Winter 2012

Weekly Climate, Water & Drought Assessment

Today's Agenda

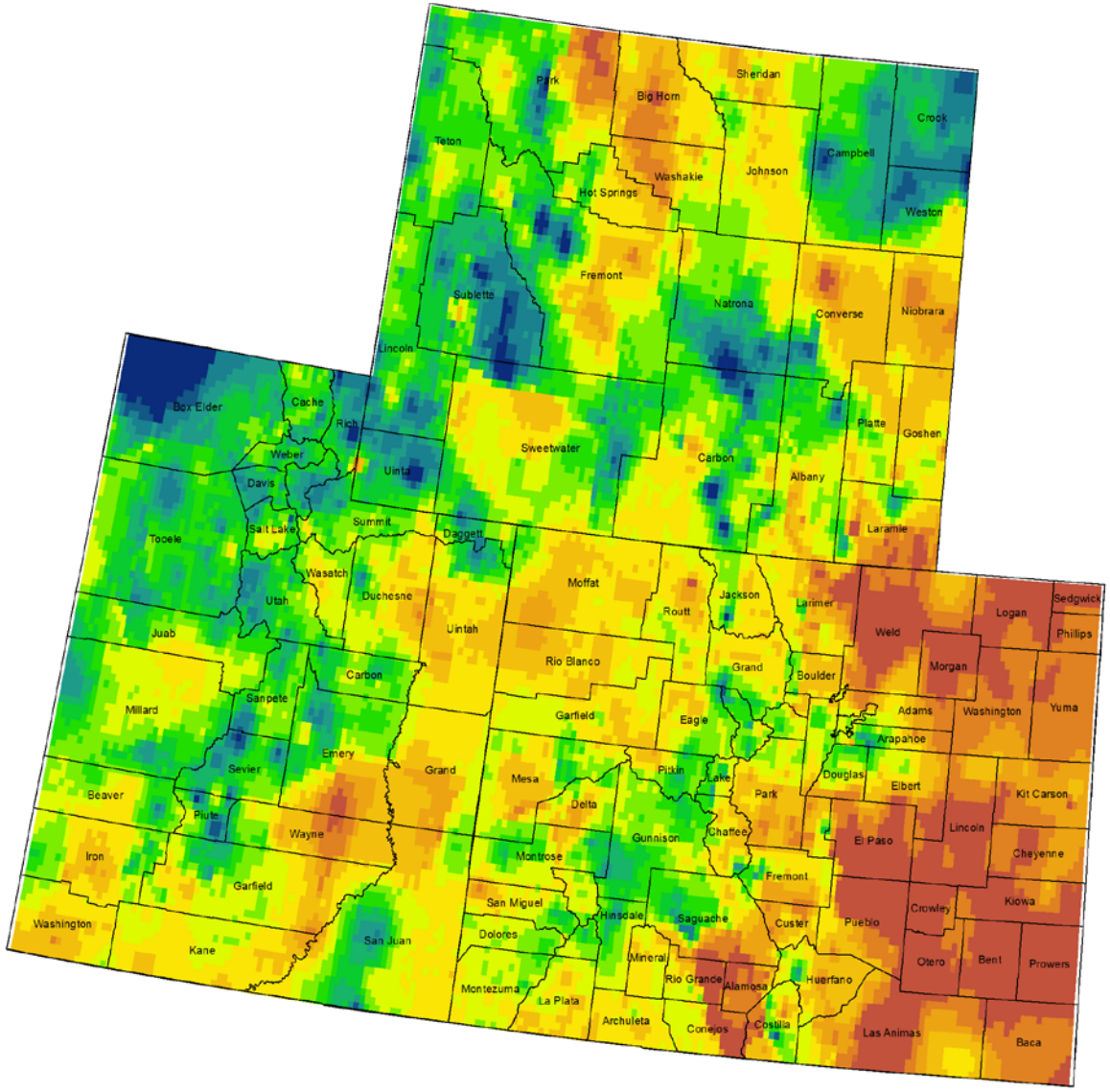
-Assessment of current water conditions

- Precipitation Forecast

- Recommendations for Drought Monitor

Precipitation/Snowpack Update

Colorado, Utah and Wyoming January 2012 Precipitation as Percent of Normal

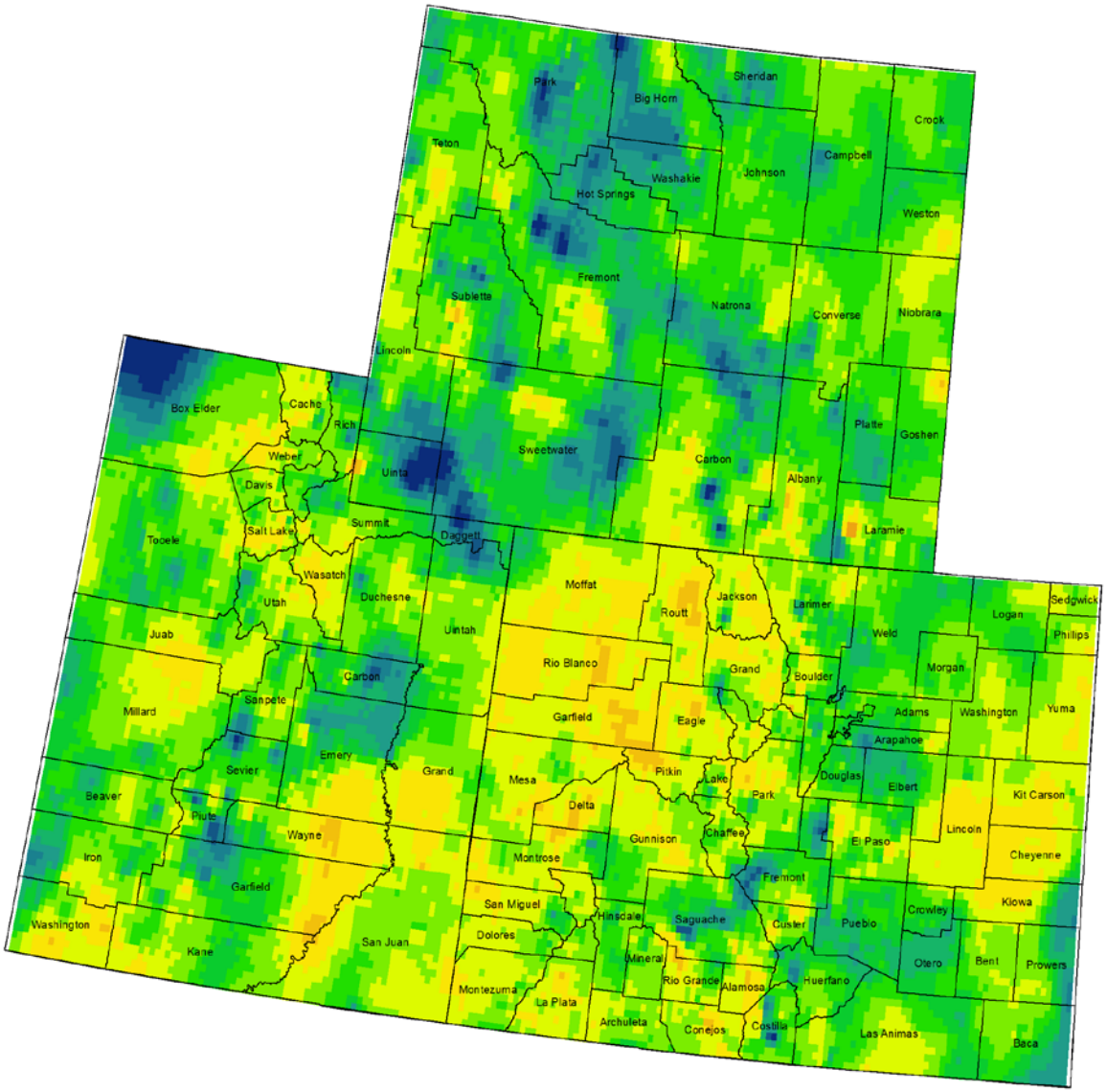


jan12_pn

% norm

- 0
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 - 170
- 171 - 200
- 201 - 250
- 251 - 300
- 300+

Colorado, Utah and Wyoming Water Year 2012 Precipitation as Percent of Normal (October 2011 - January 2012)

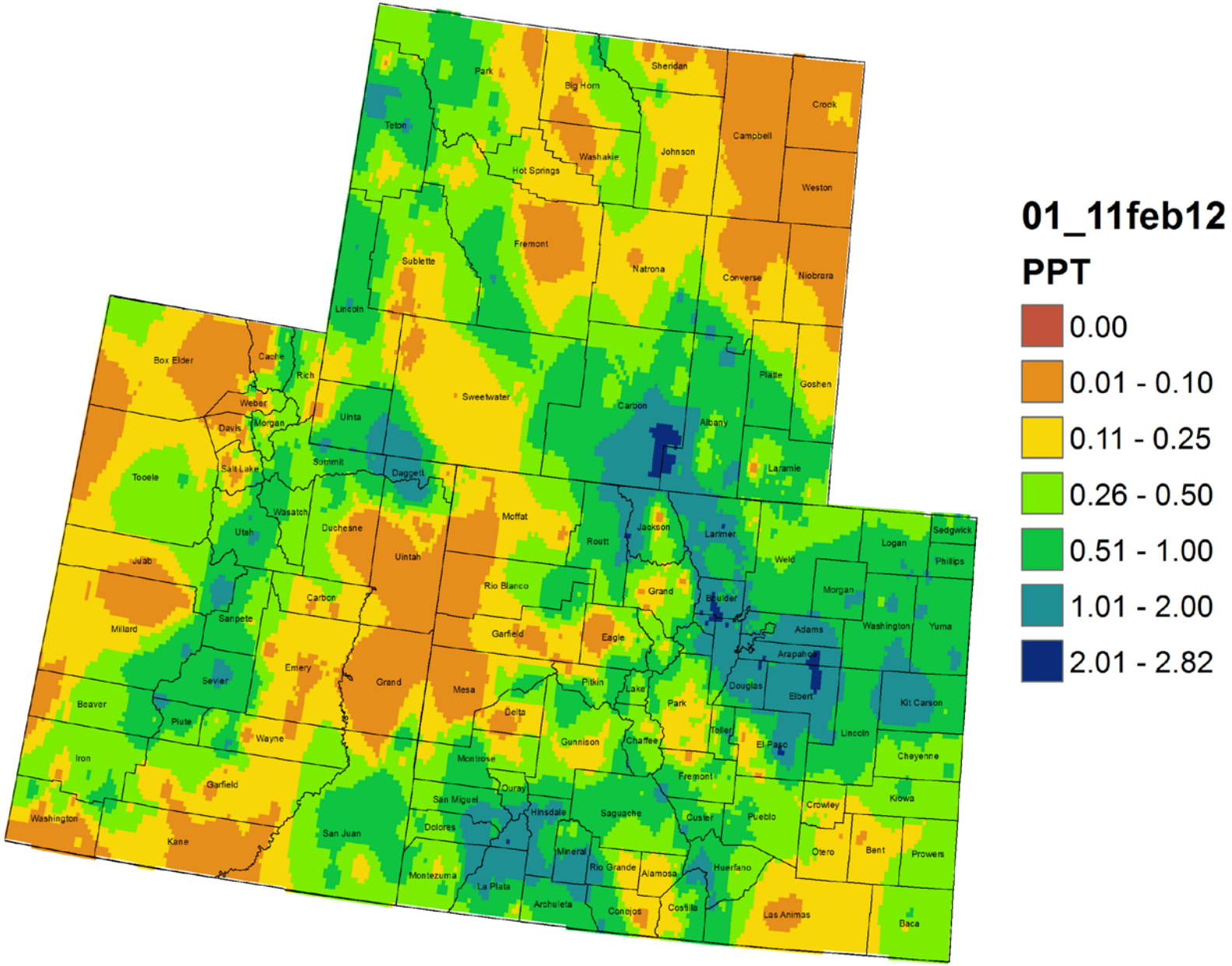


awy_jan11_pn

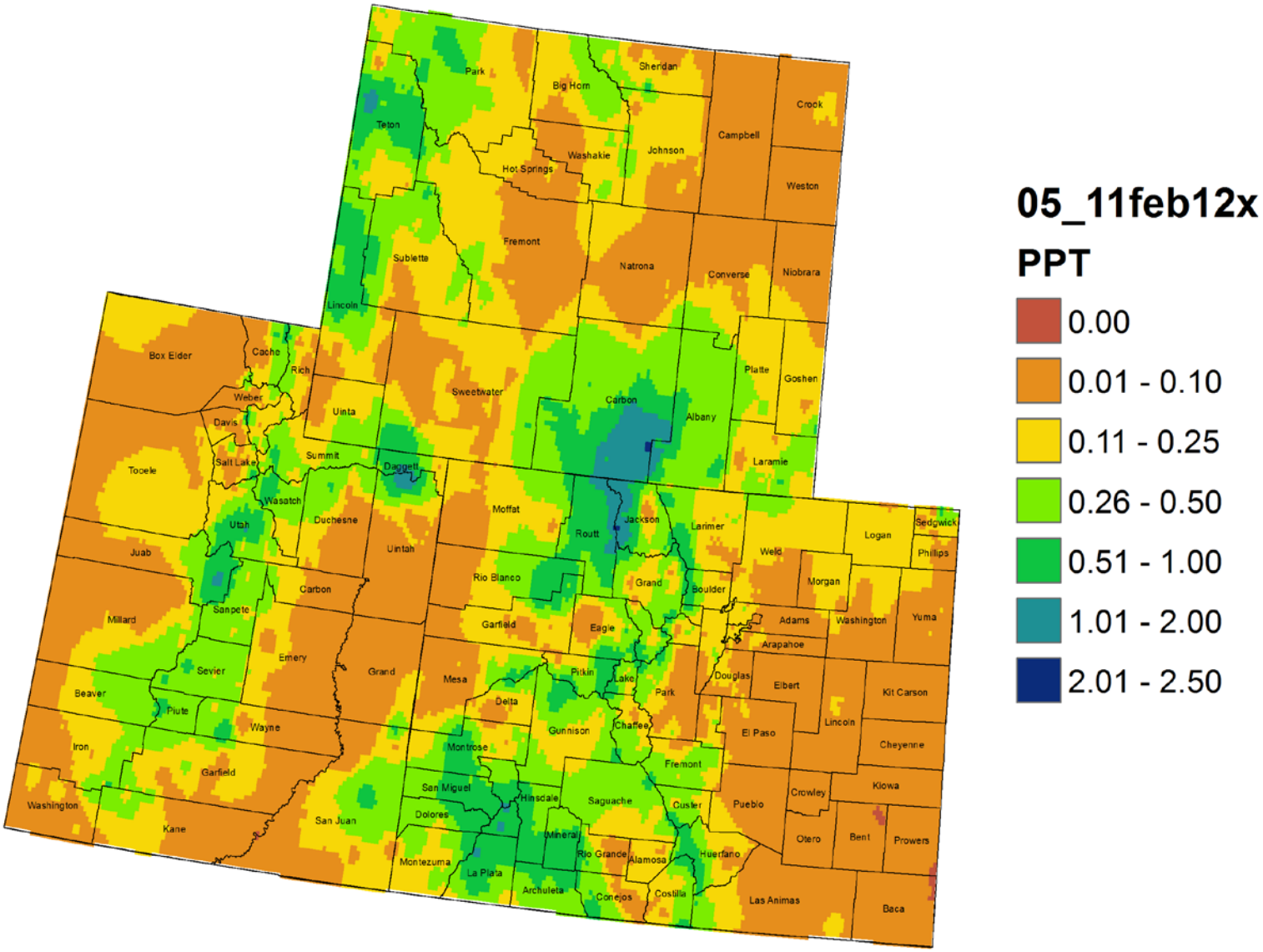
% norm

- 0
- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 - 170
- 171 - 200
- 201 - 250
- 251 - 300
- 300+

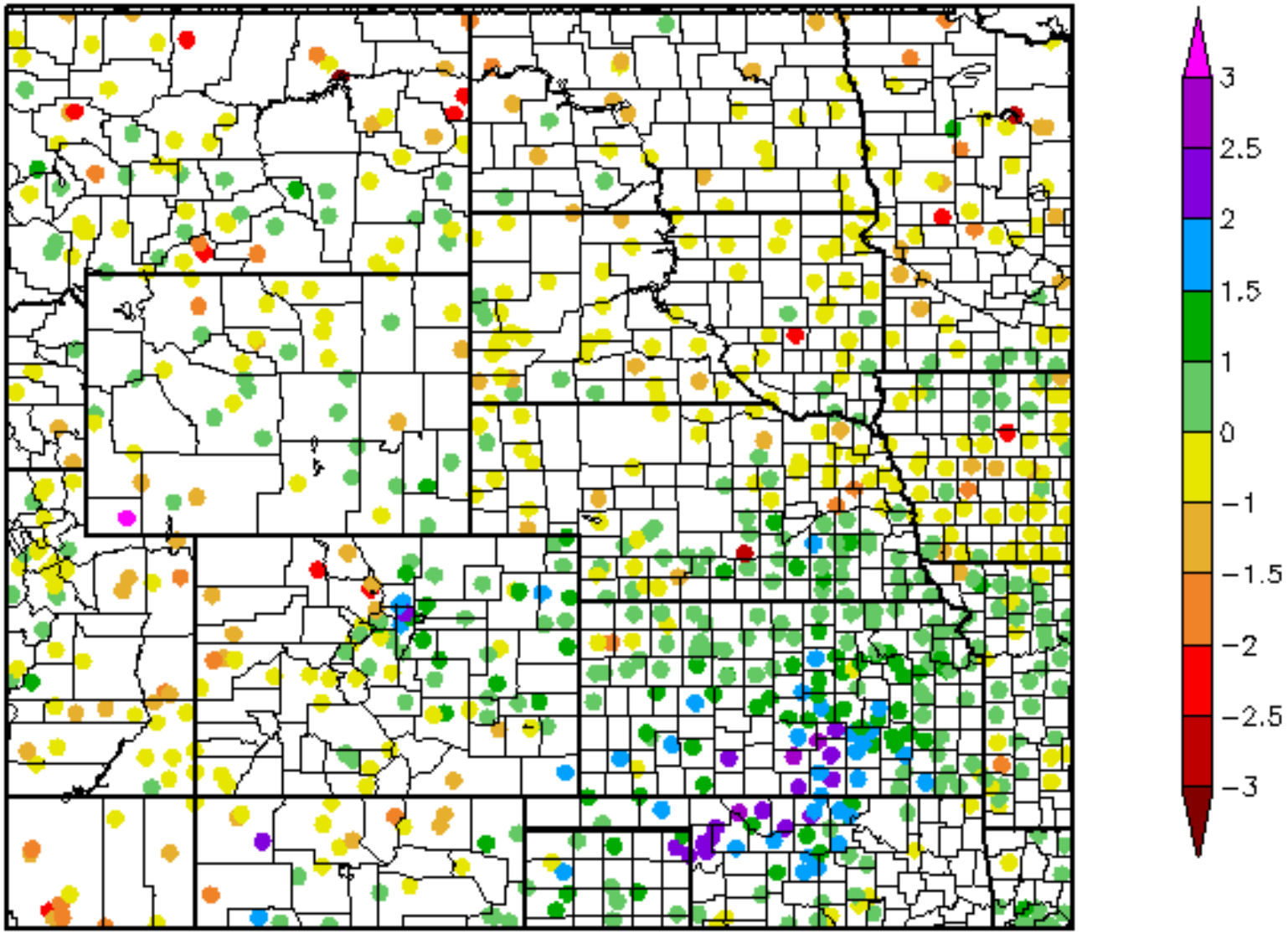
Colorado, Utah and Wyoming February Precipitation (in)
1 - 11 February 2012



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



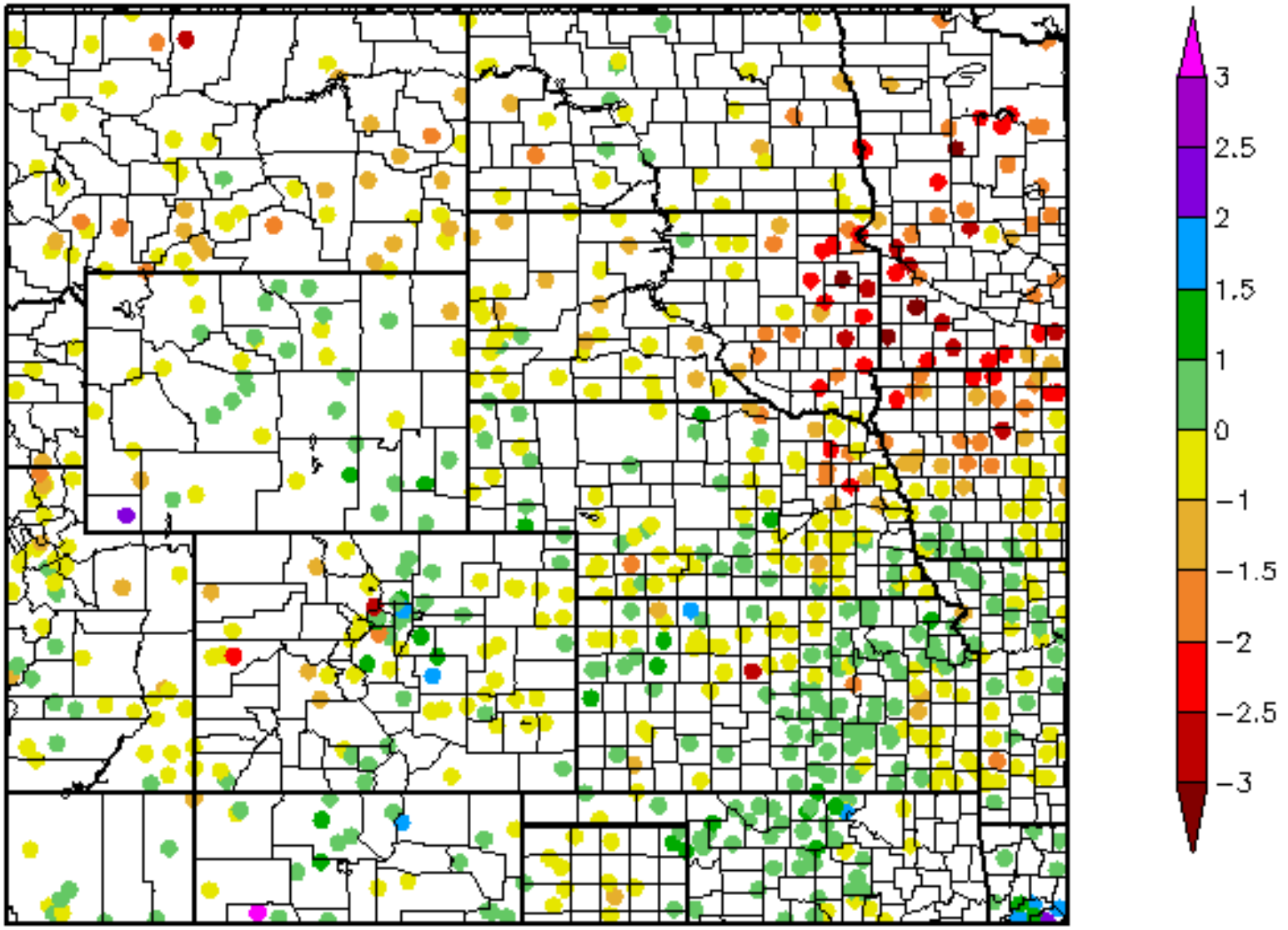
60 Day SPI
12/16/2011 – 2/13/2012



Generated 2/14/2012 at HPRCC using provisional data.

Regional Climate Centers

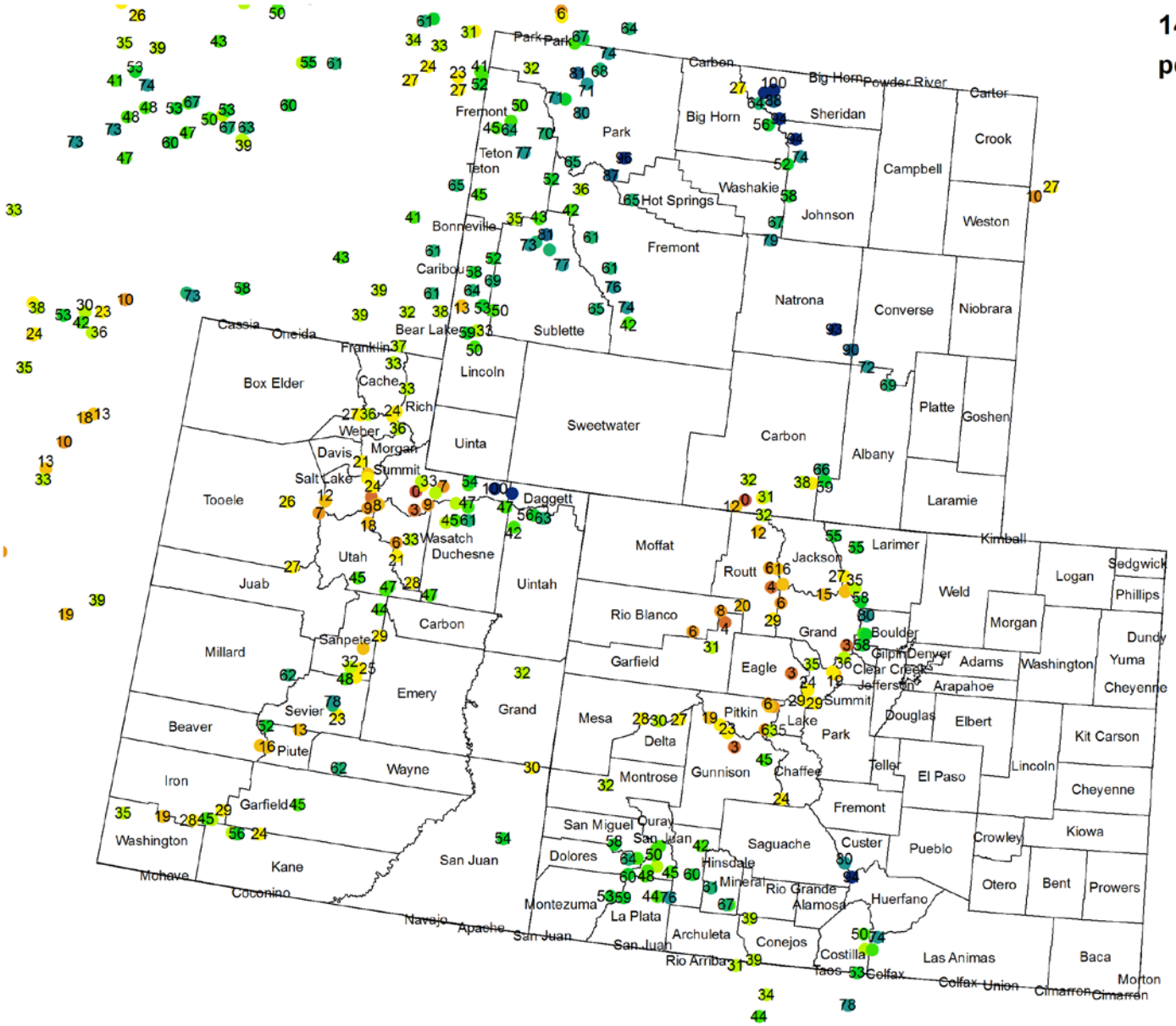
6 Month SPI
8/14/2011 – 2/13/2012



Generated 2/14/2012 at HPRCC using provisional data.

Regional Climate Centers

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

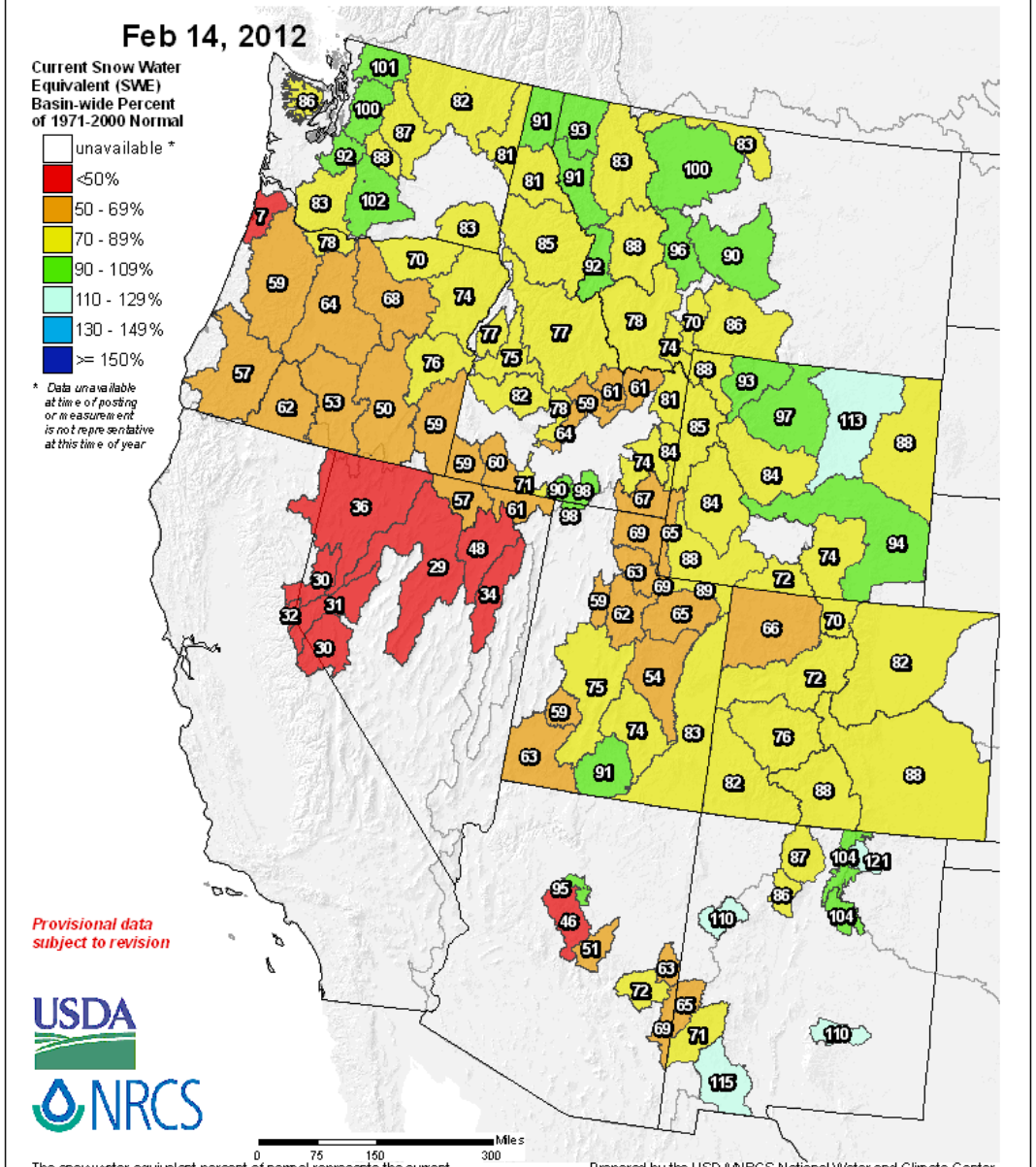


14Feb12_ptile.tab Events

pctile

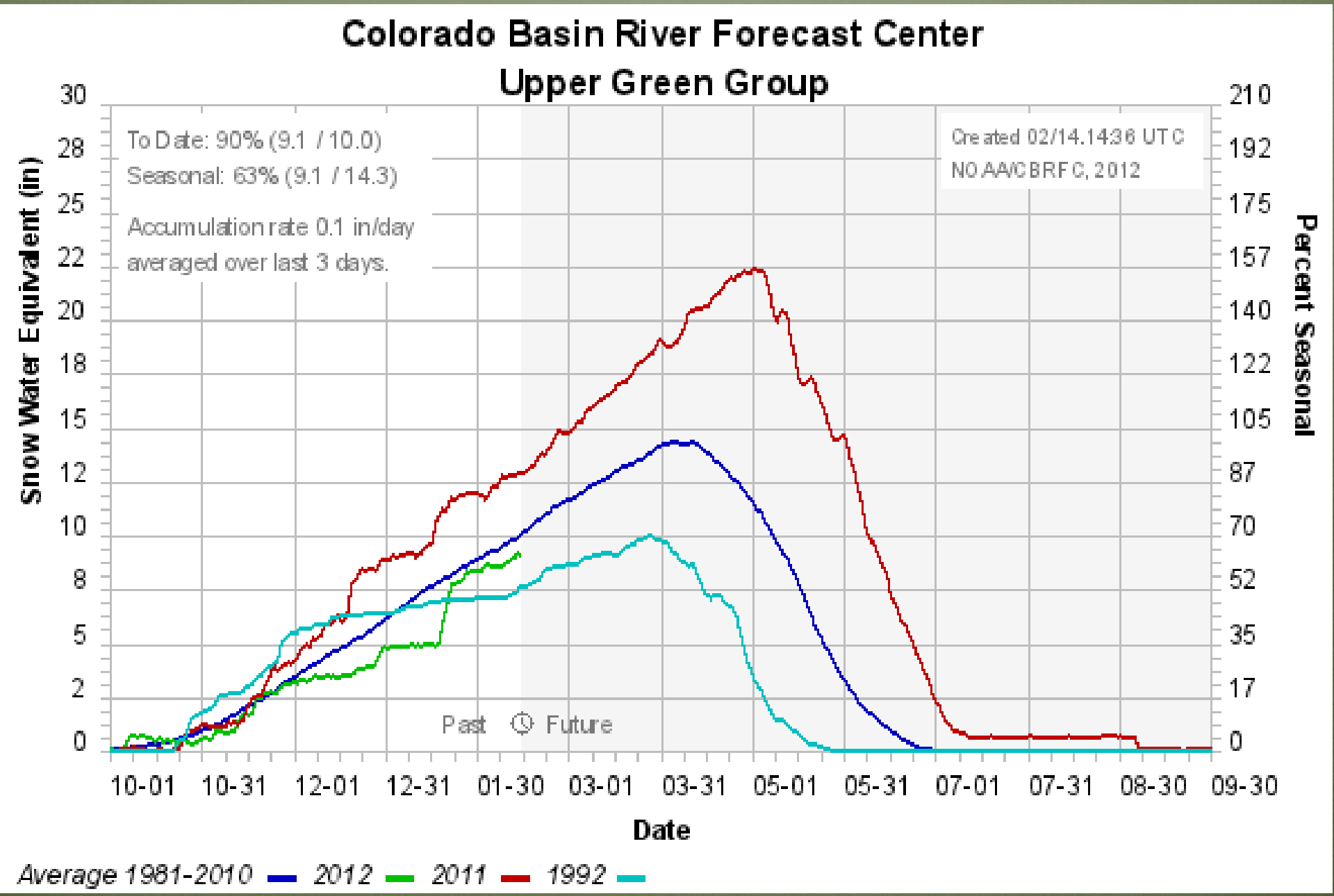
- D4: 0 - 2
- D3: 3 - 5
- D2: 6 - 10
- D1: 11 - 20
- D0: 21 - 30
- Uncategorized: 31 - 40
- Uncategorized: 41 - 50
- Uncategorized: 51 - 60
- Uncategorized: 61 - 70
- Uncategorized: 71 - 80
- Uncategorized: 81 - 90
- Uncategorized: 91 - 100

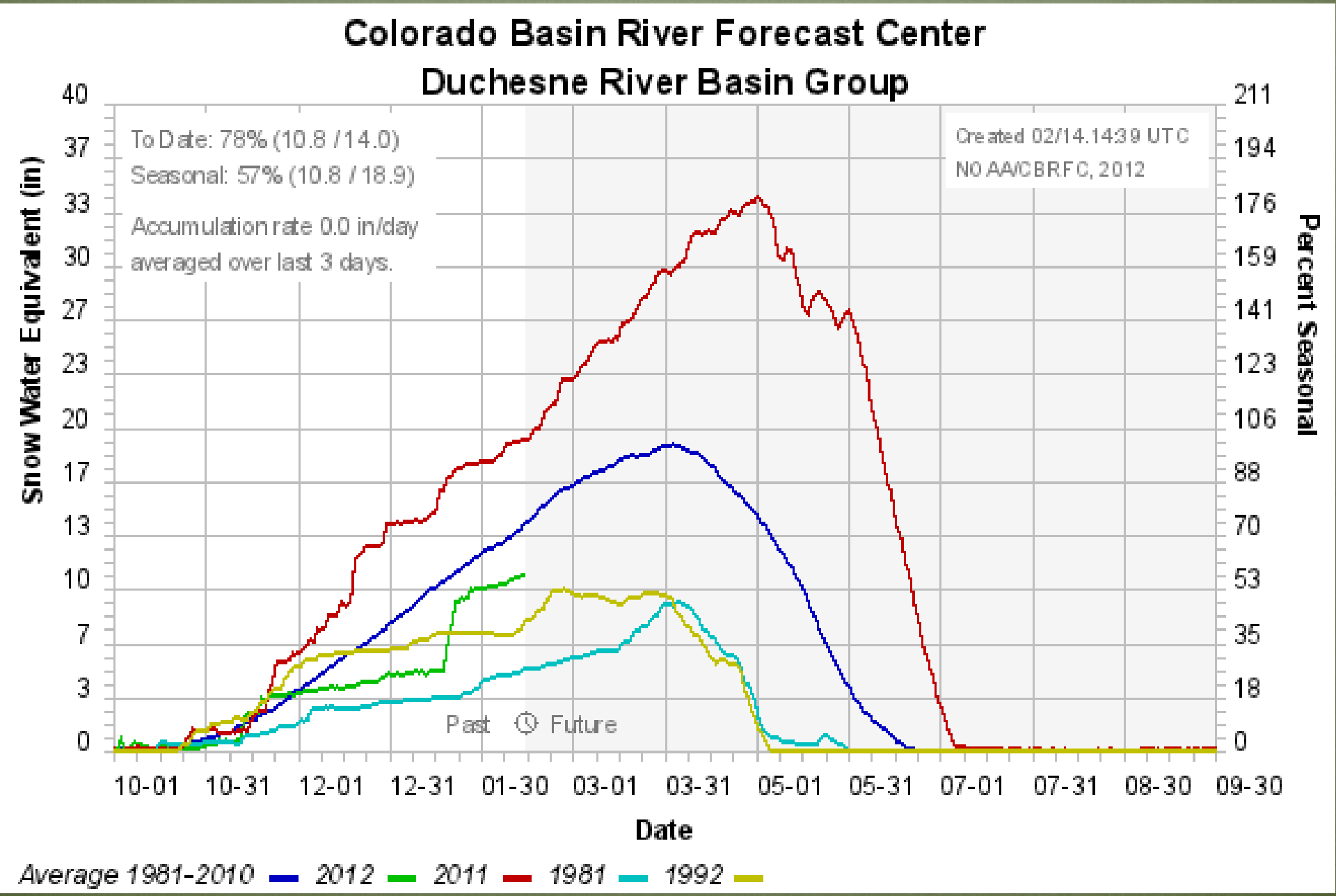
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

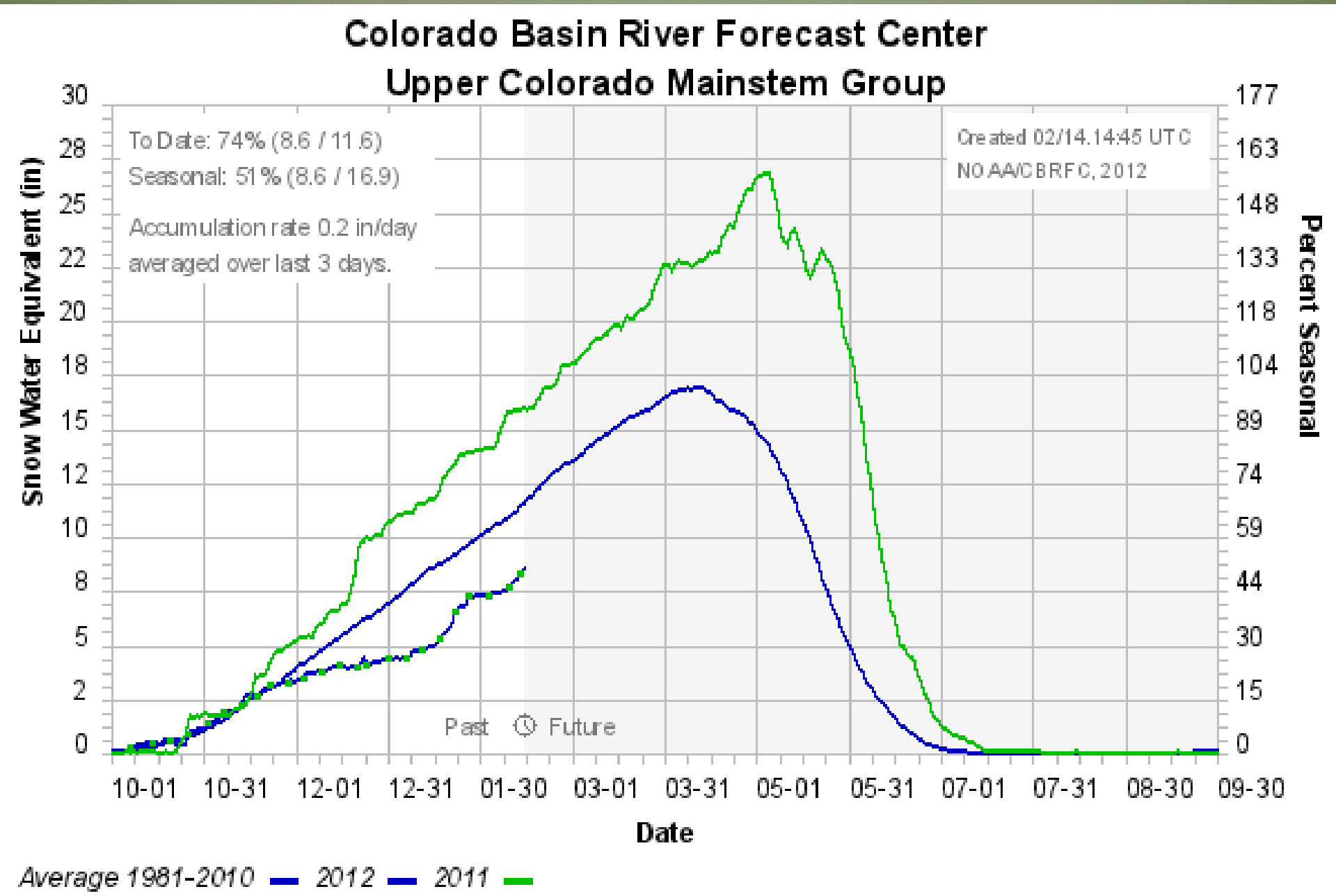


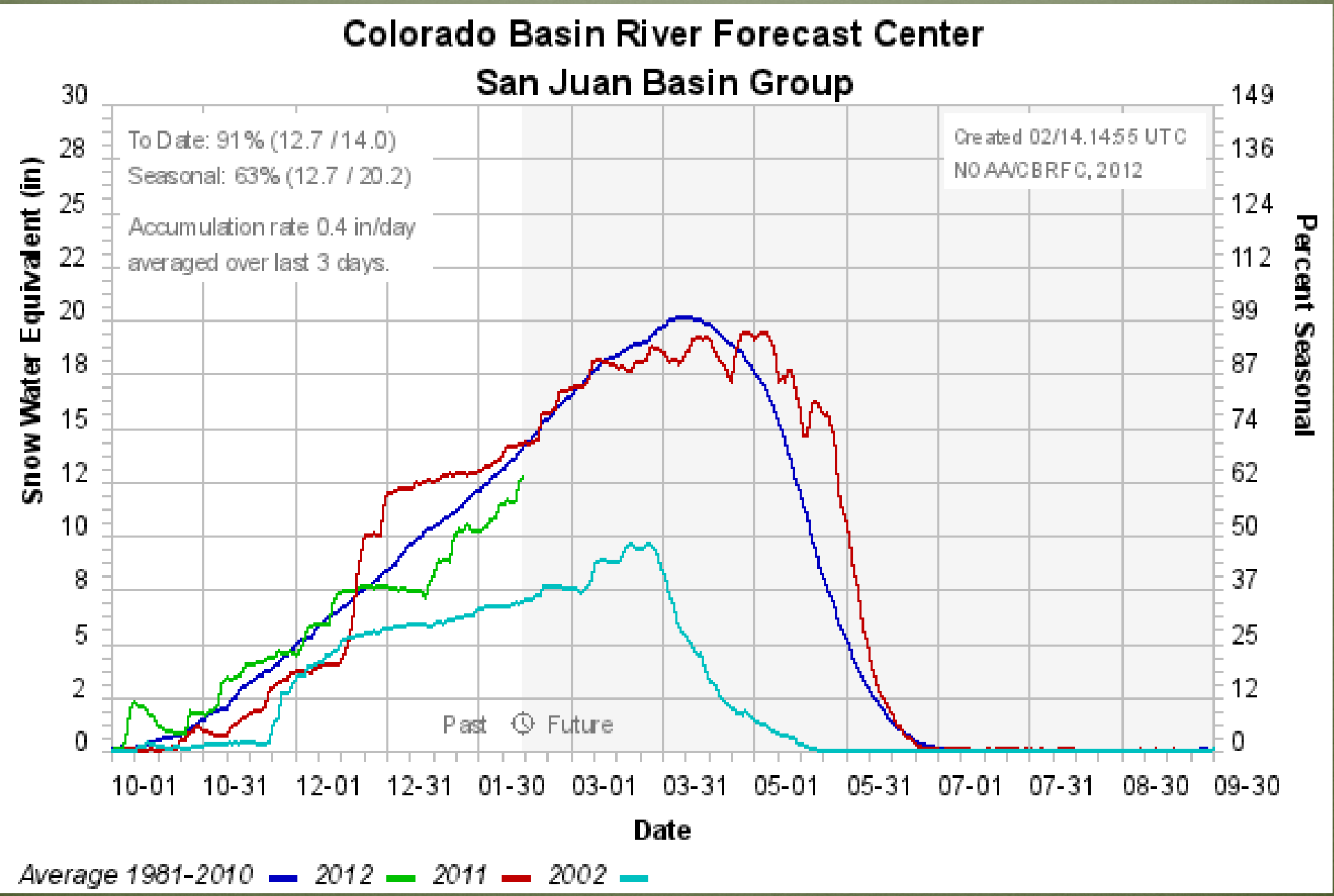
The snow water equivalent percent of normal represents the current snowwater equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047


Colorado Basin River Forecast Center
Upper Green Group
To Date: 90% (9.1 / 10.0)
Seasonal: 63% (9.1 / 14.3)
Accumulation rate 0.1 in/day
averaged over last 3 days.
Created 02/14.1436 UTC
NOAA/CBRFC, 2012
Snow Water Equivalent (in)
Percent Seasonal
30
28
25
22
20
18
15
12
10
8
5
2
0
210
192
175
157
140
122
105
87
70
52
35
17
0
Past
Future
10-01
10-31
12-01
12-31
01-30
03-01
03-31
05-01
05-31
07-01
07-31
08-30
09-30
Date
Average 1981-2010
2012
2011
1992

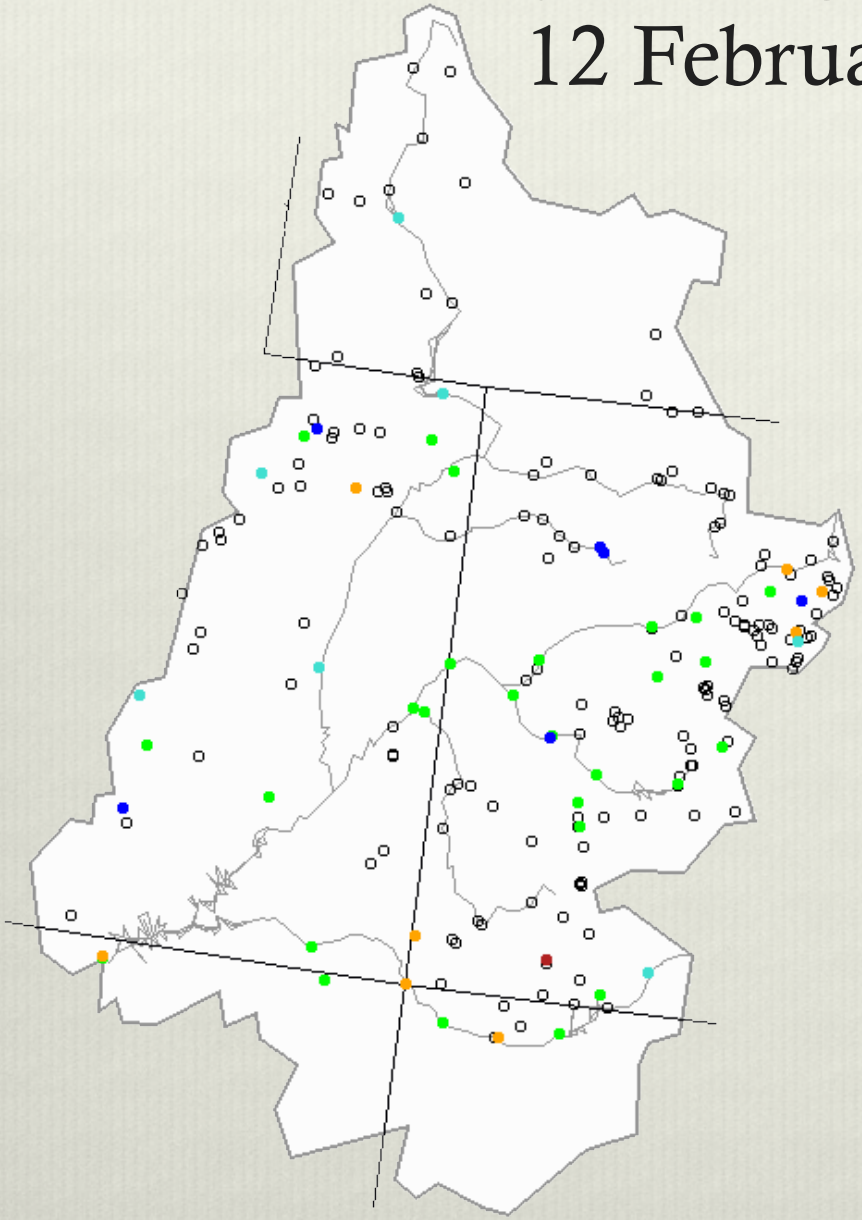

Colorado Basin River Forecast Center
Duchesne River Basin Group
To Date: 78% (10.8 / 14.0)
Seasonal: 57% (10.8 / 18.9)
Accumulation rate 0.0 in/day
averaged over last 3 days.
Created 02/14.1439 UTC
NOAA/CBRFC, 2012
Past
Future
Snow Water Equivalent (in)
Percent Seasonal
40
37
33
30
27
23
20
17
13
10
7
3
0
211
194
176
159
141
123
106
88
70
53
35
18
0
10-01
10-31
12-01
12-31
01-30
03-01
03-31
05-01
05-31
07-01
07-31
08-30
09-30
Date
Average 1981-2010
2012
2011
1981
1992


Colorado Basin River Forecast Center
Upper Colorado Mainstem Group
To Date: 74% (8.6 / 11.6)
Seasonal: 51% (8.6 / 16.9)
Accumulation rate 0.2 in/day
averaged over last 3 days.
Created 02/14.14:45 UTC
NOAA/CBRFC, 2012
Past
Future
Snow Water Equivalent (in)
Percent Seasonal
Date
10-01
10-31
12-01
12-31
01-30
03-01
03-31
05-01
05-31
07-01
07-31
08-30
09-30
0
2
5
8
10
12
15
18
20
22
25
28
30
0
15
30
44
59
74
89
104
118
133
148
163
177
Average 1981-2010
2012
2011


Colorado Basin River Forecast Center
San Juan Basin Group
To Date: 91% (12.7 /14.0)
Seasonal: 63% (12.7 / 20.2)
Accumulation rate 0.4 in/day
averaged over last 3 days.
Created 02/14.14:55 UTC
NOAA/CBRFC, 2012
Past
Future
Snow Water Equivalent (in)
Percent Seasonal
Date
30
28
25
22
20
18
15
12
10
8
5
2
0
149
136
124
112
99
87
74
62
50
37
25
12
0
10-01
10-31
12-01
12-31
01-30
03-01
03-31
05-01
05-31
07-01
07-31
08-30
09-30
Average 1981-2010
2012
2011
2002

Streamflow Update

7-Day Average Streamflow
12 February 2012

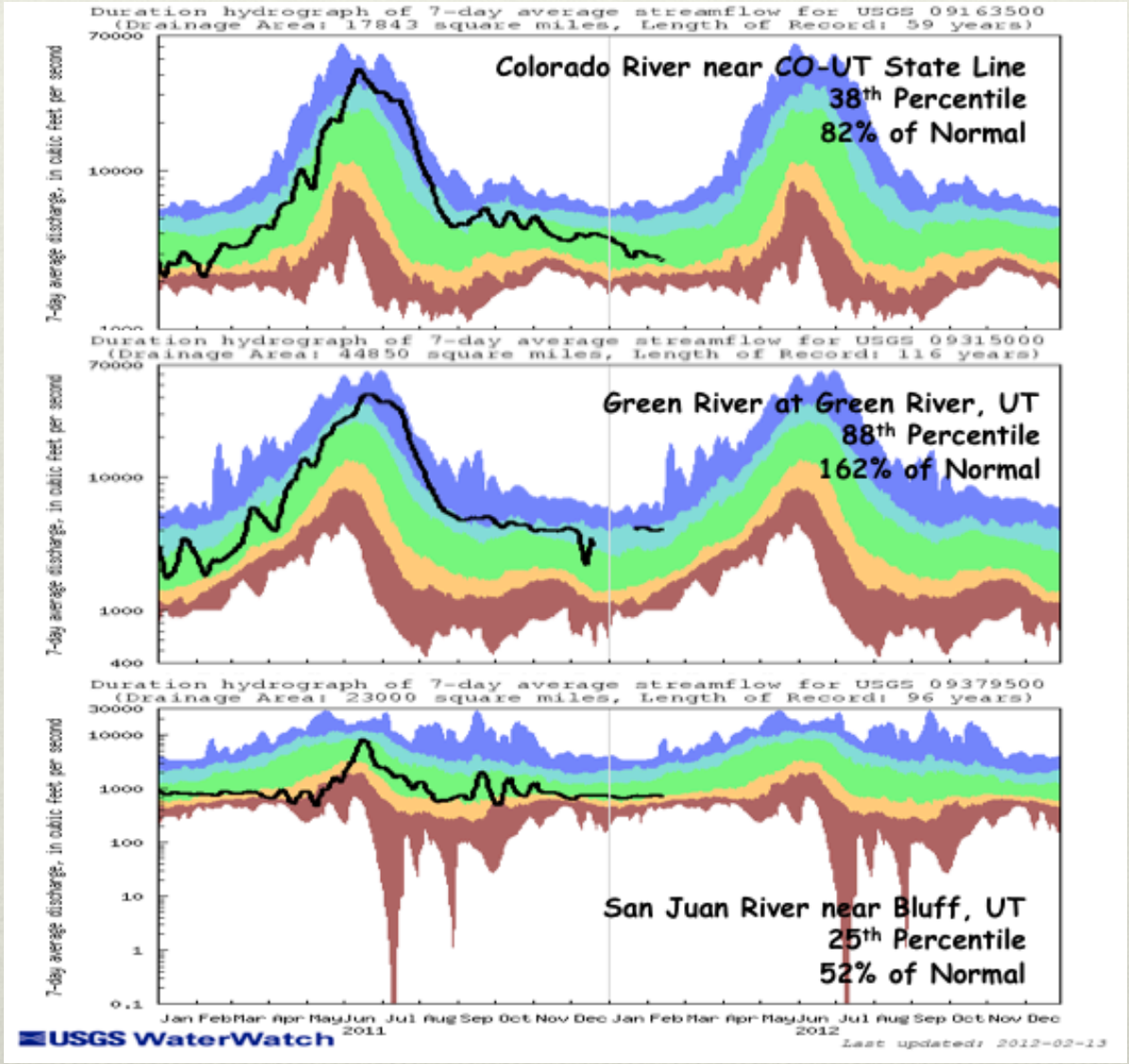


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

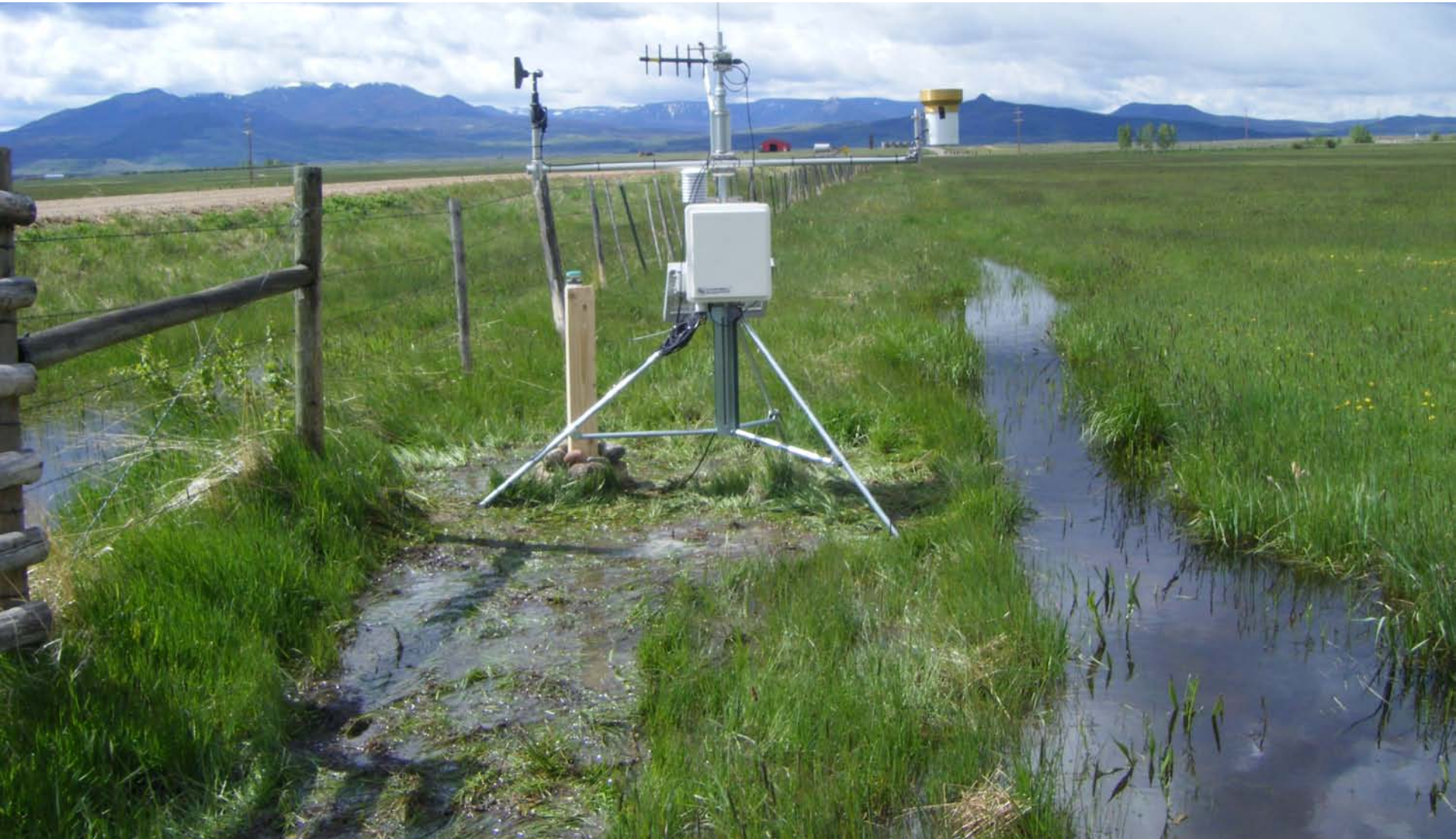
USGS

7-Day Average Hydrographs
12 February 2012

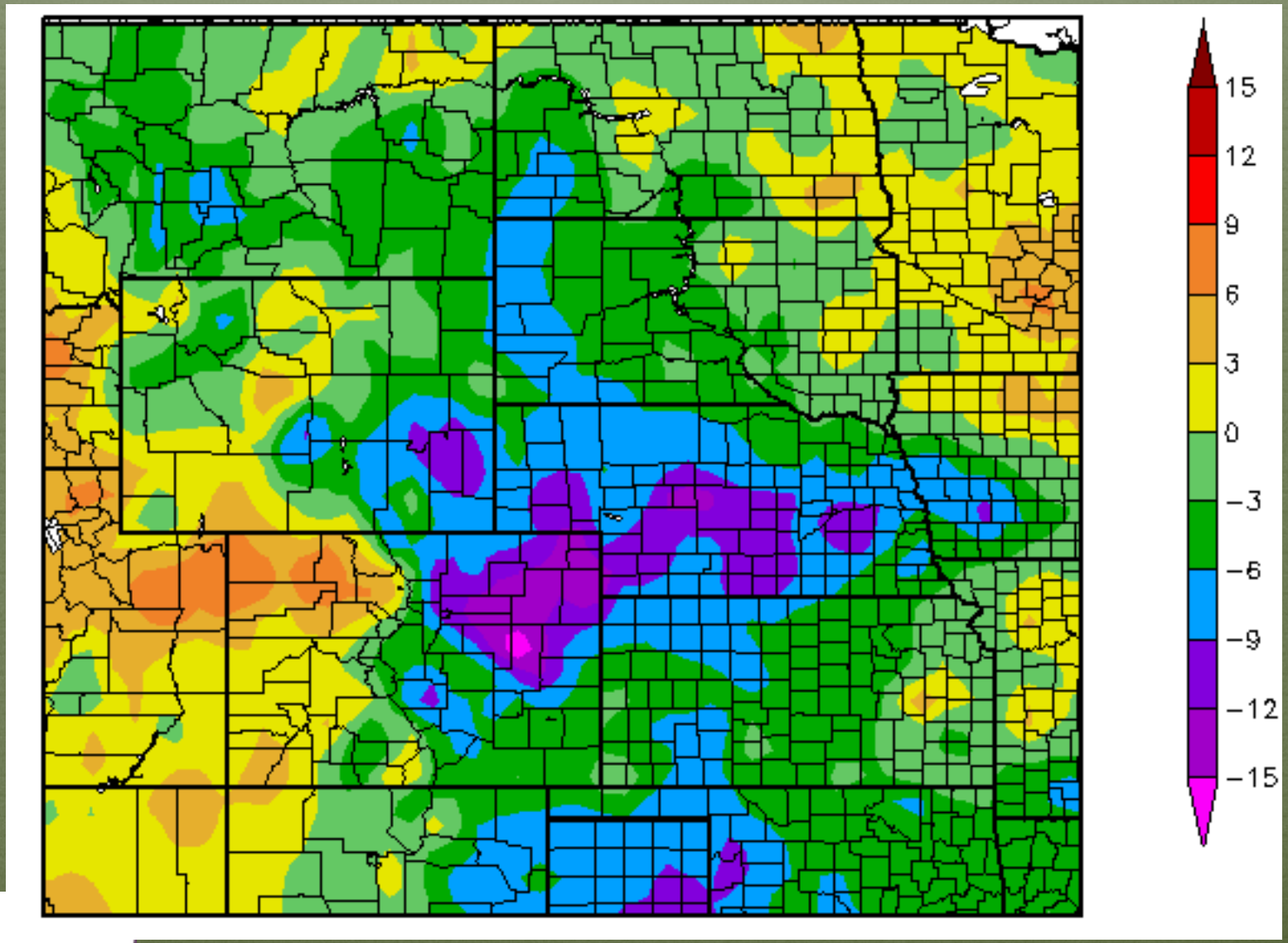
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		



Water Demand

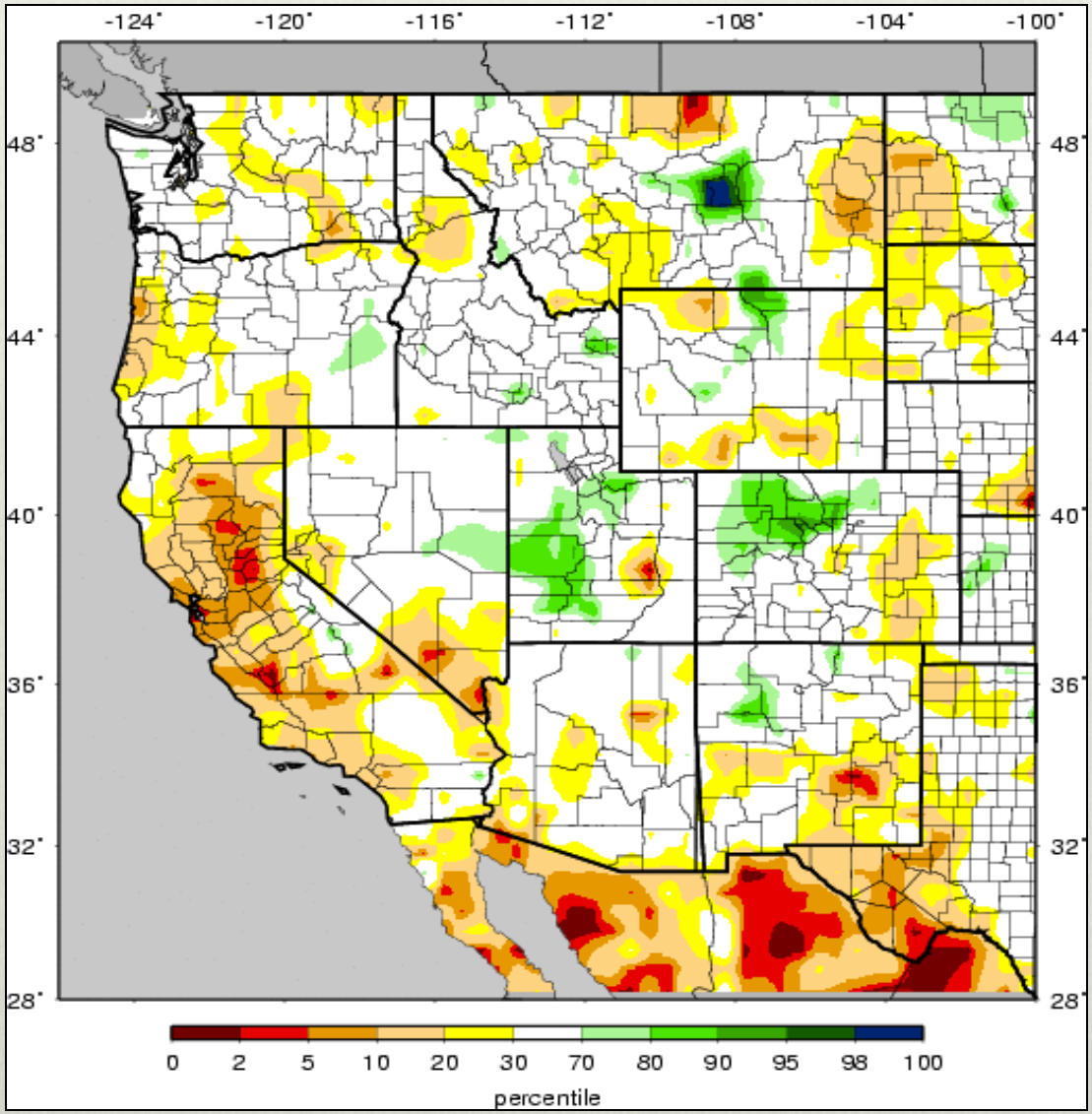


Temperature Departure from Normal
02/06/2012 – 02/12/2012



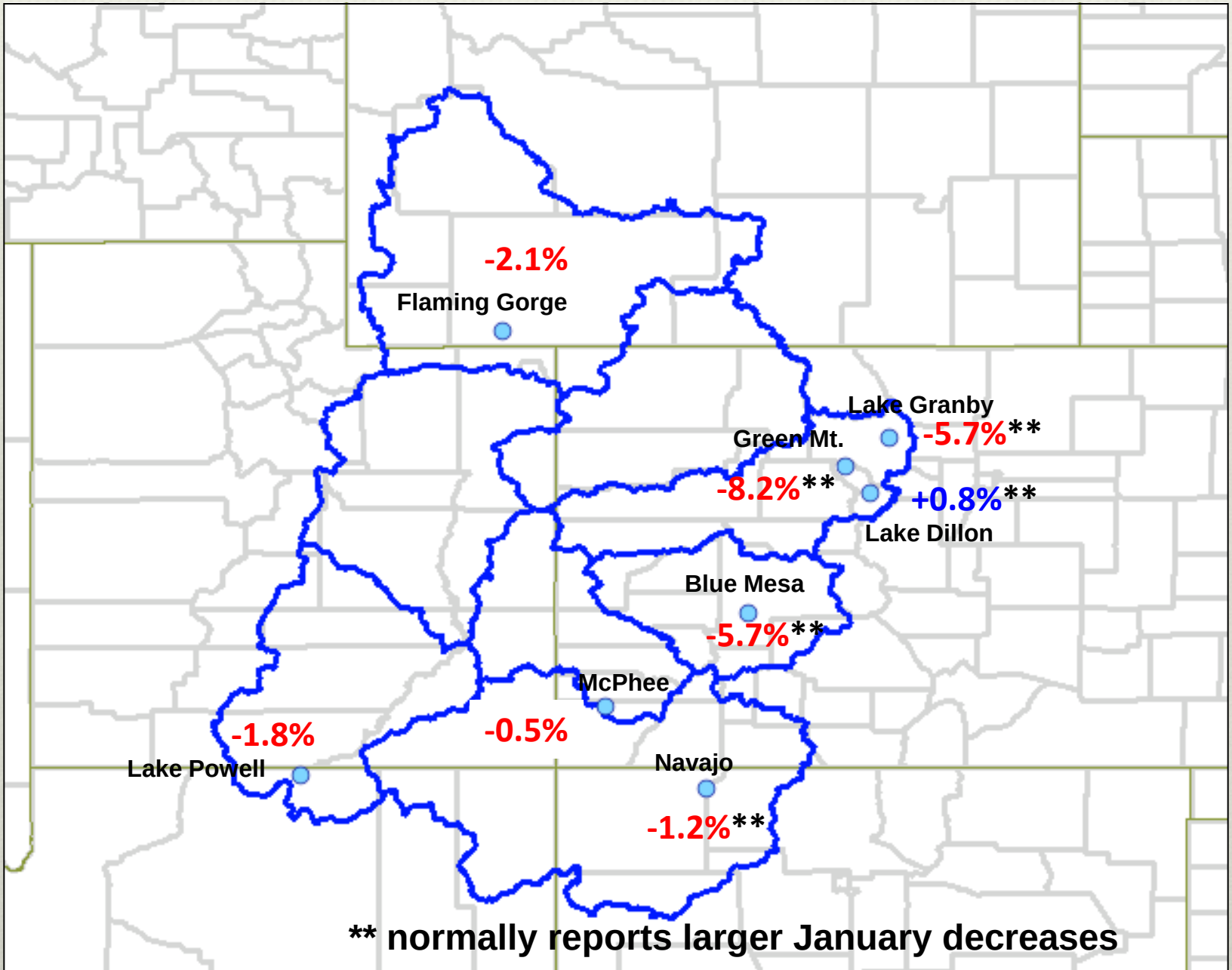
High Plains Regional Climate Center

VIC Soil Moisture
12 February 2012



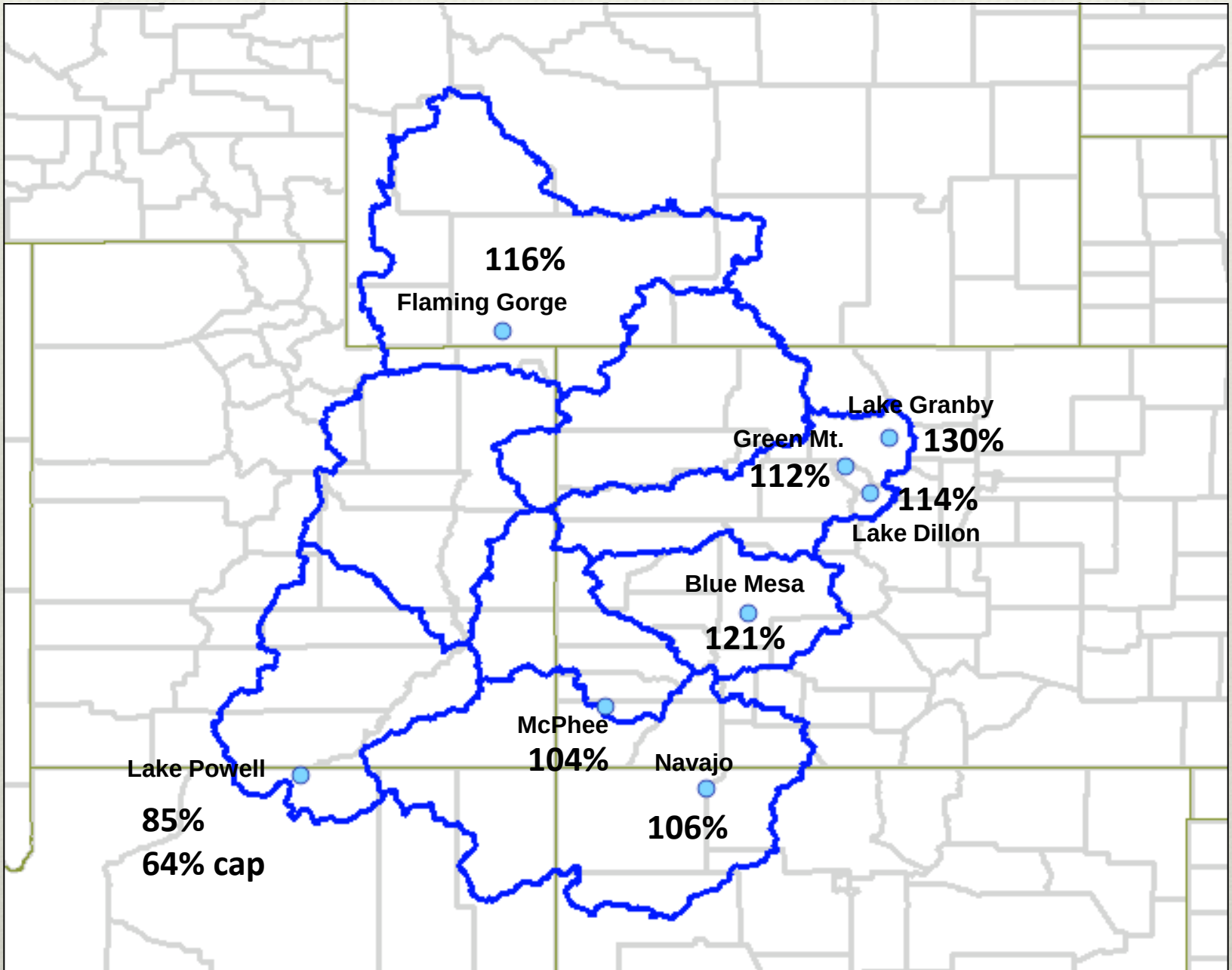
Reservoir Update

January Reservoir Storage Volume Change

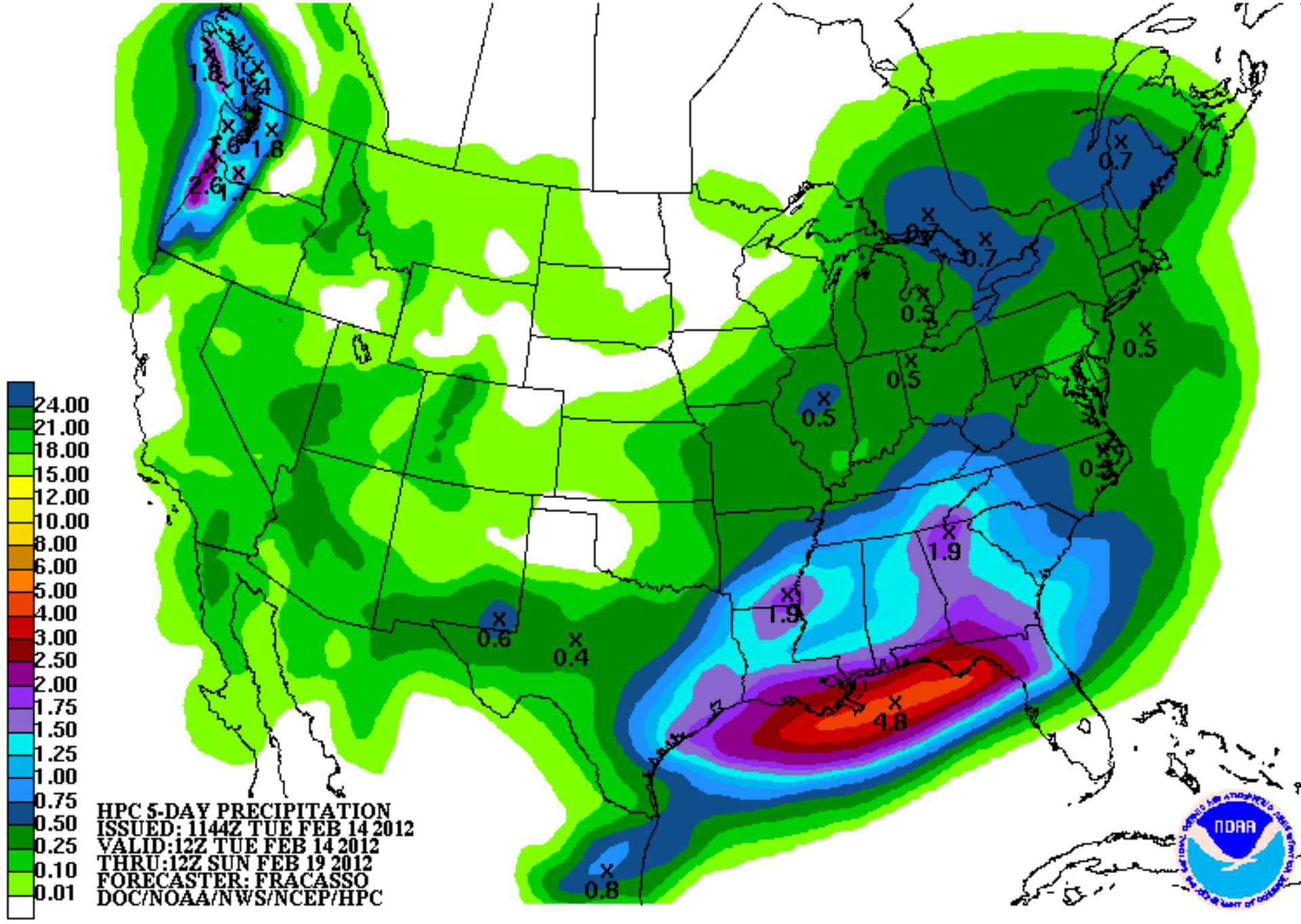


** normally reports larger January decreases

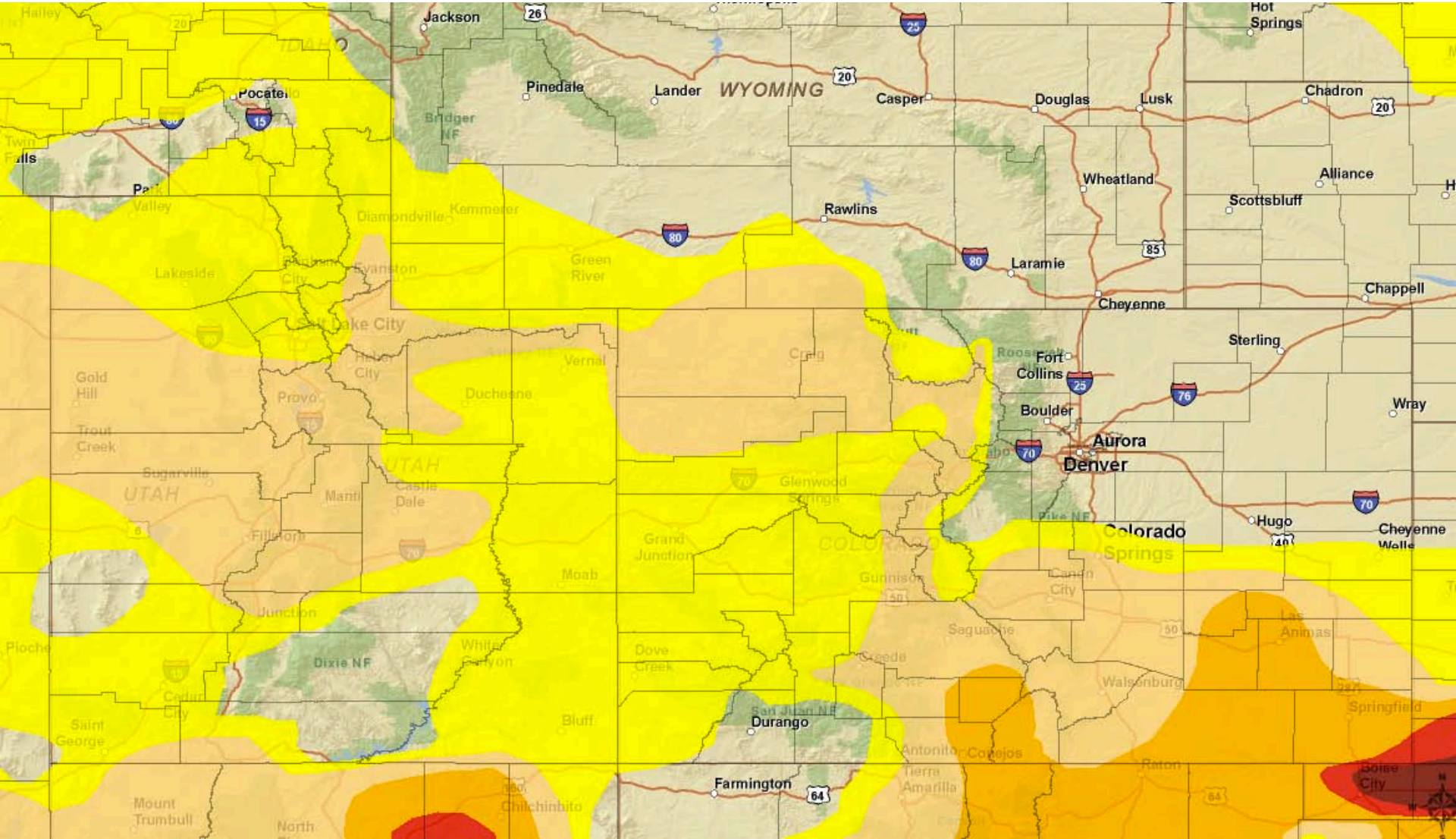
Reservoir Storage as Percent of February Average



Precipitation Forecast


24.00
21.00
18.00
15.00
12.00
10.00
8.00
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: 1144Z TUE FEB 14 2012
VALID:12Z TUE FEB 14 2012
THRU:12Z SUN FEB 19 2012
FORECASTER: FRACASSO
DOC/NOAA/NWS/NCEP/HPC
1.8
1.4
1.6
1.8
2.6
0.7
0.7
0.7
0.5
0.5
0.5
0.5
0.6
0.4
1.9
1.9
4.8
0.8
NOAA

Recommendations



INFO

For more information

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

February 14, 2012

Precipitation and Snowpack

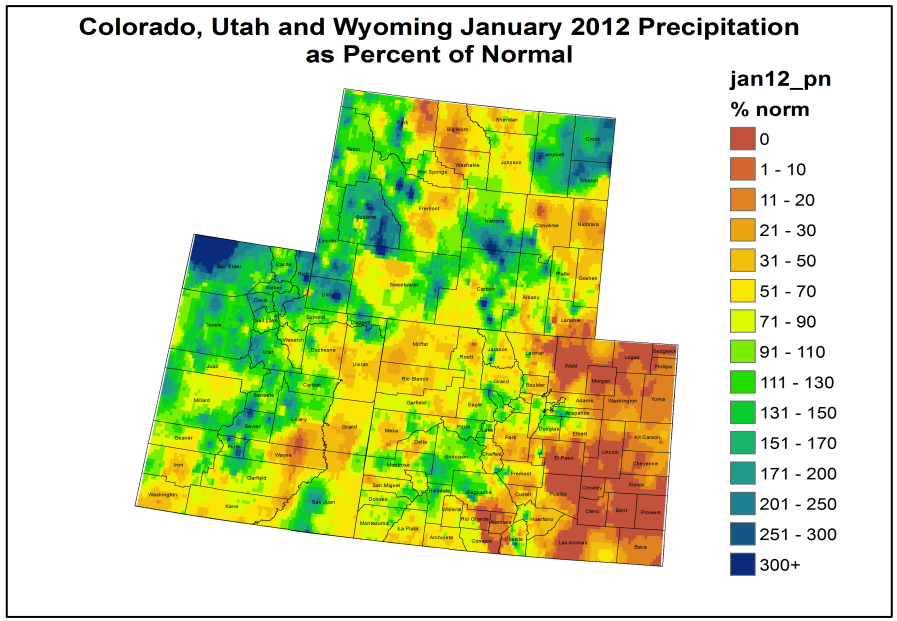


Fig. 1: January precipitation as a percent of average.

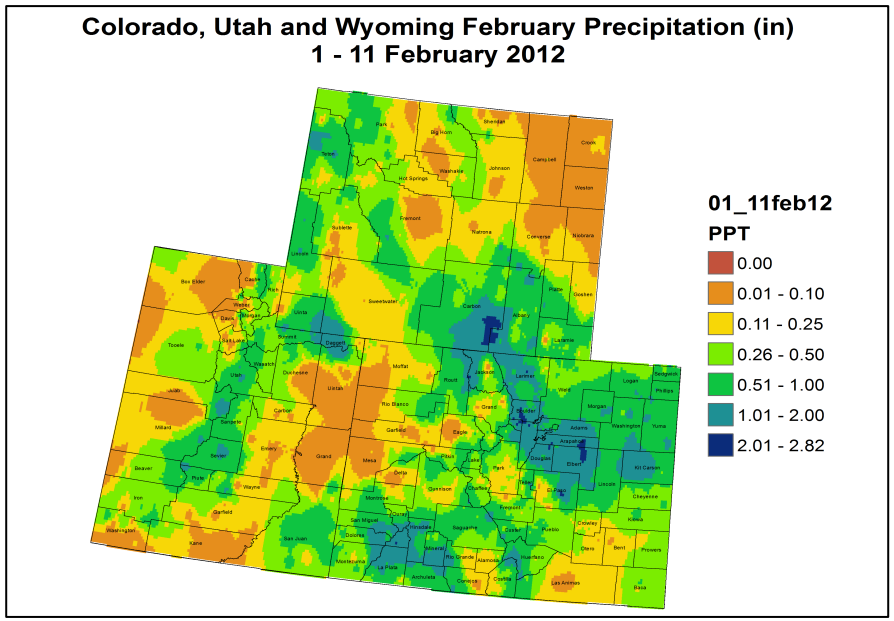


Fig. 2: February 1 – 11 precipitation in inches.

After a dry December through most of the Upper Colorado River Basin, drier than average conditions were observed across much of the UCRB for the month of January (Fig. 1). Spotty areas of near normal precipitation for the month show up in the Gunnison basin in Colorado and in the Wasatch mountains in Utah. Near to above normal precipitation was seen in the Upper Green River basin in Wyoming. Much of the lower elevations of the UCRB have received less than 70% of average precipitation for the month. Eastern CO was also drier for the month, with most areas receiving less than 50% of average.

For the month of February so far, the heaviest amounts of precipitation have fallen over the San Juan mountains in the southern part of the basin and the Wasatch mountains in UT (Fig. 2), with accumulations ranging from half an inch to 2 inches (which is about average for this time of year). Some of the higher elevations in northern and central CO have also received between a quarter inch to 2 inches of precipitation for the month, while the lower elevations in western CO and eastern UT have been relatively drier, seeing less than a tenth of an inch in many areas.

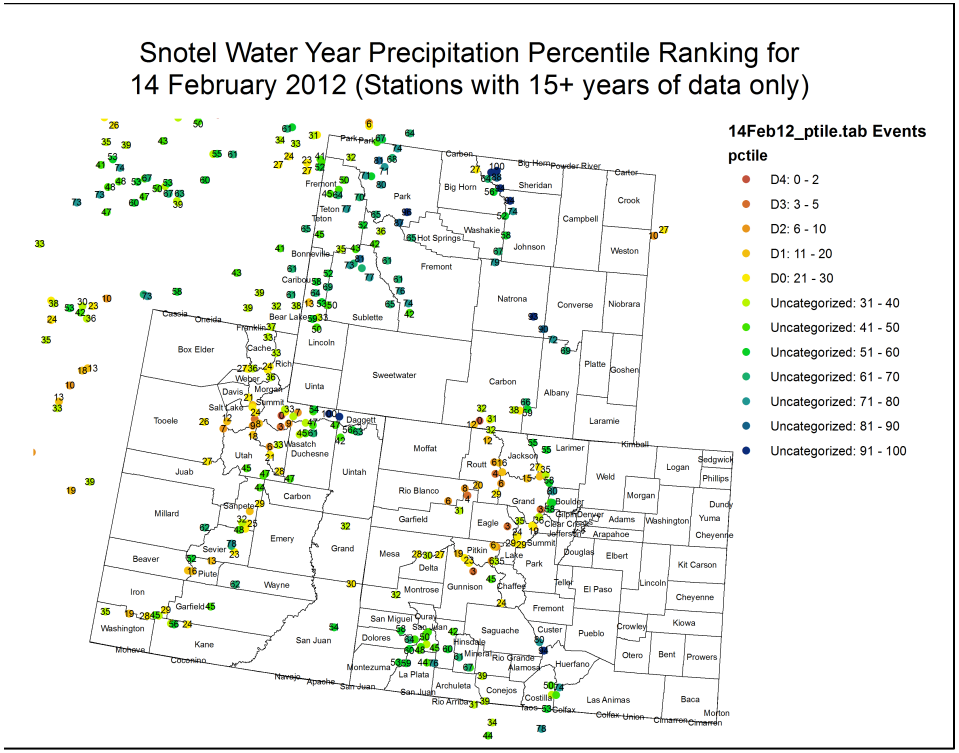


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

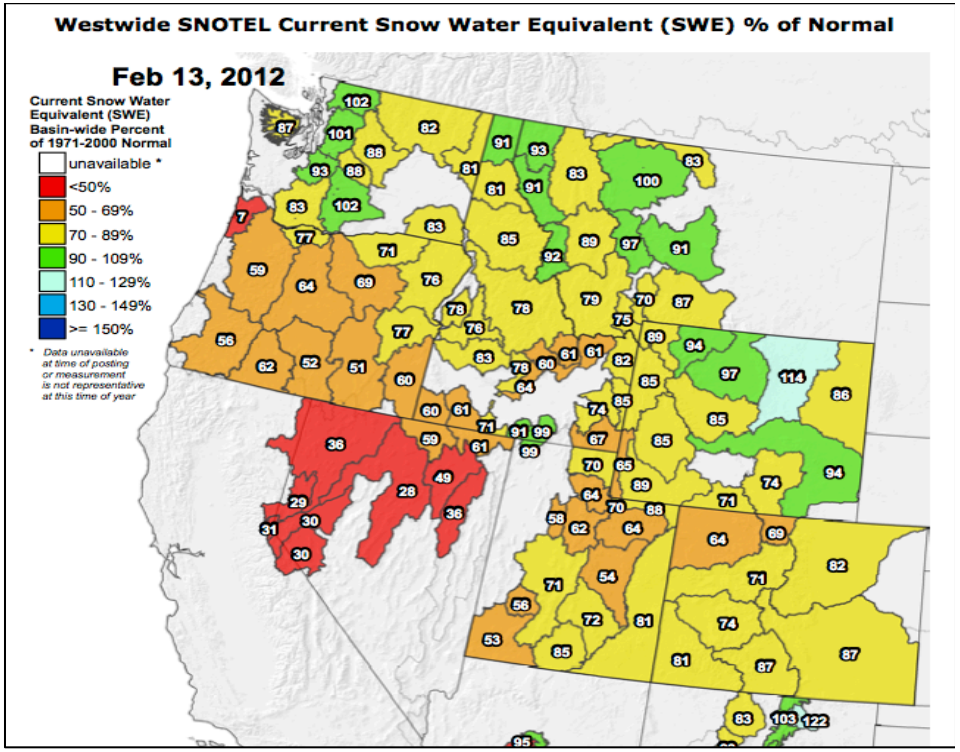


Fig. 4: Basin snow water equivalent (SWE) as a percent of average.

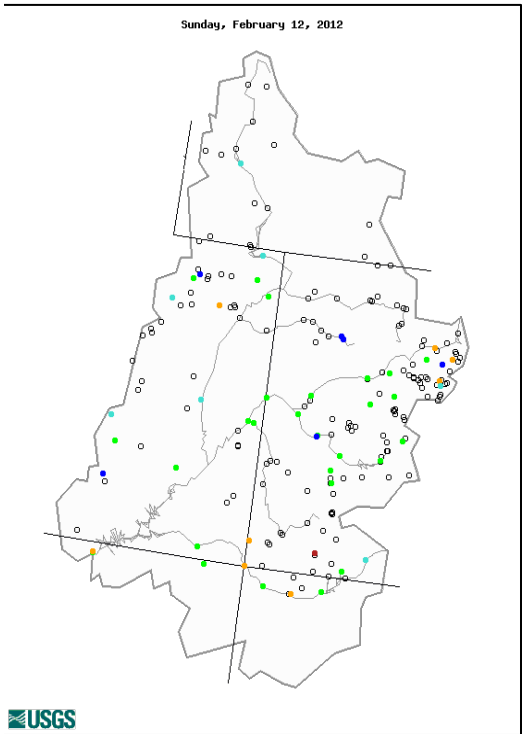
Water-year-to-date (WYTD), SNOTEL precipitation percentiles are low for much of the Yampa and Colorado headwaters basins, and along the Wasatch range in UT (Fig. 3). Percentiles in those areas range from the single digits to around the 20th percentile, with the higher values mainly on north facing slopes or east of the Continental Divide. SNOTEL percentiles in the Upper Green basin in WY are generally above the 50th percentile, and most in the San Juan basin in southern CO are near the 50th percentile.

Snowpack conditions around the UCRB are all below normal (Fig. 4) with most of the sub-basins recording 85% of average or less for snowpack. The southern part of the basin is showing around 75% to 85% of average snowpack for the season, while northwest CO and areas in northeast UT are drier, with less than 70% of average snowpack. The northern portion of the basin is showing between 85% and 90% of average snowpack.

Streamflow

As of February 12th, 82% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). About 28% of the gages in the basin are recording above normal flows, while about 19% of the gages in the basin are recording below normal flows. The number of reporting gages in the basin has decreased from over 100 in mid-November to just below 50, as many portions of the rivers are frozen over. There are currently 9 gages recording below normal flows with most of those located near the Colorado River Headwaters region or in the San Juan basin.

Key gages on the Colorado River at the CO-UT state line and the San Juan River near Bluff, UT are currently recording flows in the normal range at the 38th and 25th percentiles, respectively (Fig. 6). Flows at these two gages have been dropping more than what is normal for this time of year. The gage on the Green River at Green River, UT had become "ice affected" in mid-December and had stopped recording streamflow. It is again recording and now showing above normal flows.



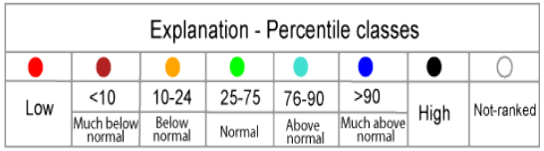


Fig. 5: 7-day average discharge compared to historical discharge for February 12th.

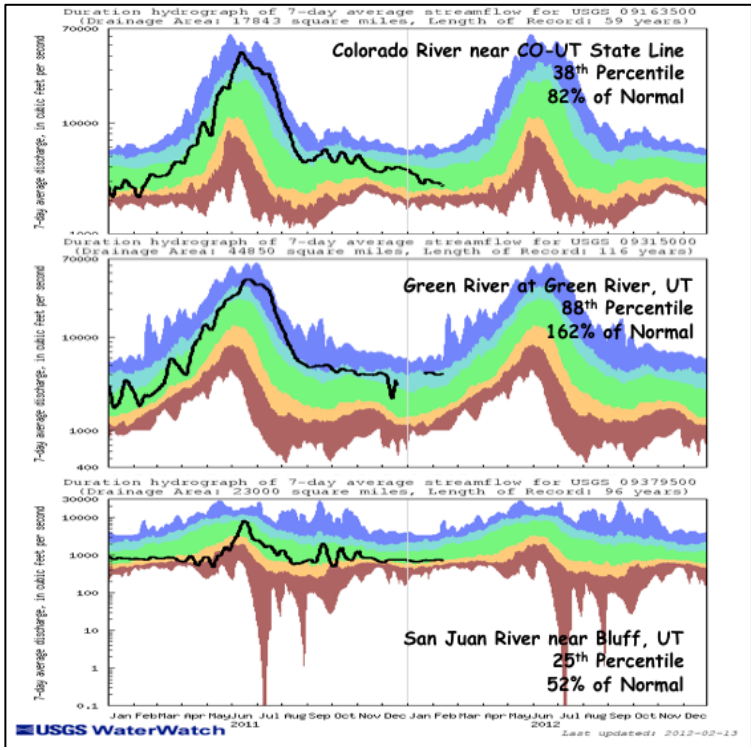


Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Much of the UCRB saw warmer than average temperatures last week, with some areas in northwest CO and northeast UT seeing temperatures more than 6 degrees warmer than average. East of the basin, eastern CO experienced cooler than average temperatures as a response to widespread snow cover. The VIC model continues to show dry soil moisture conditions in southeast CO, in UT around the Colorado River valley, and in south central WY (Fig. 7). The VIC also continues to show wet soils around the Colorado headwaters region. Near normal soil moisture conditions are being observed in the Four Corners and San Juan mountains region and in the northern part of the UCRB.

All of the major reservoirs above Lake Powell are above their February averages. Most reservoirs saw storage decreases in January, which is normal for this time of year. However, some showed decreases less than what is normal for this time of year. Lake Dillon has seen a slight increase in levels since the beginning of the year, due to decreased releases from the reservoir as a response to recent dry conditions. Lake Powell is currently at 85% of average and 64% of capacity (compared to 56% one year ago).

Precipitation Forecast

A low pressure center, dropping south across the Great Basin, is currently located west of the UCRB and headed in this direction. Light snow showers are beginning to form ahead of this feature as moisture works into western Colorado and eastern Utah. Most of this energy will continue moving to the south of the basin, but not before spreading light precipitation across much of the area through Wednesday. While most parts of the basin should see snowfall end by Wednesday, expect widely scattered snow showers to linger over the highest peaks into Thursday. Liquid precipitation amounts will remain in the 0.1 to 0.25 inch range for most of the basin with areas along the Continental Divide of Colorado picking up 0.25 to 0.5 inches of liquid equivalent by Thursday evening (Fig. 8). Ridging returns to the UCRB for the end of the work week while the next storm system approaches the Pacific Northwest. This disturbance is not projected to begin impacting the region until Sunday, with precipitation chances on the rise moving into early next week.

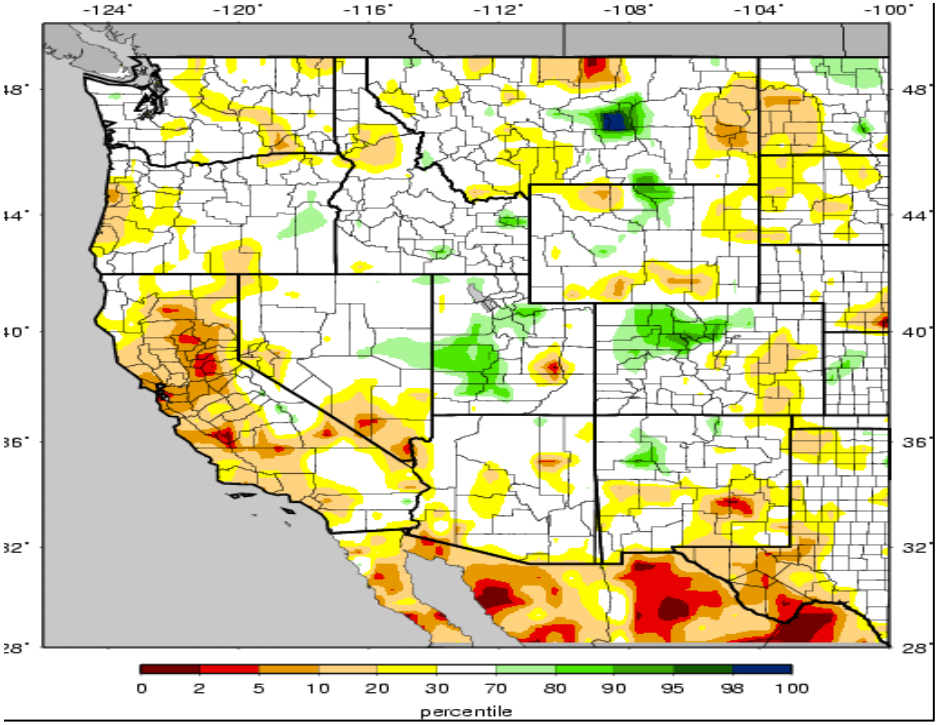


Fig. 7: VIC soil moisture percentiles as of February 12th.

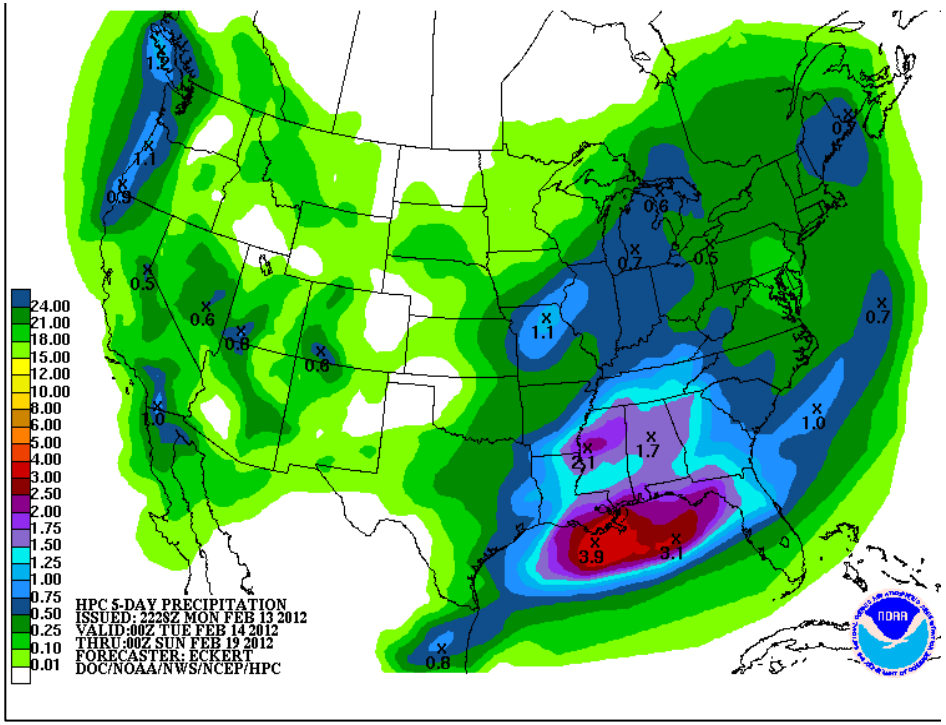
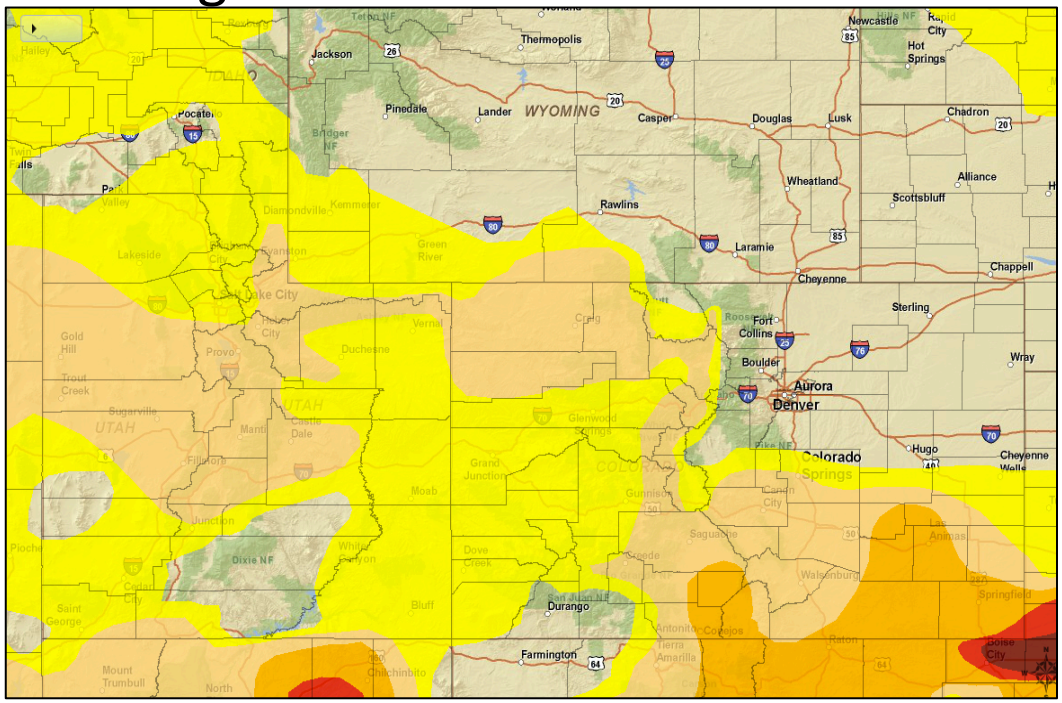
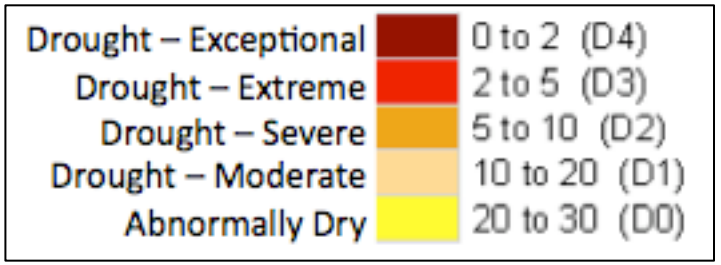


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 0Z Sunday.

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 9: February 7th release of U.S. Drought Monitor for the UCRB

Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). Most of the region received near to slightly below average precipitation for the week. Enough has accumulated to prevent the need for further degradations, but not enough has fallen to warrant any improvements.

Status quo is also recommended for eastern CO. After several weeks of below average precipitation, no improvements are recommended at this time. Standardized precipitation indices (SPIs) in the area have greatly improved on time scales shorter than 9 months, but long term impacts are still being observed in the soils. While there has been short-term relief, additional winter and spring moisture is still needed to overcome the long-term deficits and impacts.