

CBRFC
April 2014
Water Supply Webinar

April 7, 2014

Greg Smith

April Water Supply Webinar

- Recent weather
- Current snow conditions
- Snow reality check for our model
- Water supply forecasts
- Upcoming weather

Modeled Soil Moisture – Entering Winter

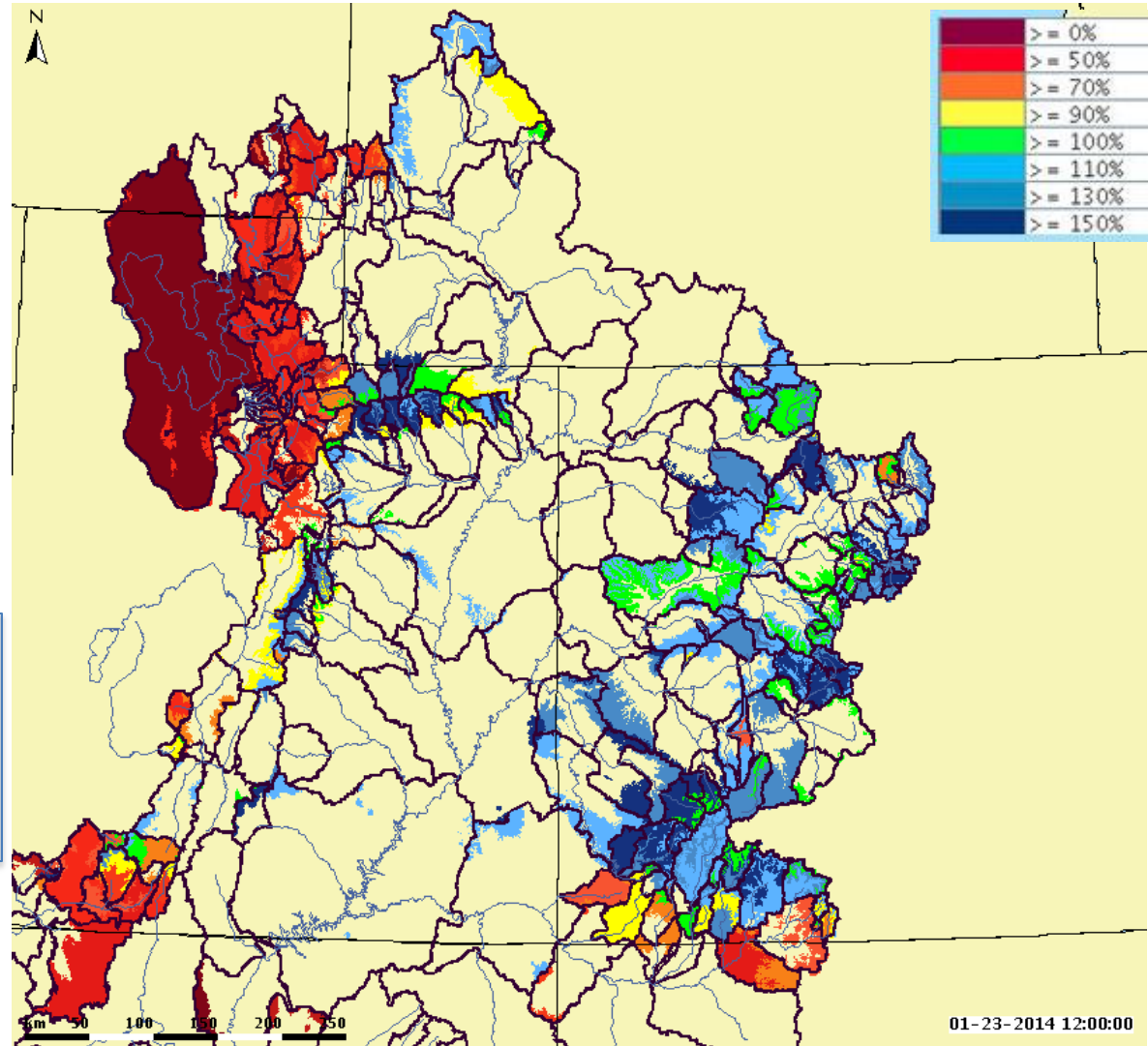
Well above Upper Colorado and well below Great Basin

Still affecting water supply forecasts?

Positive effect on the upper Colorado

Negative affect on the Great Basin and Lower Colorado

Less influential in areas that have been persistently dry and have low snow (parts of the San Juan)



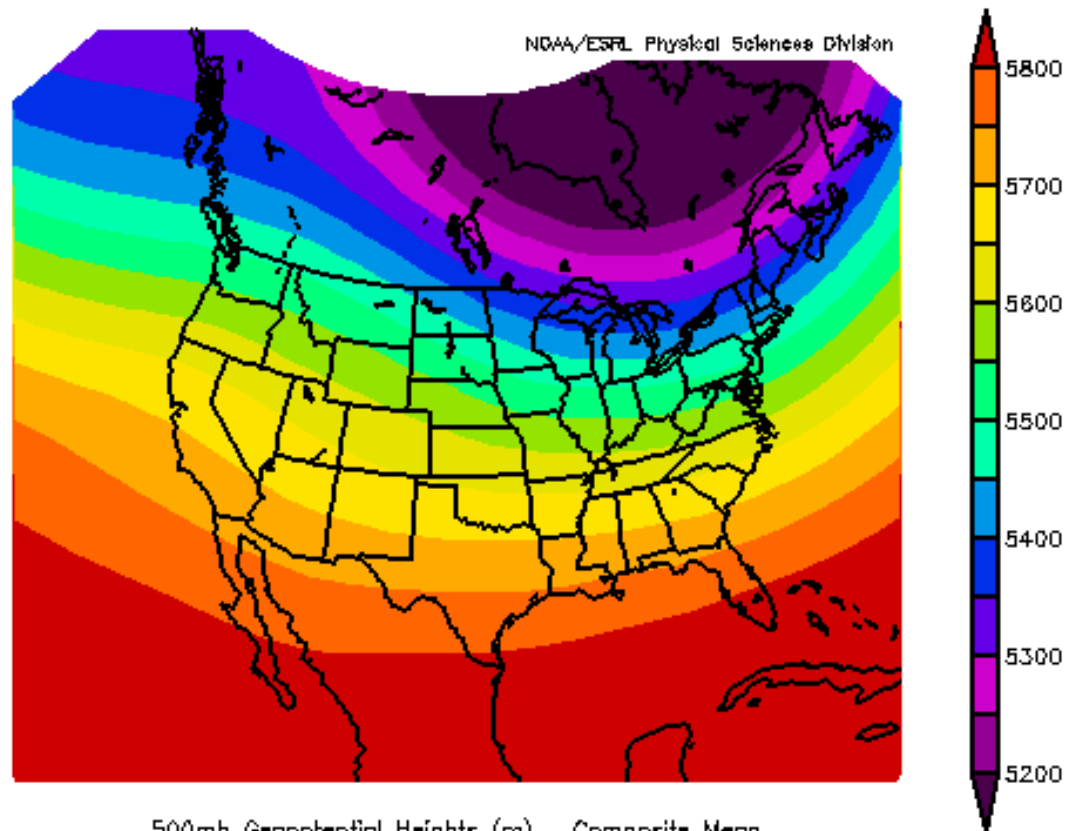
March 2014 Upper Air Pattern

Frequent storms in zonal
(west to east) upper air flow
pattern

Largest storm impacts:

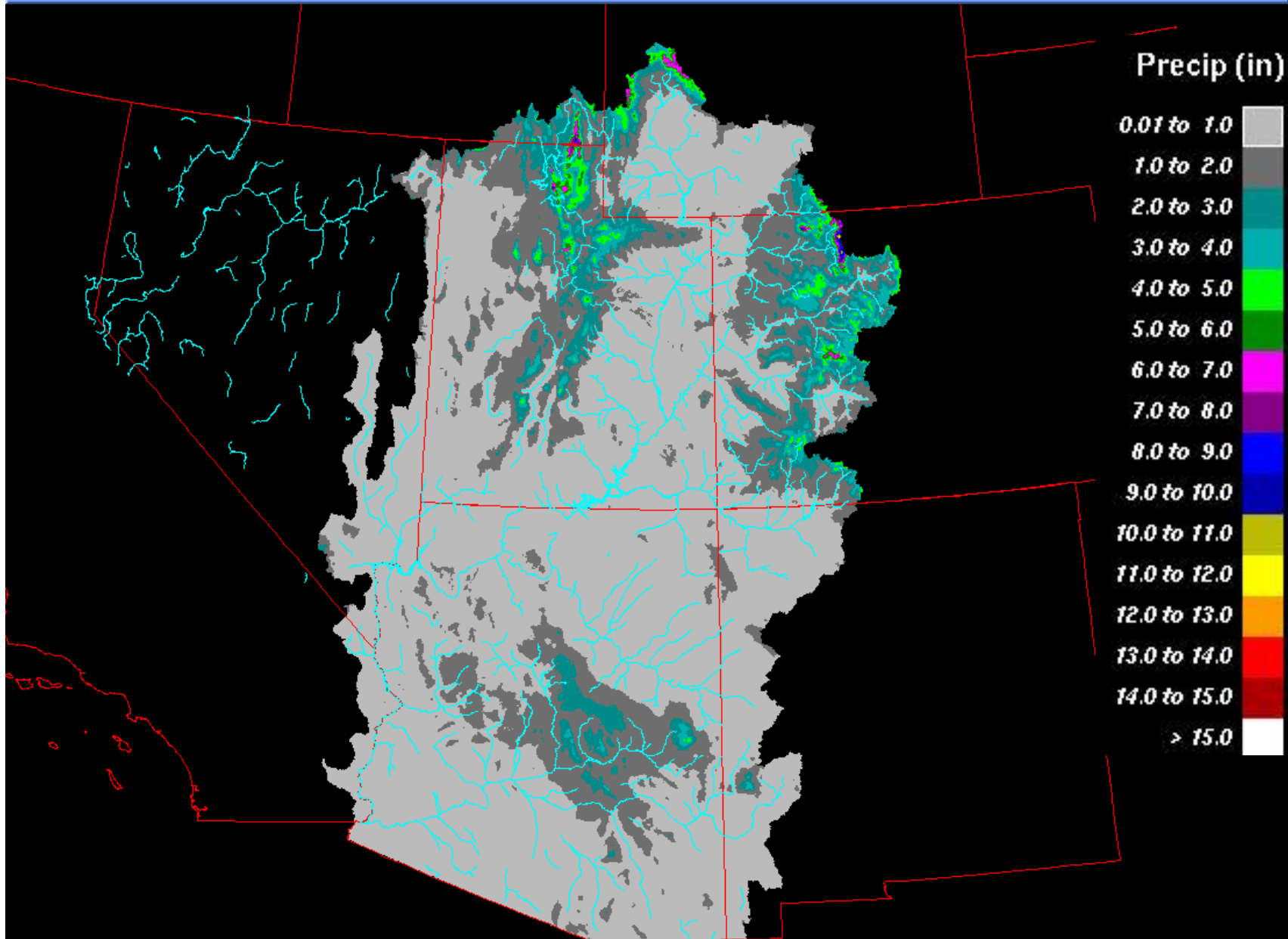
Bear River
Upper Green River
Yampa River

Dry again in the south (Virgin
River, San Juan, Lower
Colorado)



March 2014 Precipitation Observed

File Edit Backgrounds Options



Monthly Precipitation 03-2014 Level 4 - Saved

March 2014 Precipitation Percent of Average

File Edit Backgrounds Options

Avg (Pcnt)

< 50

50 to 70

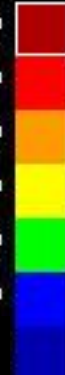
70 to 90

90 to 110

> 110

130 to 150

> 150

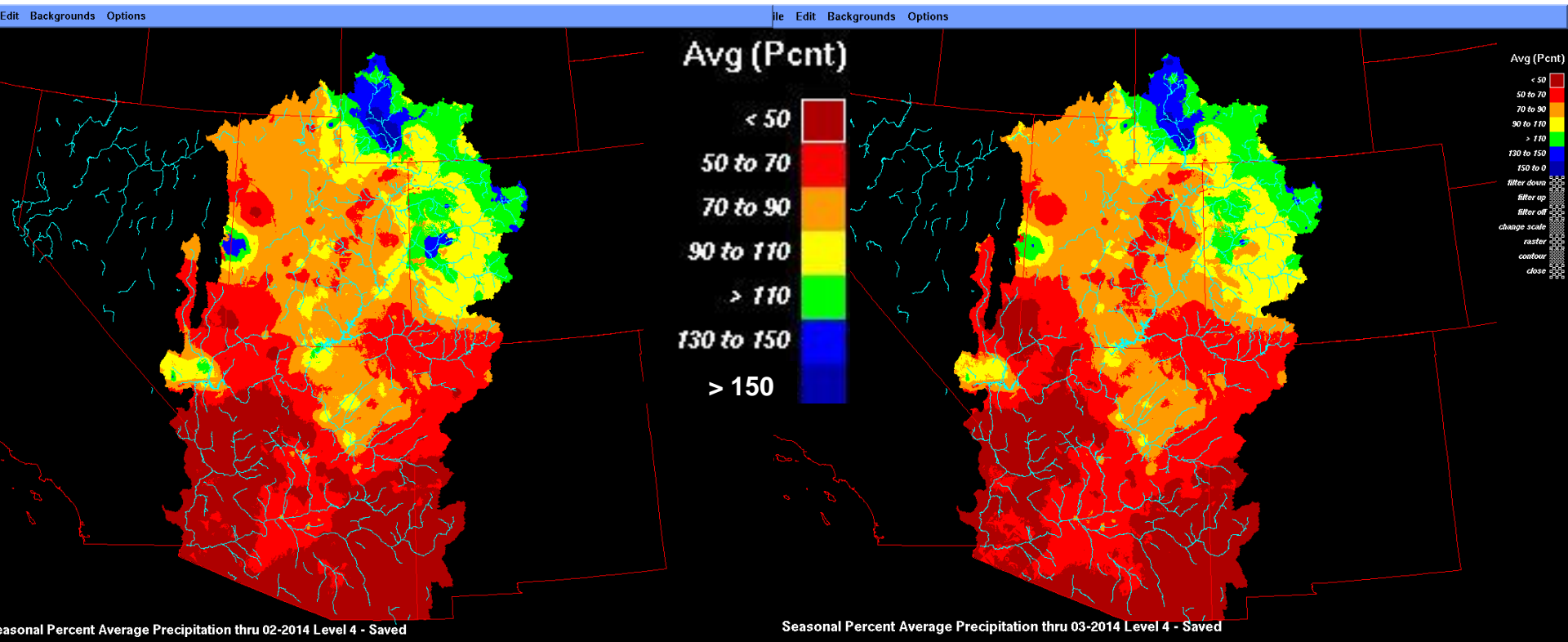


Monthly Percent Average Precipitation 03-2014 Level 4 - Saved

Water Year Precipitation

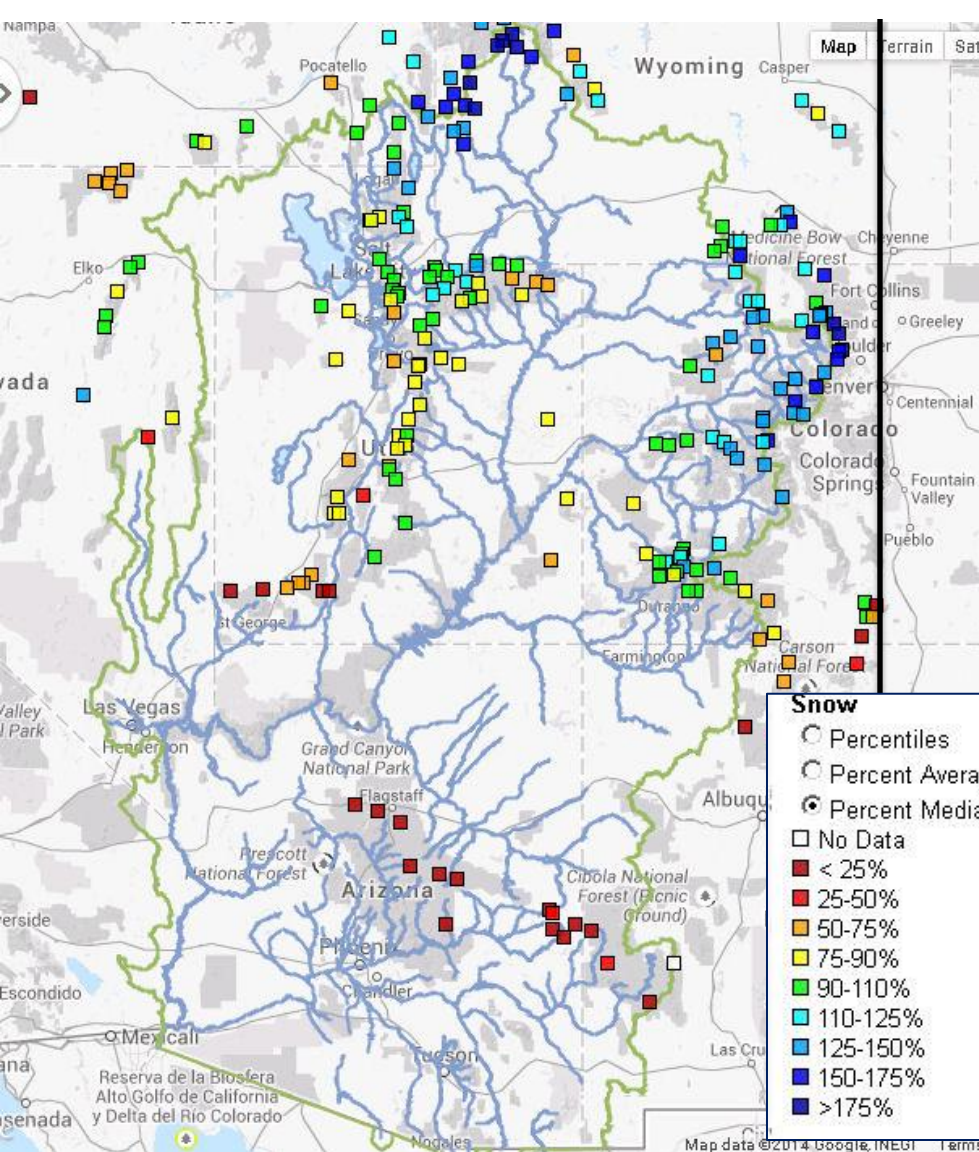
Oct-Feb Precipitation % of Average

Oct-Mar Precipitation % of Average

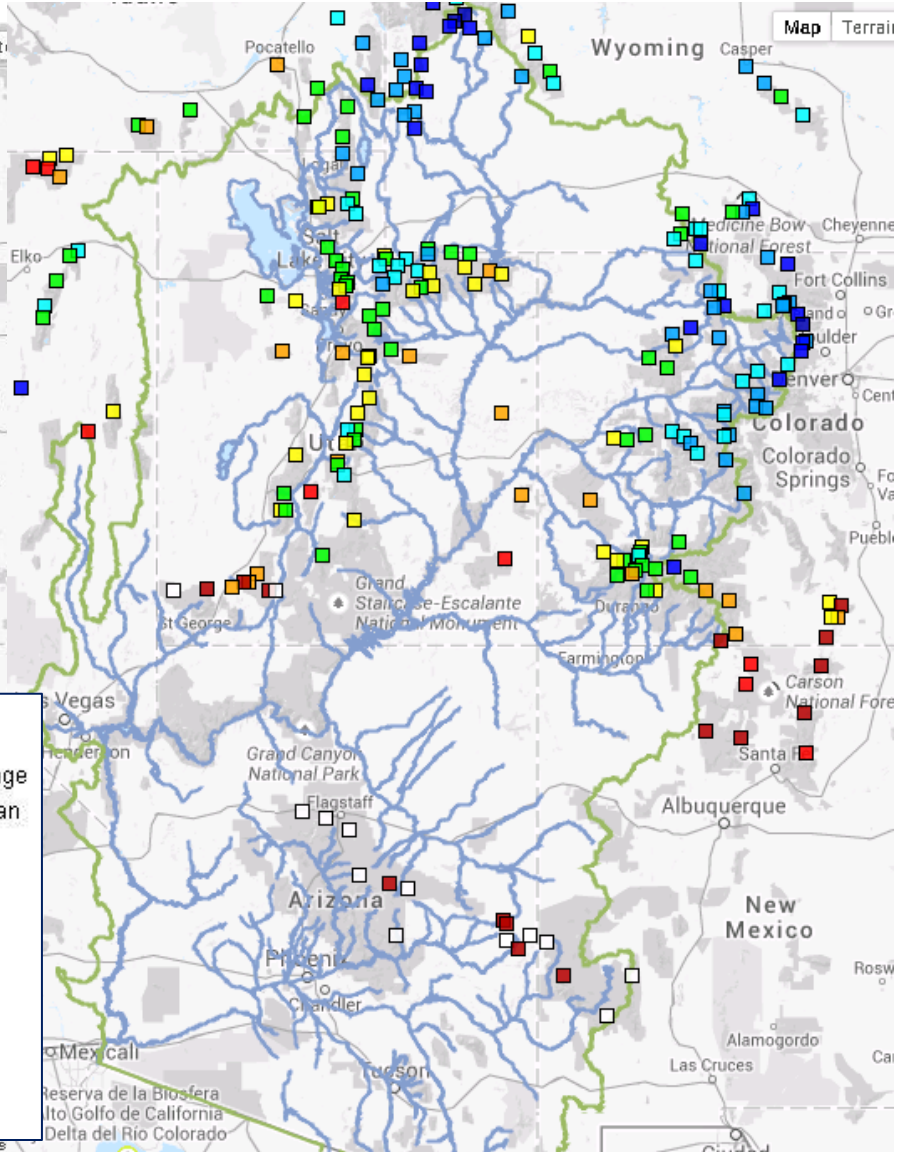


Snow

February 5th Snow



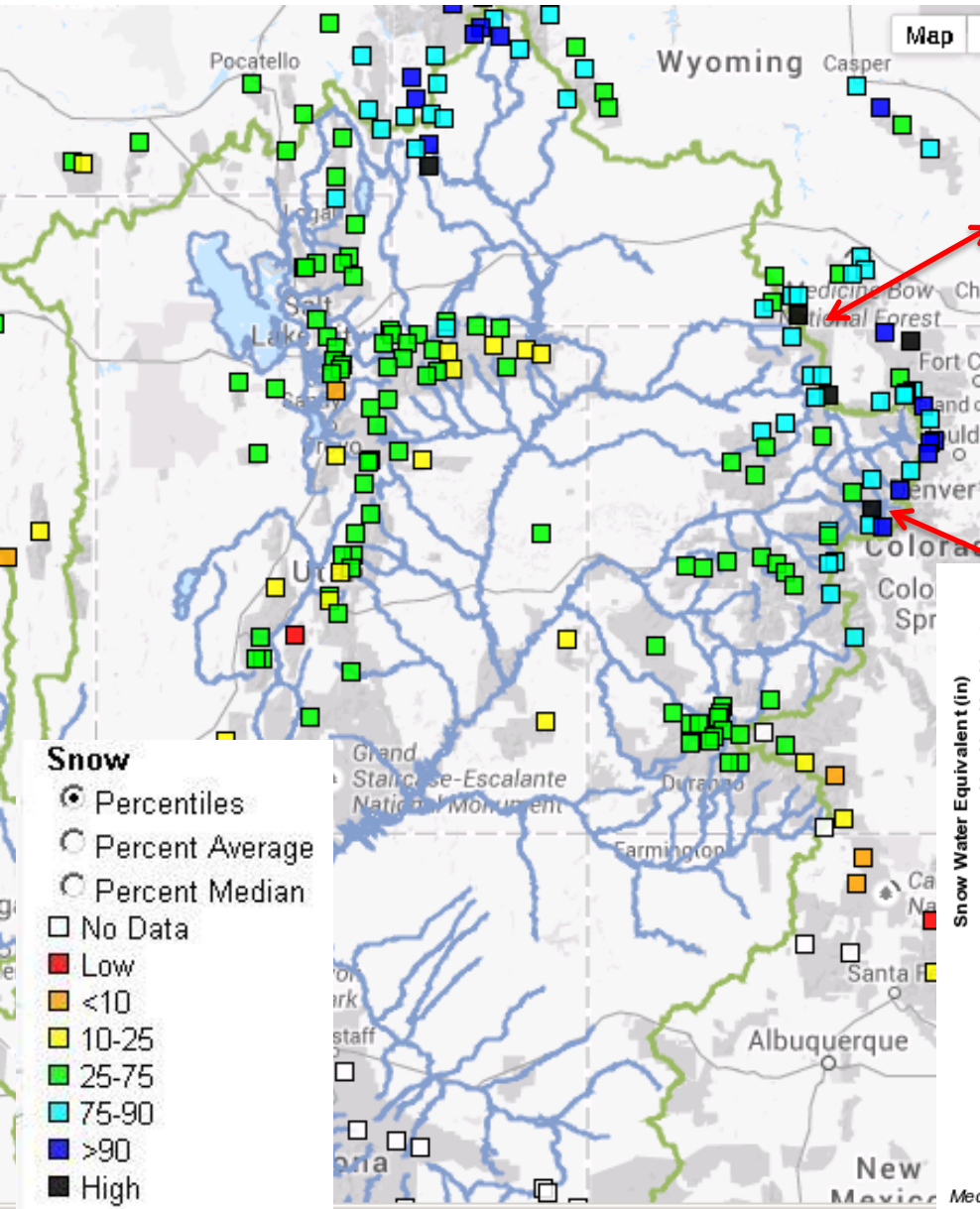
April 3rd Snow



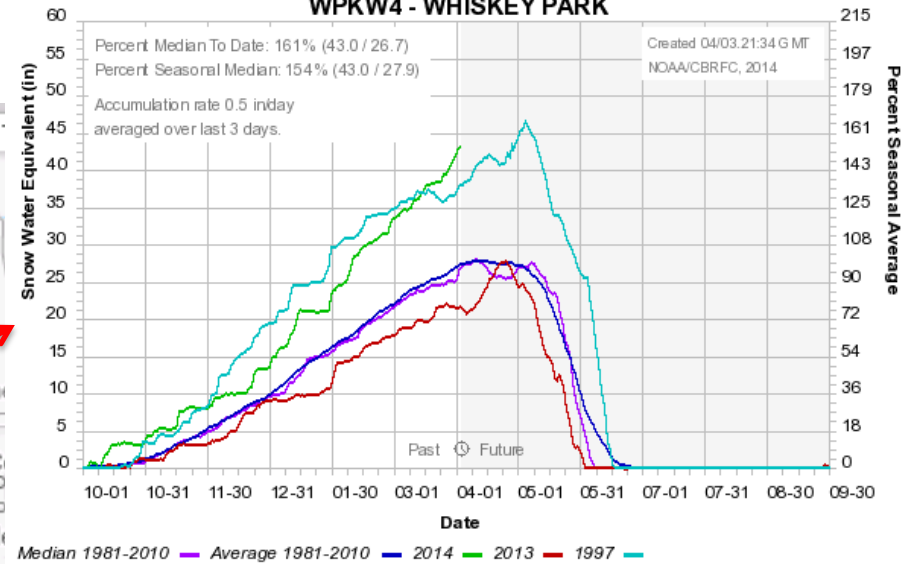
Snow

- Percentiles
- Percent Average
- Percent Median
- No Data
- < 25%
- 25-50%
- 50-75%
- 75-90%
- 90-110%
- 110-125%
- 125-150%
- 150-175%
- >175%

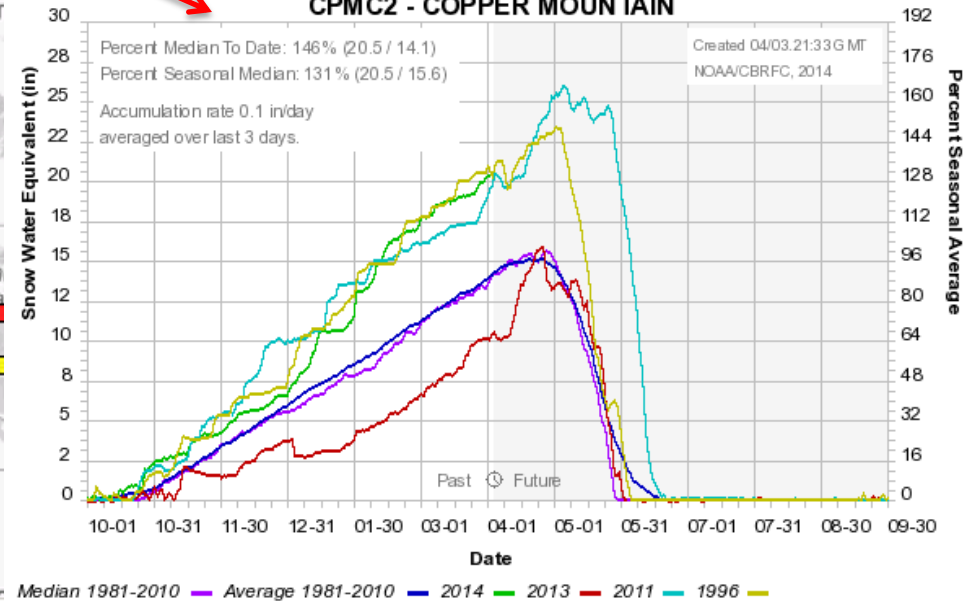
SNOW - Historical Ranking – April 3rd



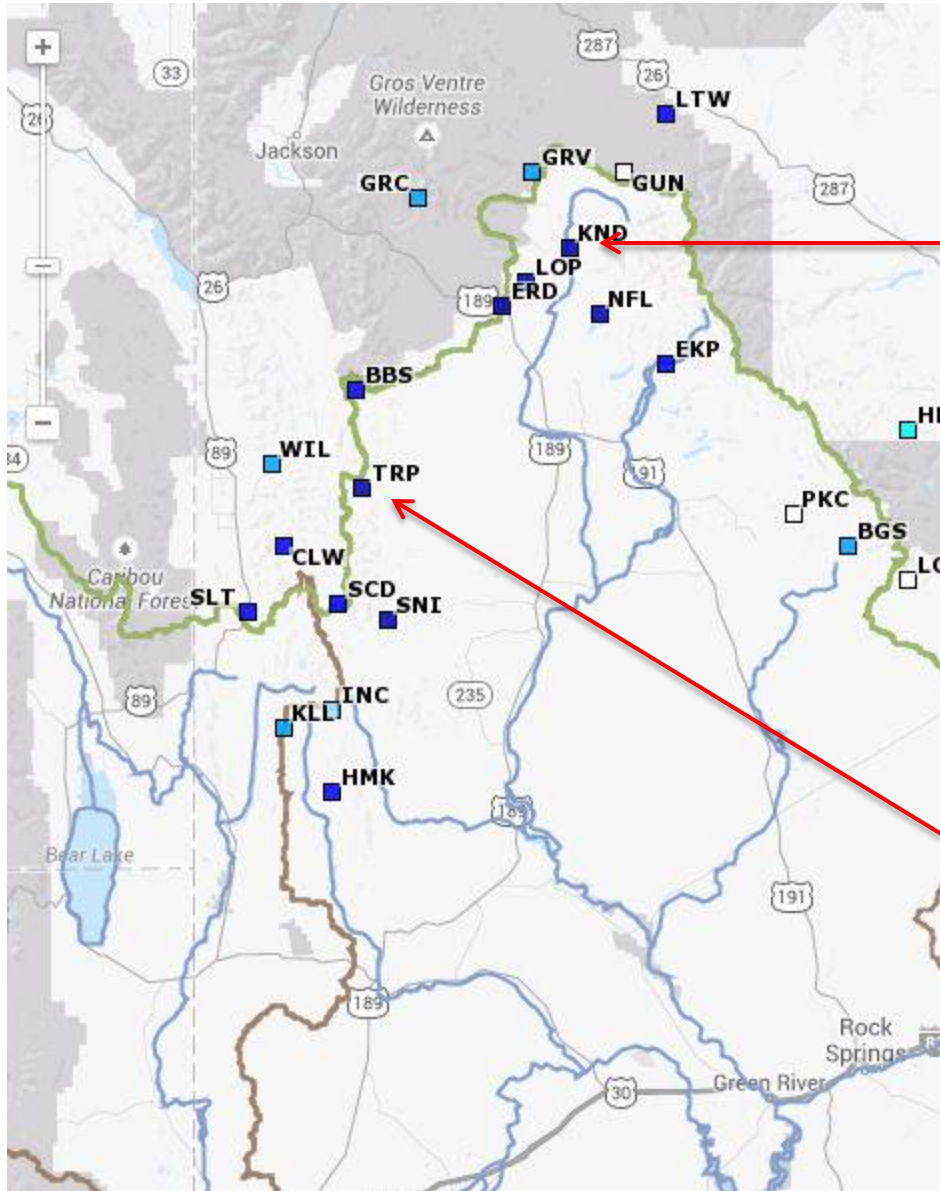
Colorado Basin River Forecast Center
WPKW4 - WHISKEY PARK



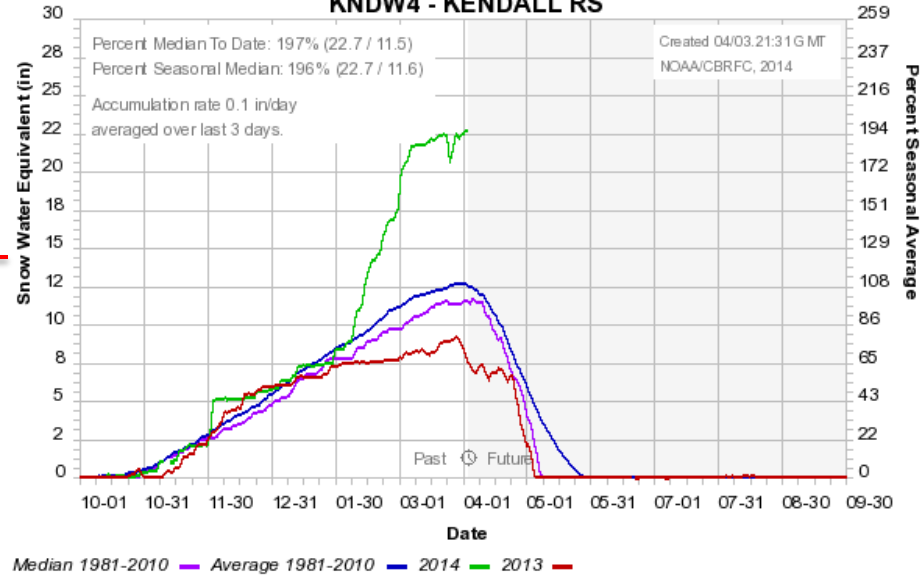
Colorado Basin River Forecast Center
CPMC2 - COPPER MOUNTAIN



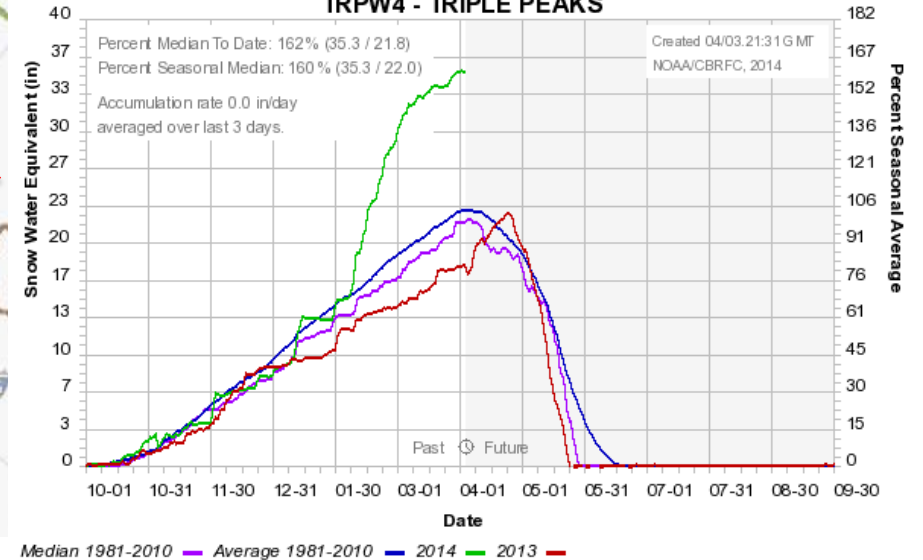
SNOW - Green River Basin (above Fontenelle)



Colorado Basin River Forecast Center
KNDW4 - KENDALL RS

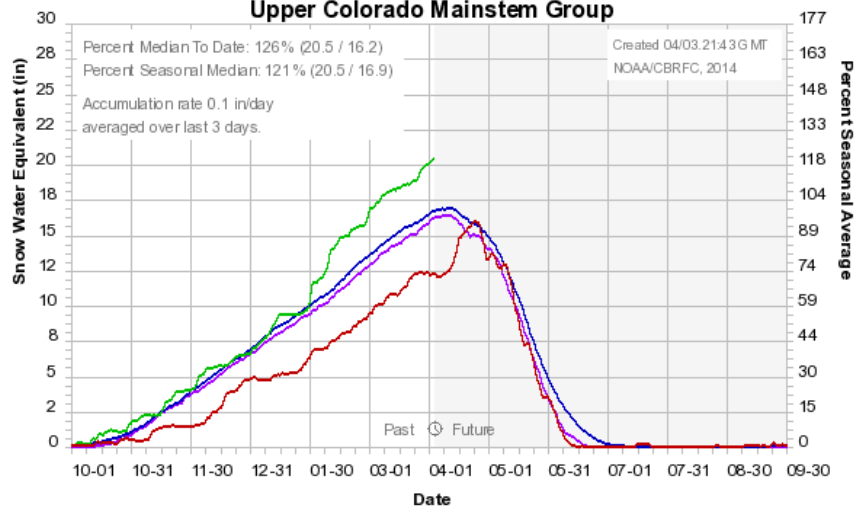


Colorado Basin River Forecast Center
TRPW4 - TRIPLE PEAKS



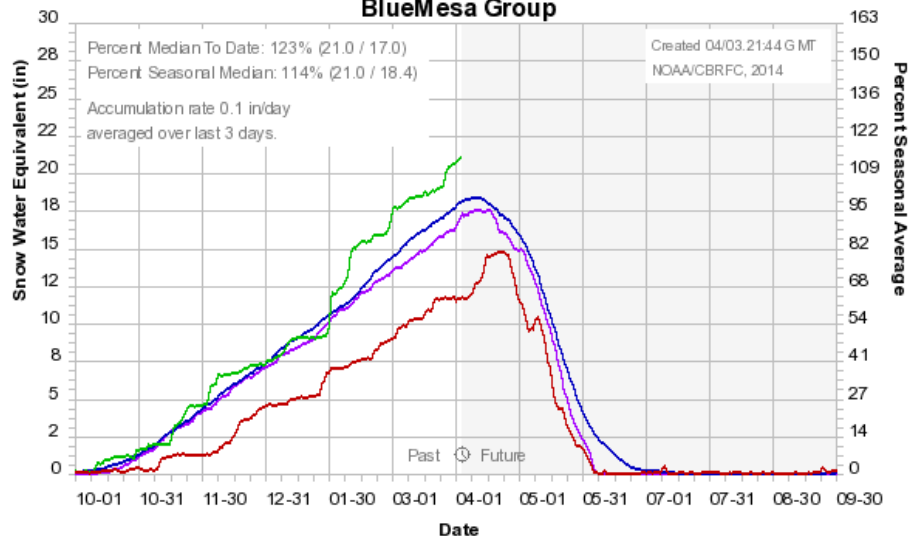
Basin Snow Groups:

Colorado Basin River Forecast Center
Upper Colorado Mainstem Group



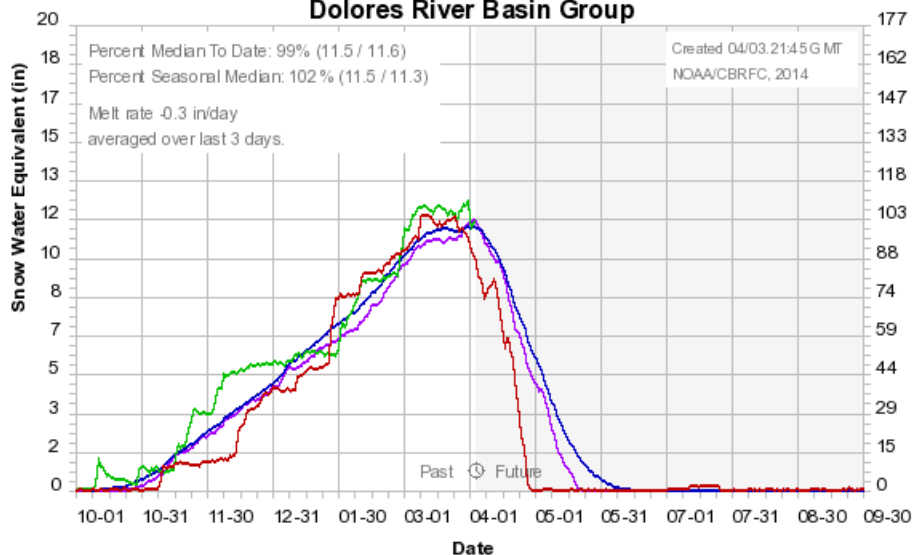
Median 1981-2010 Average 1981-2010 2014 2013

Colorado Basin River Forecast Center
BlueMesa Group



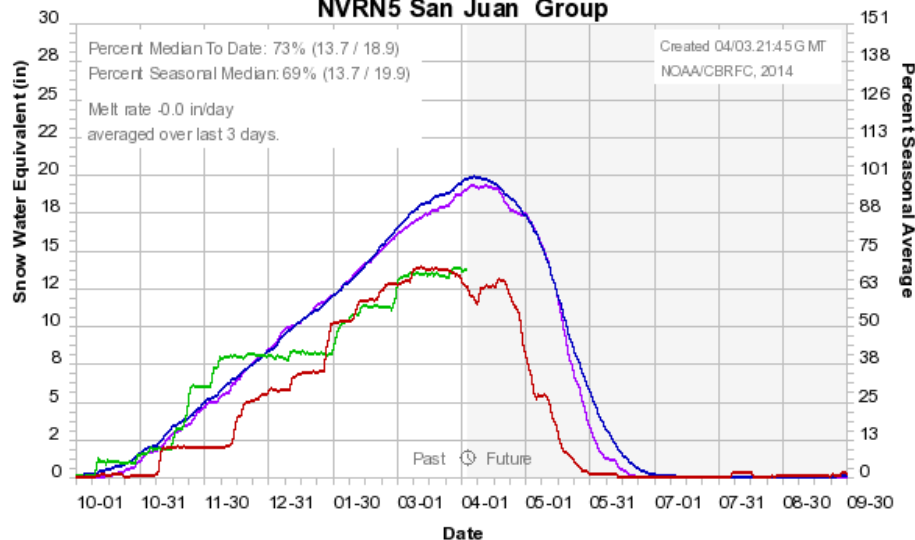
Median 1981-2010 Average 1981-2010 2014 2013

Colorado Basin River Forecast Center
Dolores River Basin Group



Median 1981-2010 Average 1981-2010 2014 2013

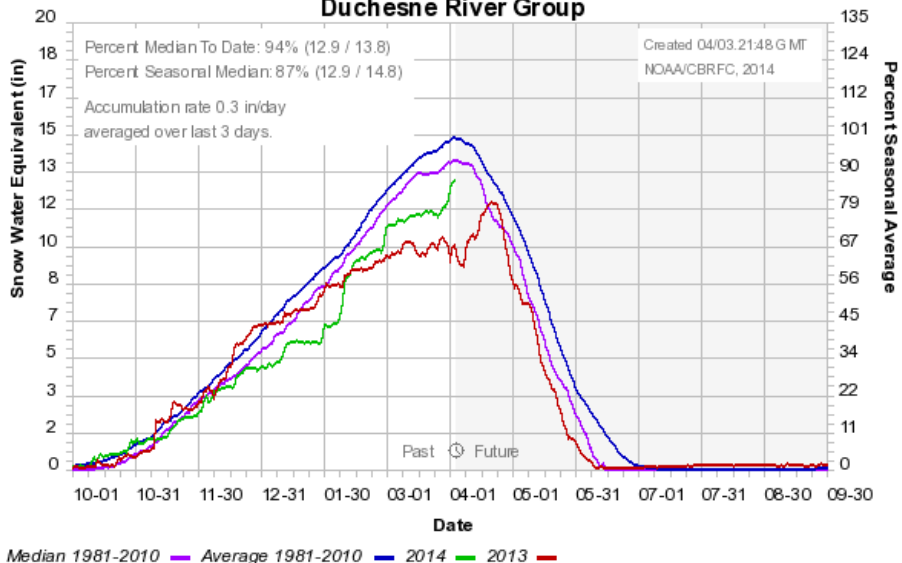
Colorado Basin River Forecast Center
NVRN5 San Juan Group



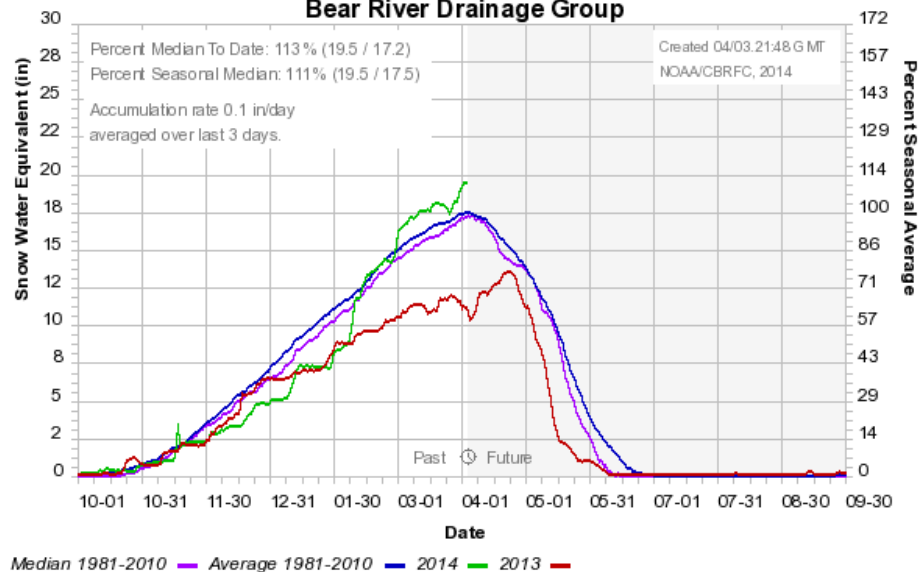
Median 1981-2010 Average 1981-2010 2014 2013

Basin Snow Groups:

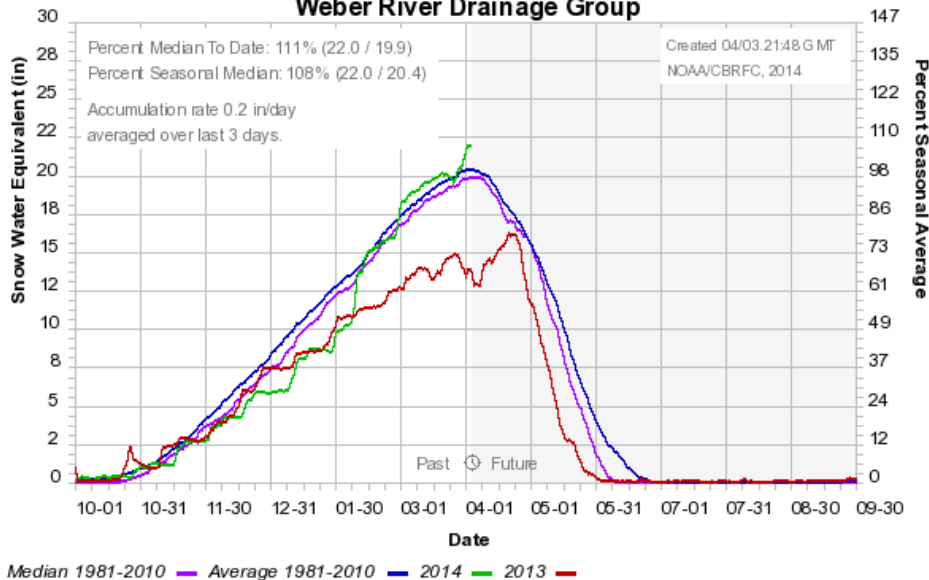
Colorado Basin River Forecast Center
Duchesne River Group



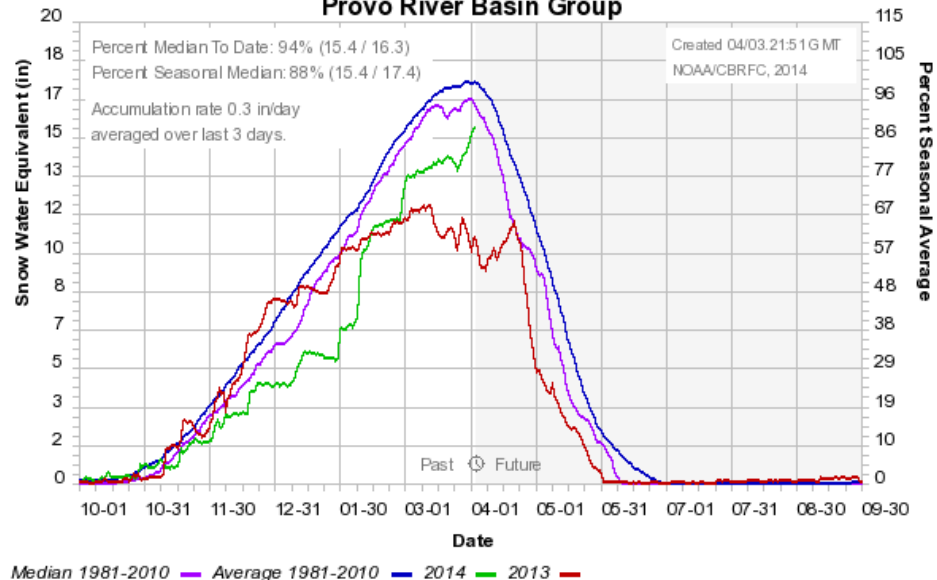
Colorado Basin River Forecast Center
Bear River Drainage Group



Colorado Basin River Forecast Center
Weber River Drainage Group



Colorado Basin River Forecast Center
Provo River Basin Group



Getting a handle on the snow when...

Model is over or under simulating current streamflow

- Melting too fast or too slow
- Areal extent of snow cover not correct (we adjust)
- etc.

SNOTEL sites melt out or malfunction

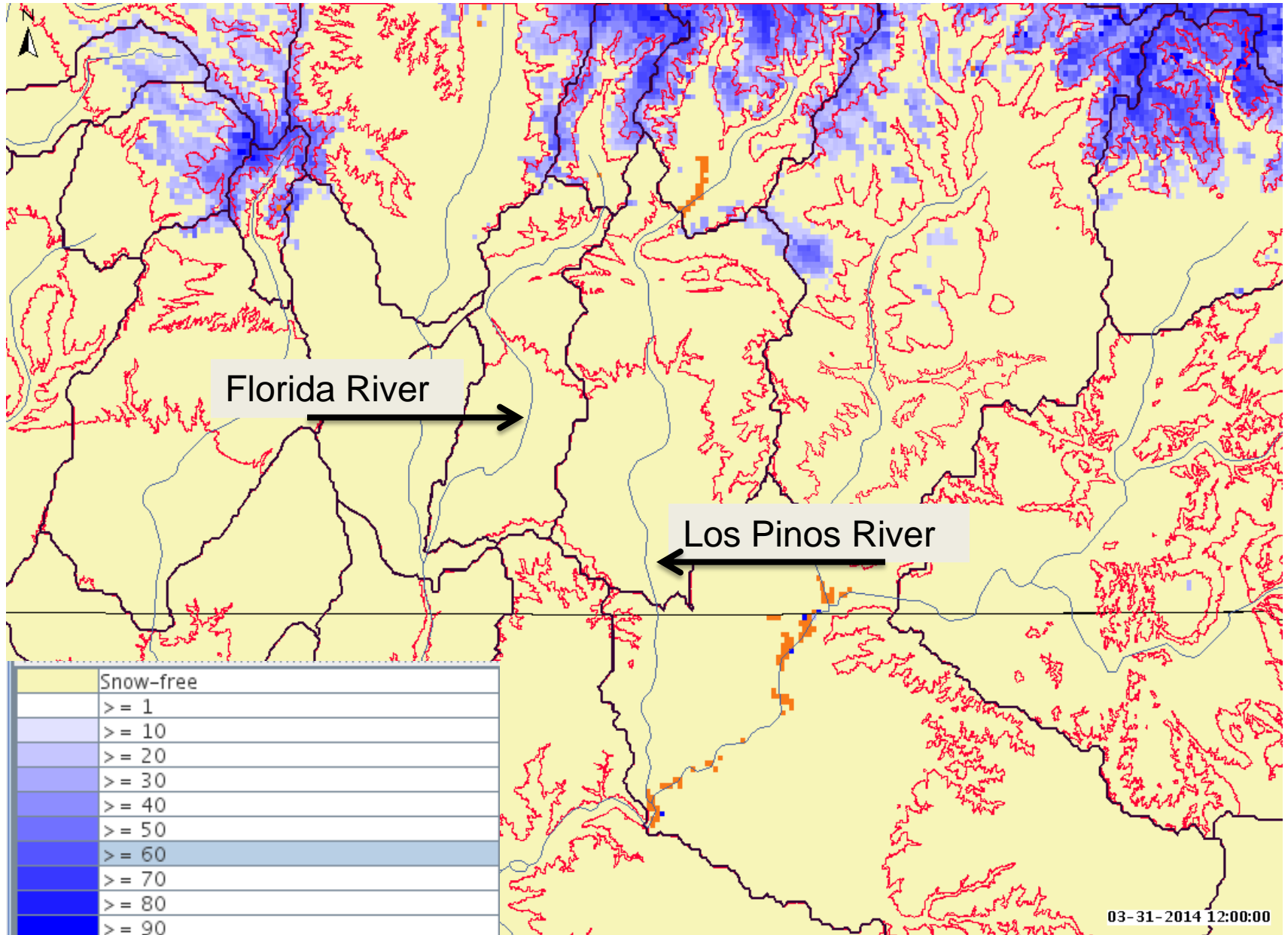
Areas with large data voids

Sudden spike in observed streamflow

- Tends to occur as snow is nearing melt out
- Dust layers becoming visible & having an impact?
- We can adjust melt rates within the model

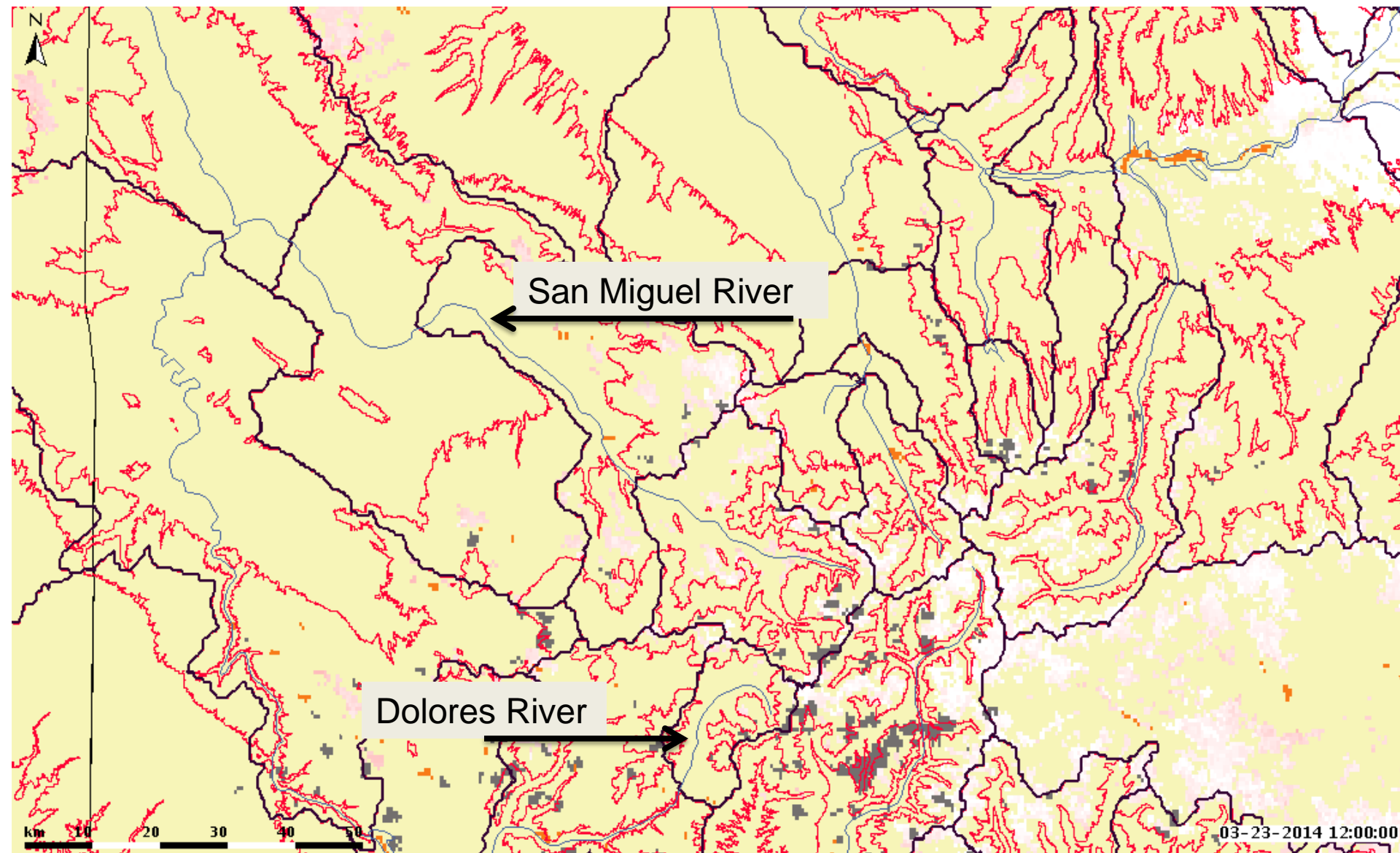
Etc.

Satellite Derived Snow Cover Grids – San Juan Basin



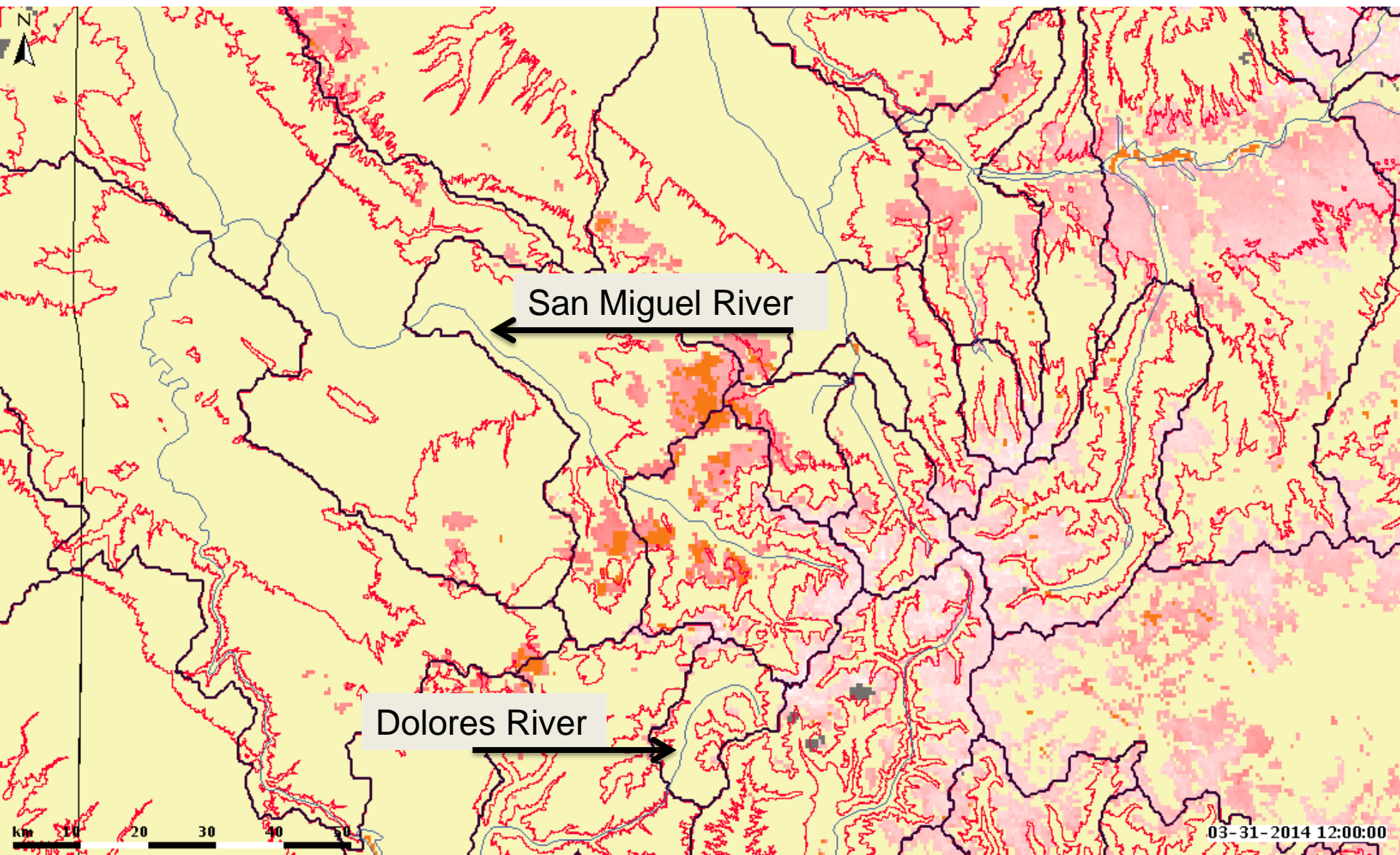
Satellite Derived Snow Contamination (“dust on snow”) Grids – Dolores Basin

March 23 2014



Satellite Derived Snow Contamination ("dust on snow") Grids – Dolores Basin

March 31 2014



April 1st Water Supply Forecasts

Apr-Jul Volumes / % Average

Weber-Oakley:
93 KAF / 79%

Provo-Woodland:
91 KAF / 91%

Virgin-Virgin:
21 KAF / 36%

Flaming Gorge:
1400 KAF / 143%

Yampa-Deerlodge:
1550 KAF / 125%

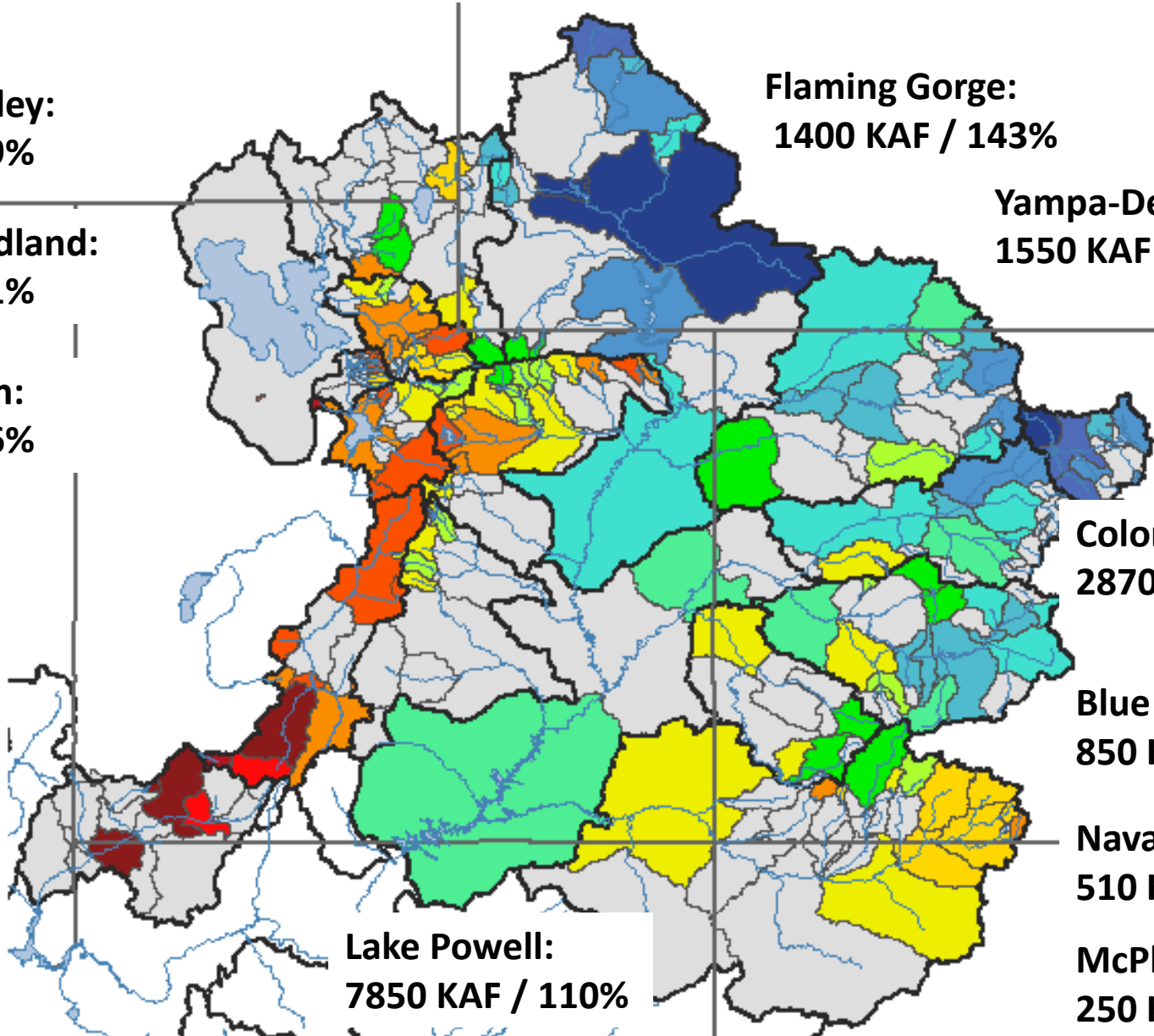
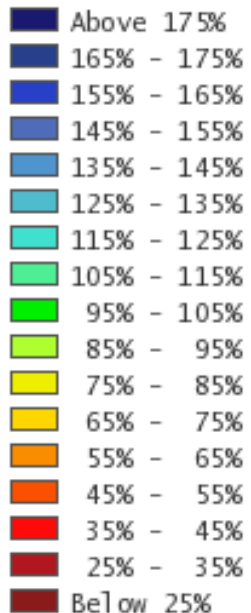
Colorado-Cameo:
2870 KAF / 122%

Blue Mesa:
850 KAF / 126%

Navajo Res:
510 KAF / 69%

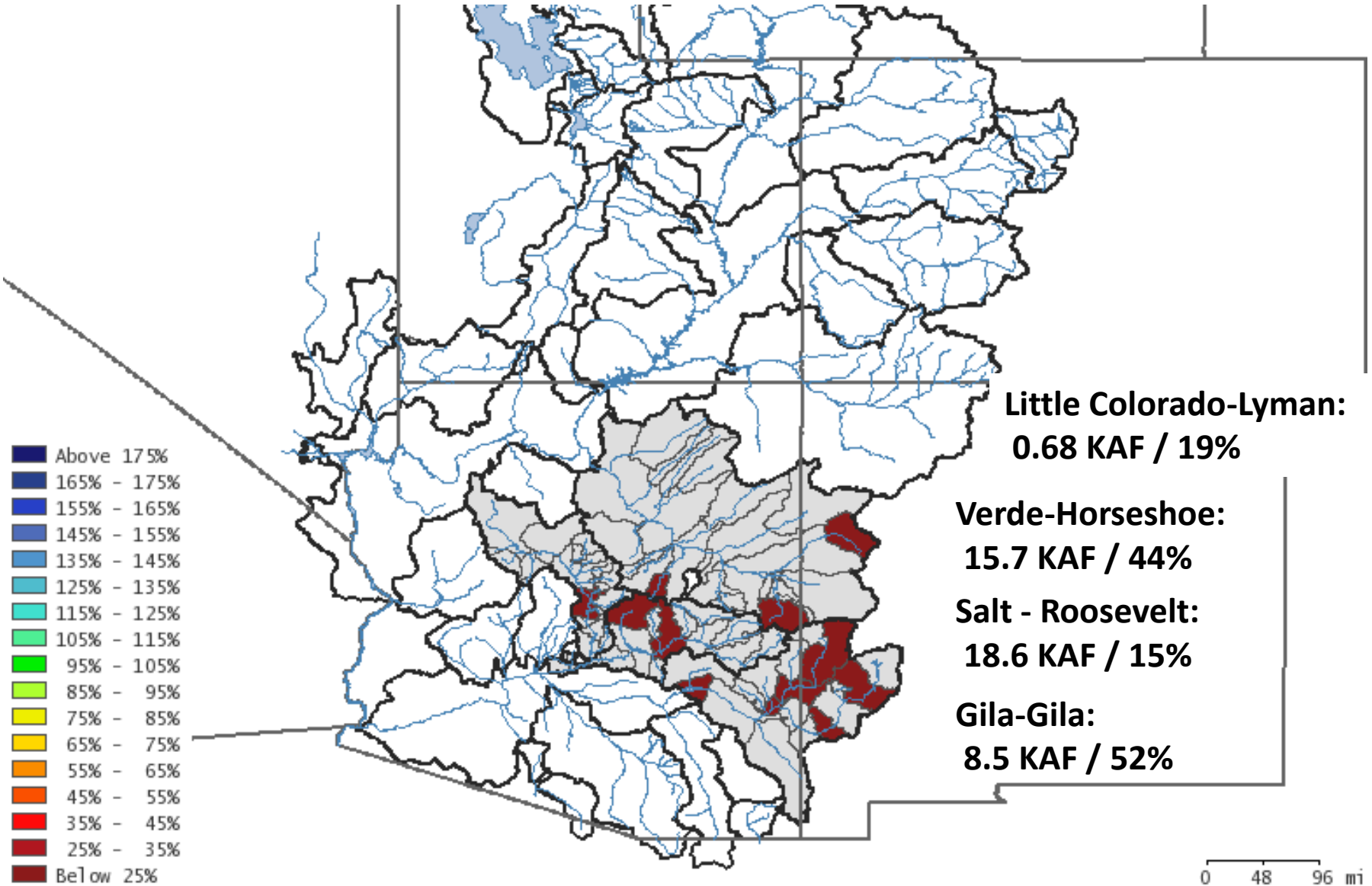
McPhee Res:
250 KAF / 85%

Lake Powell:
7850 KAF / 110%



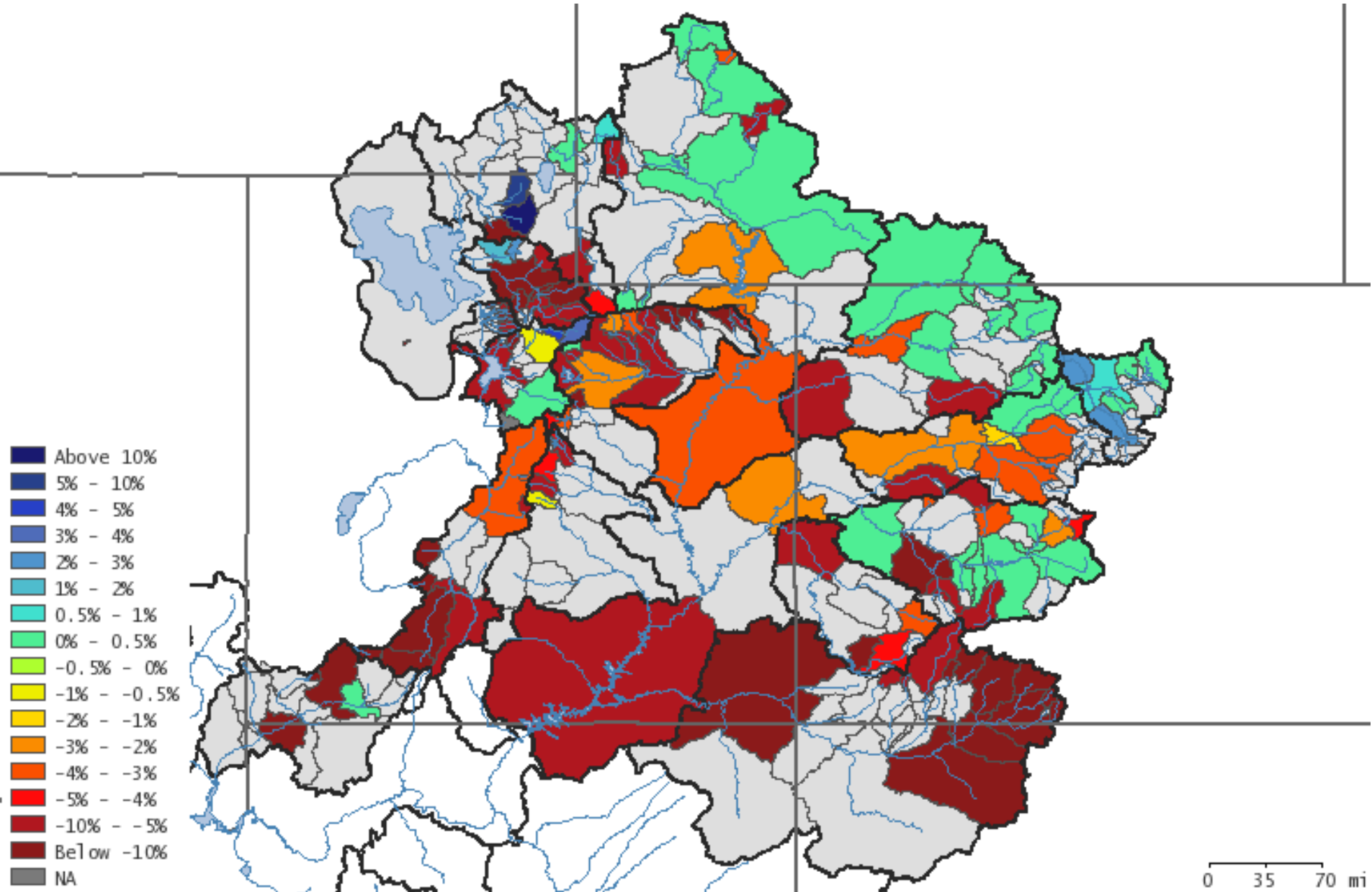
April 1st Water Supply Forecasts

Apr-May Volumes / % Median



Water Supply Forecast Trend

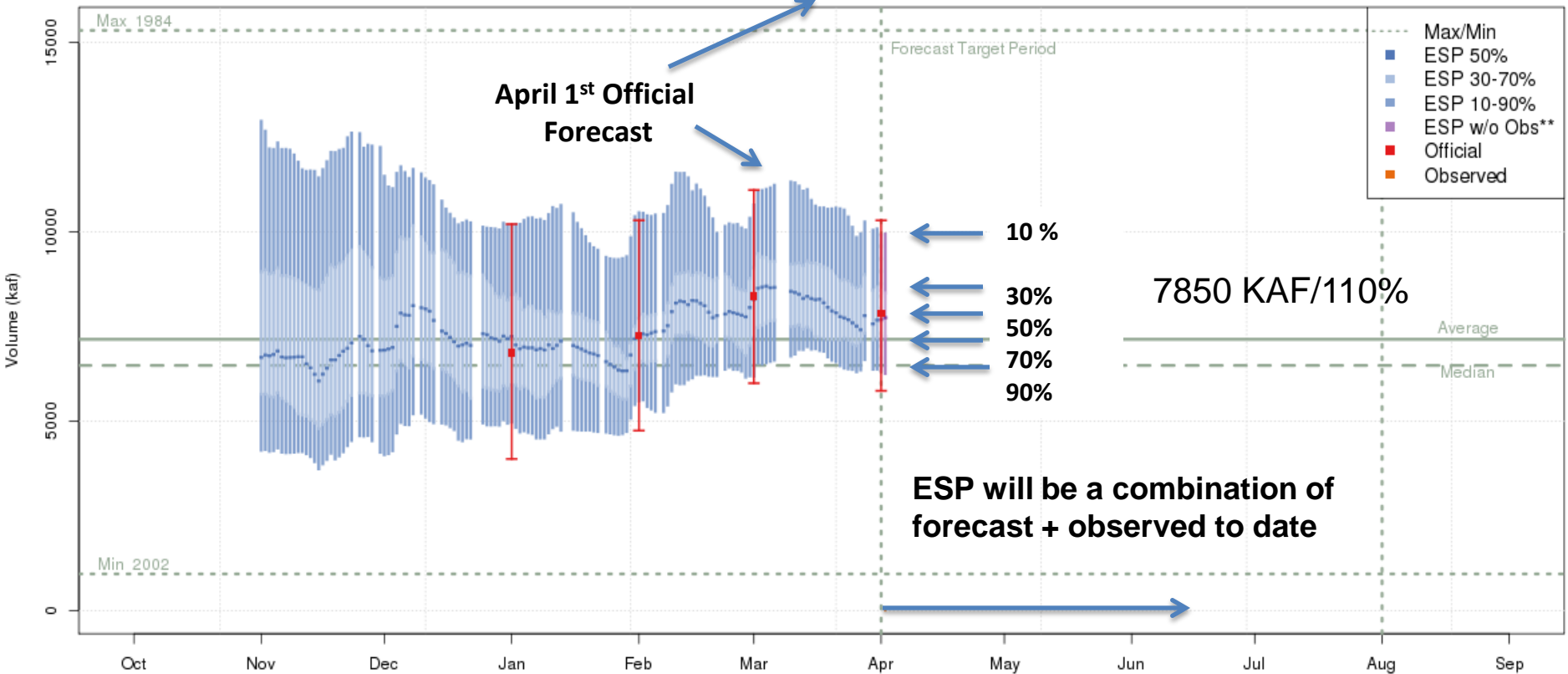
Change in the forecast % of average between Mar 1st and Apr 1st



Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 7850kaf (110% of average)

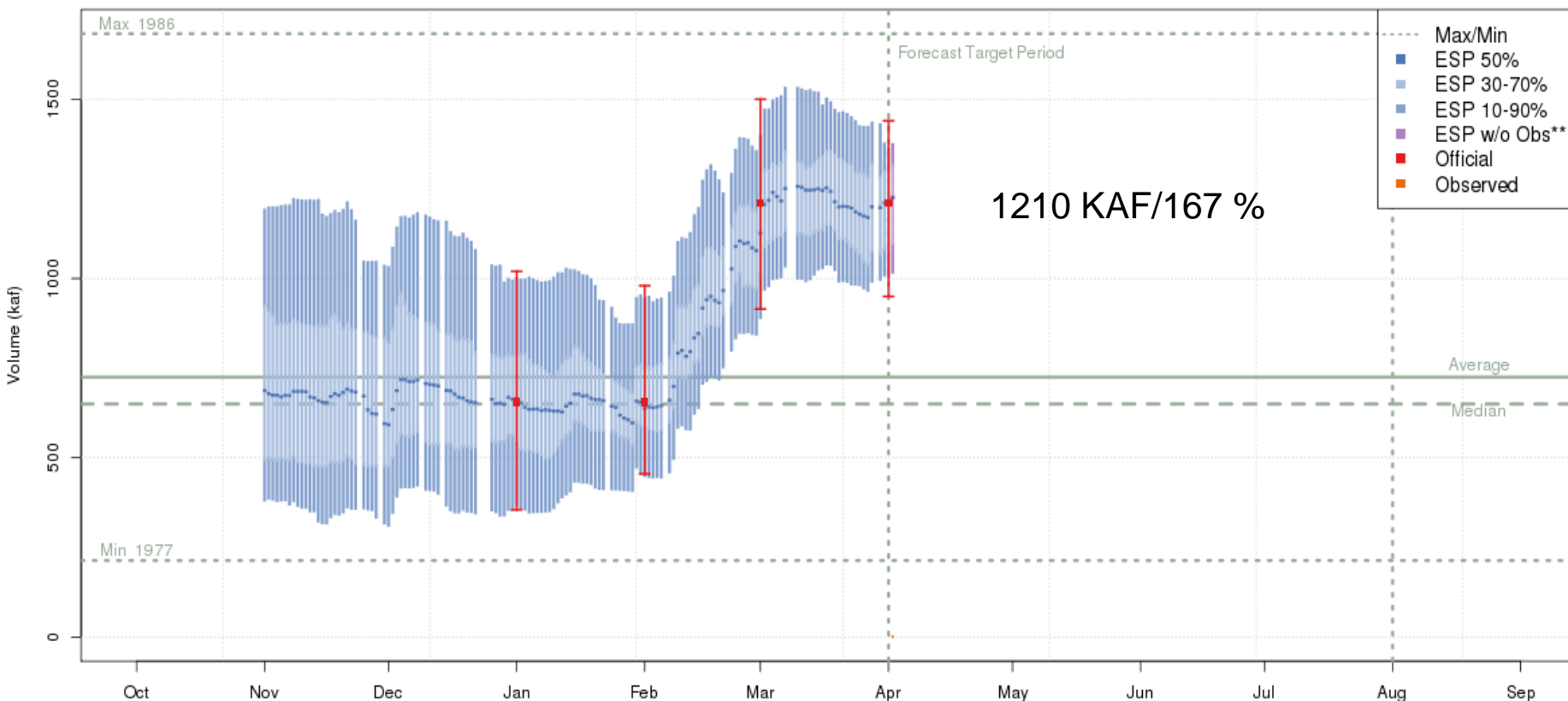


Plot Created 2014-04-03 14:54:38, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed 1.1 % from yesterday and 1.8 % from April 1
**These ESP forecasts do not include observed and are not total runoff.

Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

Green - Fontenelle Res- Fontenelle Nr (GBRW4) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 1210kaf (167% of average)

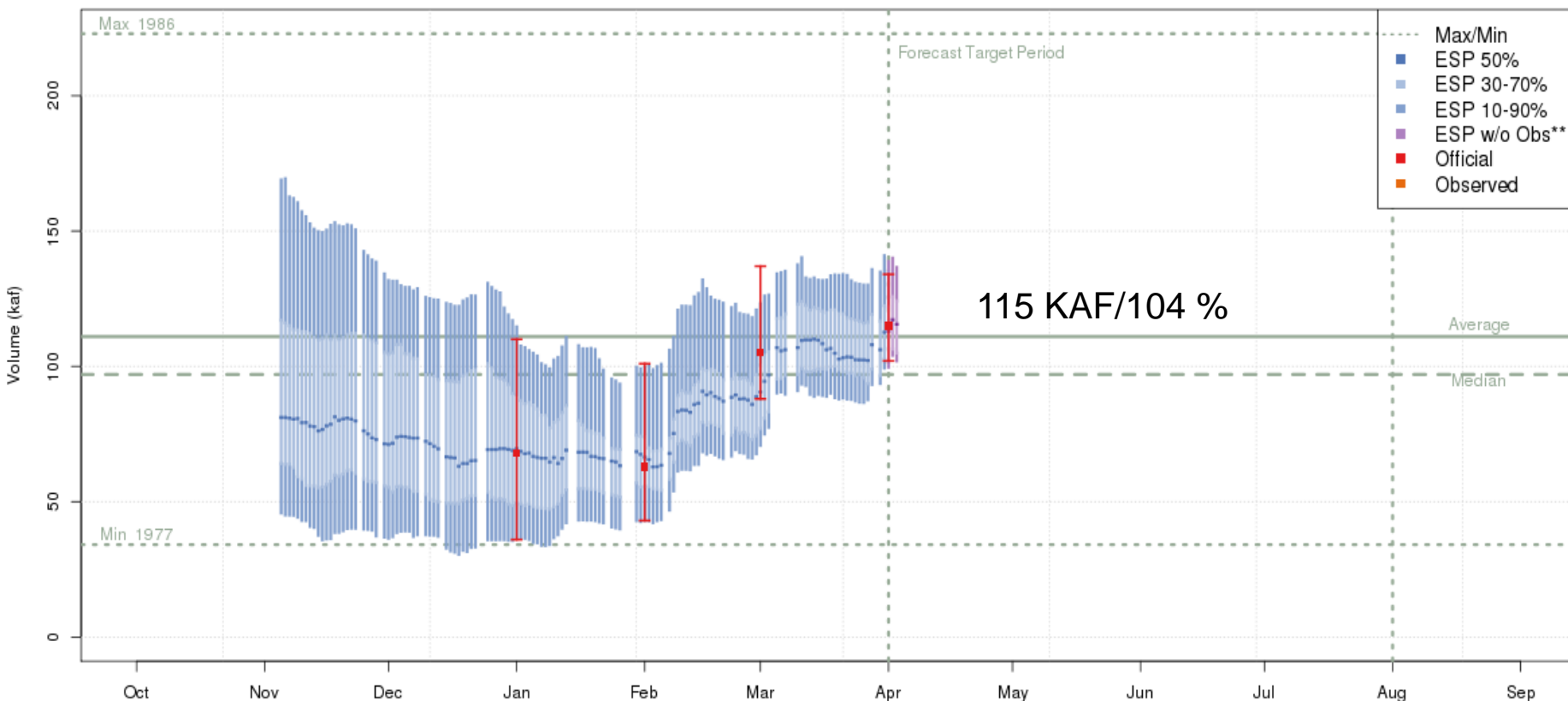


Plot Created 2014-04-03 14:53:21, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed 0 % from yesterday and 1 % from April 1
**These ESP forecasts do not include observed and are not total runoff.

Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

Logan - Logan- Nr- State Dam- Abv (LGNU1) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 115kaf (104% of average)

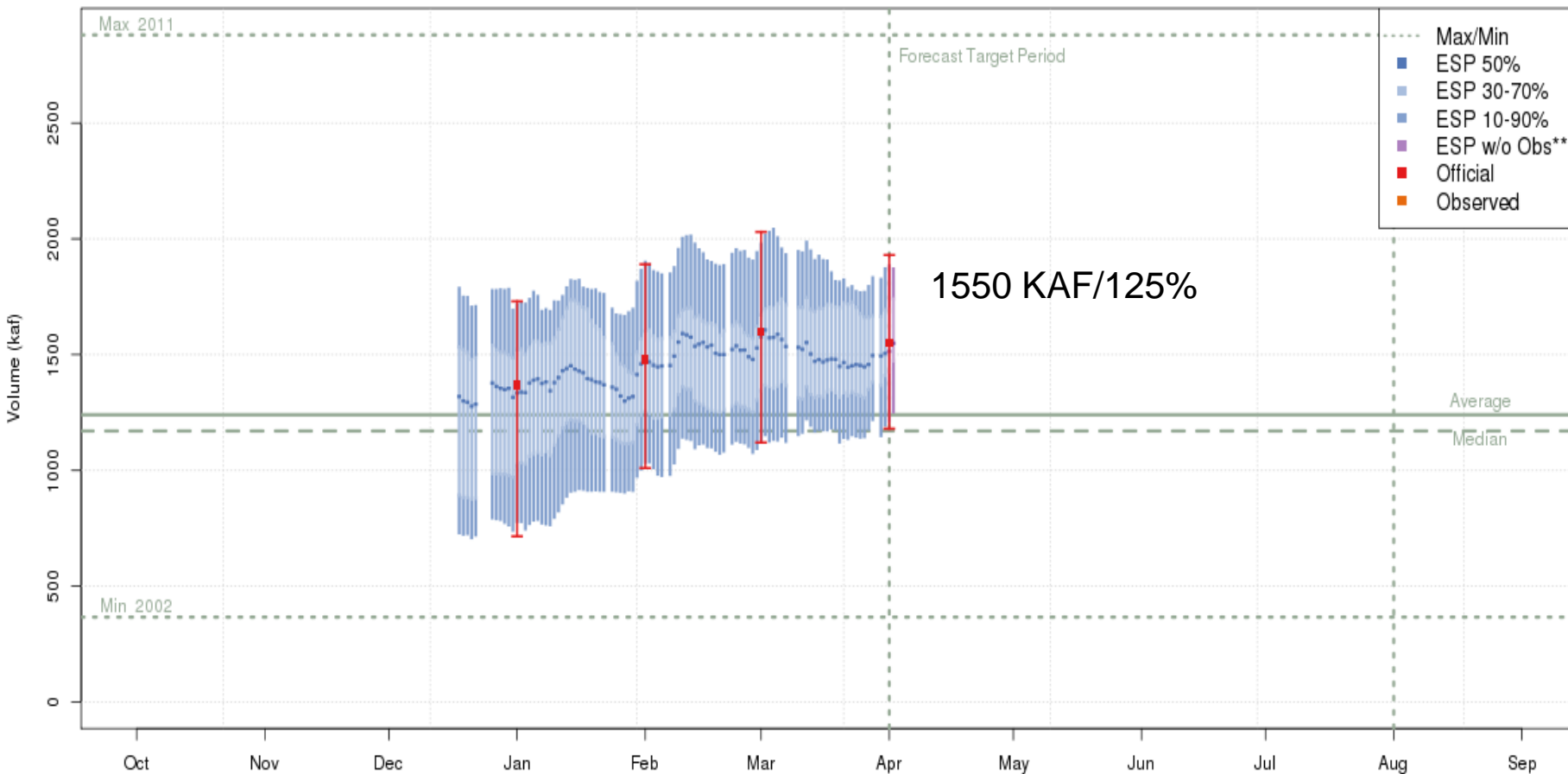


Plot Created 2014-04-04 11:24:40, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed -1.4 % from yesterday and 2.3 % from April 1
**These ESP forecasts do not include observed and are not total runoff.

Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

Yampa - Deerlodge Park (YDLC2) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 1550kaf (125% of average)

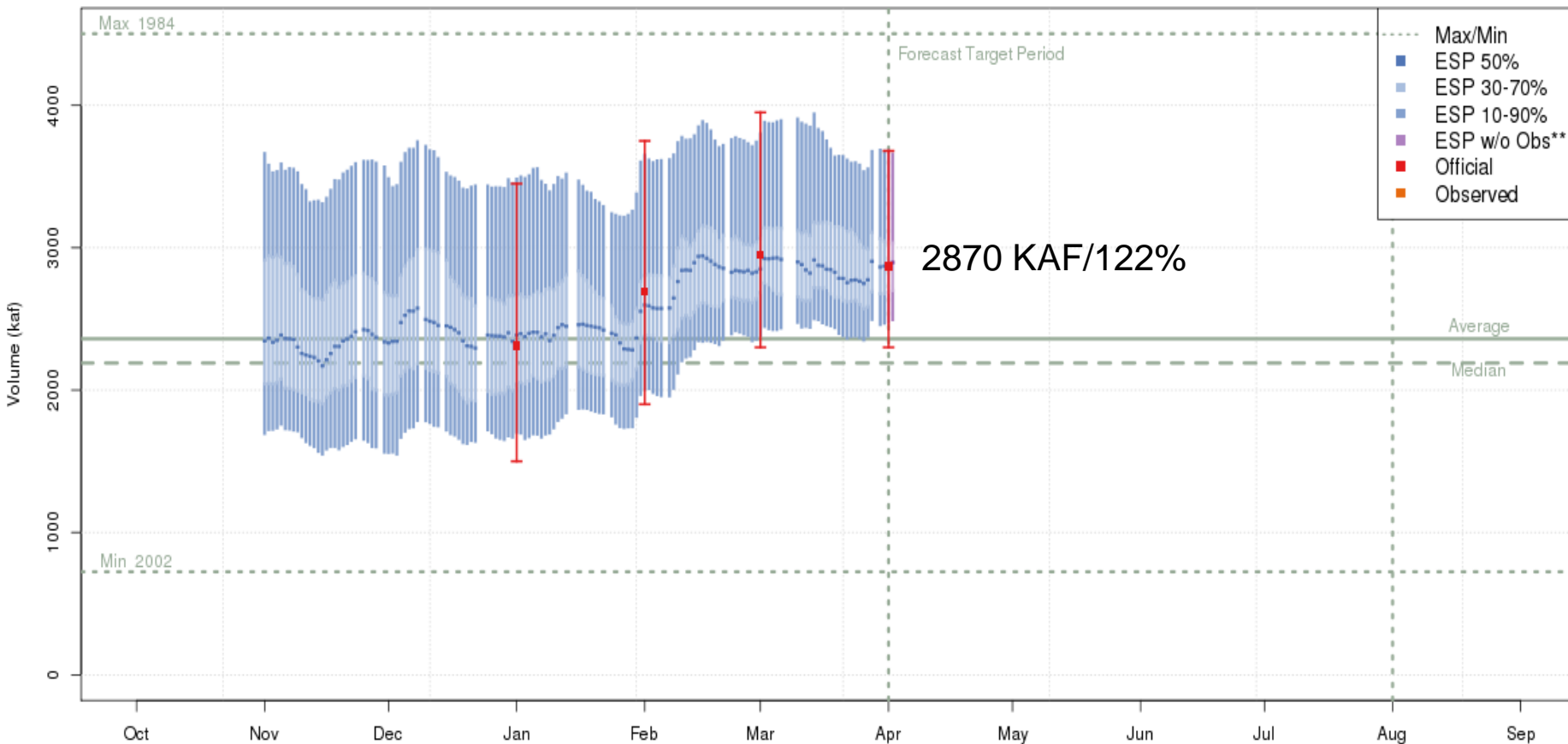


Plot Created 2014-04-03 15:20:07, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed 0.7% from yesterday and 3% from April 1
**These ESP forecasts do not include observed and are not total runoff.

Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

Colorado - Cameo- Nr (CAMC2) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 2870kaf (122% of average)

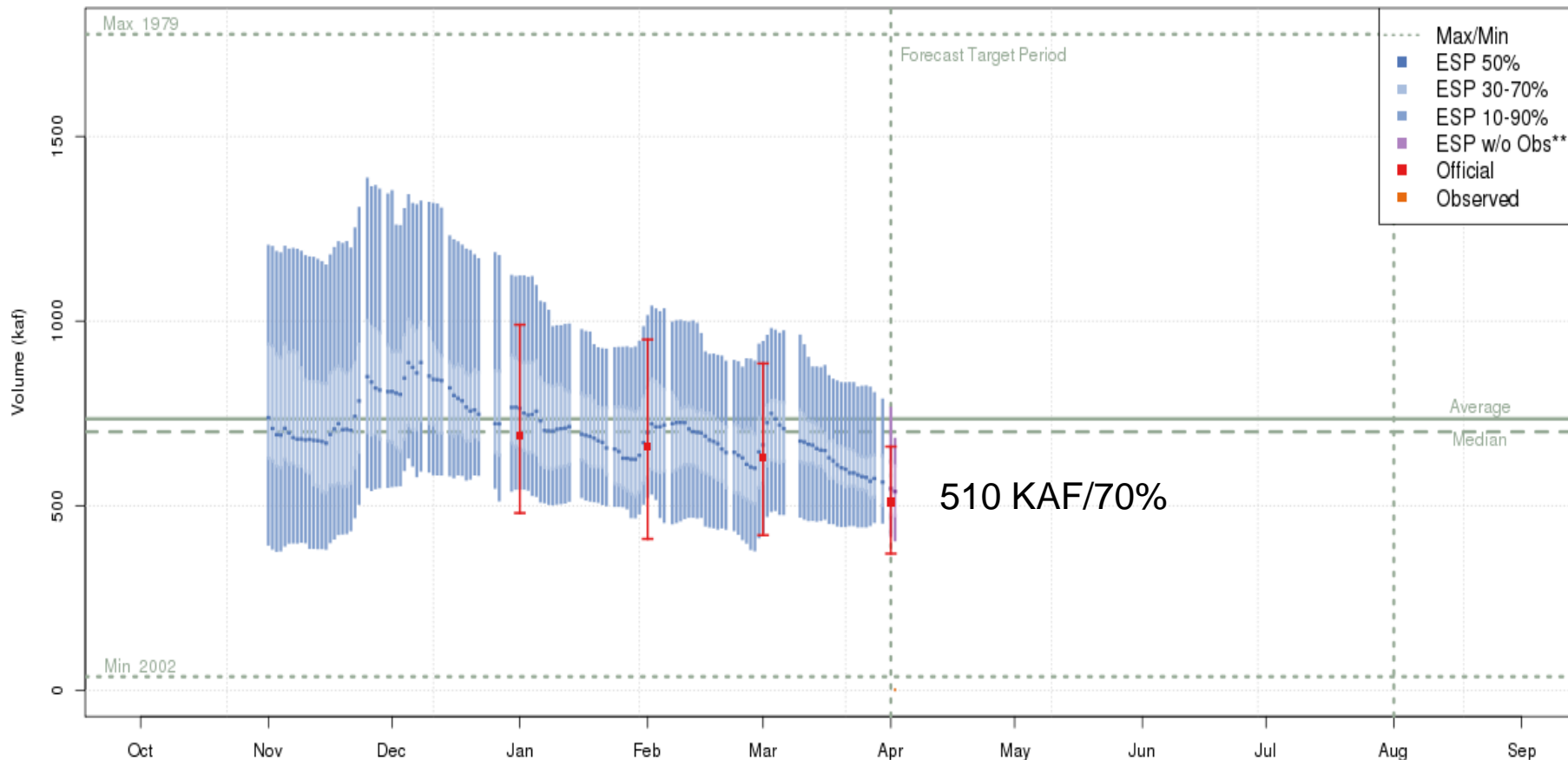


Plot Created 2014-04-03 14:44:06, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed -1.1 % from yesterday and -0.7 % from April 1
**These ESP forecasts do not include observed and are not total runoff.

Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

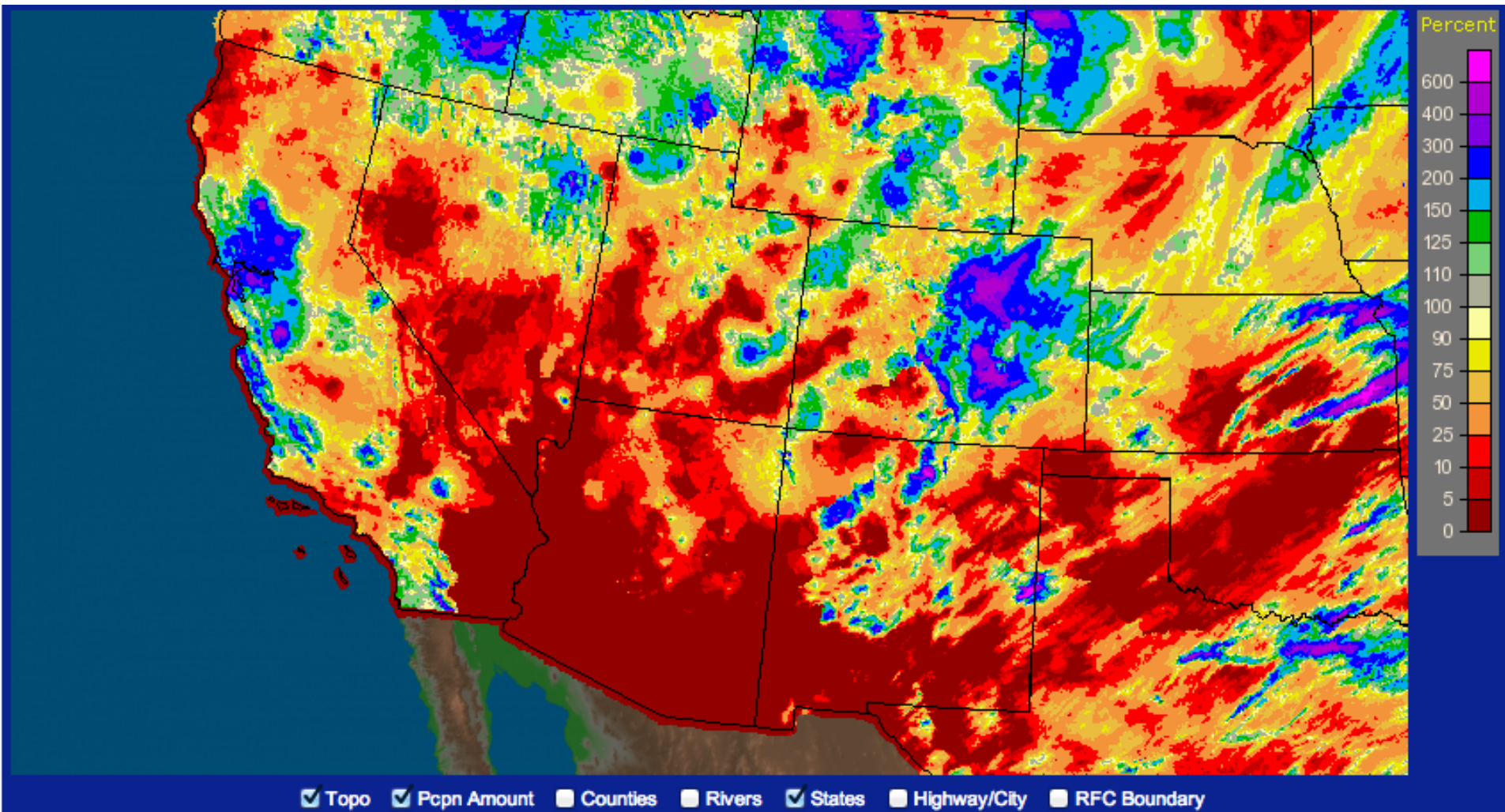
Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest

San Juan - Navajo Res- Archuleta- Nr (NVRN5) Apr-Jul 2014 Runoff Forecast
2014-04-01 Official 50% Forecast: 510kaf (69% of average)

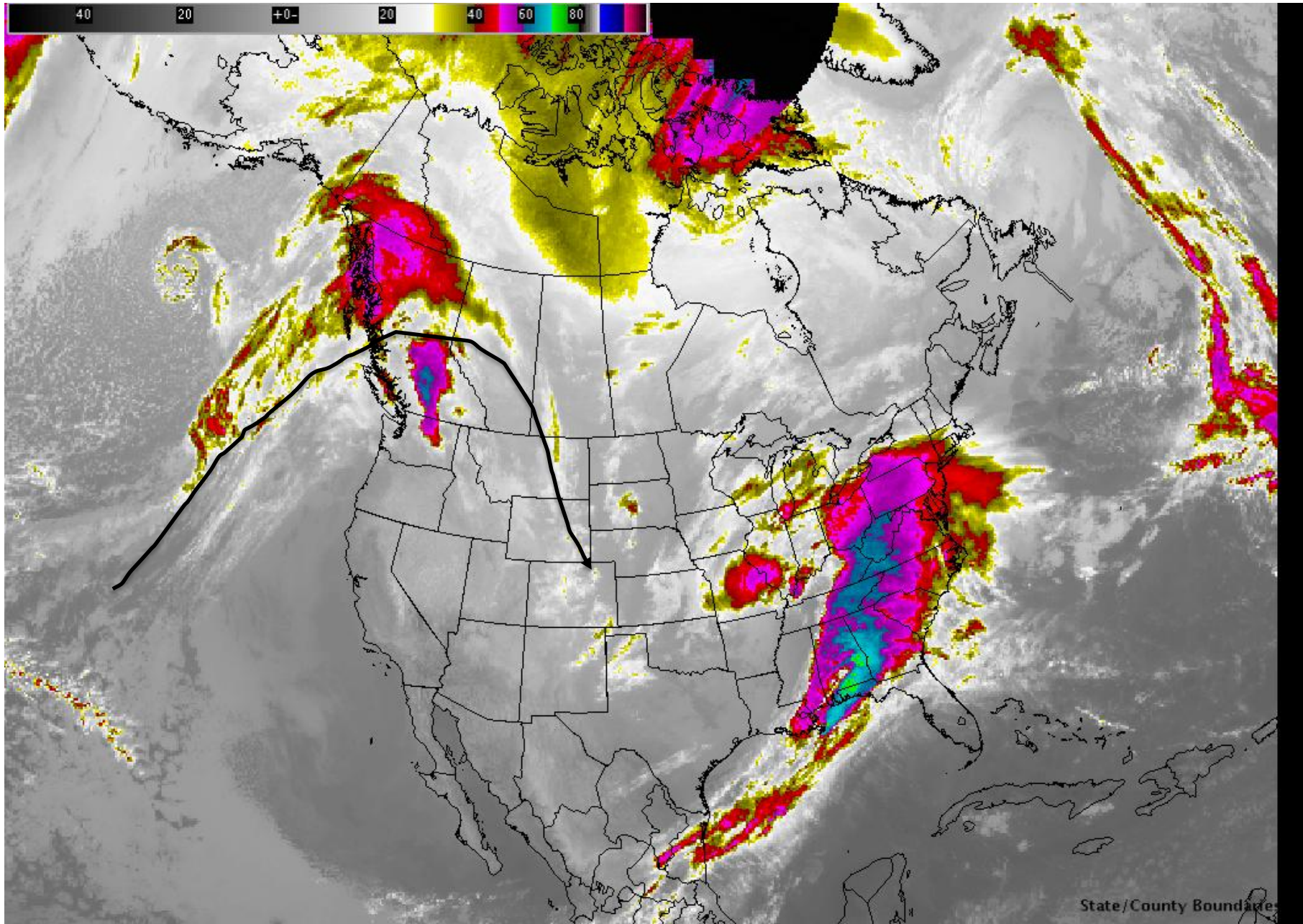


Plot Created 2014-04-03 15:04:35, Lastest ESP Run from 2014-04-03, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed 0.4 % from yesterday and -1.1 % from April 1
**These ESP forecasts do not include observed and are not total runoff.

April 1 – 6 percent of average precipitation



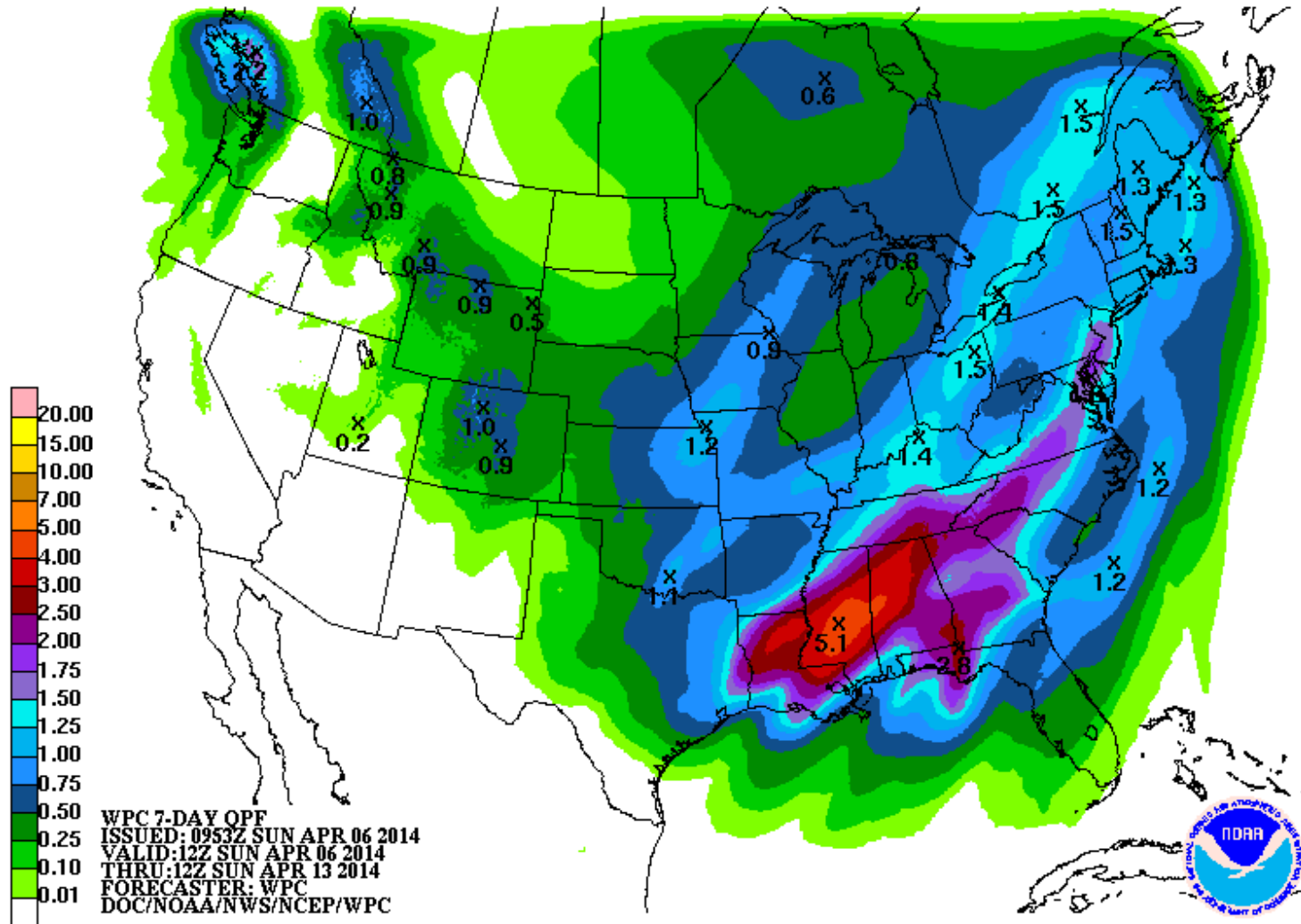
Upcoming Weather: Short term warm and dry.
Increasing chance of precipitation mid April



Quantitative Precipitation Forecast

Weather Prediction Center

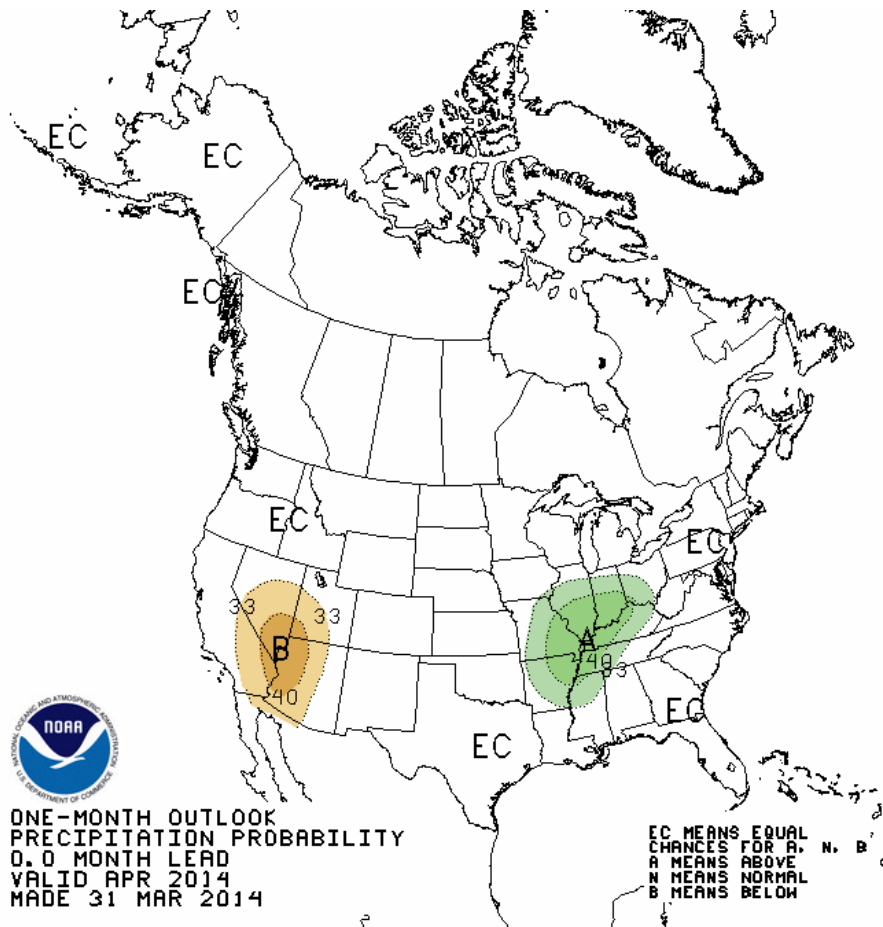
April 6 - 13



Long Term Precipitation Outlook

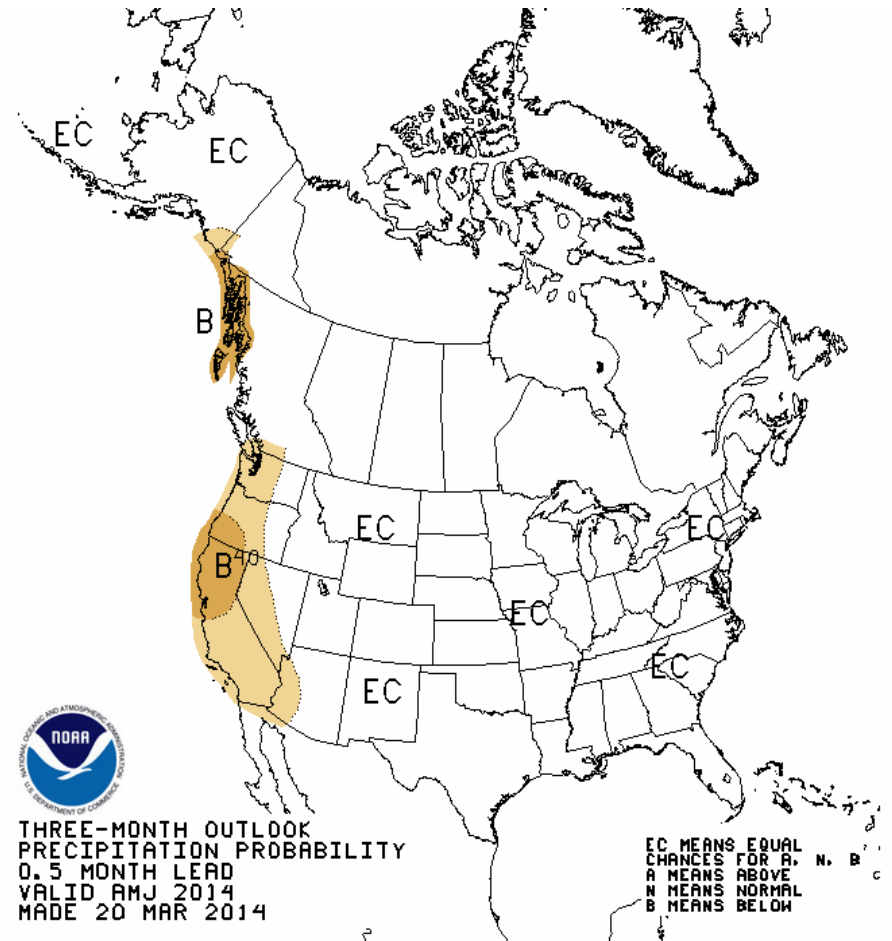
Climate Prediction Center

April 2014



ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.0 MONTH LEAD
VALID APR 2014
MADE 31 MAR 2014

April-June 2014

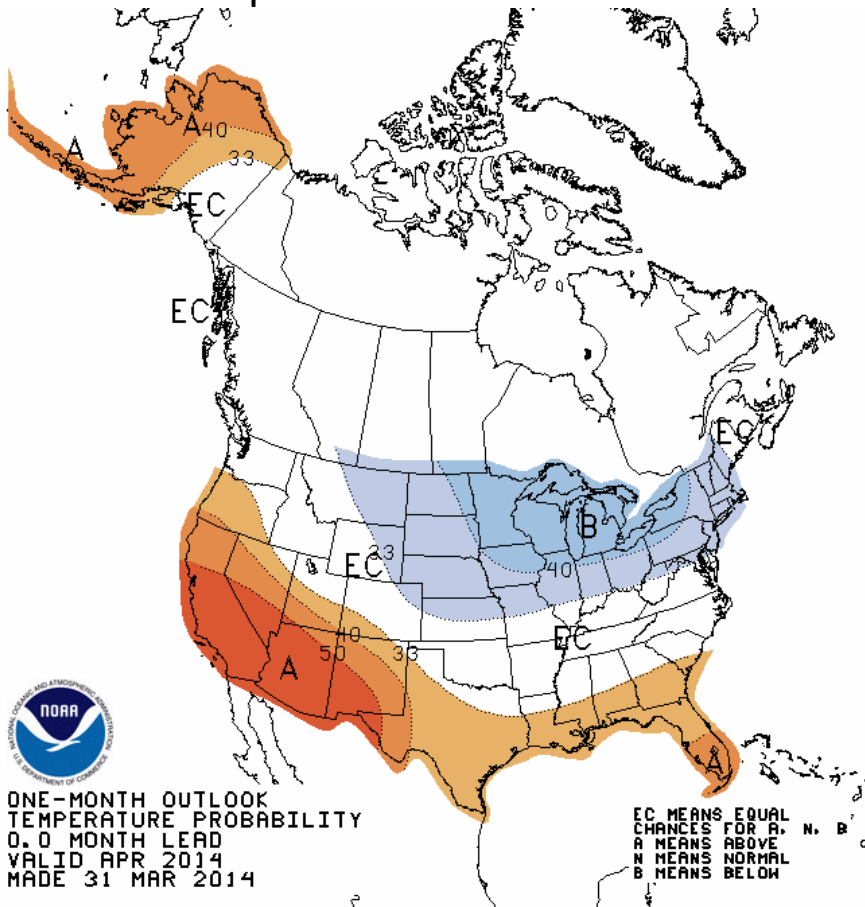


THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID AMJ 2014
MADE 20 MAR 2014

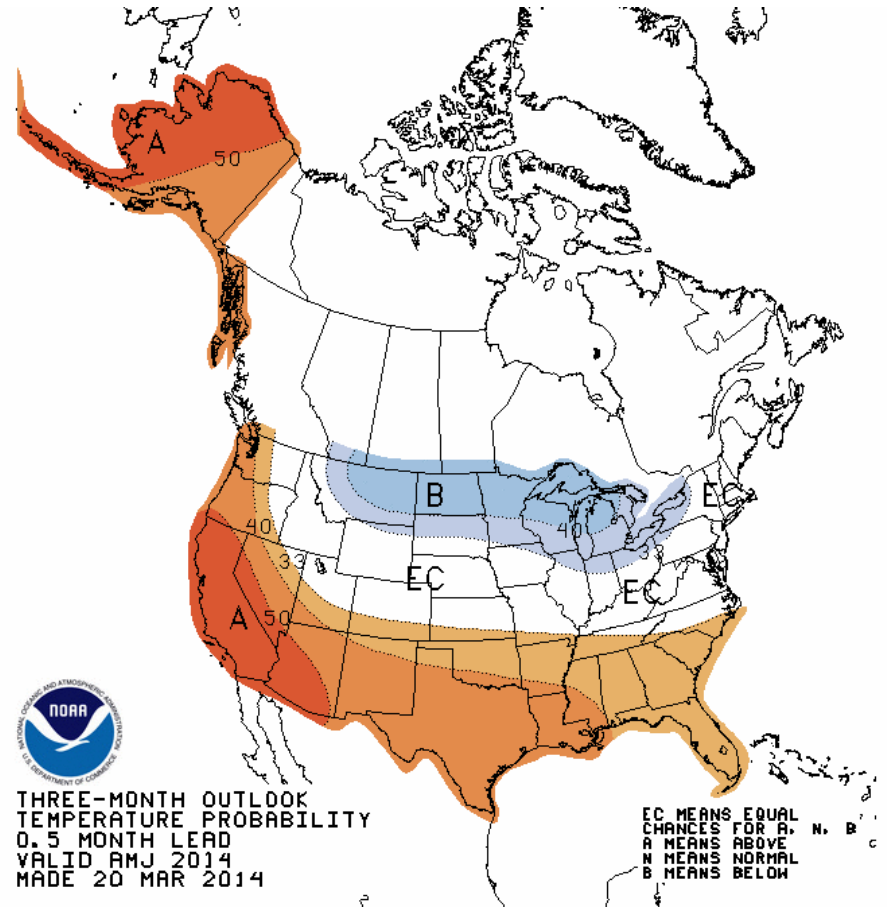
Spring Temperature Outlook

Climate Prediction Center

April 2014



April-June 2014



Summary

- **Soil Moisture Impacts**

- Positive in much of the Upper Colorado / Negative Great & LC Basins
- Lack of snow becoming the influence in the San Juan/Virgin

- **Snow**

- Significant Green Basin (Wyoming), Yampa, Colorado-abv Cameo, Gunnison above Blue Mesa, parts of Bear River Basin

- **Forecasts**

- Much Above average Yampa, Colorado above Cameo, Gunnison
- Below average San Juan, concern about dry spring weather
- Below average Sevier, Virgin, and Lower Colorado Basins
- Small decreases & below average in the Great Basin

- **Weather:**

- Warm /dry then more active middle of the month
- Hint of an El Nino developing late summer or fall

2014 Forecast Webinar Schedule

April 9 at 11am MDT – Peak Flow

May 6 at 1pm MDT

June 5 at 1pm MDT

Registration available:

www.cbrfc.noaa.gov/news/wswebinar2014.html

Please contact us with any specific questions

- Key Water Supply Contacts:
 - Michelle Stokes (Hydrologist in Charge)
 - Brenda Alcorn (Upper Colorado)
 - Ashley Nielson (Green + Yampa / White)
 - Greg Smith (San Juan + Gunnison + Dolores)
 - Paul Miller (Great Basin – Bear, Weber, Provo, Six-Creeks/Jordan)
 - Tracy Cox (Lower Colorado + Virgin + Sevier)