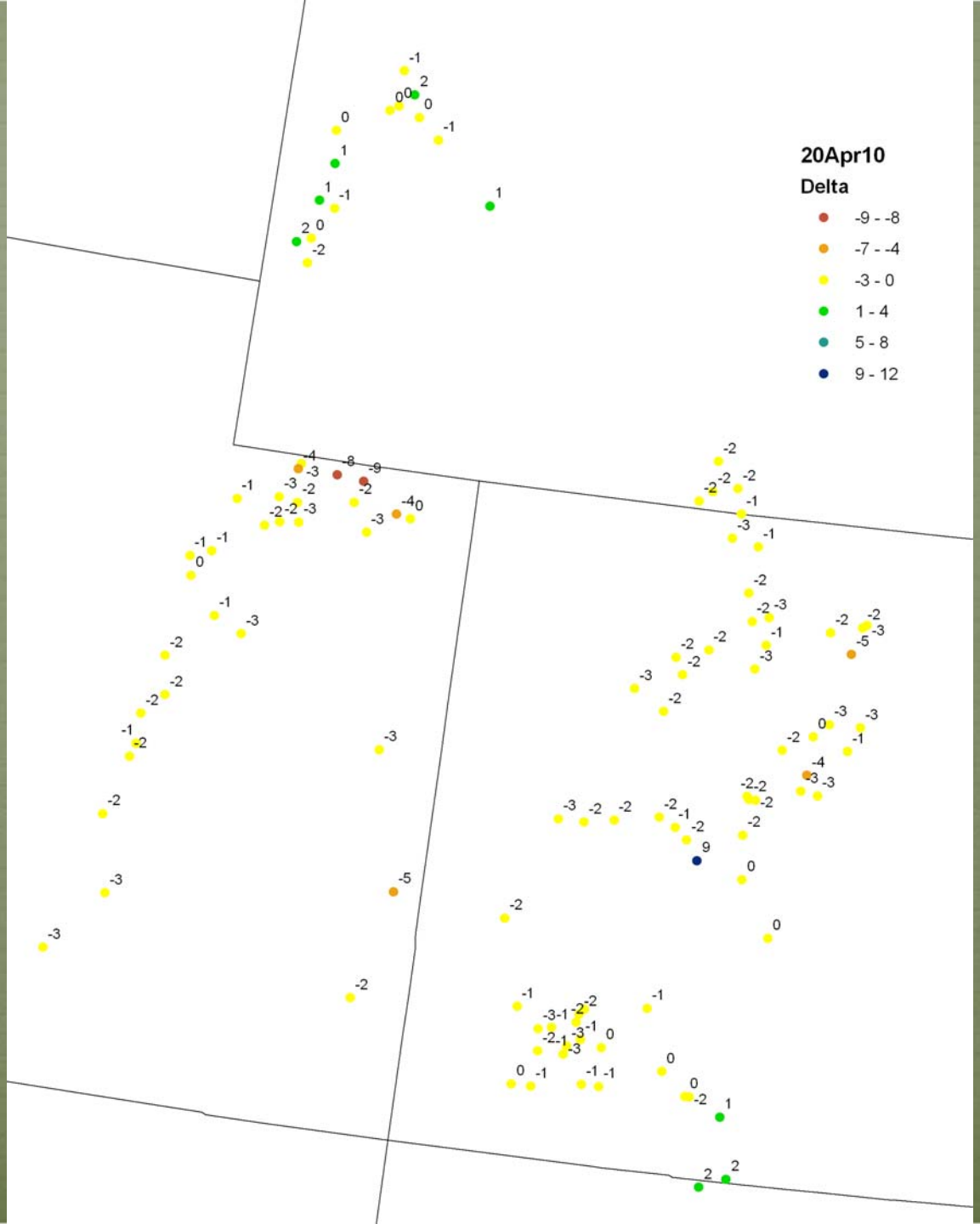
Basin Snowpack: 82%

Snotel WYTD Precipitation as Percentage of Average

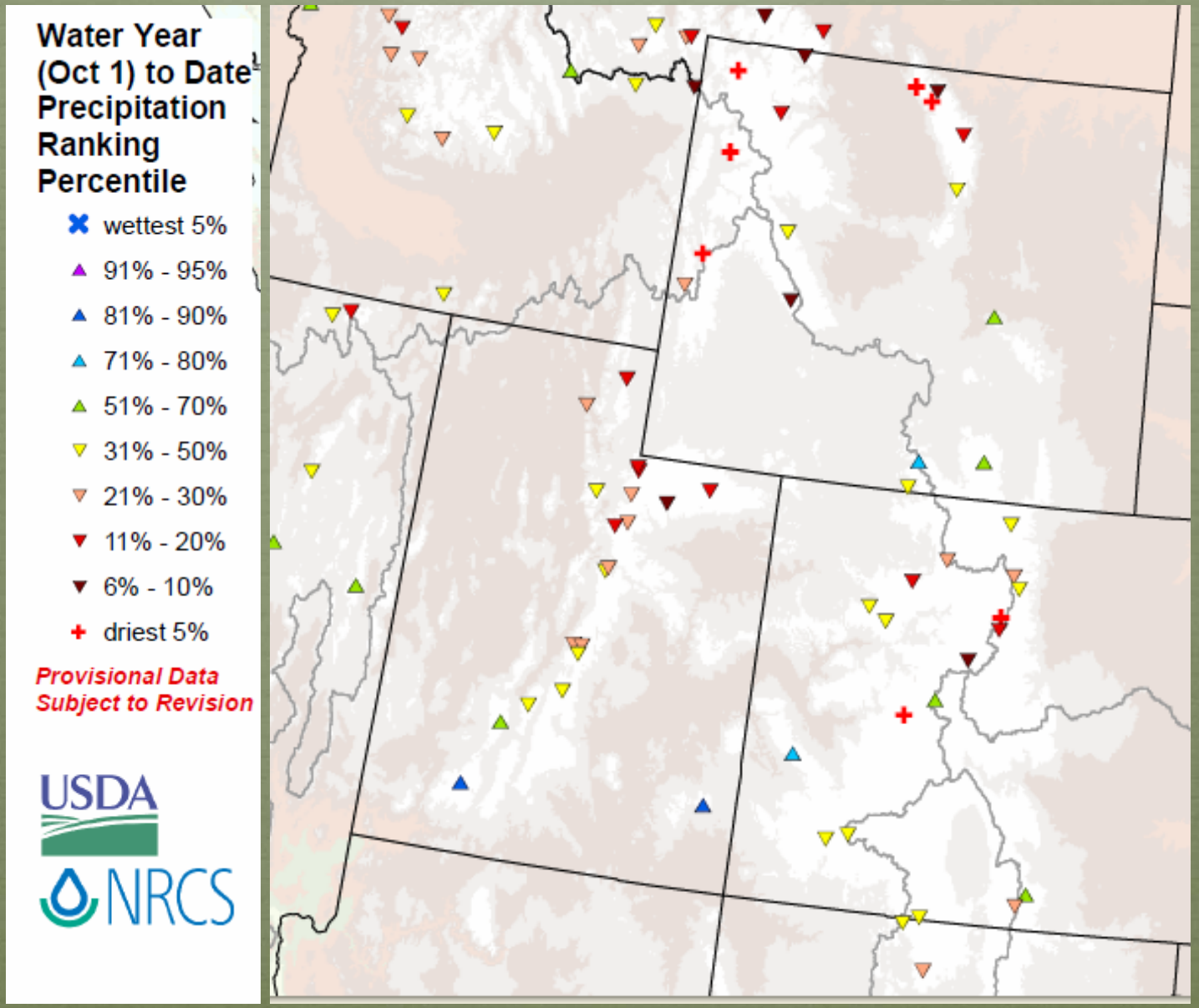
Upper Colorado 78% of Average Overall



1 Week Change in Snotel WYTD Precipitation Percent of Average



Western Snotel Percentiles 20 Apr 2010

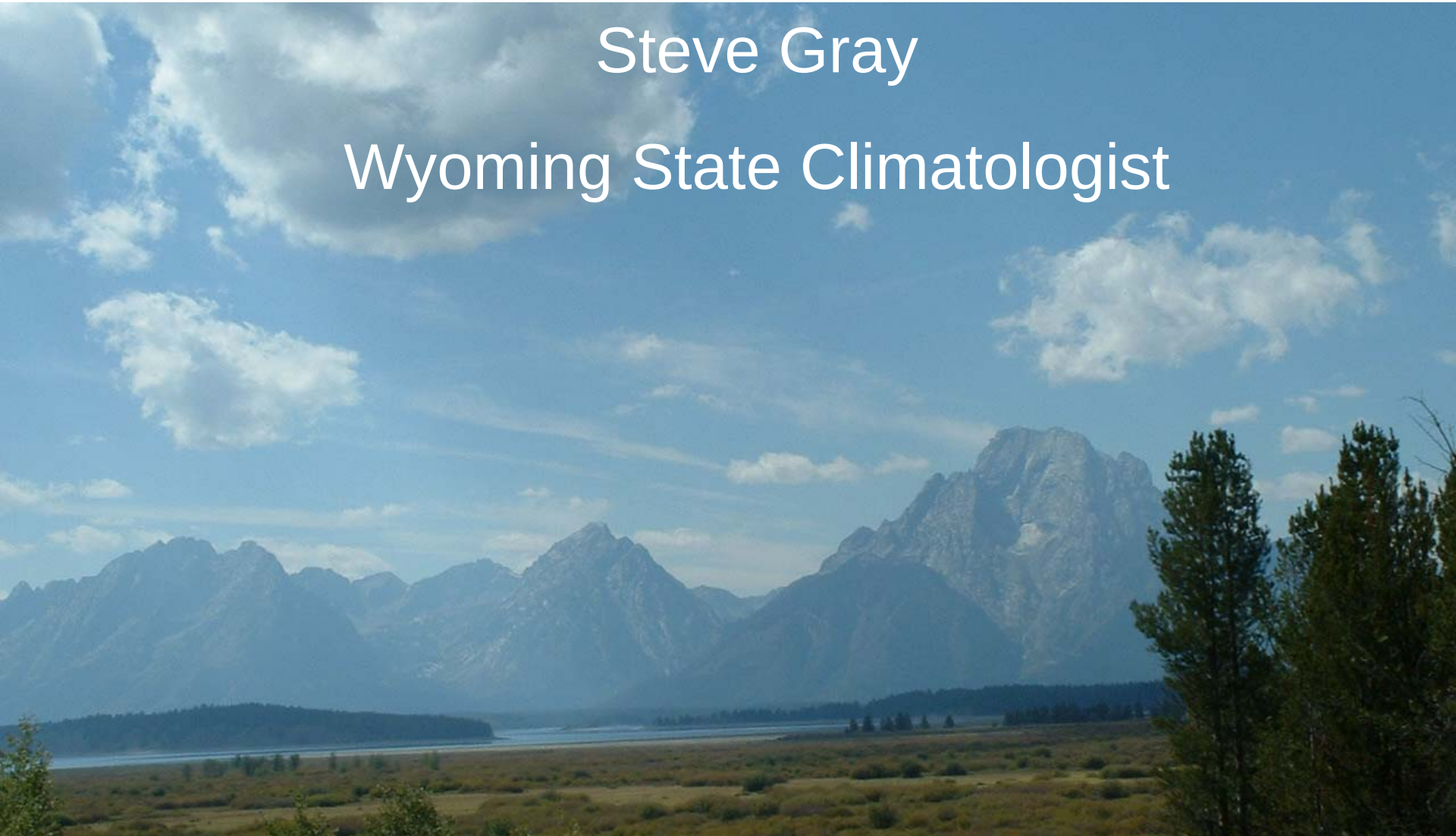


http://www.wcc.nrcs.usda.gov/gis/precip.html

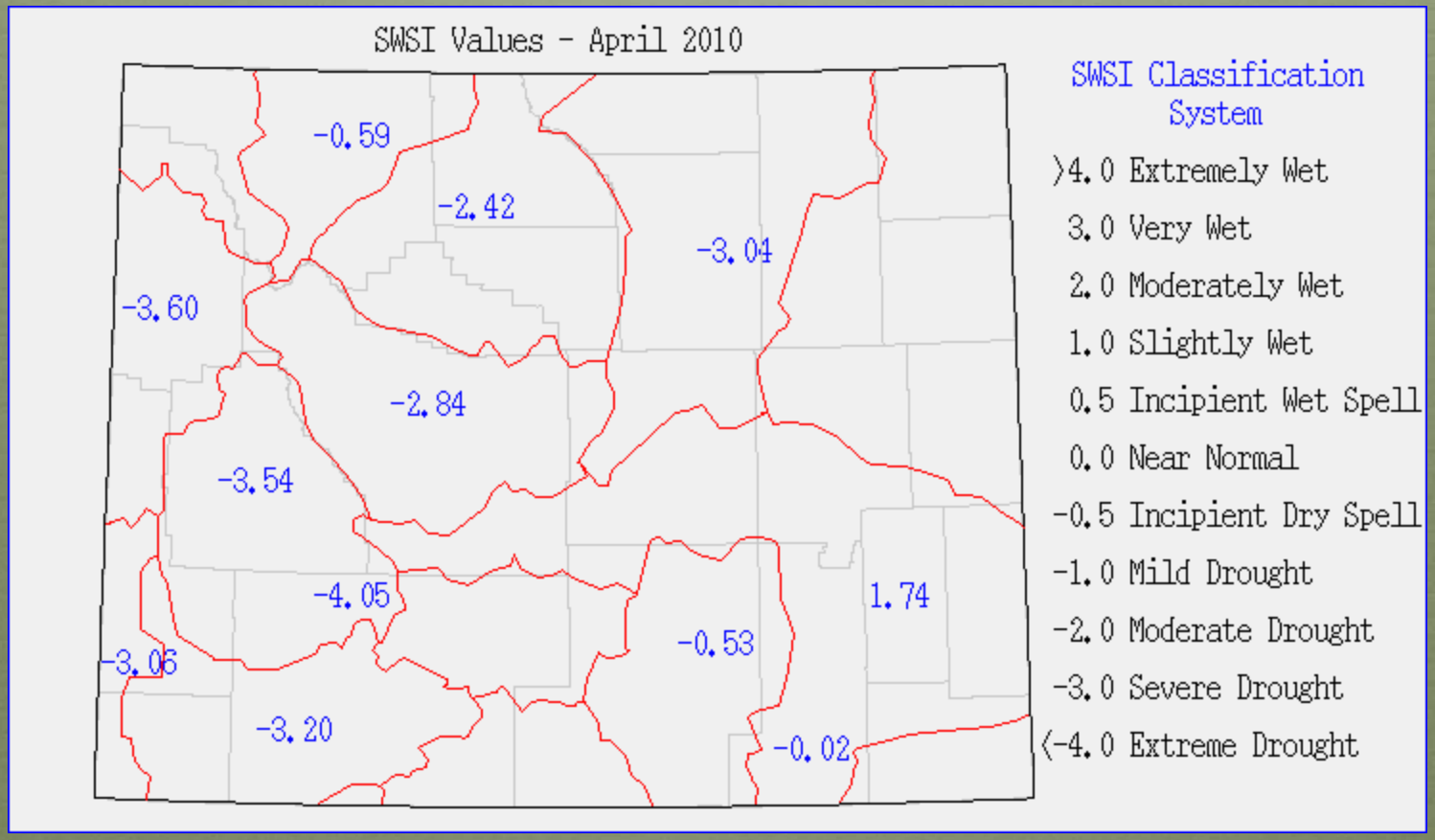
Wyoming Update

Steve Gray

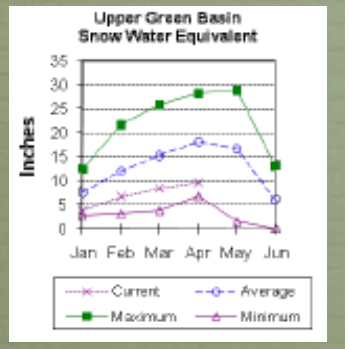
Wyoming State Climatologist



Wyoming SWSI: Mid-April 2010



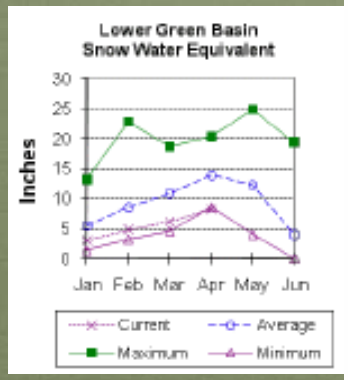
Green River Basin: Snowpack Summary and Streamflow Forecasts



UPPER GREEN RIVER BASIN
Streamflow Forecasts - April 1, 2010

Forecast Pt / Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * 50% (1000AF)	50% (% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Green River at Warren Bridge							
APR-JUL	100	117	130	49	143	164	265
Pine Creek abv Fremont Lake							
APR-JUL	54	61	66	64	71	79	104
New Fork River nr Big Piney							
APR-JUL	130	170	200	51	235	285	395
Fontenelle Reservoir Inflow							
APR-JUL	205	290	360	42	435	560	860
Big Sandy River nr Farson							
APR-JUL	20	26	30	52	35	43	58

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.



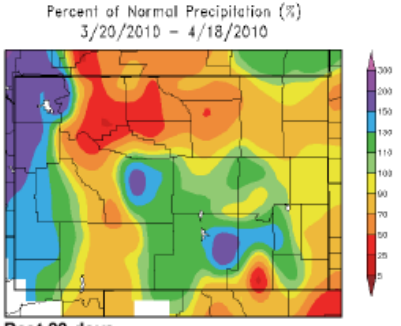
LOWER GREEN RIVER BASIN
Streamflow Forecasts - April 1, 2010

Forecast Pt / Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * 50% (1000AF)	50% (% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Green River nr Green River, WY (2)							
APR-JUL	220	310	380	43	455	575	875
Blacks Fork nr Robertson							
APR-JUL	42	54	63	66	73	88	95
EF of Smiths Fork nr Robertson (2)							
APR-JUL	11.1	15.6	19.0	66	23	29	29
Hams Fk blw Pole Ck nr Frontier							
APR-JUL	18.0	25	30	46	36	45	65
Hams Fork Inf to Viva Naughton Res							
APR-JUL	21	30	37	42	45	58	89
Flaming Gorge Reservoir Inflow							
APR-JUL	230	335	450	38	580	800	1190

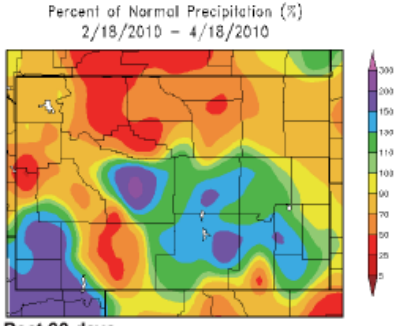
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

Courtesy NRCS Casper

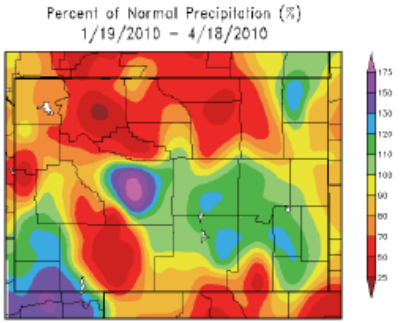
Wyoming Precipitation: Departures from Normal



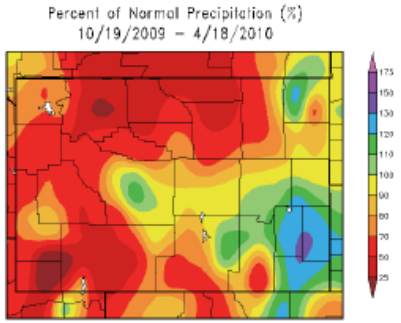
Past 30 days



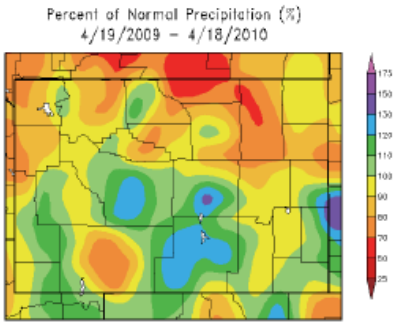
Past 60 days



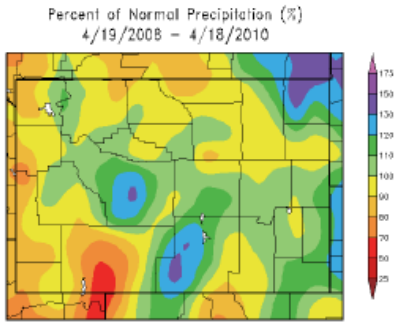
Past 90 days



Past 6 months



Past 12 months



Past 24 months

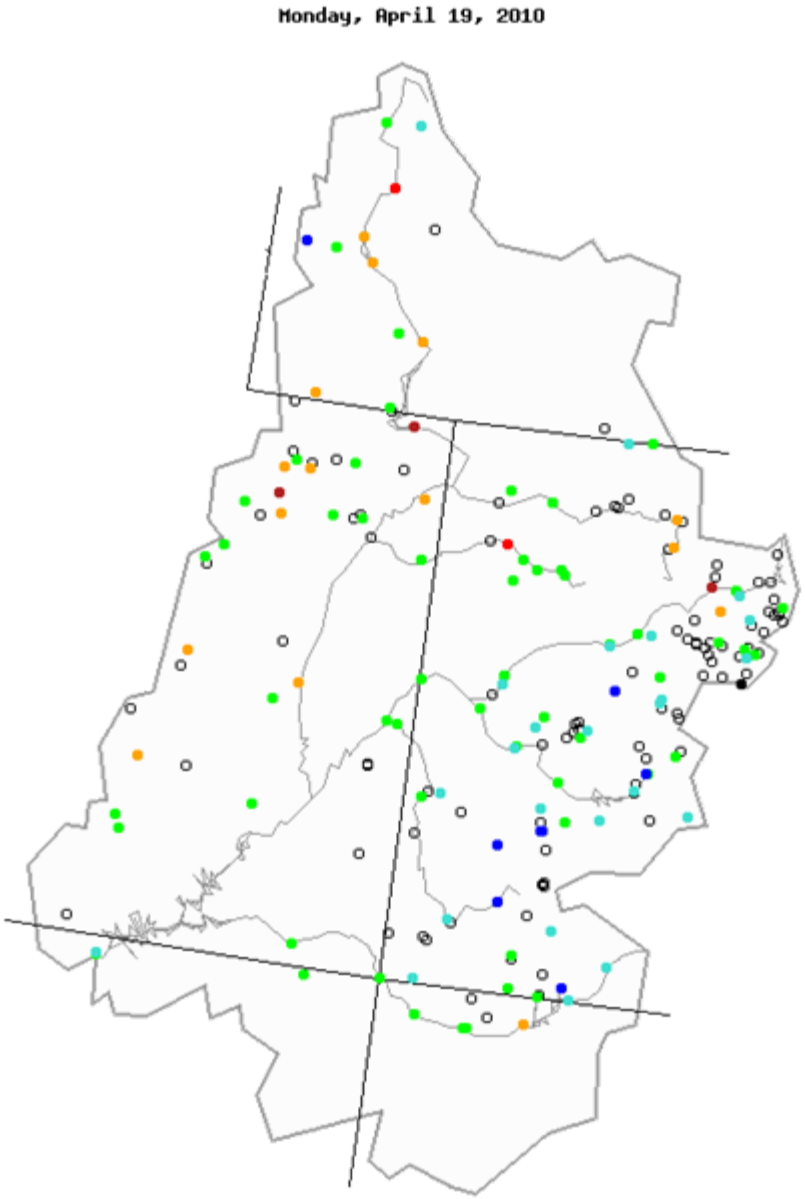
Product of the Wyoming Water Resources Data System
http://www.wrds.uwyo.edu/
Data Courtesy: High Plains Regional Climate Center
http://www.hprcc.unl.edu/

Streamflow Update

Michael E. Lewis - USGS

Upper Colorado Basin

7-day average streamflow (all gages) compared to historical streamflow for the day of the year

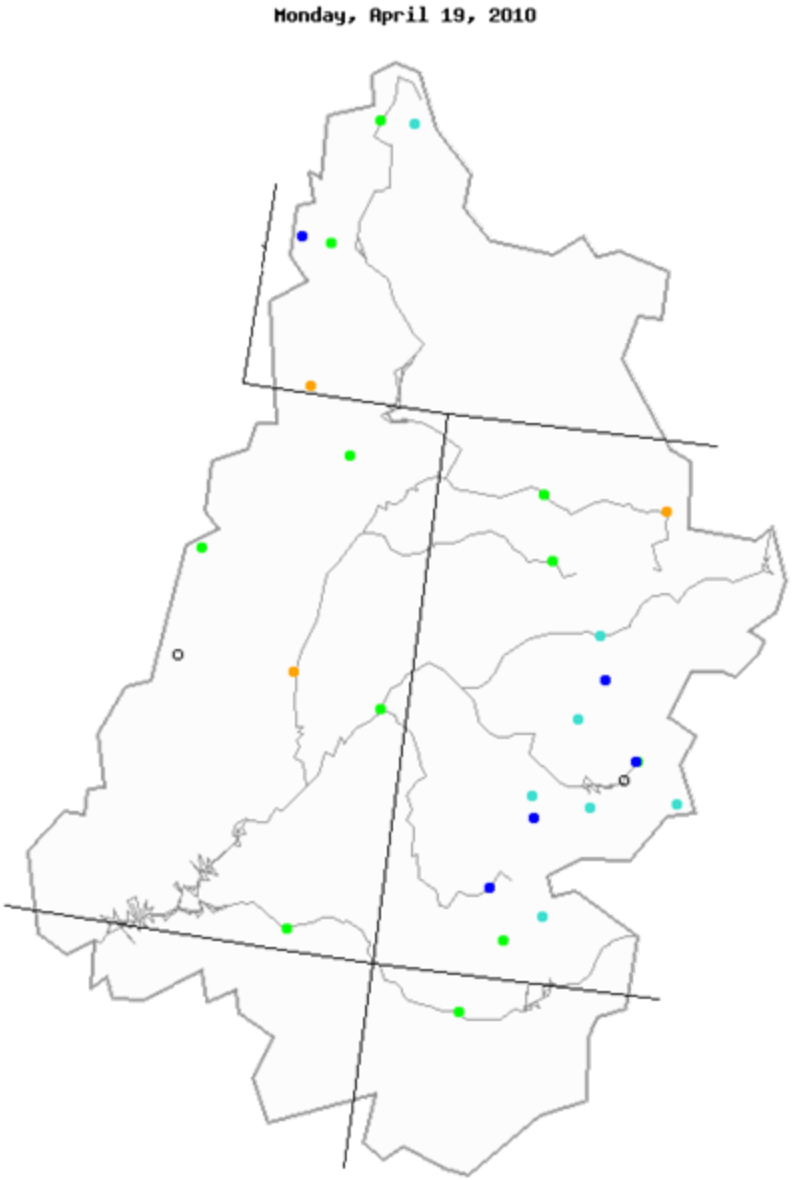


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

Upper Colorado Basin

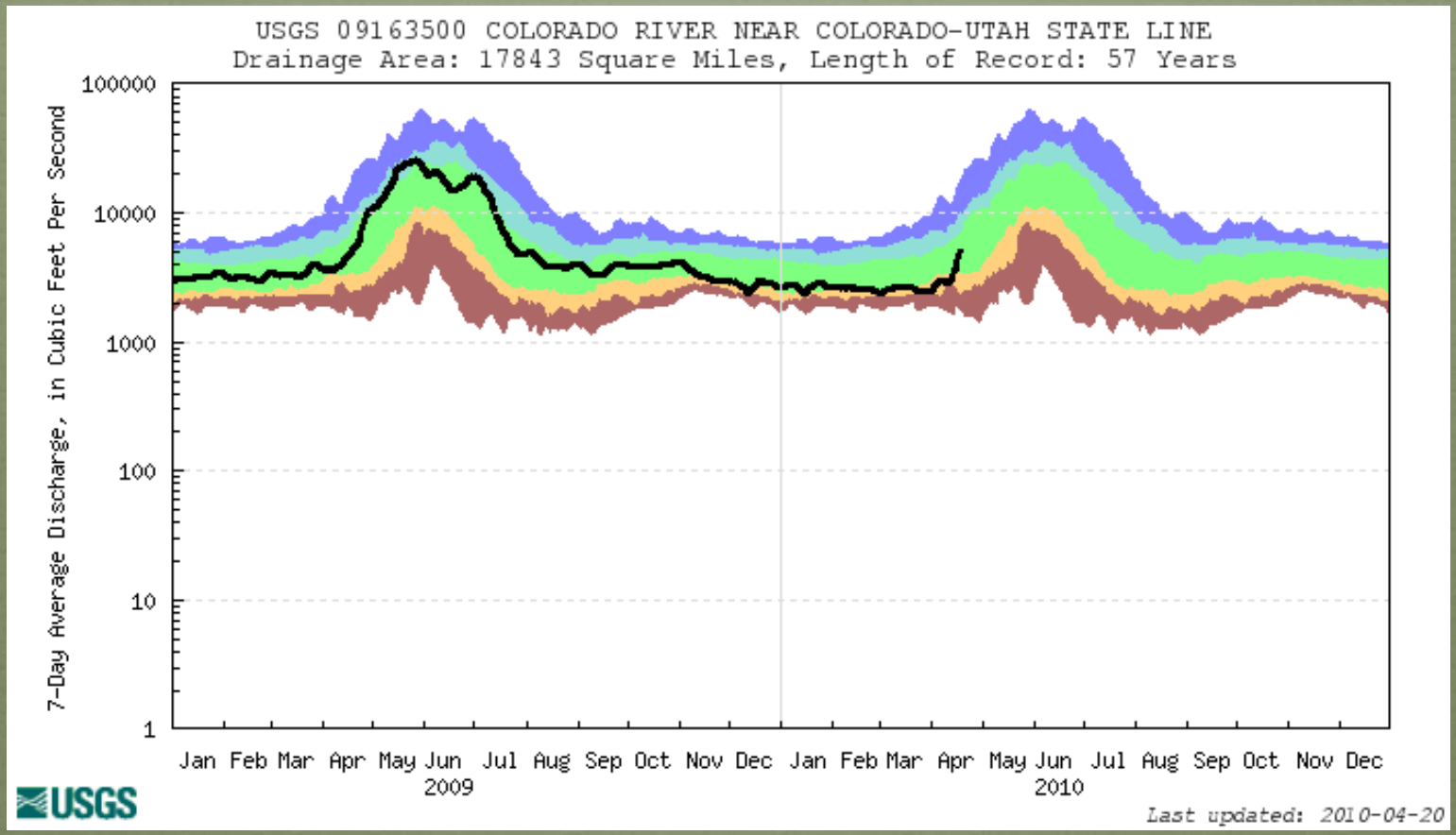
7-day average streamflow (HCDN gages only) compared to historical streamflow for the day of the year

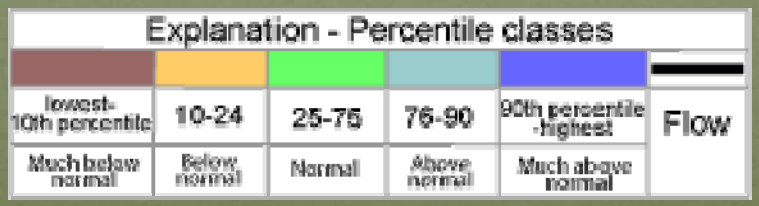


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

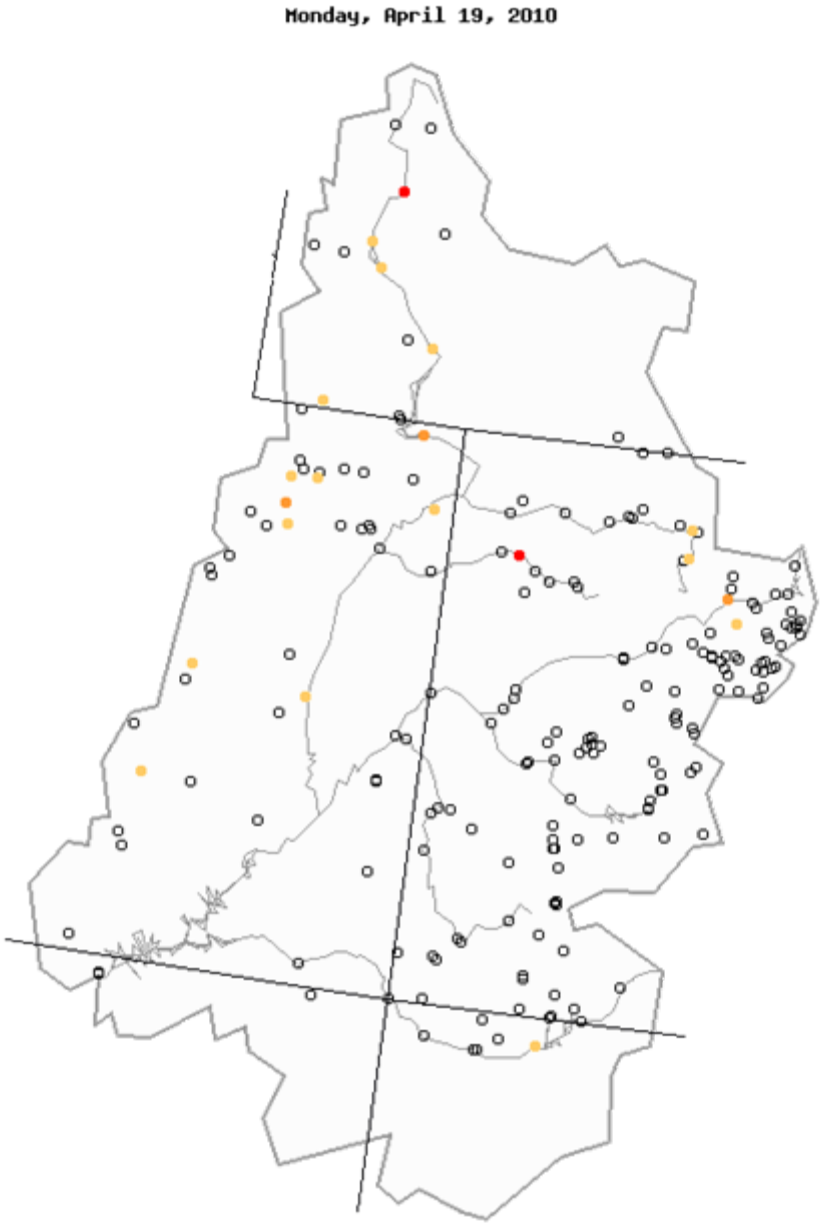
Time series plot of real-time streamflow compared to historical streamflow for the day of the year





Upper Colorado Basin

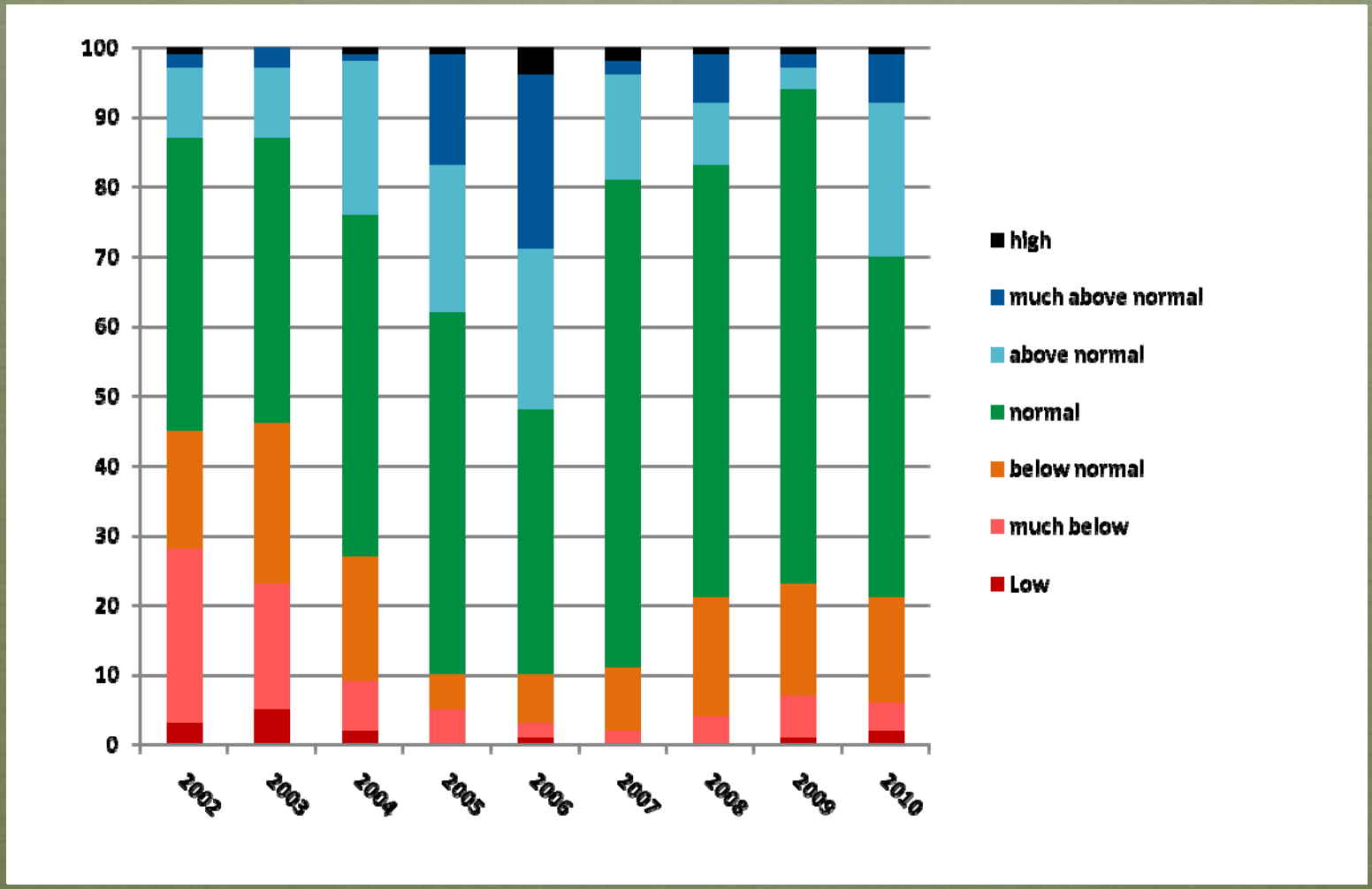
Below normal 7-day average streamflow compared to historical conditions for the day of the year



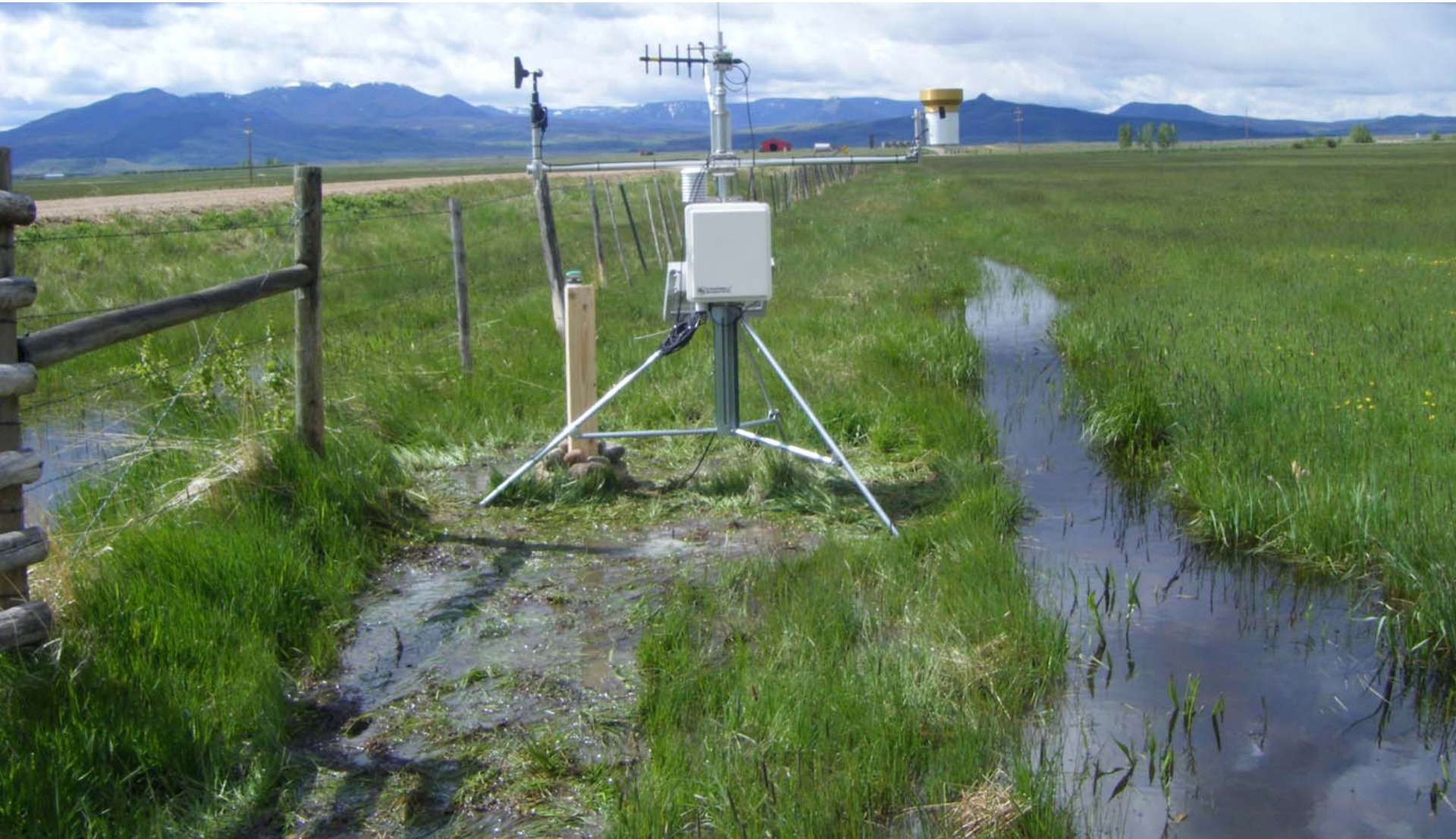
Explanation - Percentile classes				
New low	<=5	6-9	10-24	Not ranked
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

USGS

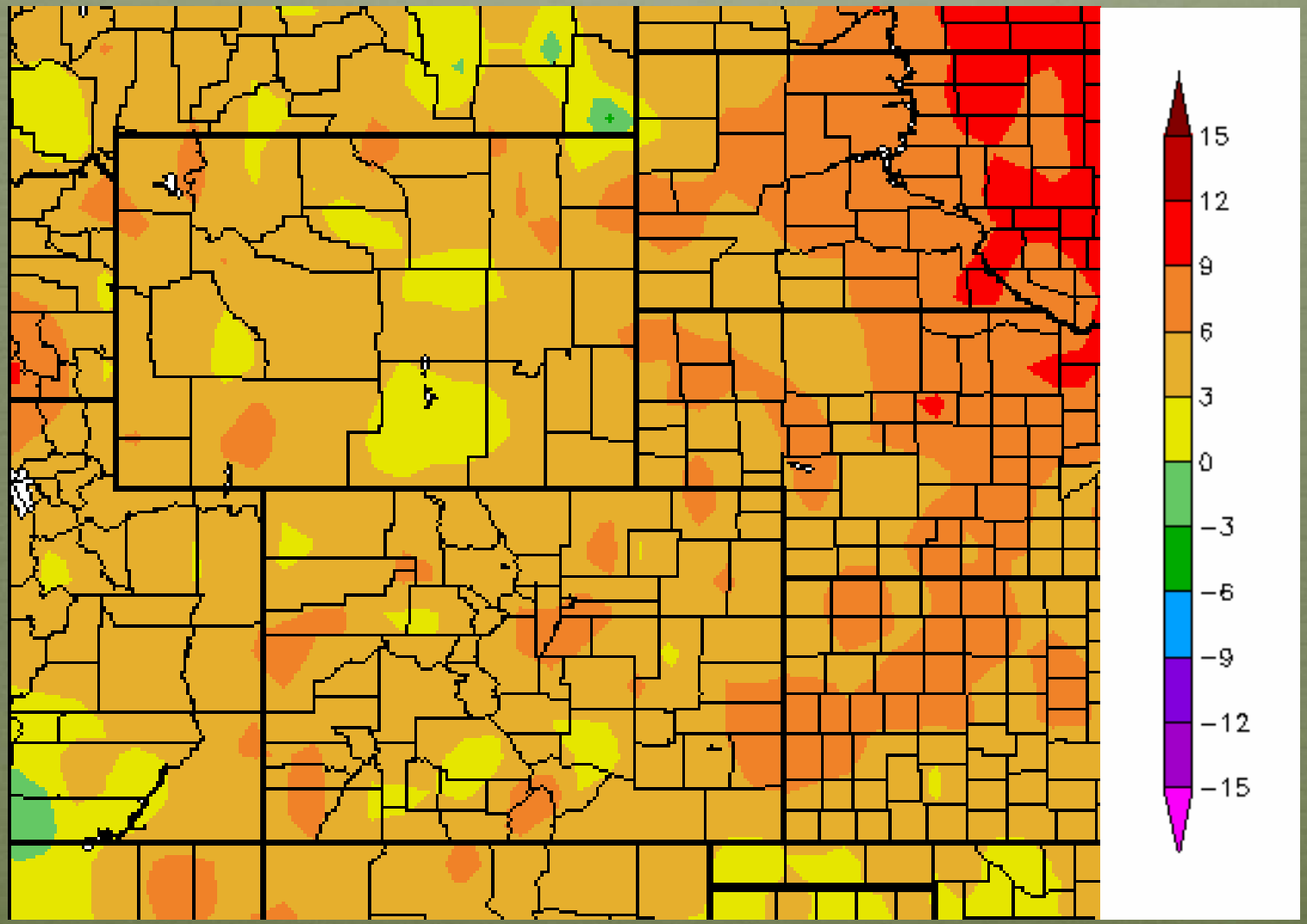
April 18
Percentage of Streamgages per Percentile Class
7-day Average Streamflow

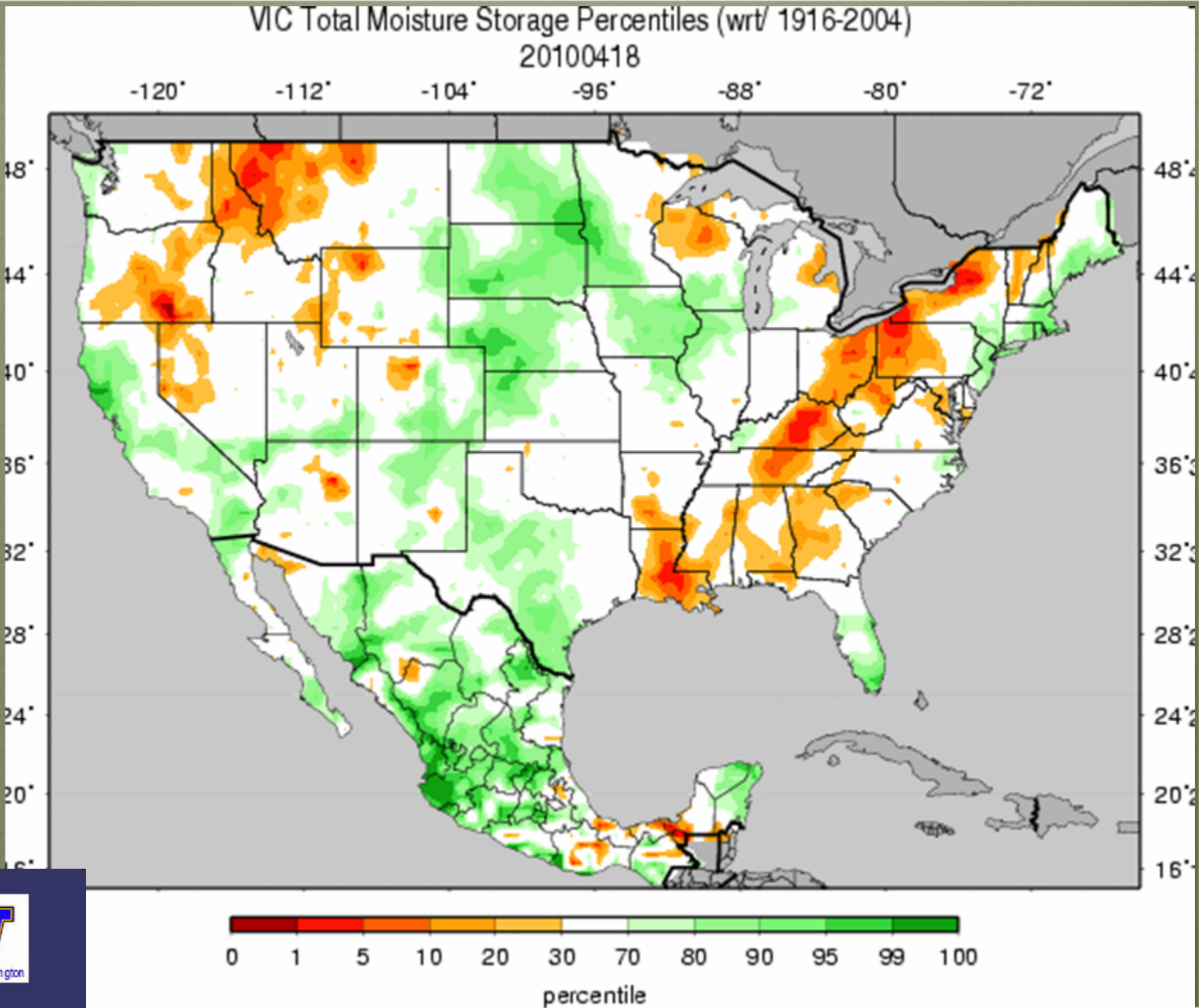


Water Demand



Temperature Departure from Normal
4/13/2010 – 4/19/2010





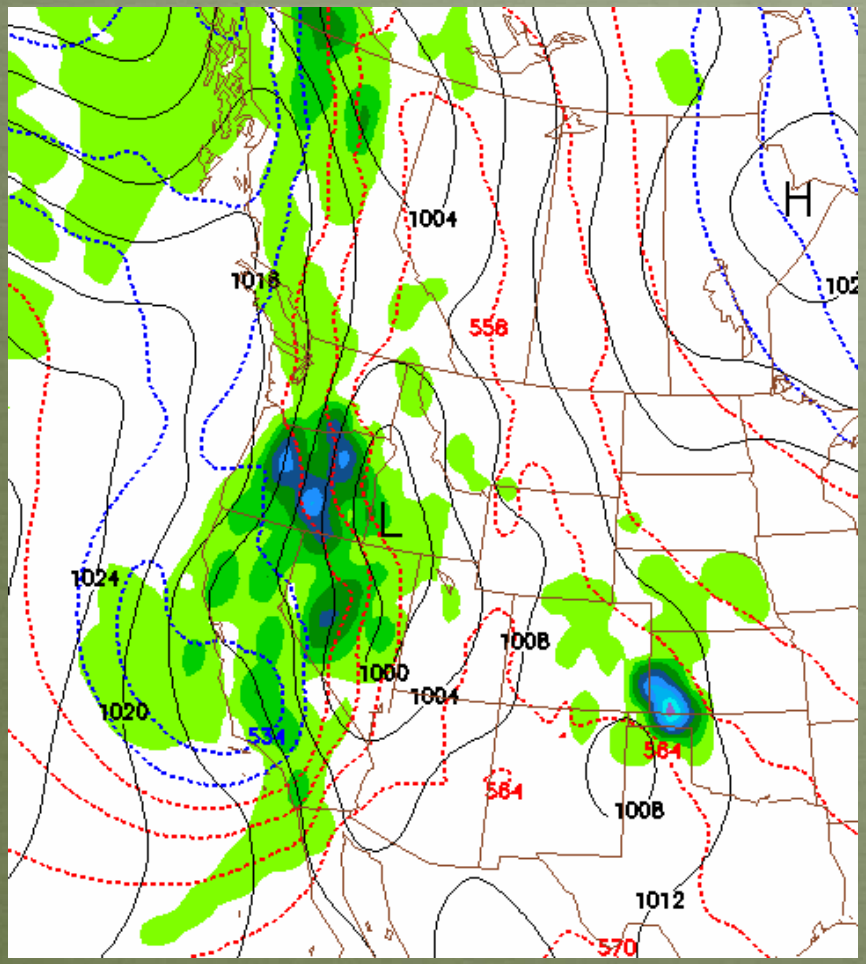
University of Washington

Precipitation Forecast

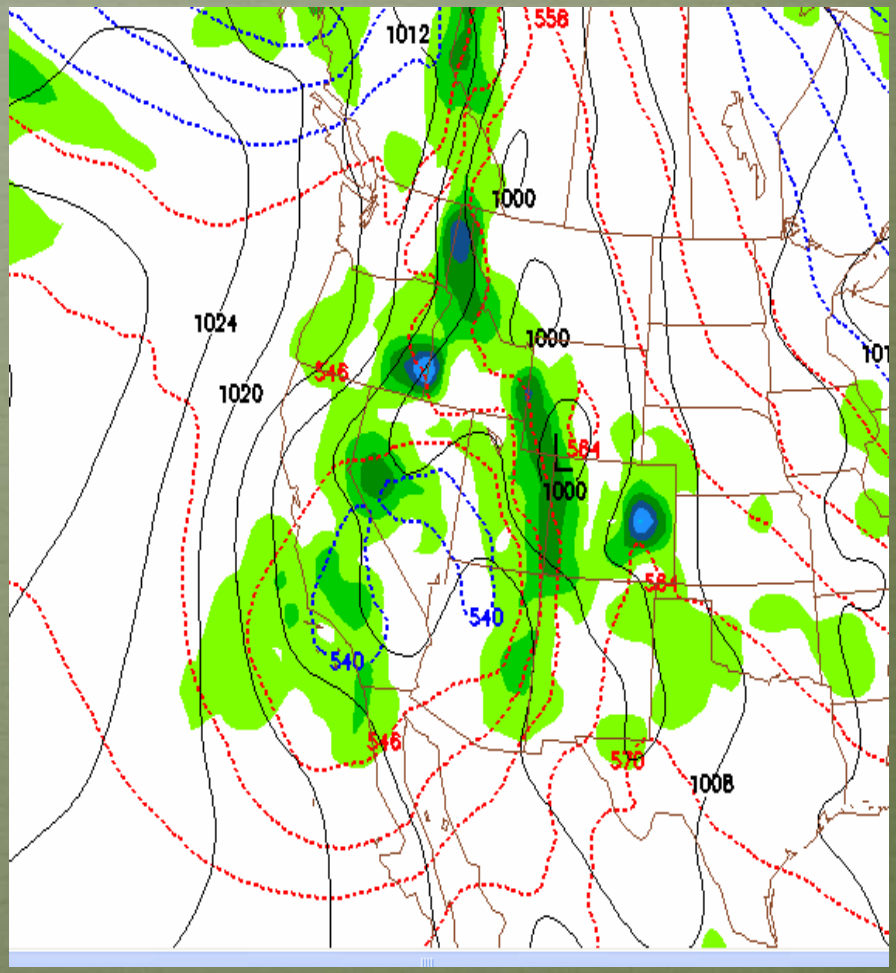
Ellen Heffernan

GJT WFO

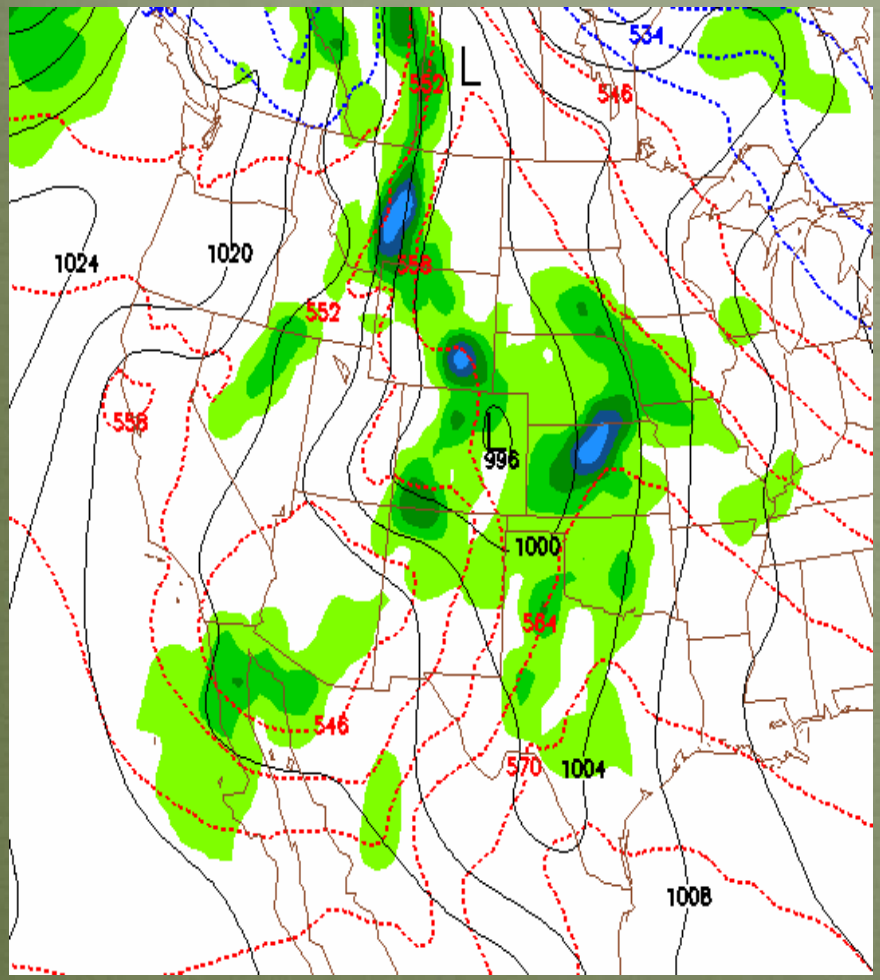
06Z GFS 24 HR 06Z Wed



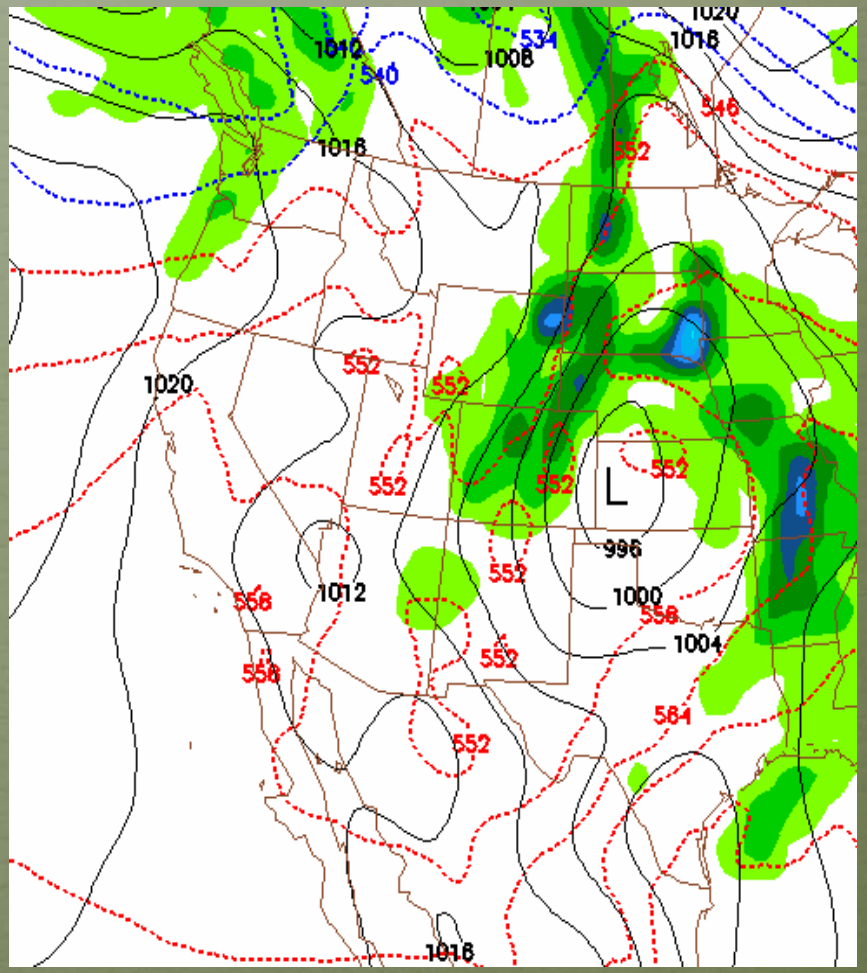
06Z GFS 48 HR 06Z Thu



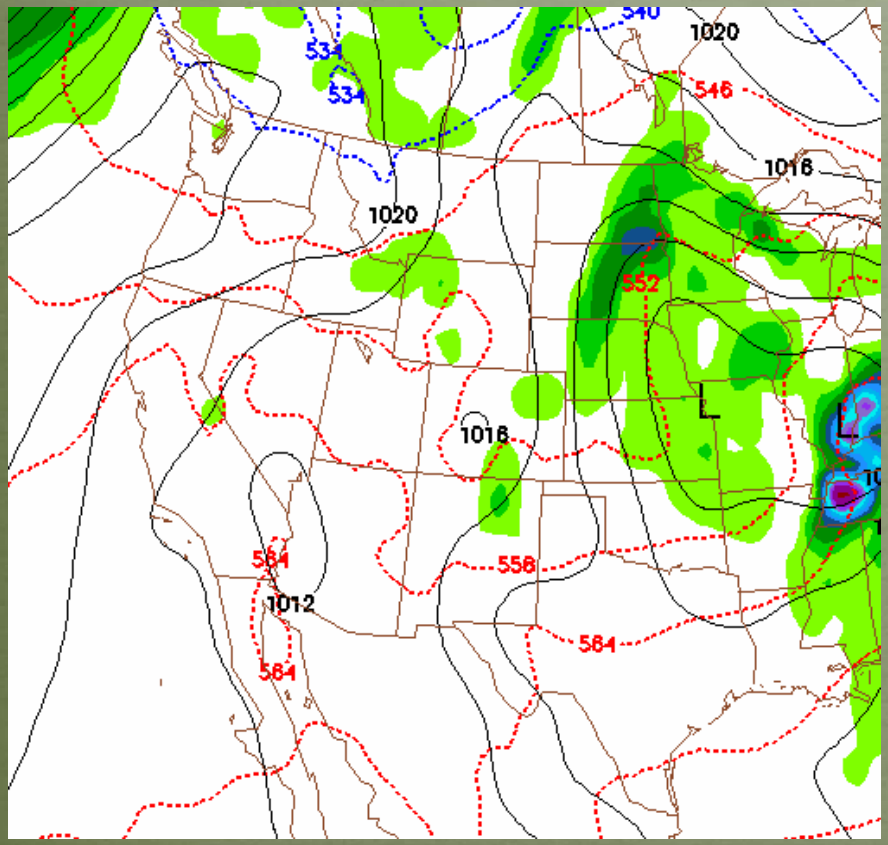
06Z GFS 72 HR 06Z Fri



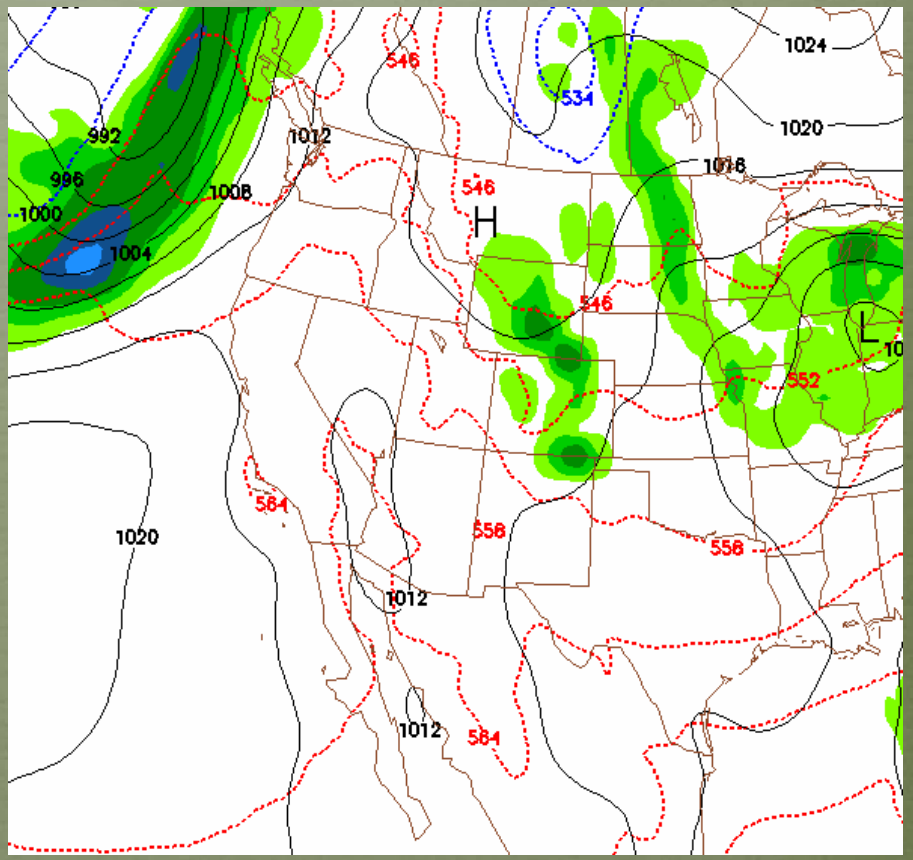
06Z GFS 06Z 96 HR 06Z Sat



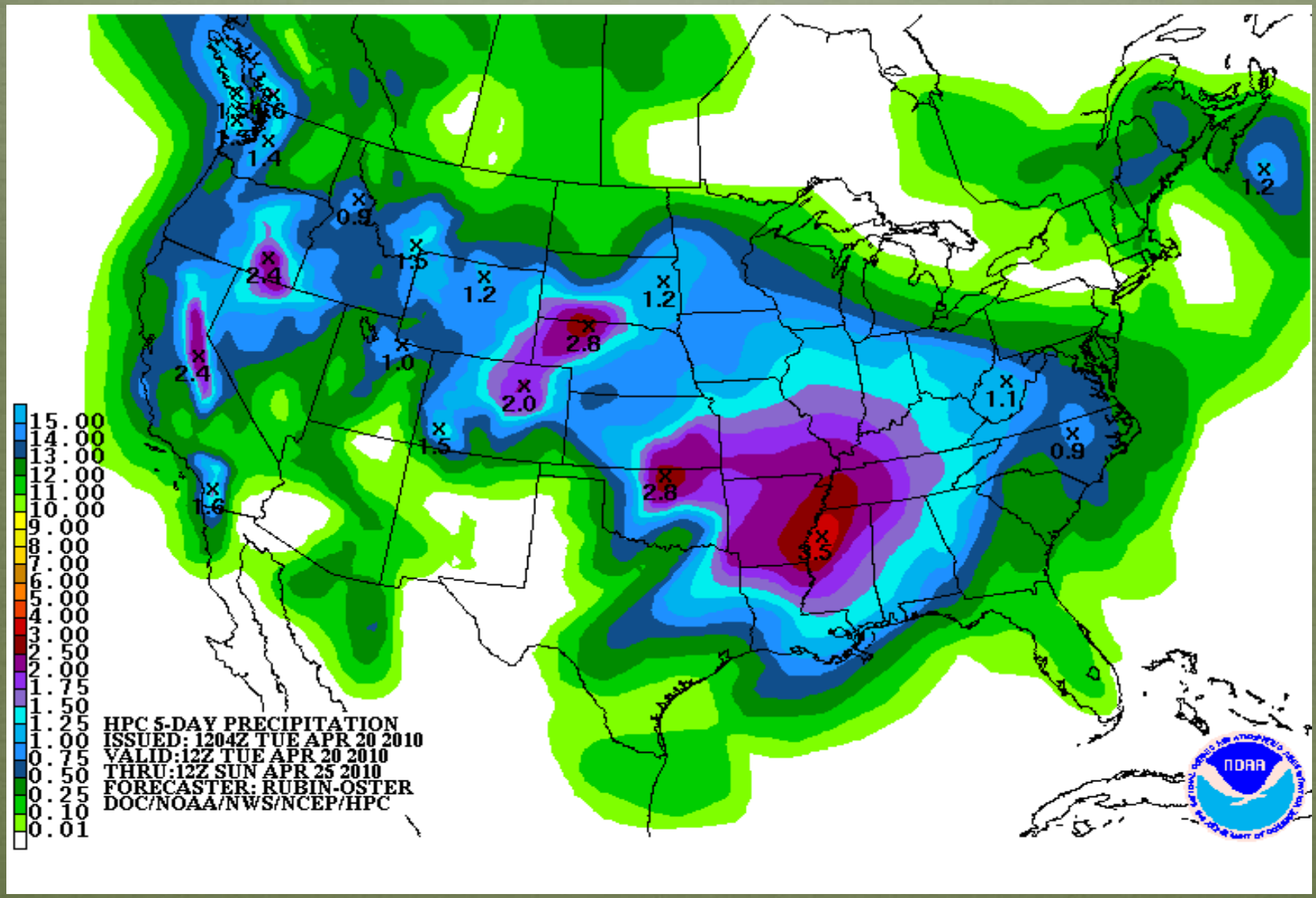
06Z GFS 120 HR 06Z Sun



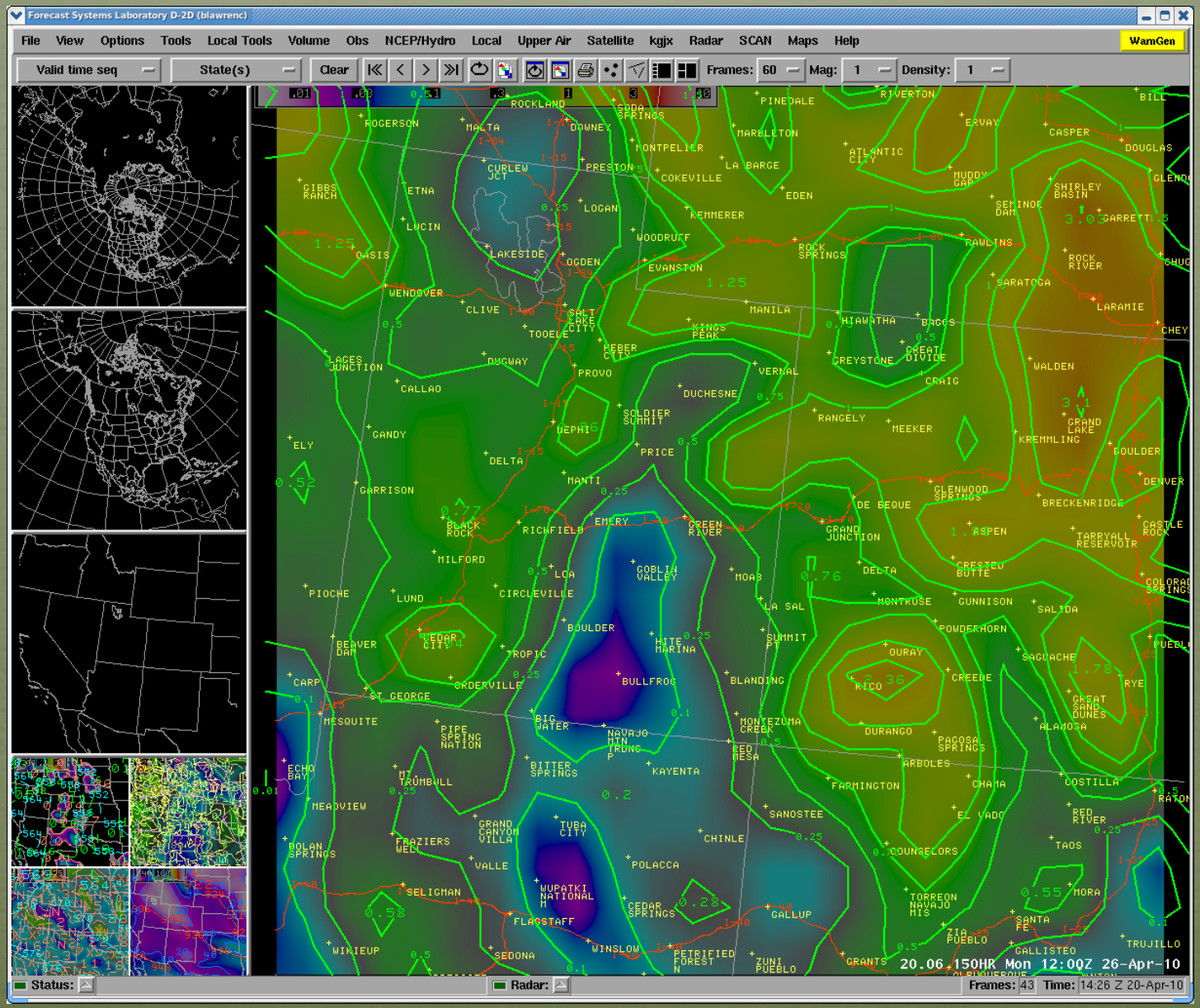
06Z GFS 144 HR 06Z Mon



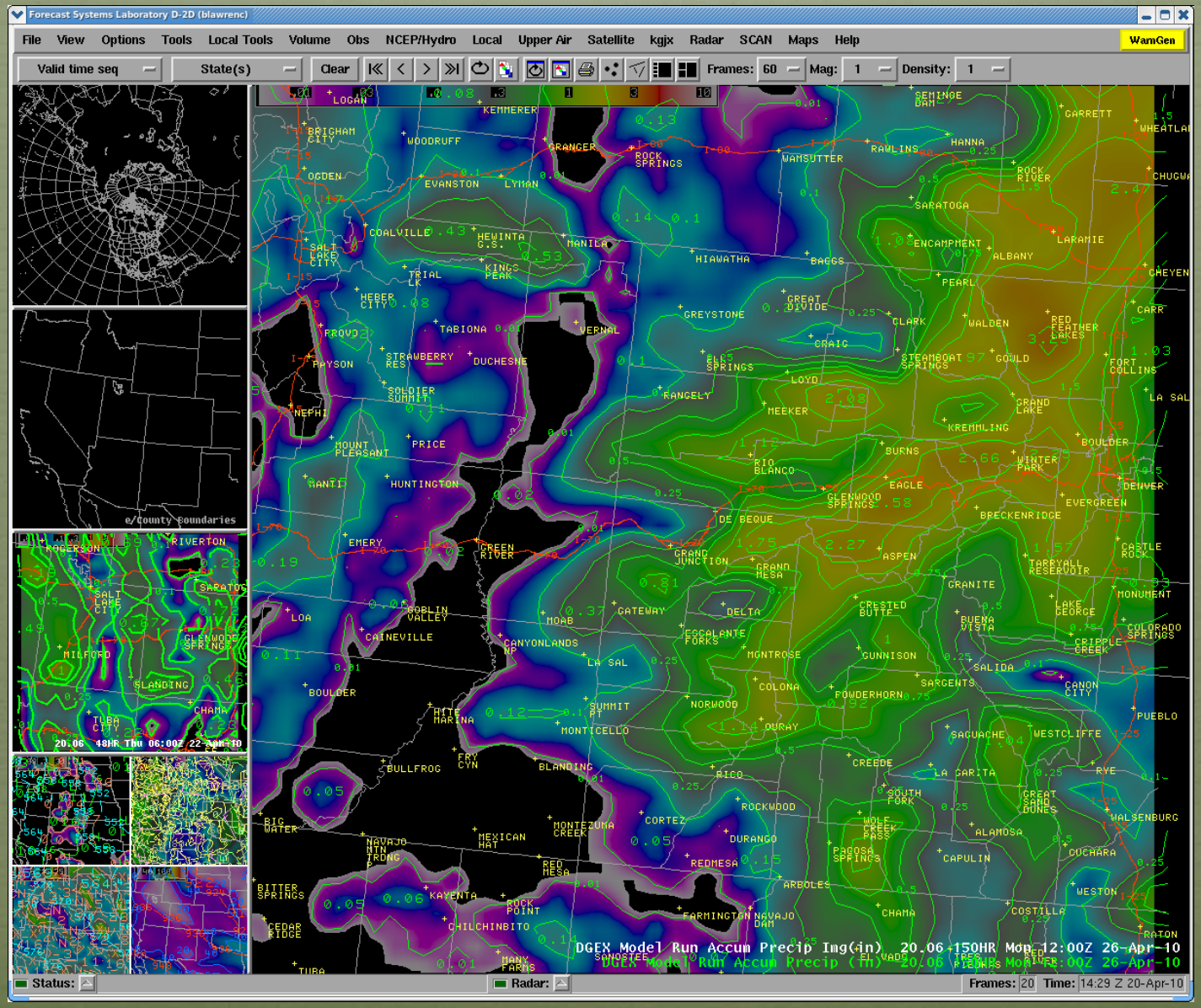
HPC 5 Day Precip Through12Z Sun



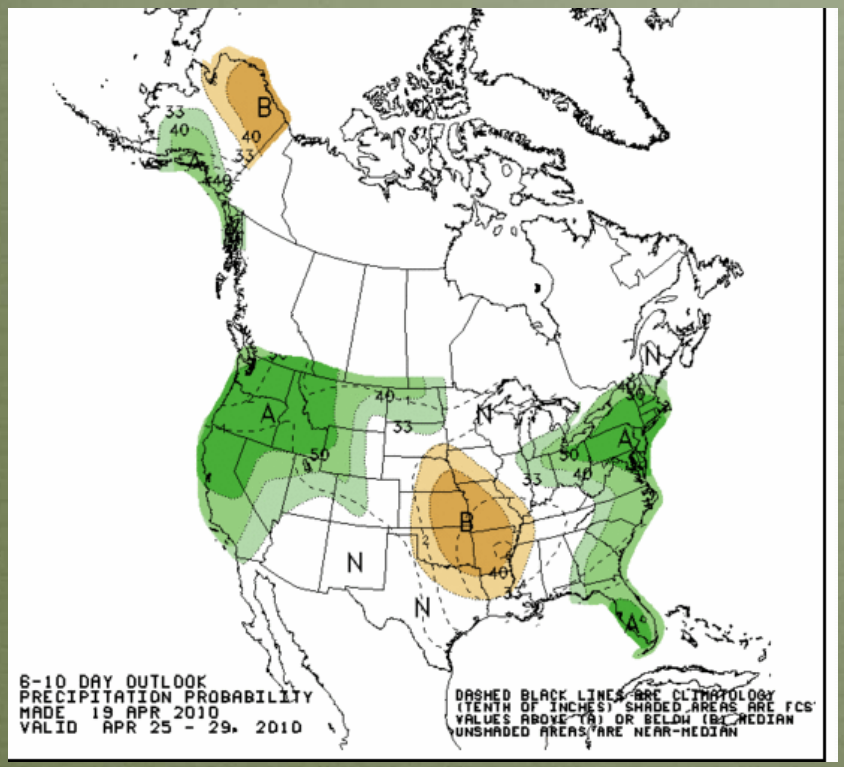
GFS Precip Through 12Z Mon

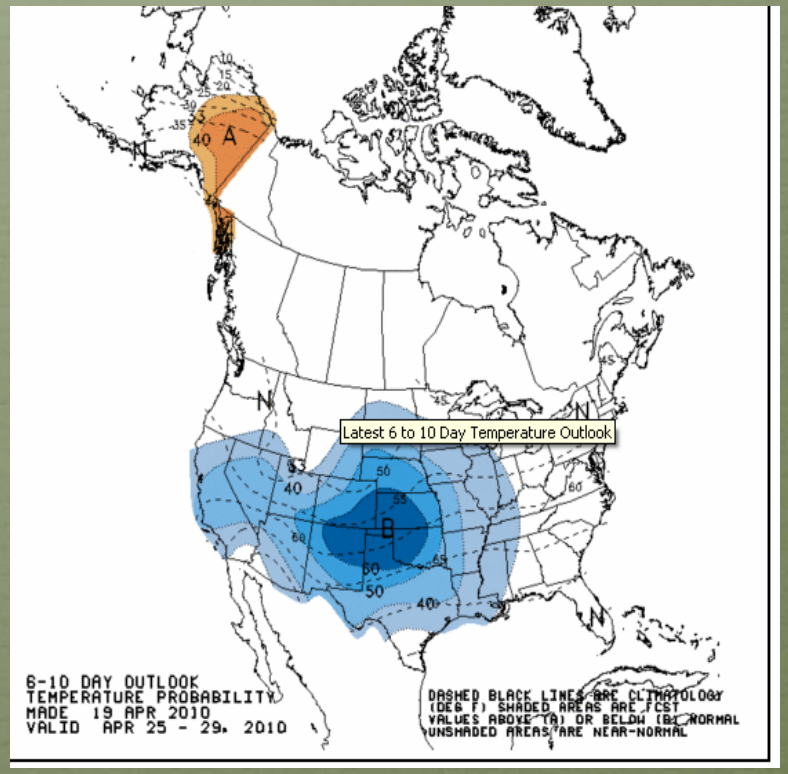


DGEX Precip Through 12Z Mon

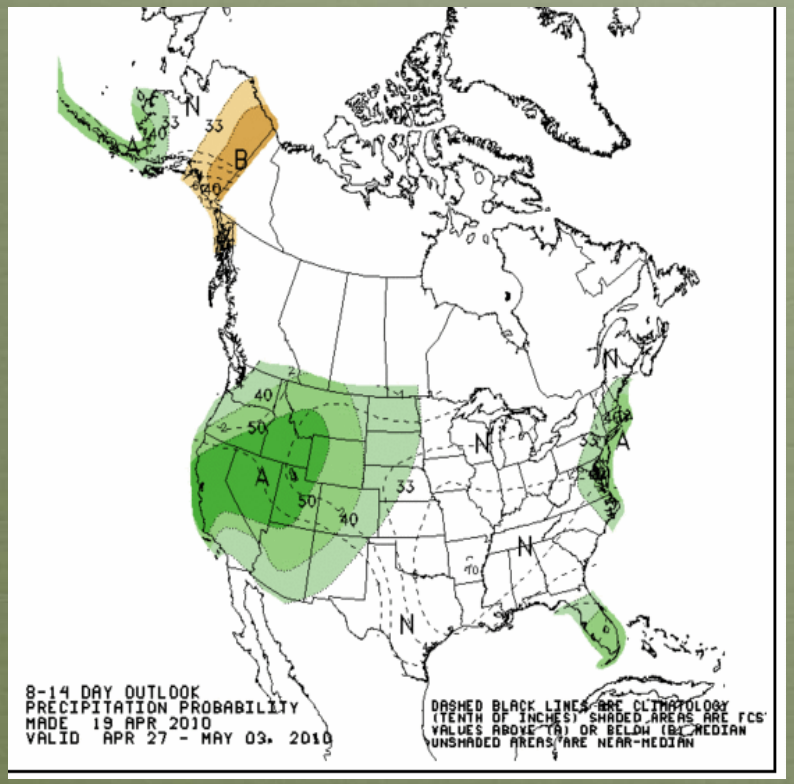


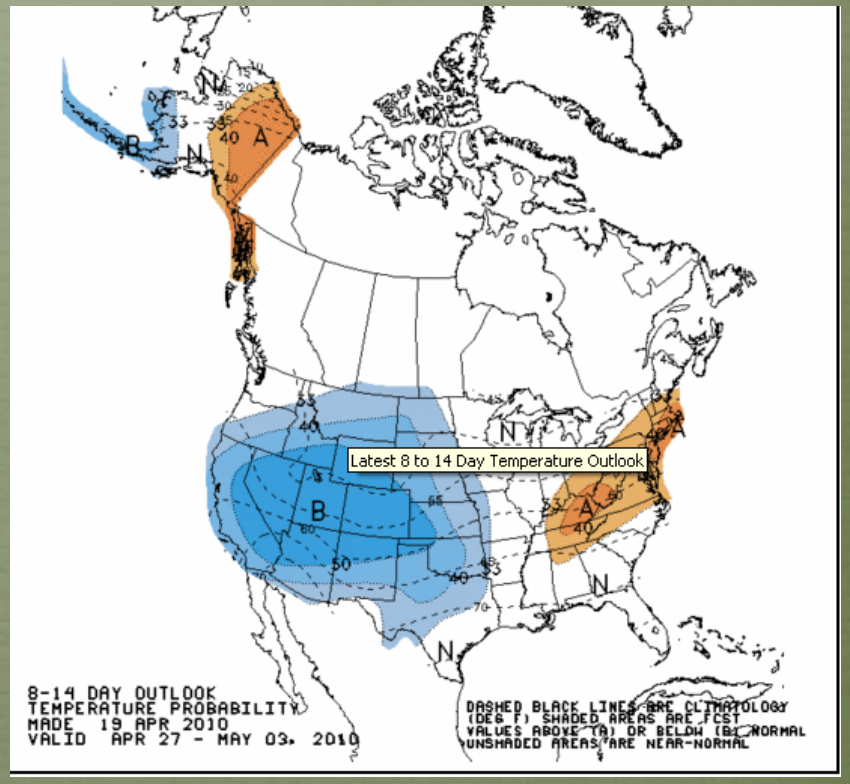
CPC 6-10 Day Outlook



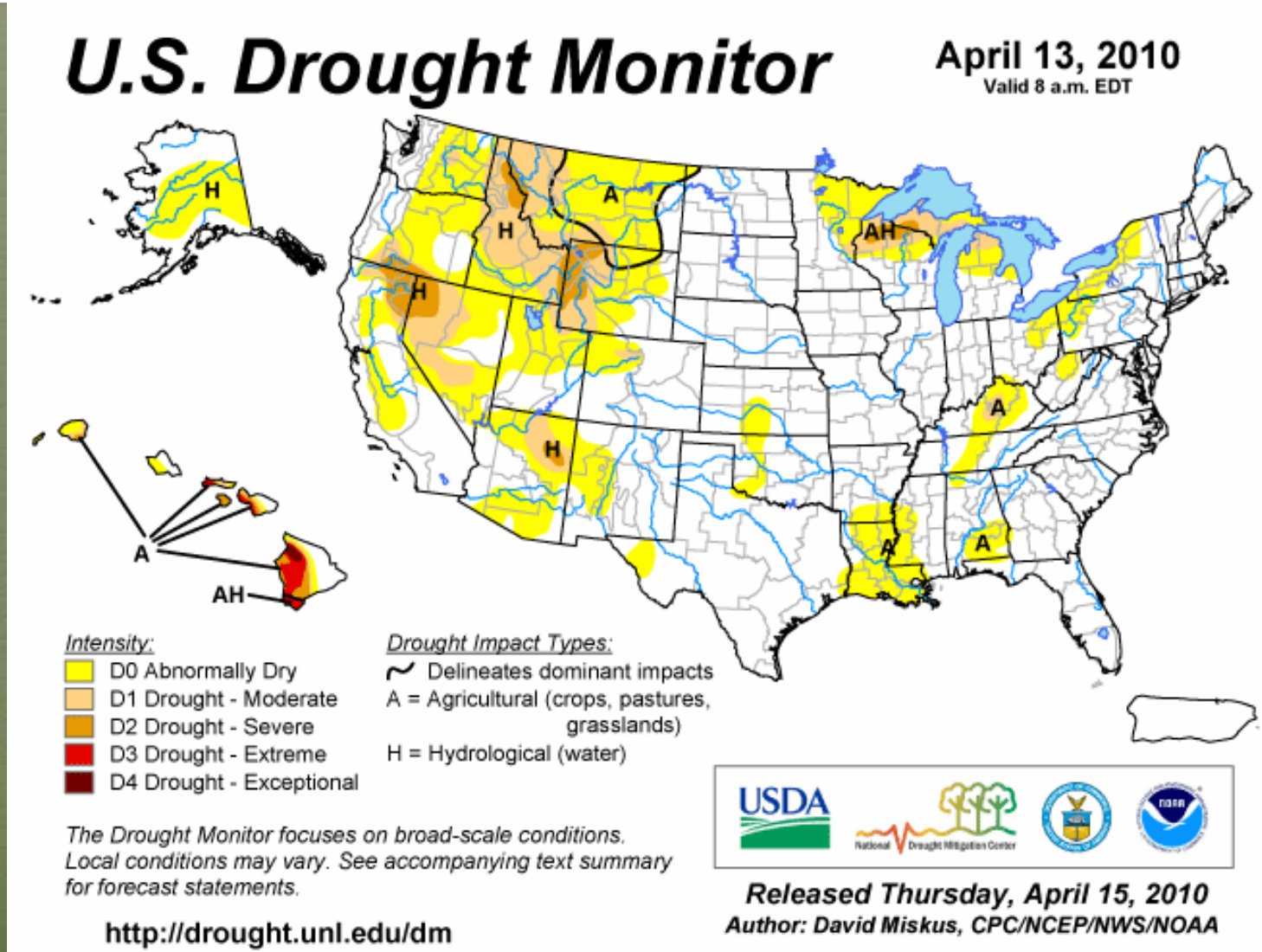


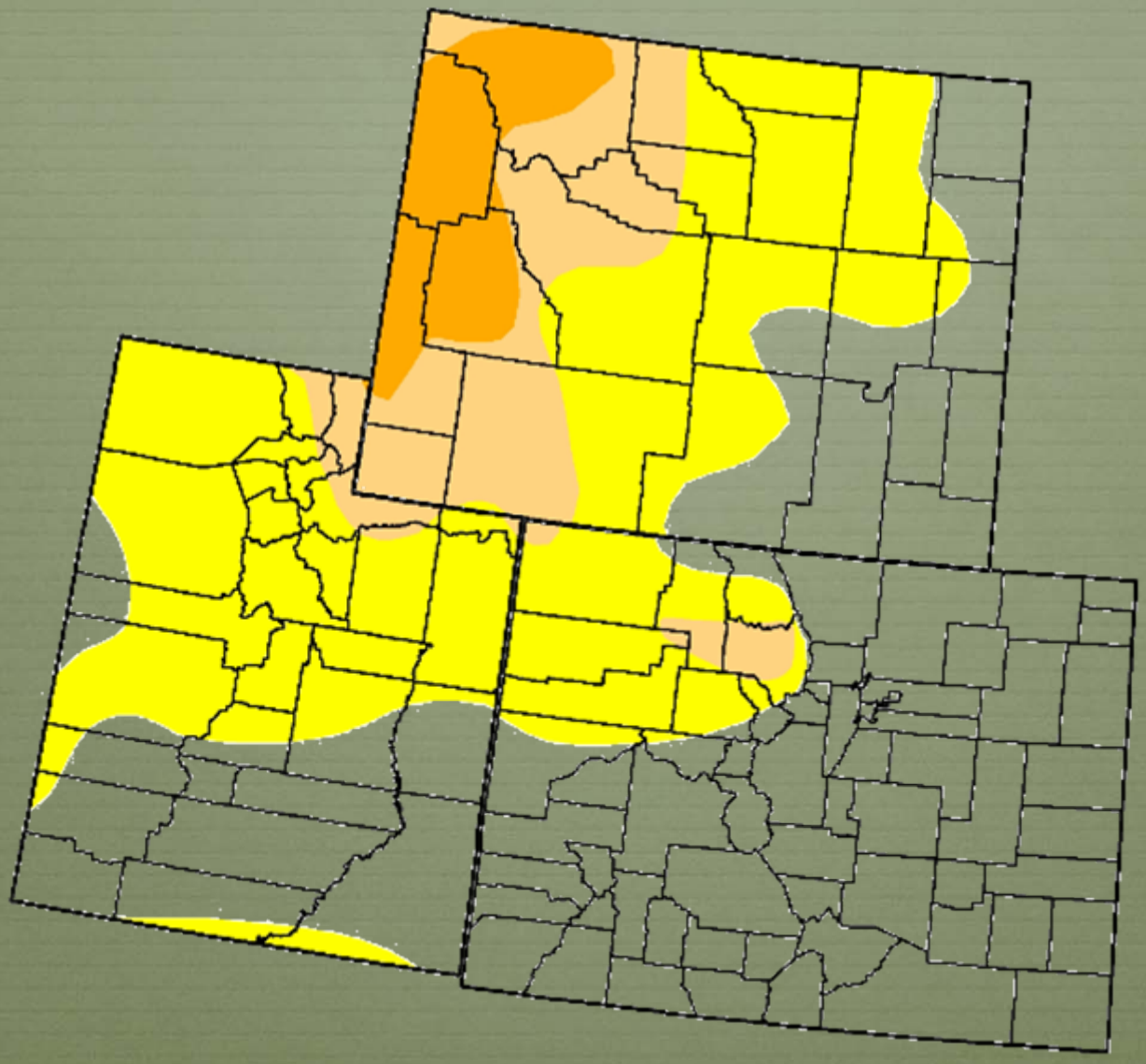
CPC 8-14 Day Outlook





Recommendations





INFO

For more information

Summary

- Last week, the majority of Colorado's precipitation fell in the Arkansas and Rio Grande river basins. Month-to-date shows good moisture in the areas that needed it most--Rio Blanco, Routt and Jackson counties. This moisture has not been quite enough to greatly improve water-year percentages, but it has kept conditions from deteriorating. Many of the snotel stations, both high and lower elevation, have begun to show some melting over the past week--a result of the warmer than average temperatures that prevailed over the region. The current melting is slightly early compared to the historical average for Colorado. However, this is almost a month too early for the Wyoming stations. Wyoming is also showing SWSI values around -3 to -4 for most of the western part of the state, though the far southwestern portion of the state has shown some improvement due to recent storms. Streamflow for the Upper Colorado basin has improved over the last week and runoff is well underway. Only 20% of the USGS sites are recording below normal flows, as compared to 36% of the sites last week.

  With the passage of a slow moving low pressure system, the region should receive good amounts of moisture through Saturday of this week, and also see cooler than average temperatures as a result. Due to strong pressure gradients and high winds as the front pushes out of Utah and into Colorado, this could also mean another dust-on-snow event for the mountains on Wednesday. By next Monday, conditions should warm up to near average, and also dry out before the next system enters near the end of next week.

  Status quo has been recommended for Colorado this week for the Drought Monitor. Wyoming will be making its own recommendations for tweaking of the D1 and D2 lines in the western part of the state. Due to improved conditions in the far southwestern portion of WY (particularly in Sweetwater County), the small D0 could possibly be expanded northward to reduce the amount of D1 in the area (WY experts will be sending their specific recommendations separately). If the DM author does adjust these lines, they could also consider redrawing the D1 line in northwestern Colorado (in Moffat County). Poor station coverage in the area makes it difficult to know for certain about the conditions in that region (which do show decent water-year percentages, but have not benefited from recent storms), but it would help in making the lines smoother and match more with Wyoming.