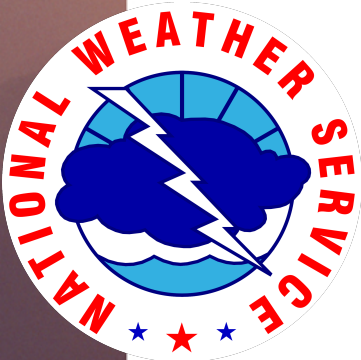
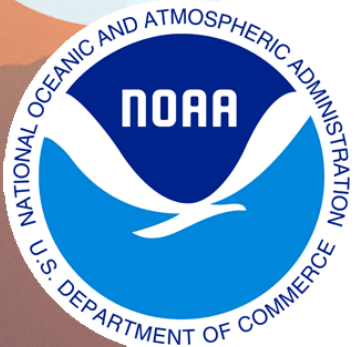
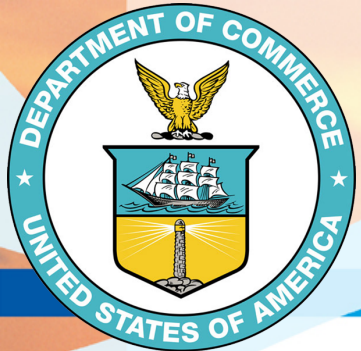


CBRFC Water Supply Webinar – April 7th 11 a.m. MDT



Today's Presentation

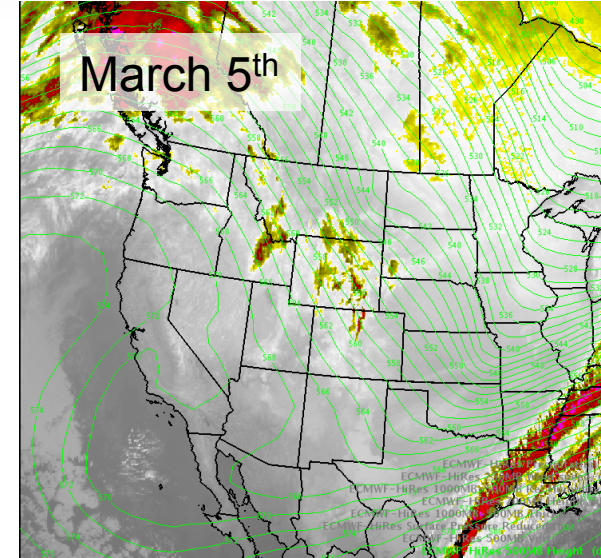
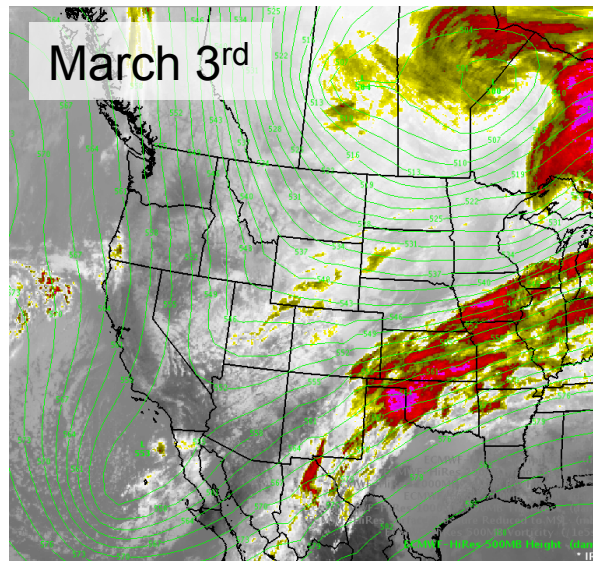
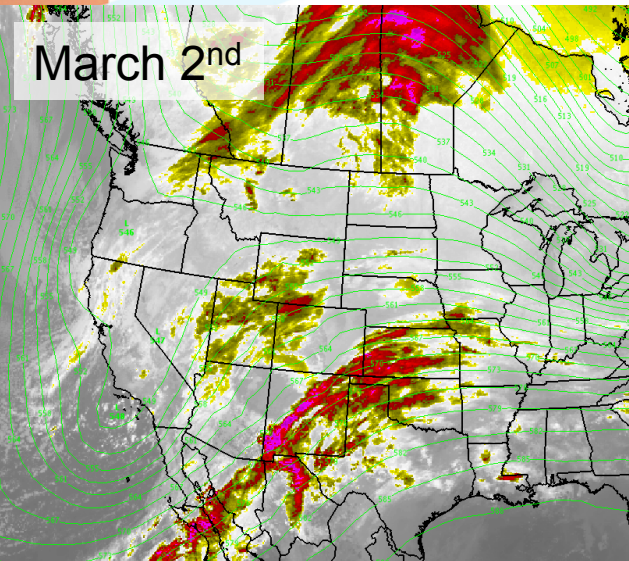
2

- March weather
- Current conditions driving the forecast
- April Final Water Supply Forecast Summary
- Record-breaking conditions
 - Streamflow
 - Snowpack
- Future Weather Outlook



March Weather

3

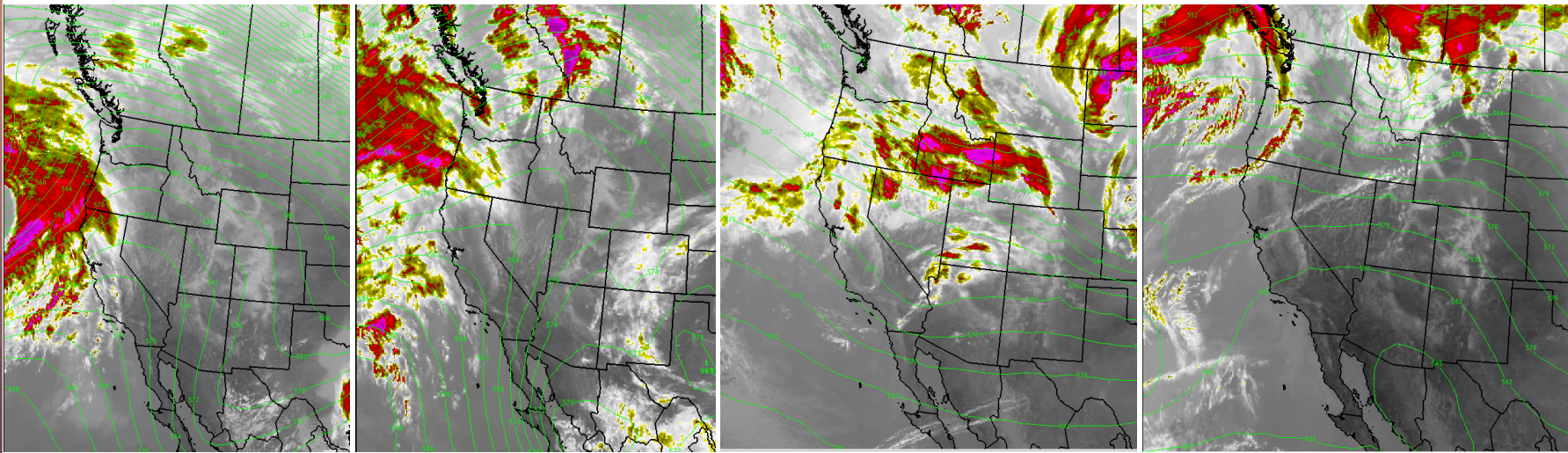


March storms were quick, infrequent, relatively warm, and dry. On March 2nd (far left), quick storm moved across the Upper Basin, but high pressure ridge was re-established by March 5th (far right).

March Weather

4

Storm activity was not apparent throughout much of March.



March 10th

March 13th

March 24th

March 28th

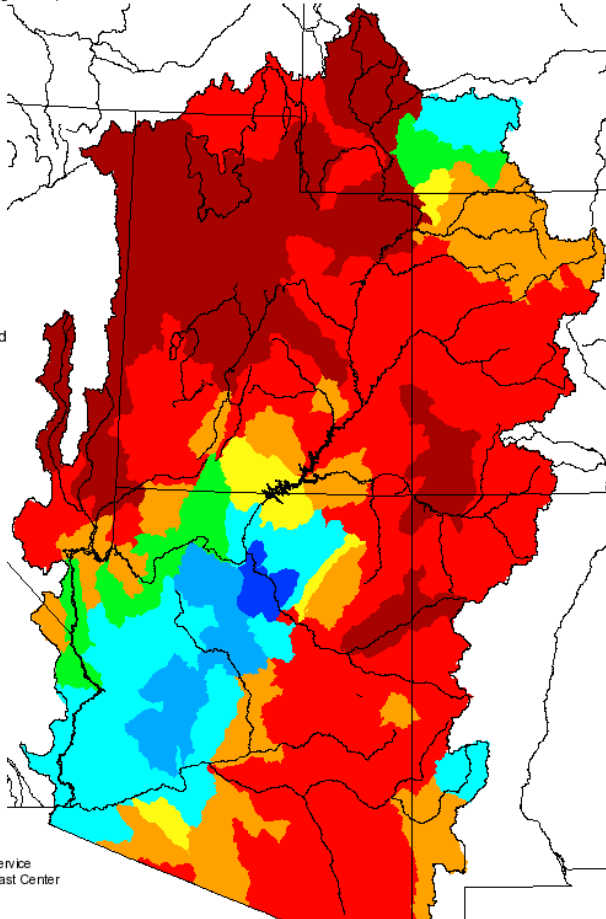
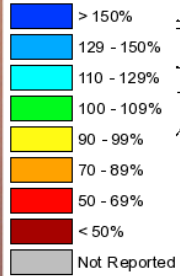
Winter storm activity projected by models > 10 days out rarely occurred.

March and Seasonal Precipitation

Monthly Precipitation for March 2015

(Averaged by Hydrologic Unit)

% Average

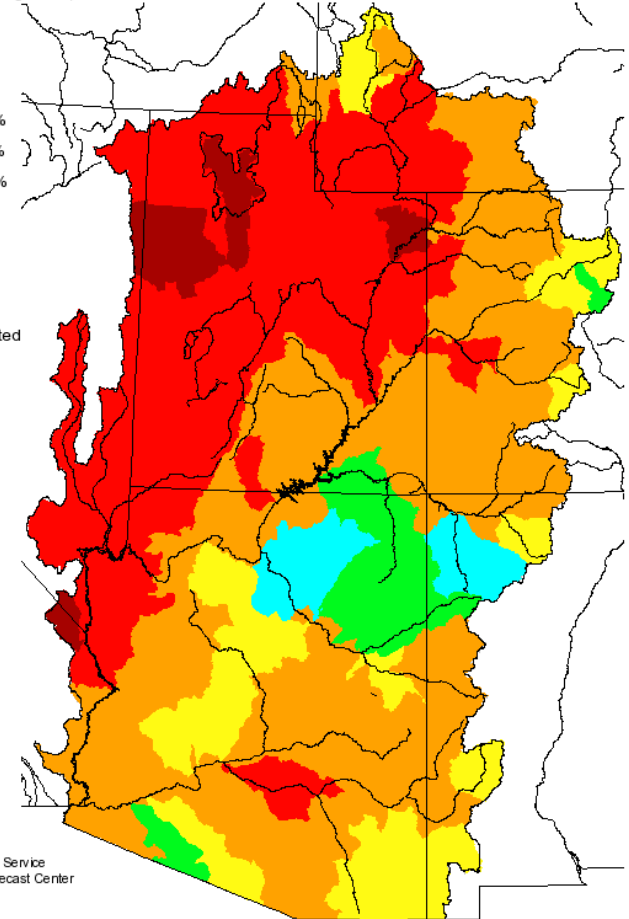
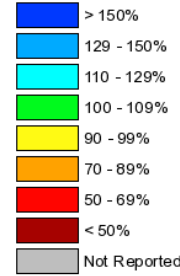


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Seasonal Precipitation, October 2014 - March 2015

(Averaged by Hydrologic Unit)

% Average



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

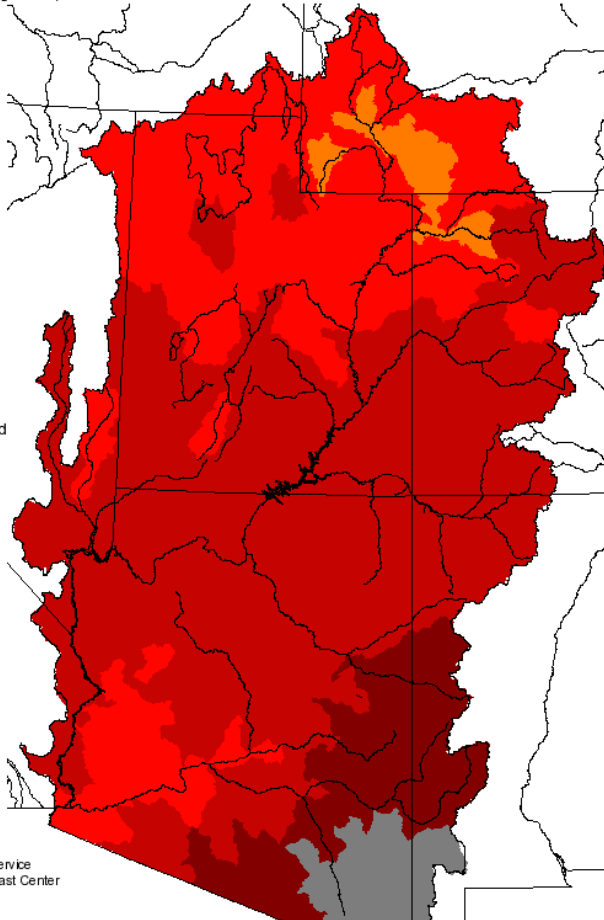
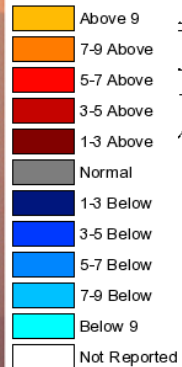
March Temperatures

6

Monthly Max Temp Deviation for March 2015

(Averaged by Hydrologic Unit)

Degrees (F)

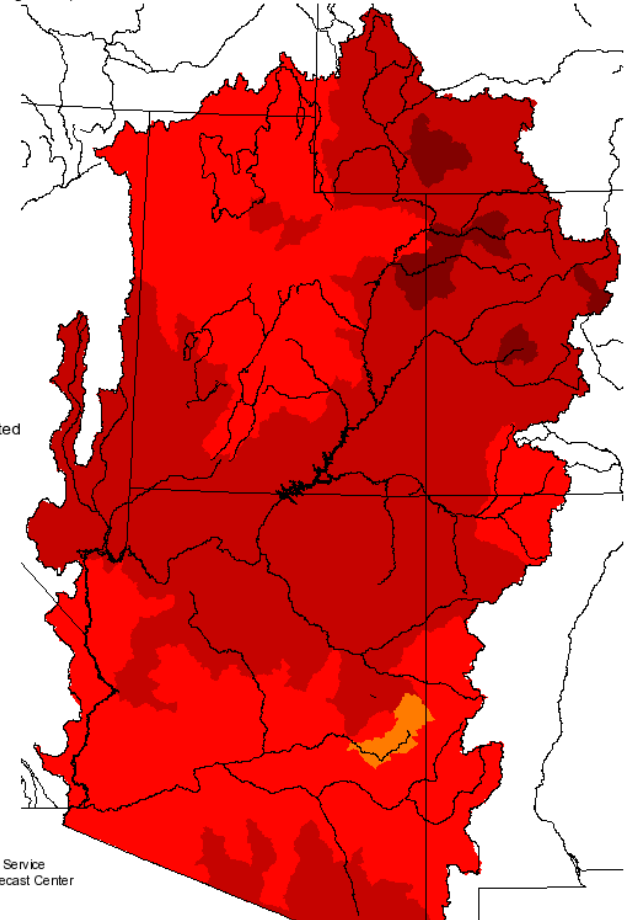


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Monthly Min Temp Deviation for March 2015

(Averaged by Hydrologic Unit)

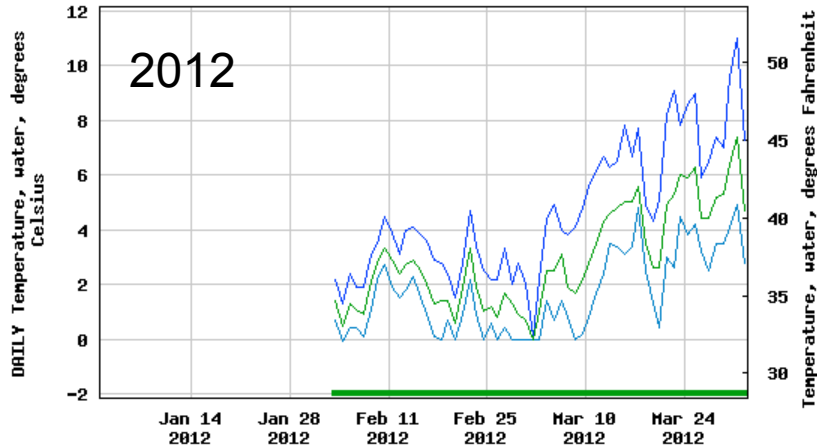
Degrees (F)



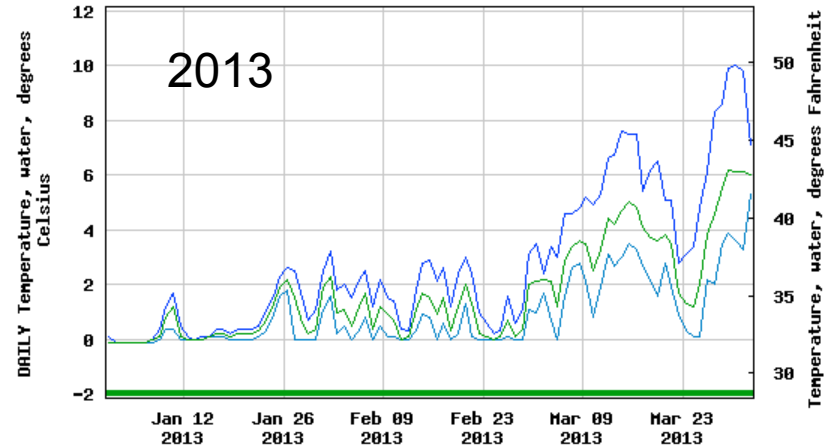
Prepared by
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Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Water Temperatures

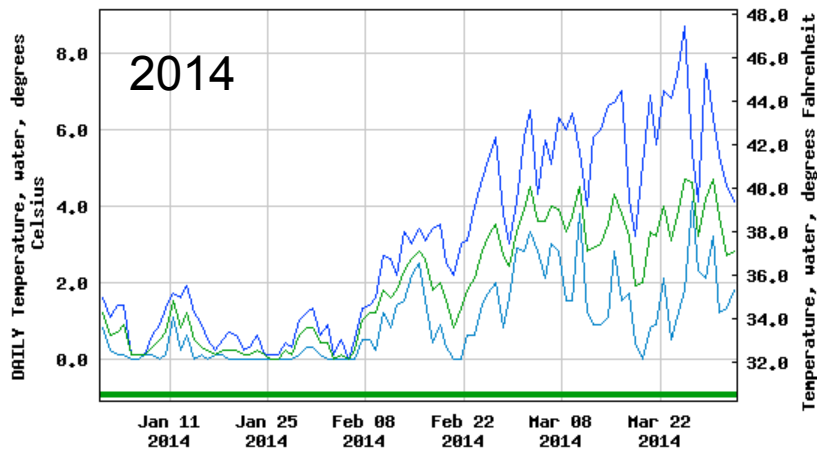
USGS 10172200 RED BUTTE CREEK AT FORT DOUGLAS, NEAR SLC, UT



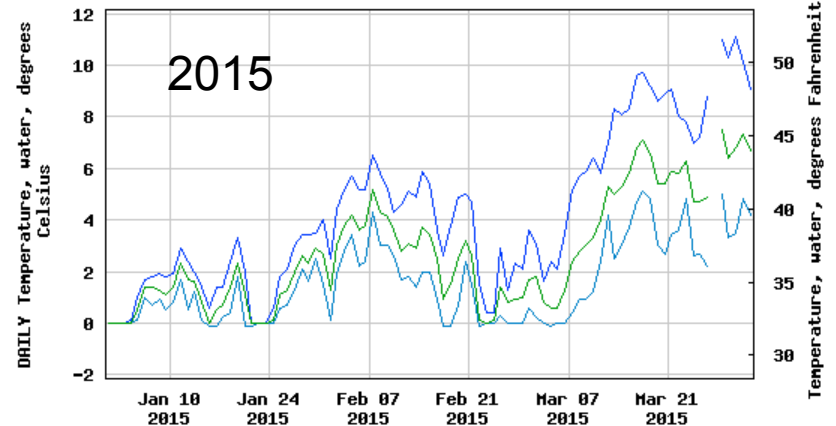
USGS 10172200 RED BUTTE CREEK AT FORT DOUGLAS, NEAR SLC, UT



USGS 10172200 RED BUTTE CREEK AT FORT DOUGLAS, NEAR SLC, UT



USGS 10172200 RED BUTTE CREEK AT FORT DOUGLAS, NEAR SLC, UT



---- Provisional Data Subject to Revision ----

— Daily maximum temperature — Daily mean temperature
— Daily minimum temperature — Period of approved data

— Daily maximum temperature — Daily mean temperature
— Daily minimum temperature



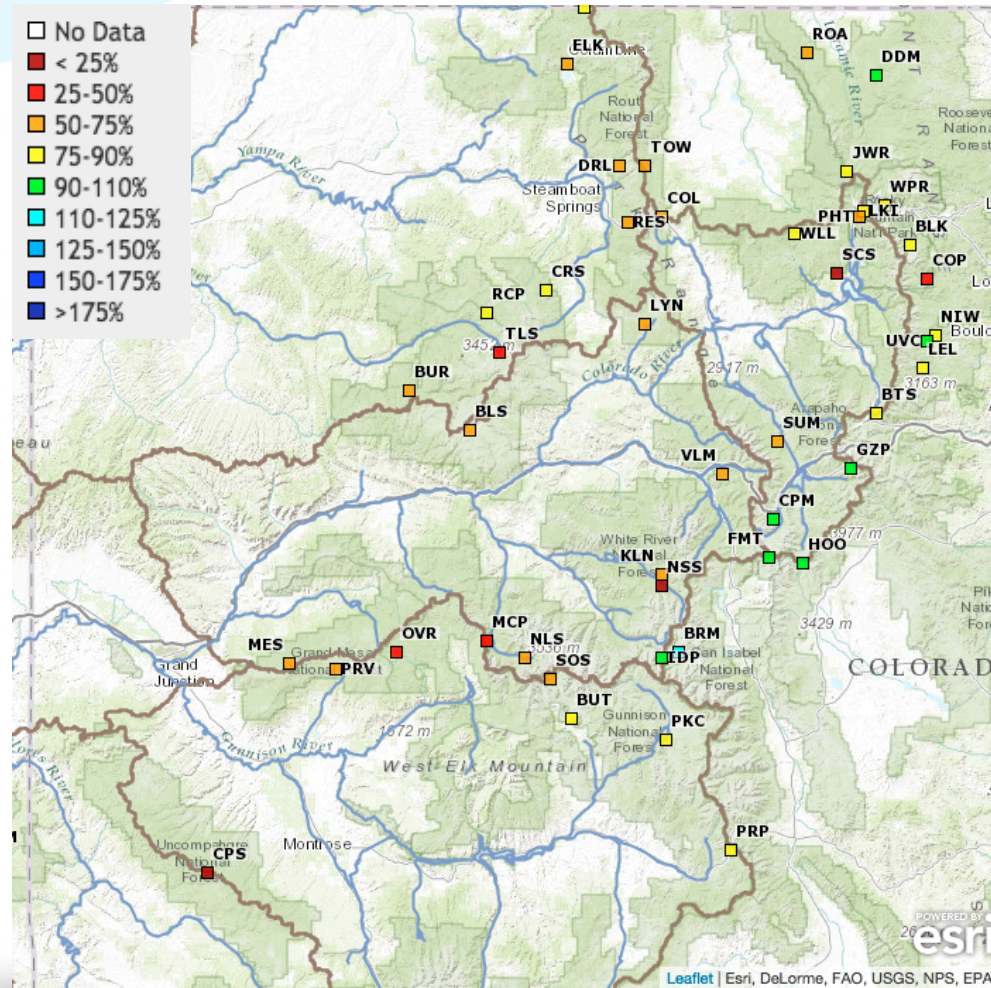
What does all this mean?

8

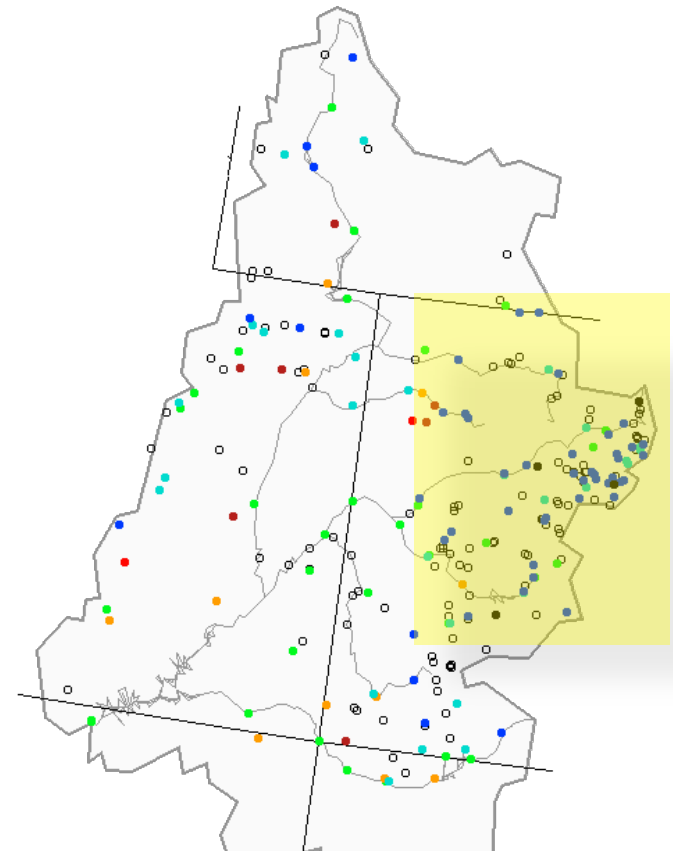
- Poor snow conditions due to lack of precipitation, record temperatures, have led to early melt/runoff!
- Streamflow gages
 - Many gages are running well above average currently, despite poor snowpack conditions
 - Diurnal flow conditions seen as early as late January at low elevation sites in Utah
 - Gages that are usually ice-affected in March were not ice-affected in March this year

Upper Colorado Streamflow and Snowpack – 4/2/2015

- No Data
- < 25%
- 25-50%
- 50-75%
- 75-90%
- 90-110%
- 110-125%
- 125-150%
- 150-175%
- >175%



Thursday, April 02, 2015 13:31ET

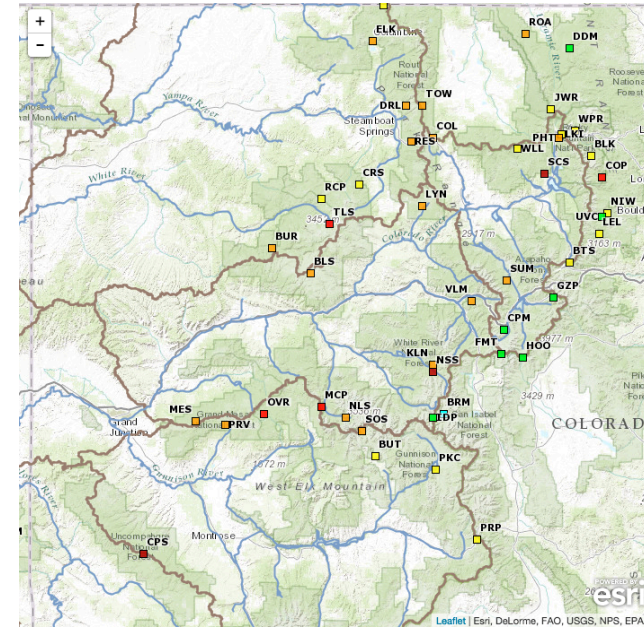
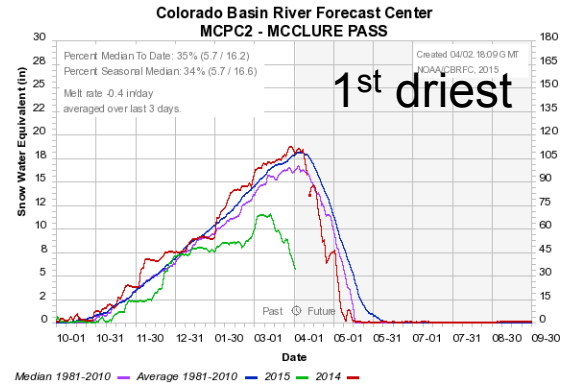
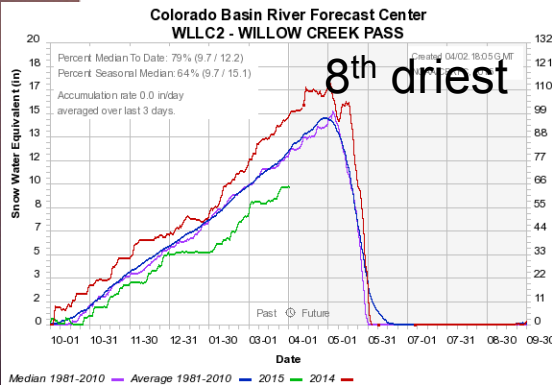
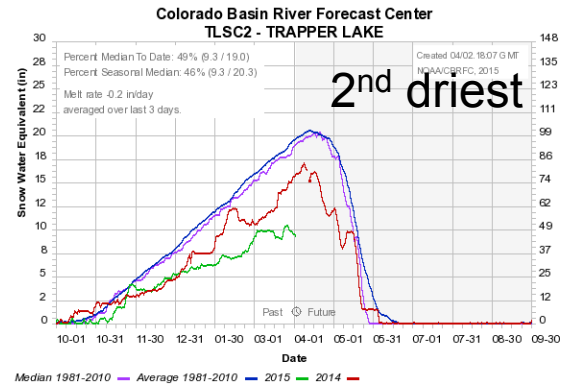
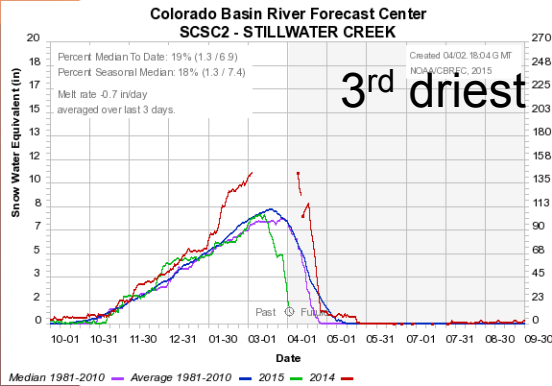


Explanation - Percentile classes

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

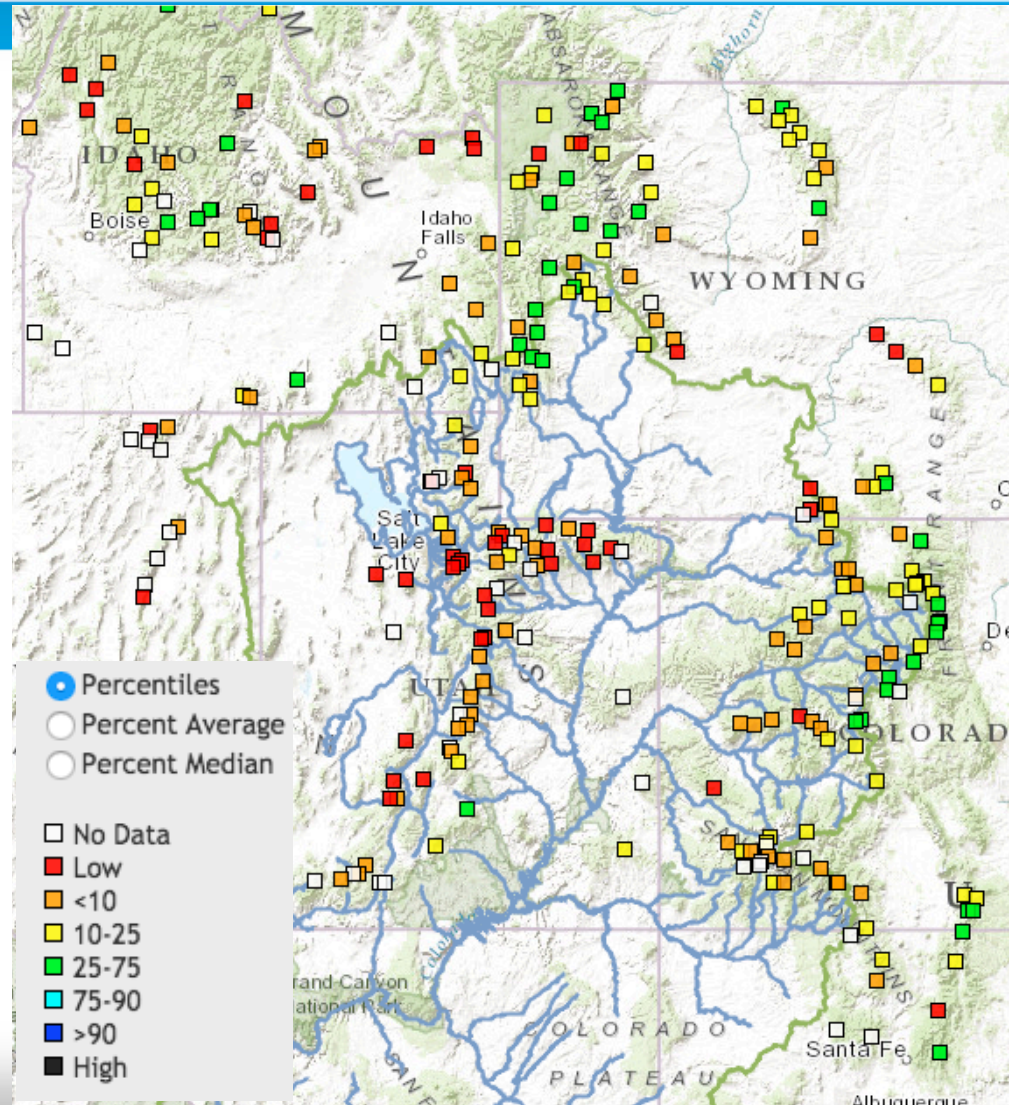


Upper Colorado Streamflow and Snowpack – 4/2/2015

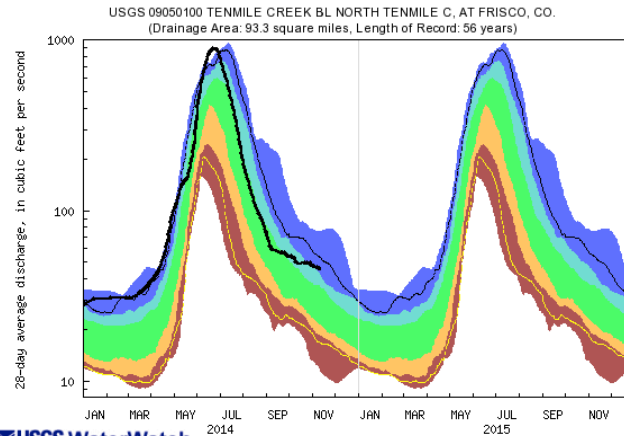
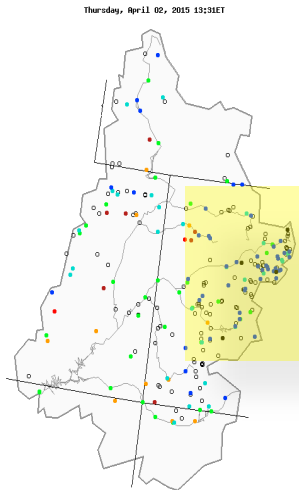


Current Snowpack Conditions

- Many are the lowest on record or in bottom tenth percentile
- Can access by going to our website and plotting SNOTEL stations by “Percentiles”

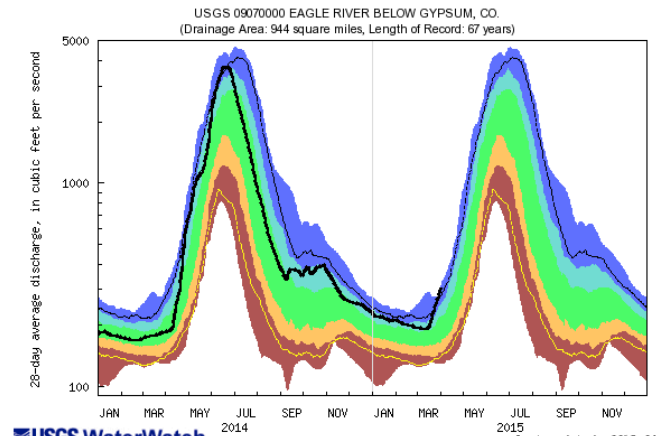


Upper Colorado Streamflow* and Snowpack – 4/2/2015



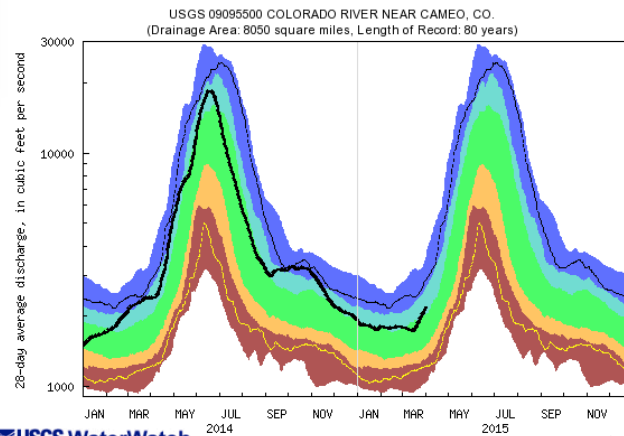
USGS WaterWatch

Last updated: 2015-04-06



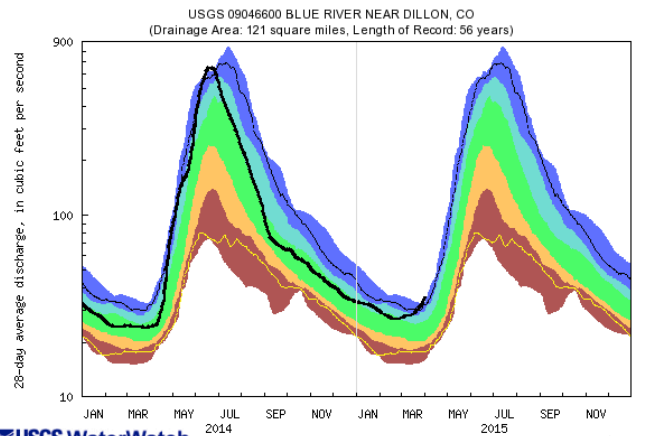
USGS WaterWatch

Last updated: 2015-04-02



USGS WaterWatch

Last updated: 2015-04-02



USGS WaterWatch

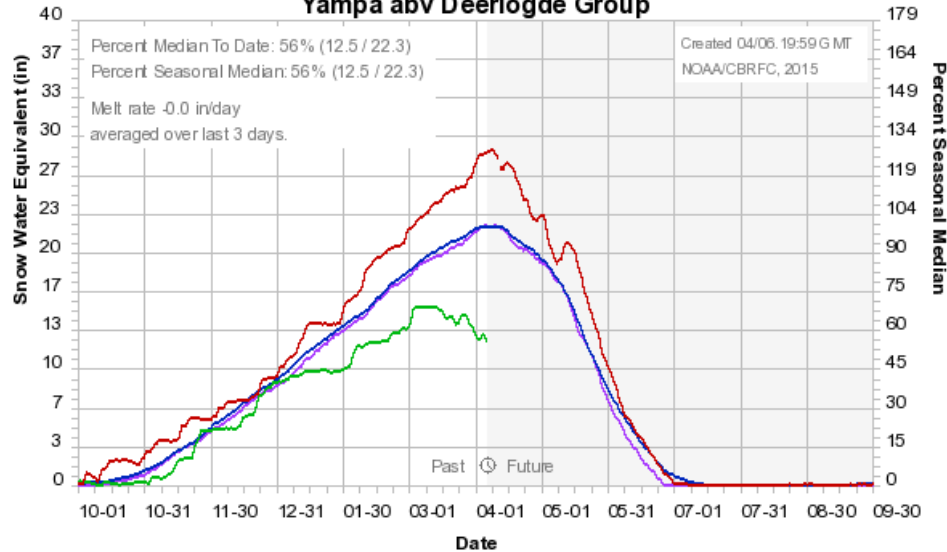
Last updated: 2015-04-02



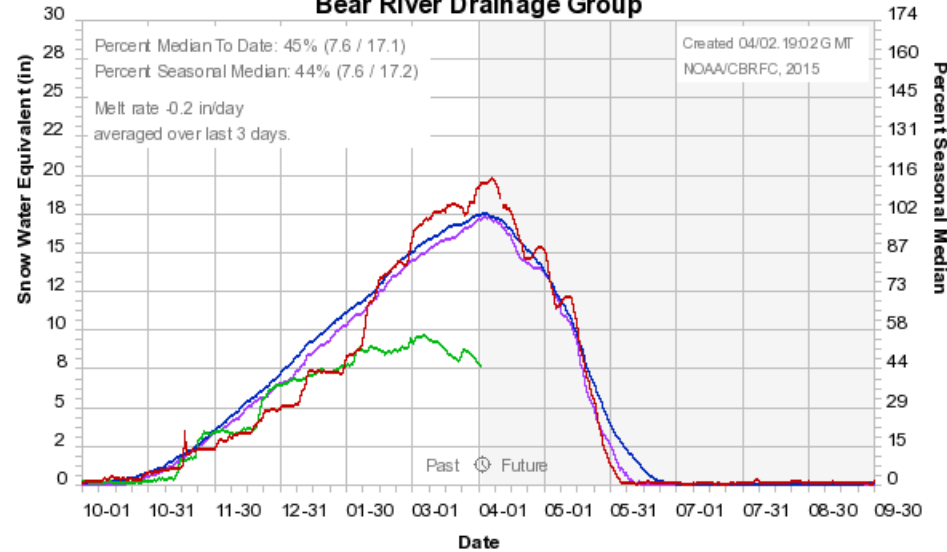
*These are regulated flows

Basin Snow Groups

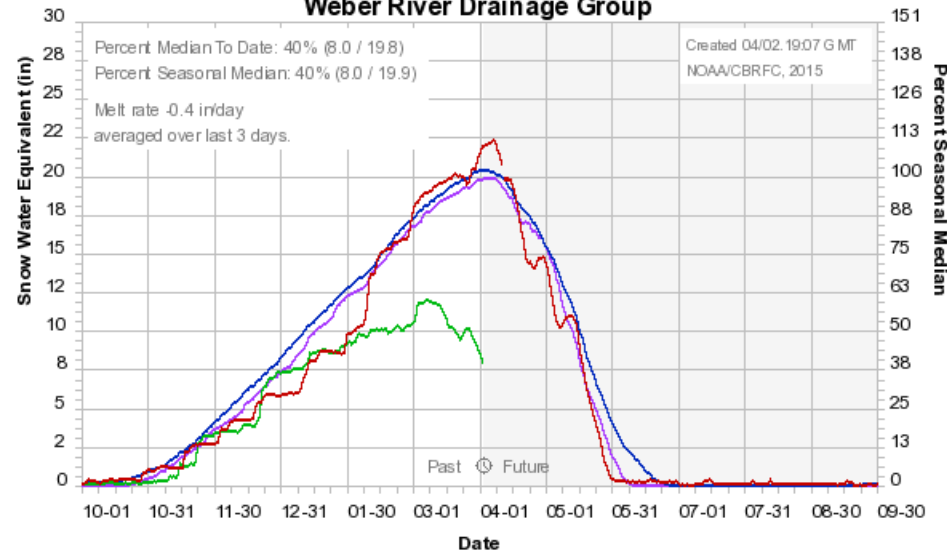
Colorado Basin River Forecast Center
Yampa abv Deerlogde Group



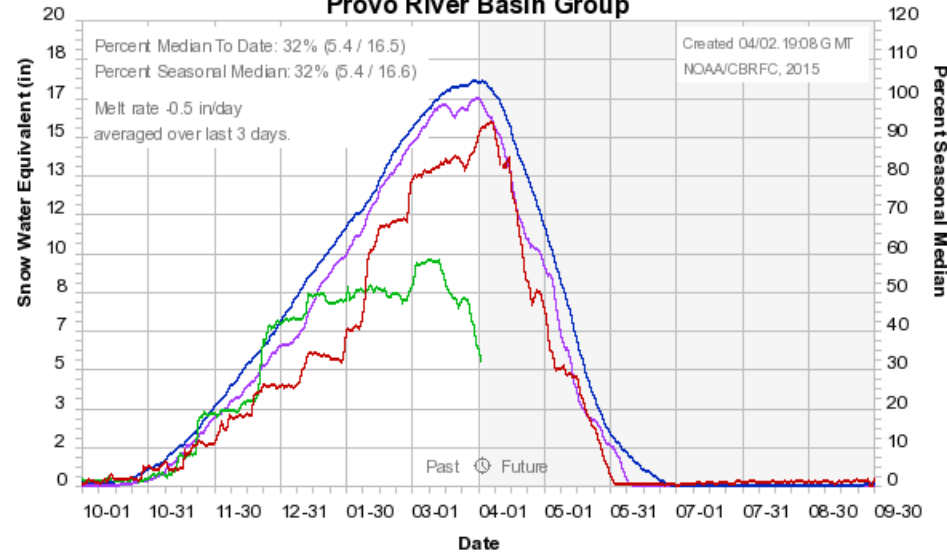
Colorado Basin River Forecast Center
Bear River Drainage Group



Weber River Drainage Group

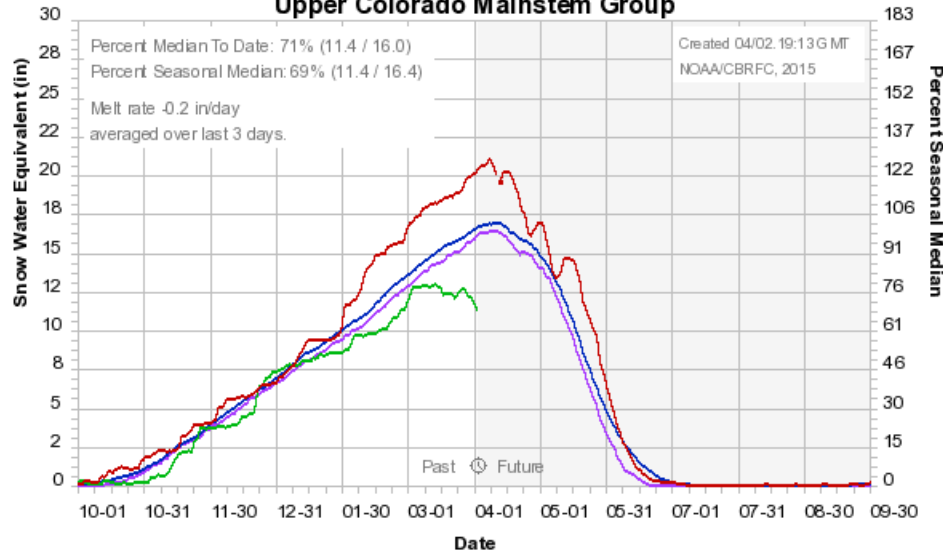


Colorado Basin River Forecast Center
Provo River Basin Group

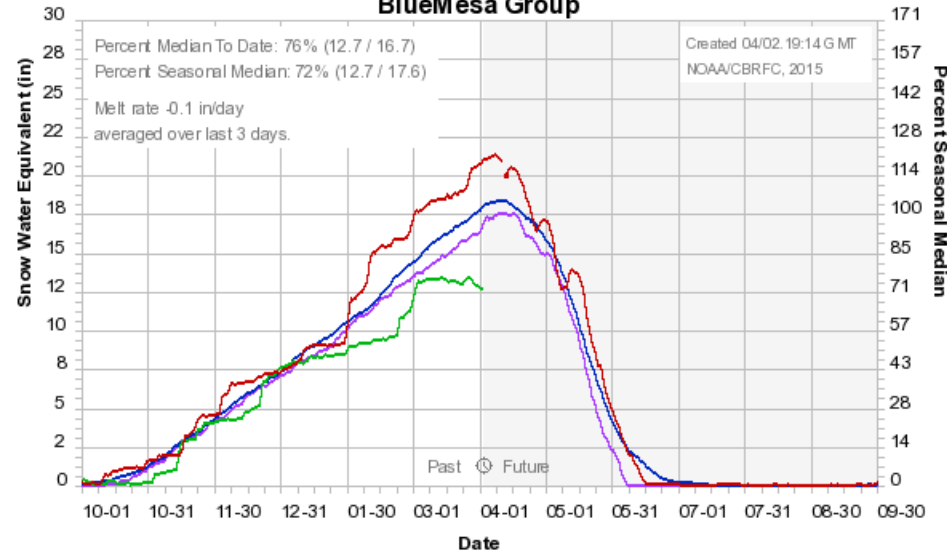


Basin Snow Groups

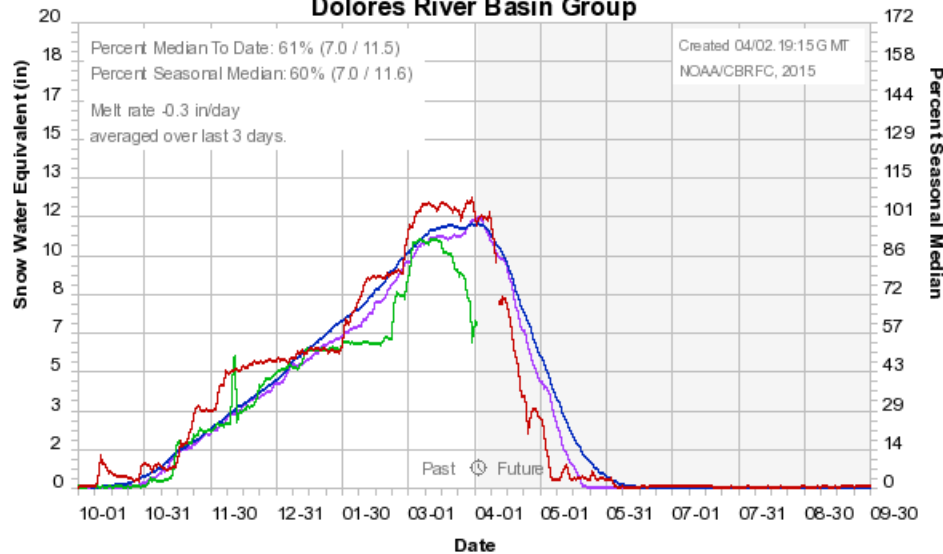
Colorado Basin River Forecast Center
Upper Colorado Mainstem Group



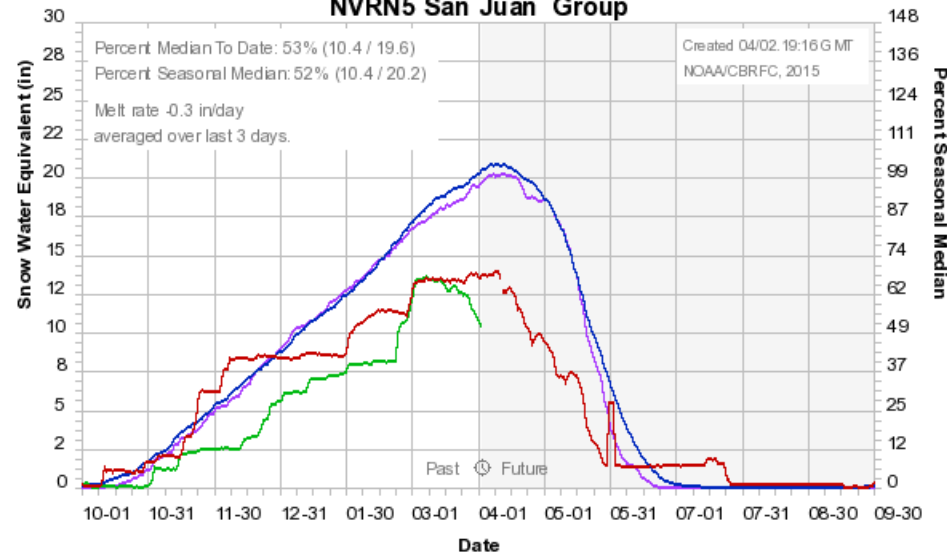
Colorado Basin River Forecast Center
BlueMesa Group



Colorado Basin River Forecast Center
Dolores River Basin Group



Colorado Basin River Forecast Center
NVRN5 San Juan Group



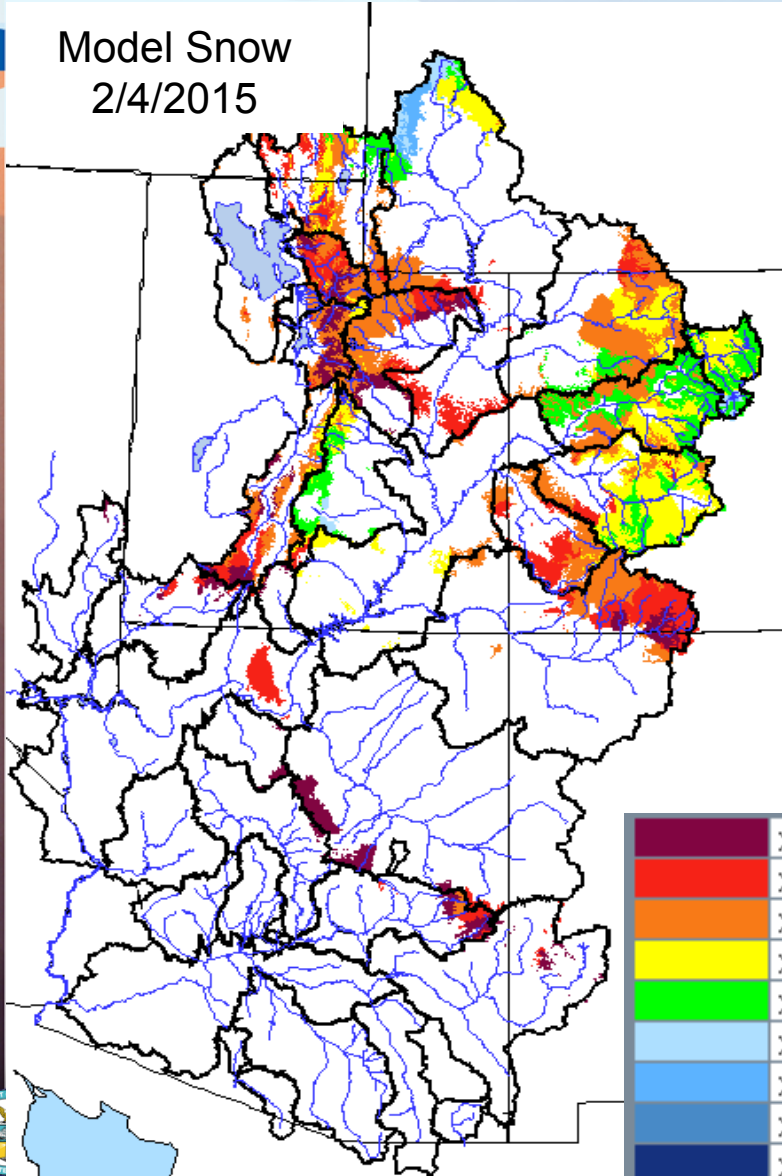
Median 1981-2010 Average 1981-2010 2015 2014

Median 1981-2010 Average 1981-2010 2015 2014

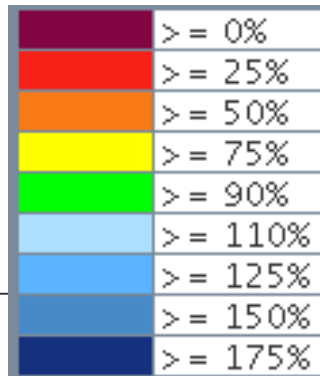
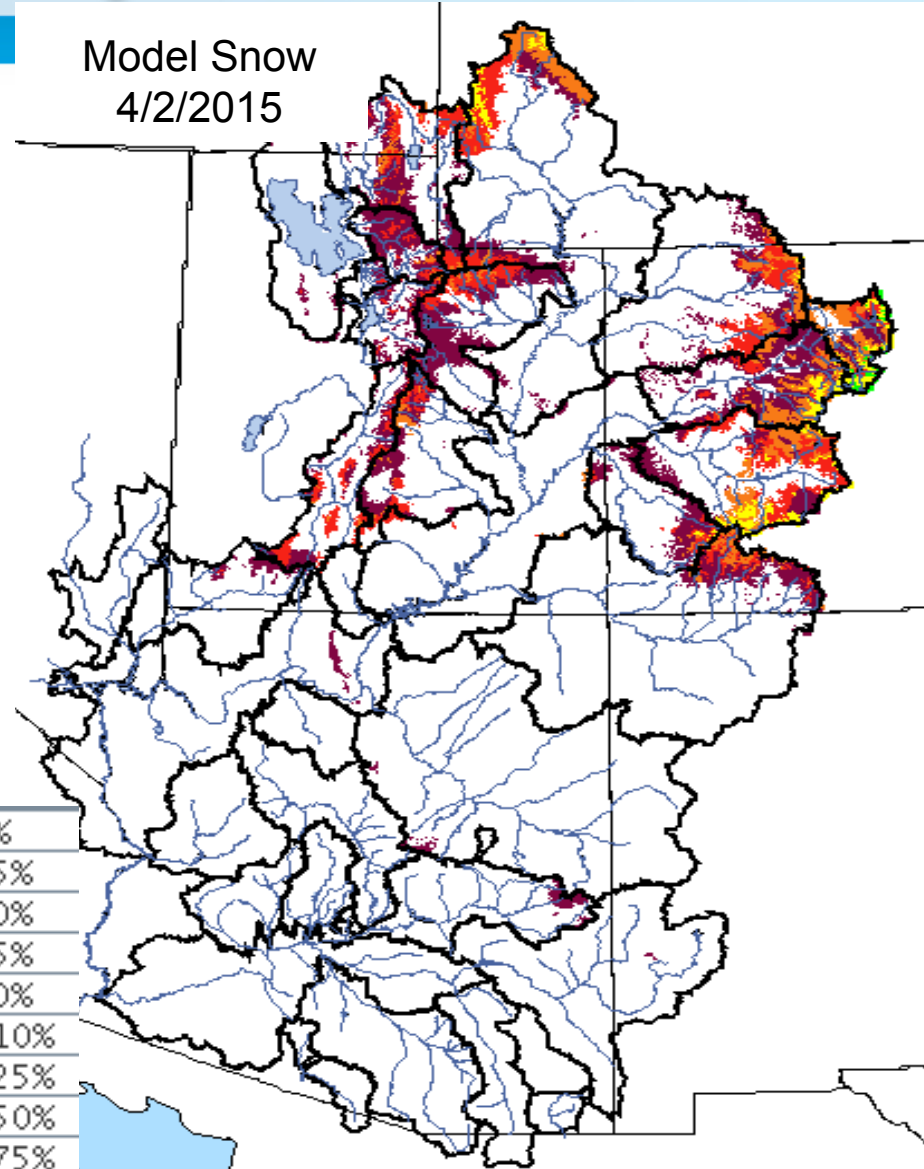
Modeled Snowpack Conditions

15

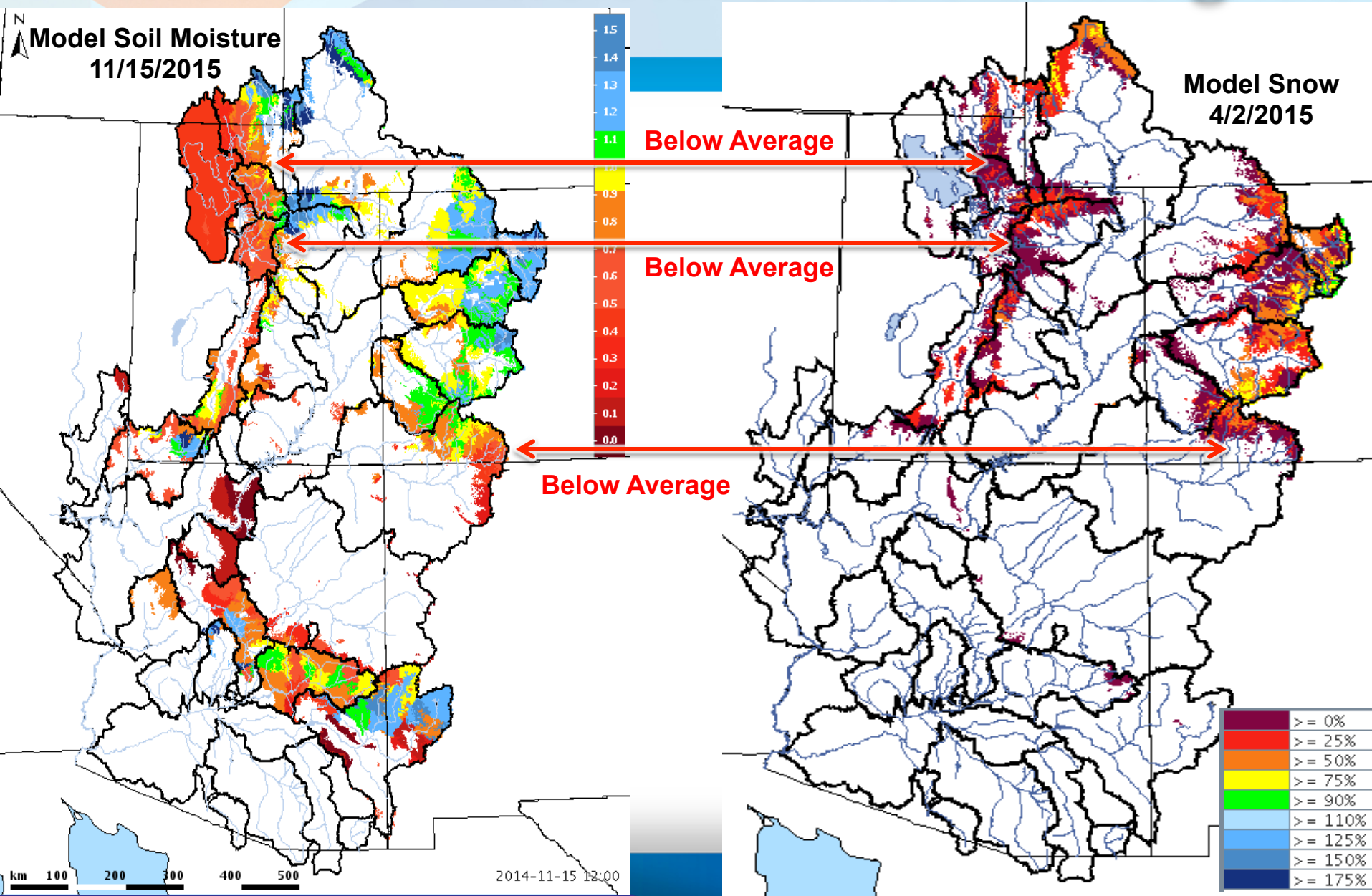
Model Snow
2/4/2015



Model Snow
4/2/2015



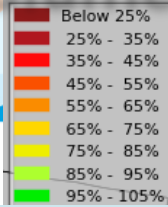
Model Soil Moisture and Snow Signals



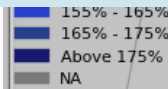
April 1st Water Supply Forecasts

Apr-Jul Volumes / % Average – (50% exceedance forecasts)

17



Bear-UT/WY Stateline:
80 KAF / 71%



Weber-Oakley:
62 KAF / 53%

Provo-Woodland:
62 KAF / 62%

Virgin-Virgin:
20 KAF / 34%

Lake Powell:
3750 KAF / 52%

Flaming Gorge:
650 KAF / 66%

Yampa-Deerlodge:
730 KAF / 59%

Colorado-Cameo:
1840 KAF / 78%

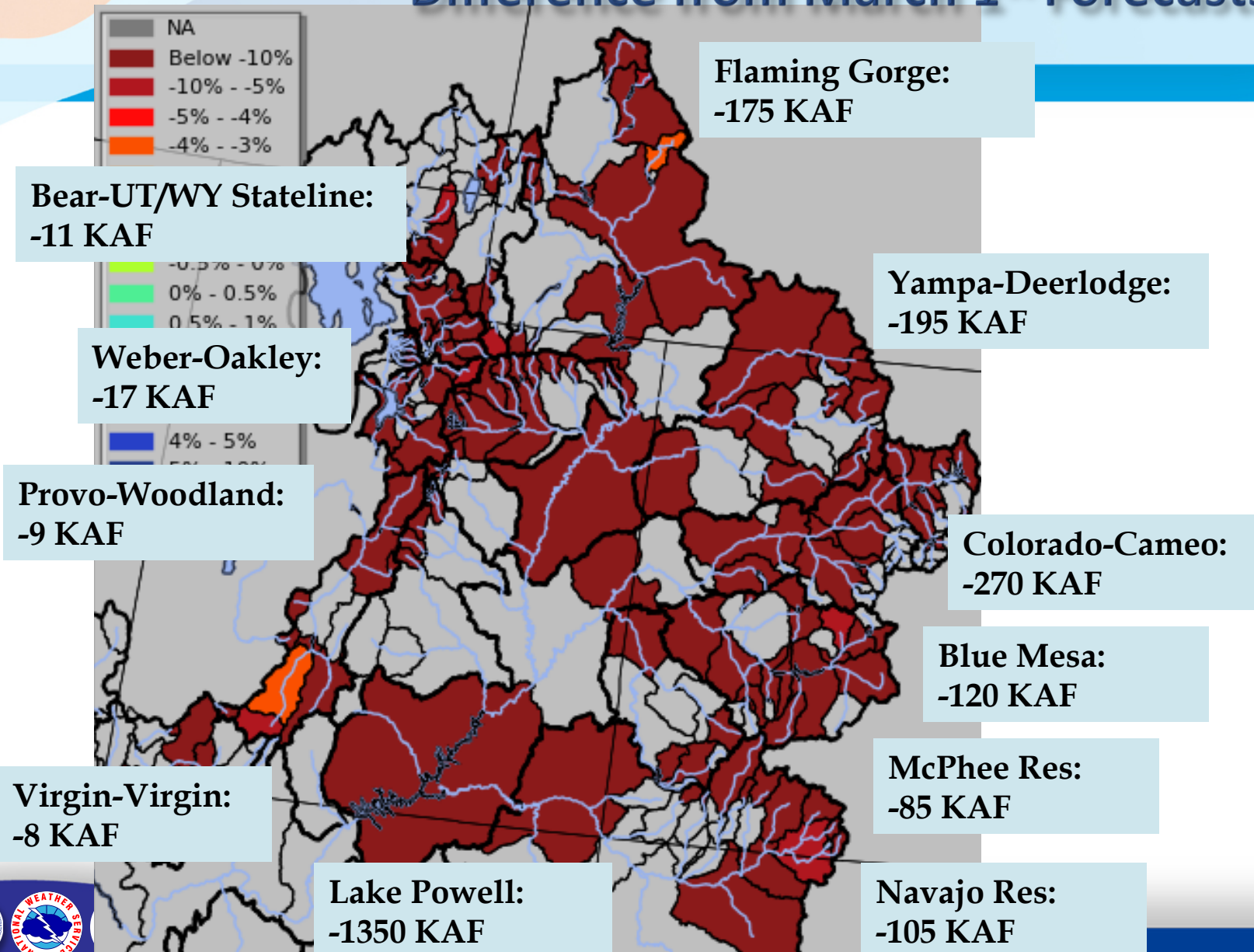
Blue Mesa:
480 KAF / 71%

McPhee Res:
145 KAF / 49%

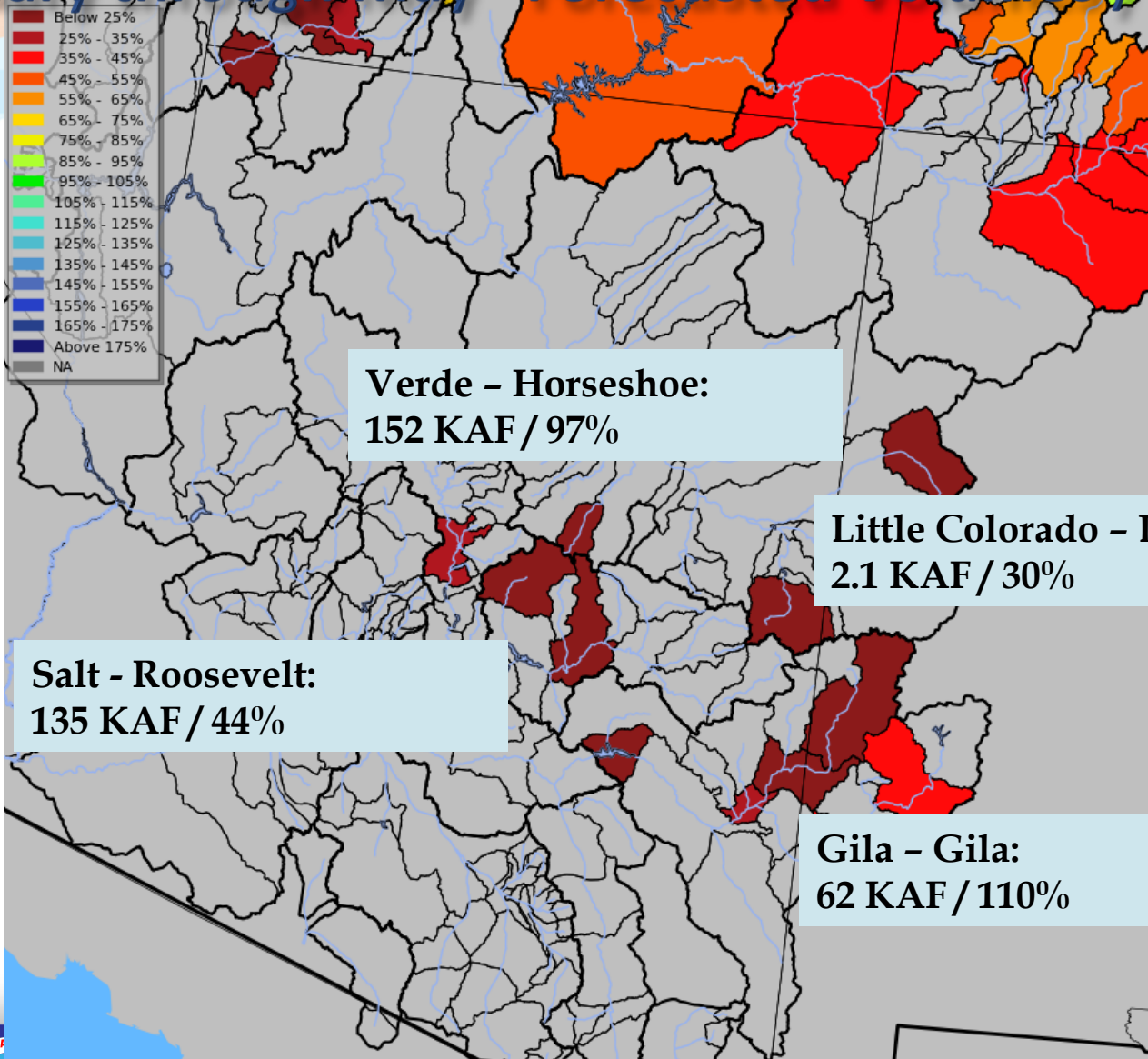
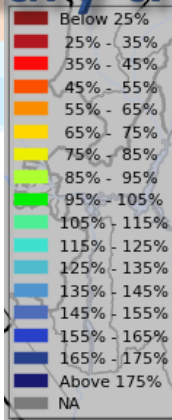
Navajo Res:
310 KAF / 42%



April 1st Water Supply Forecasts Difference from March 1st Forecasts



April 1st Water Supply Forecasts January through May* Forecasted Volumes / % Median



Verde - Horseshoe:
152 KAF / 97%

Little Colorado - Lyman*:
2.1 KAF / 30%

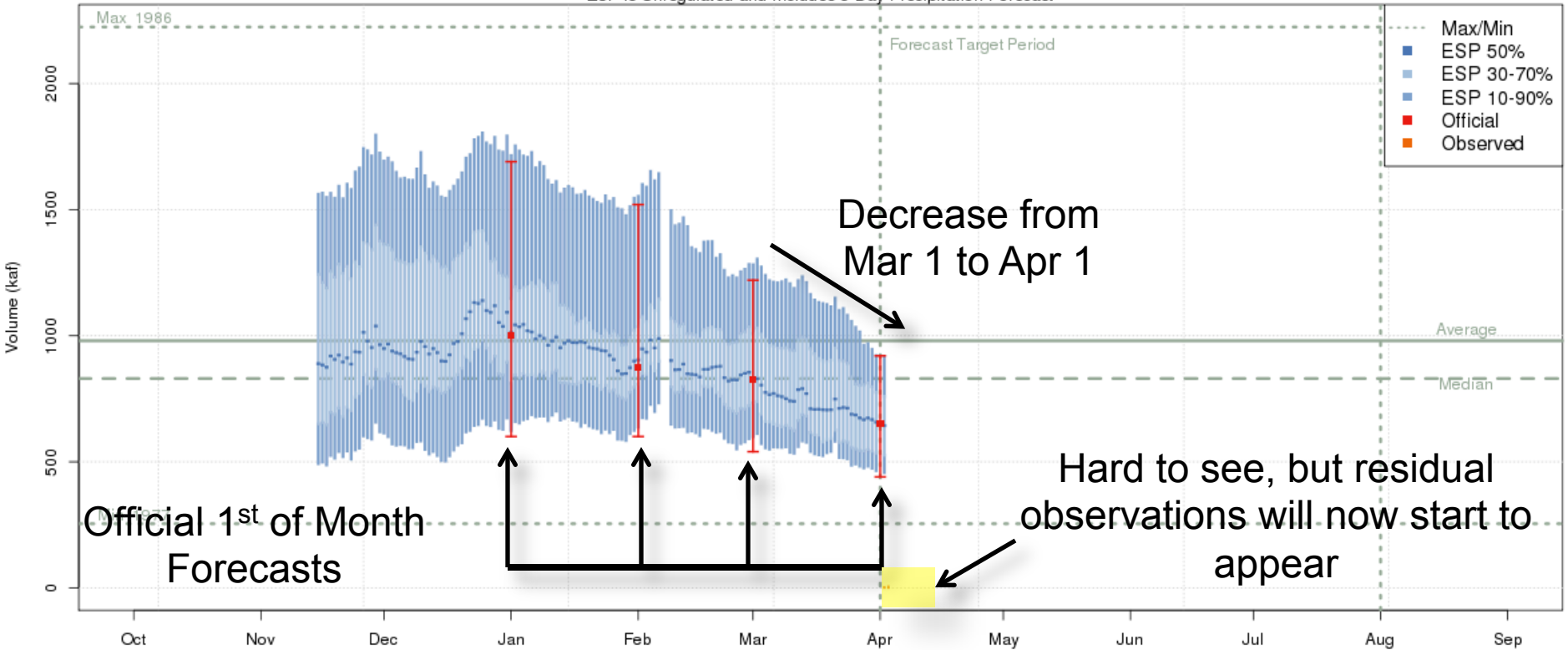
Salt - Roosevelt:
135 KAF / 44%

Gila - Gila:
62 KAF / 110%

**Little Colorado - Lyman forecasted volumes are over the period January through June.*

Green River at Flaming Gorge

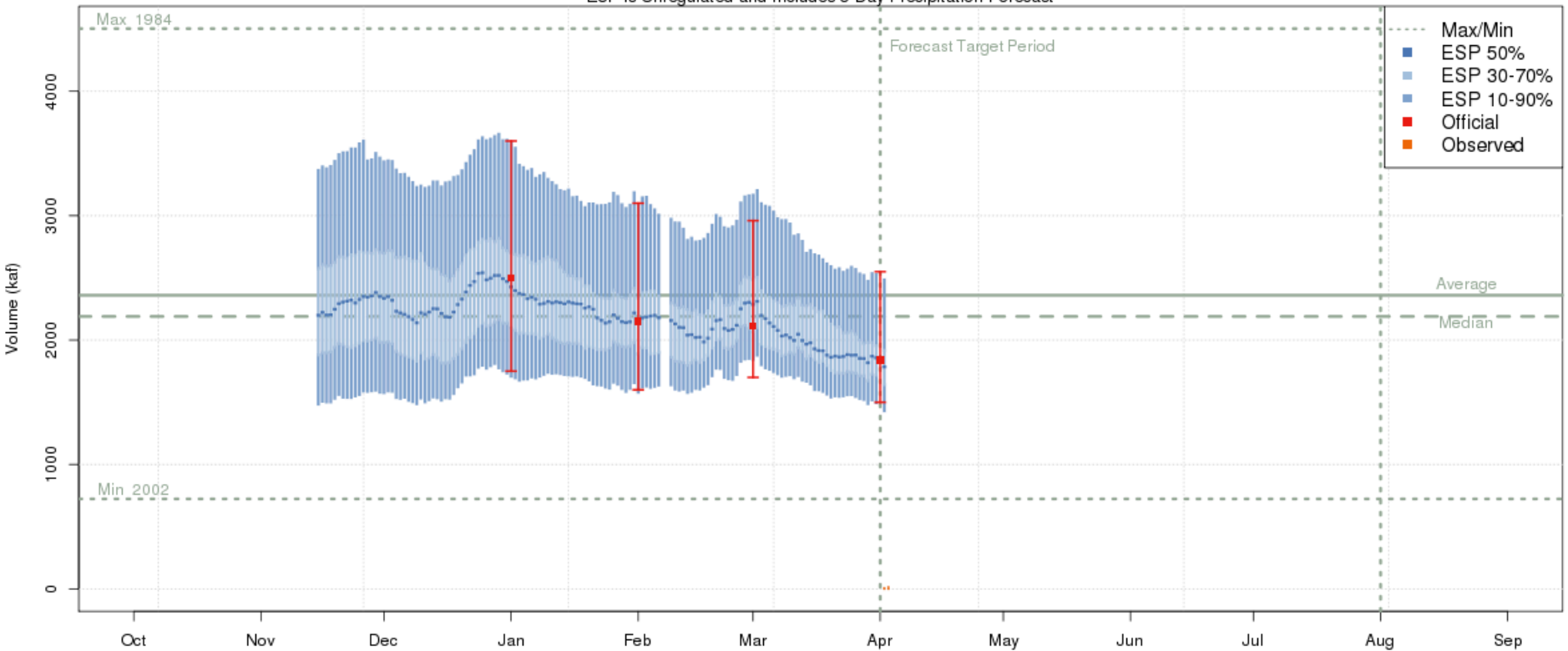
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1)
2015-04-01 Apr-Jul Official 50% Forecast: 650 kaf (66% of average)
ESP is Unregulated and Includes 5 Day Precipitation Forecast



The latest (2015-04-02) 50% ESP forecast is 643 kaf.
Plot Created 2015-04-03 13:22:45, NOAA / NWS / CBRFC

Colorado near Cameo

Colorado - Cameo- Nr (CAMC2)
2015-04-01 Apr-Jul Official 50% Forecast: 1840 kaf (78% of average)
ESP is Unregulated and Includes 5 Day Precipitation Forecast

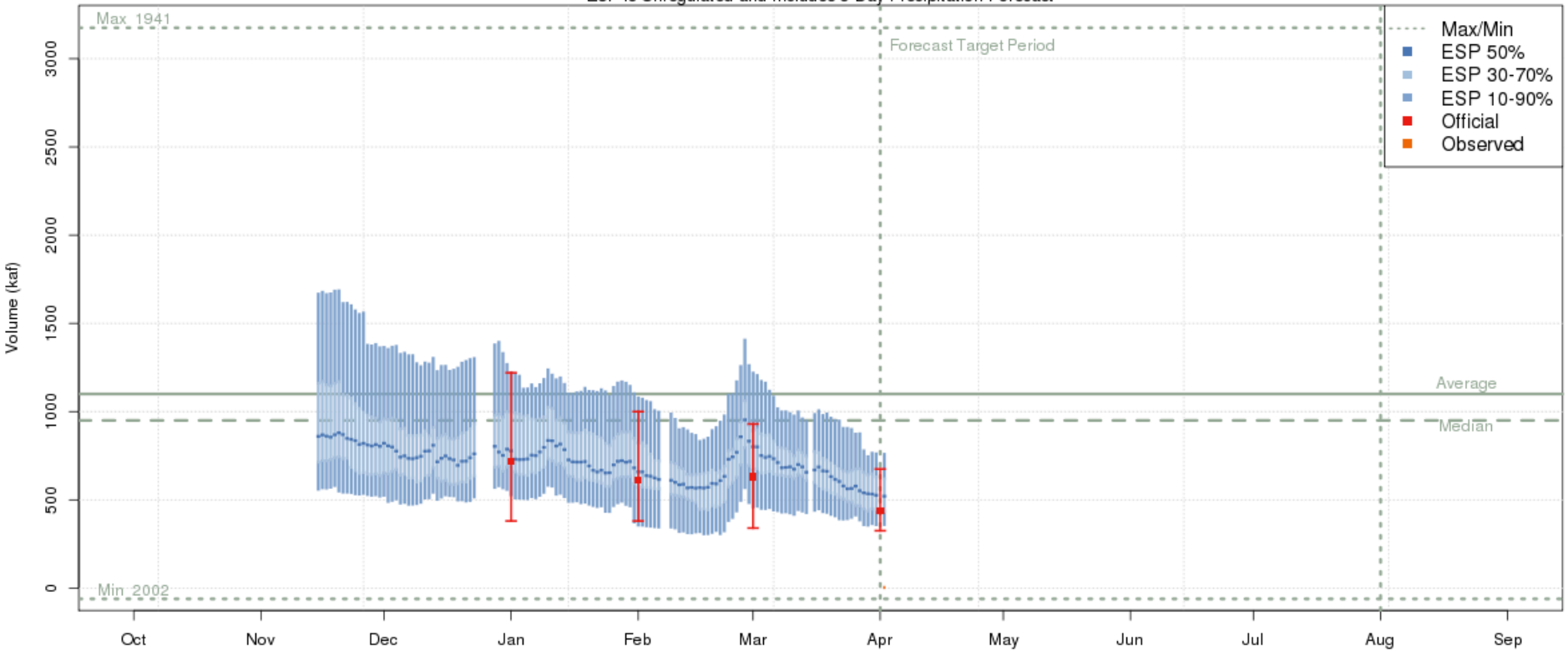


The latest (2015-04-02) 50% ESP forecast is 1784 kaf.
Plot Created 2015-04-03 13:10:48, NOAA / NWS / CBRFC



San Juan Near Bluff

San Juan - Bluff- Nr (BFFU1)
2015-04-01 Apr-Jul Official 50% Forecast: 440 kaf (40% of average)
ESP is Unregulated and Includes 5 Day Precipitation Forecast



The latest (2015-04-02) 50% ESP forecast is 520 kaf.
Plot Created 2015-04-03 13:08:59, NOAA / NWS / CBRFC

Weber Near Oakley

Weber - Oakley- Nr (OAWU1)
2015-04-01 Apr-Jul Official 50% Forecast: 62 kaf (53% of average)
ESP is Unregulated and Includes 5 Day Precipitation Forecast



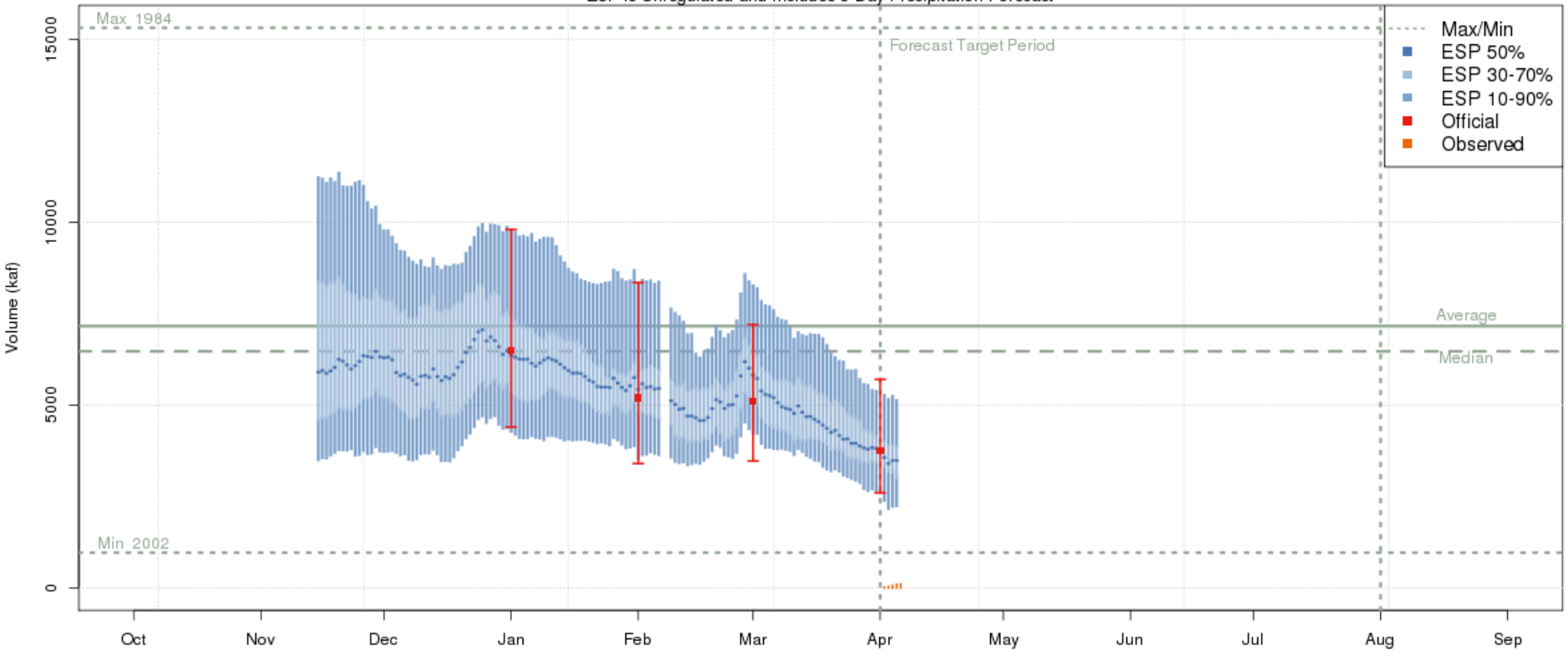
The latest (2015-04-02) 50% ESP forecast is 61 kaf.
Plot Created 2015-04-03 13:32:24, NOAA / NWS / CBRFC



Lake Powell at Glen Canyon Dam

24

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
2015-04-01 Apr-Jul Official 50% Forecast: 3750 kaf (52% of average)
ESP is Unregulated and Includes 5 Day Precipitation Forecast

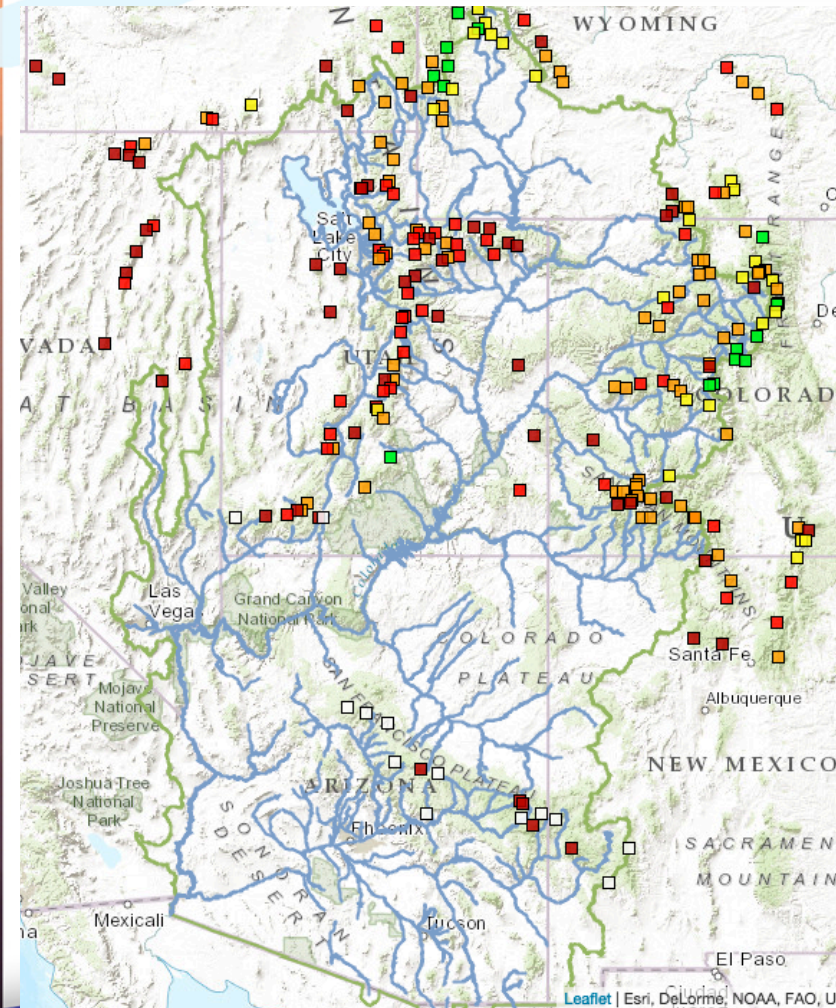


The latest (2015-04-05) 50% ESP forecast is 3484 kaf.
Plot Created 2015-04-06 13:16:49, NOAA / NWS / CBRFC



Record Breaking Conditions

25



- 7 SNOTEL stations showed earliest date of 0 SWE on record (all in Utah)
- 5 others showed 0 SWE in the top 5 earliest dates
- Prelim Analysis - At least 18 sites show a statistically significant trend (95% CI) towards earlier melt (0.5 to 1 day/year)

Record Breaking Conditions

26

- Early Runoff, record March unregulated flow volumes
 - Bear River at UT-WY Stateline
 - Hams Fork near Frontier
 - South Fork Rock Creek below Docs Diversion
- Almost record breakers (2nd highest volumes)
 - Provo near Woodland
 - Bear near Border
 - Hams Fork at Viva Naughton
 - Elkhead Creek near Hayden
 - Rock Creek at Upper Stillwater Reservoir



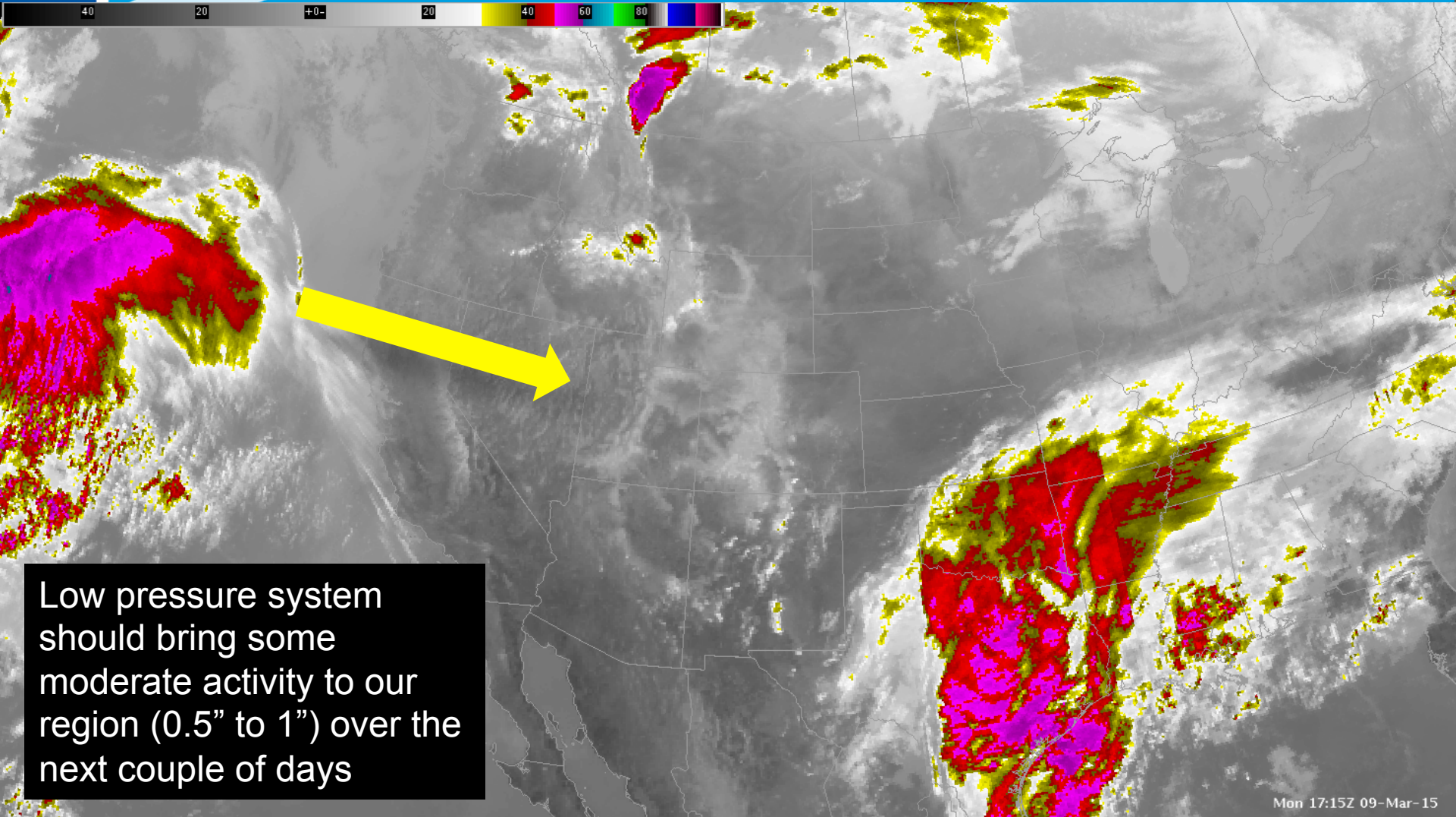
Record Breaking Conditions

27

- Upper Colorado Flows
 - Unregulated flows have been running above to much above average all winter, particularly above Kremmling
 - In March, 5 of 8 water supply points above Kremmling set new records for the month
 - Record high inflow at Ruedi Reservoir in the Roaring Fork
 - 11 of 14 water supply points above Cameo were in the top 3 monthly volumes in their period of record, most of which are 50 years or longer

Upcoming Weather

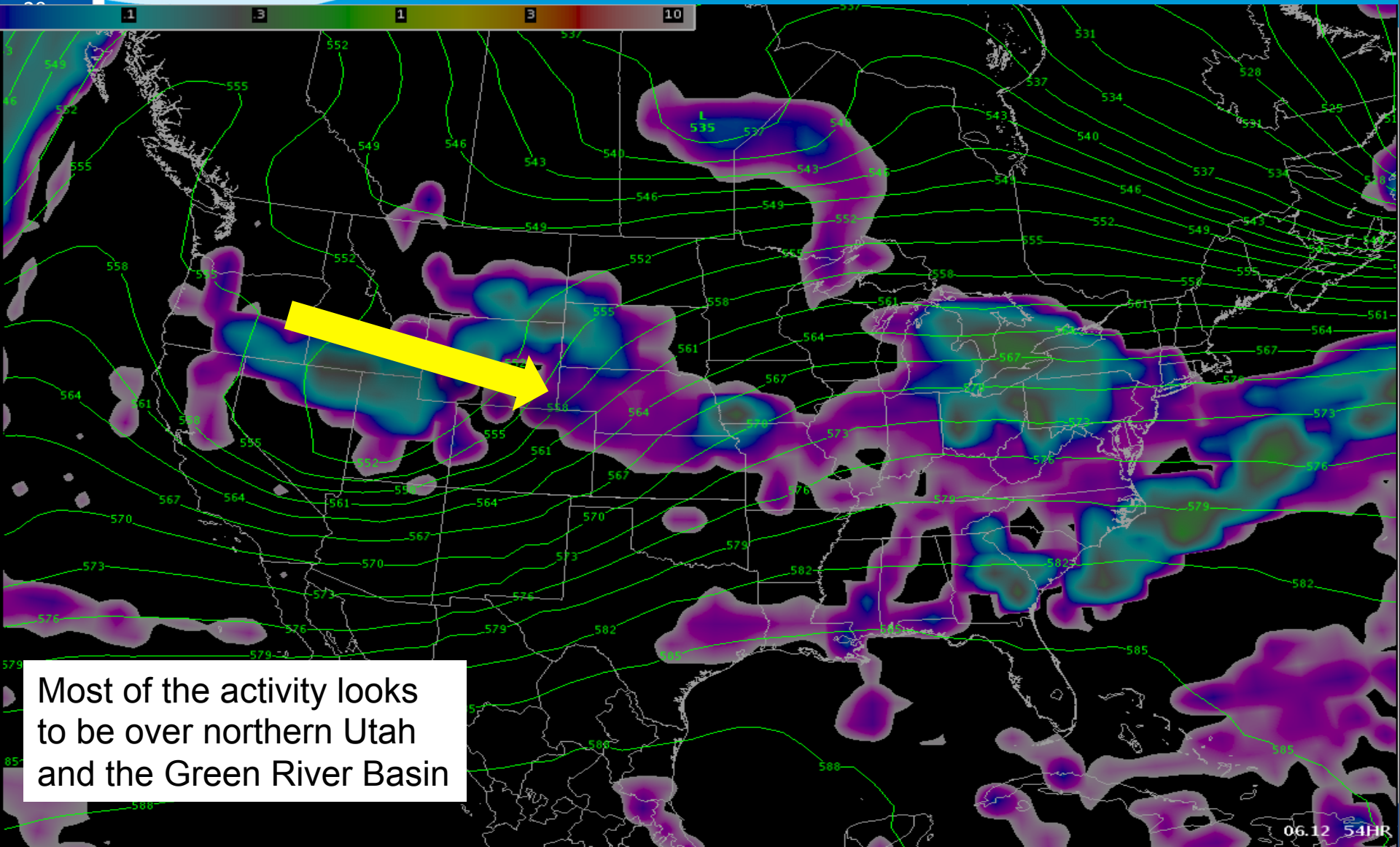
28



Low pressure system should bring some moderate activity to our region (0.5" to 1") over the next couple of days

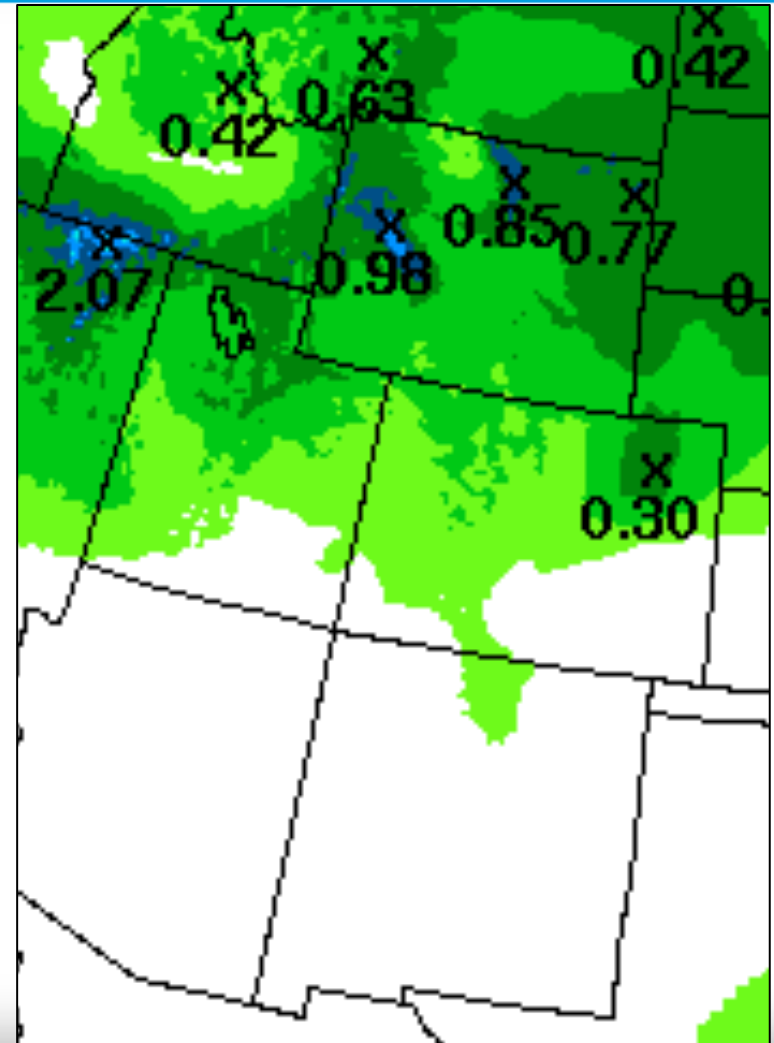
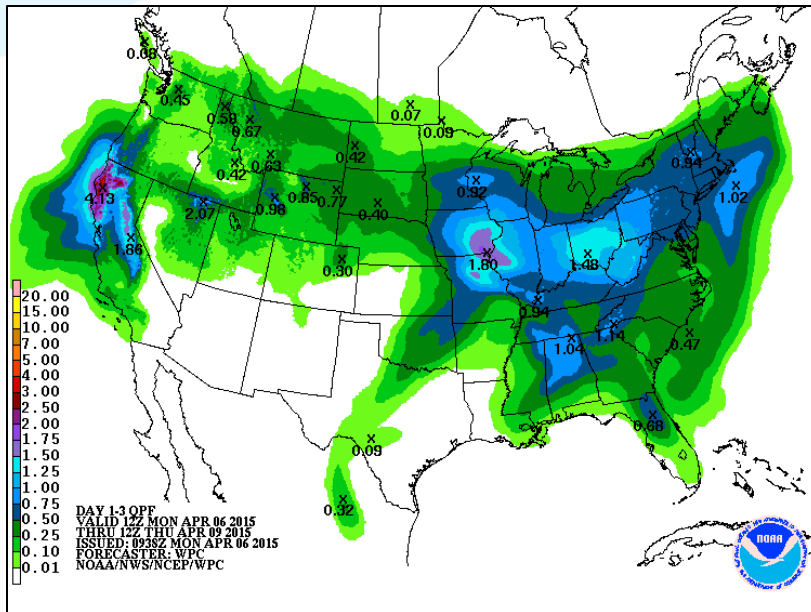


Upcoming Weather



Most of the activity looks to be over northern Utah and the Green River Basin

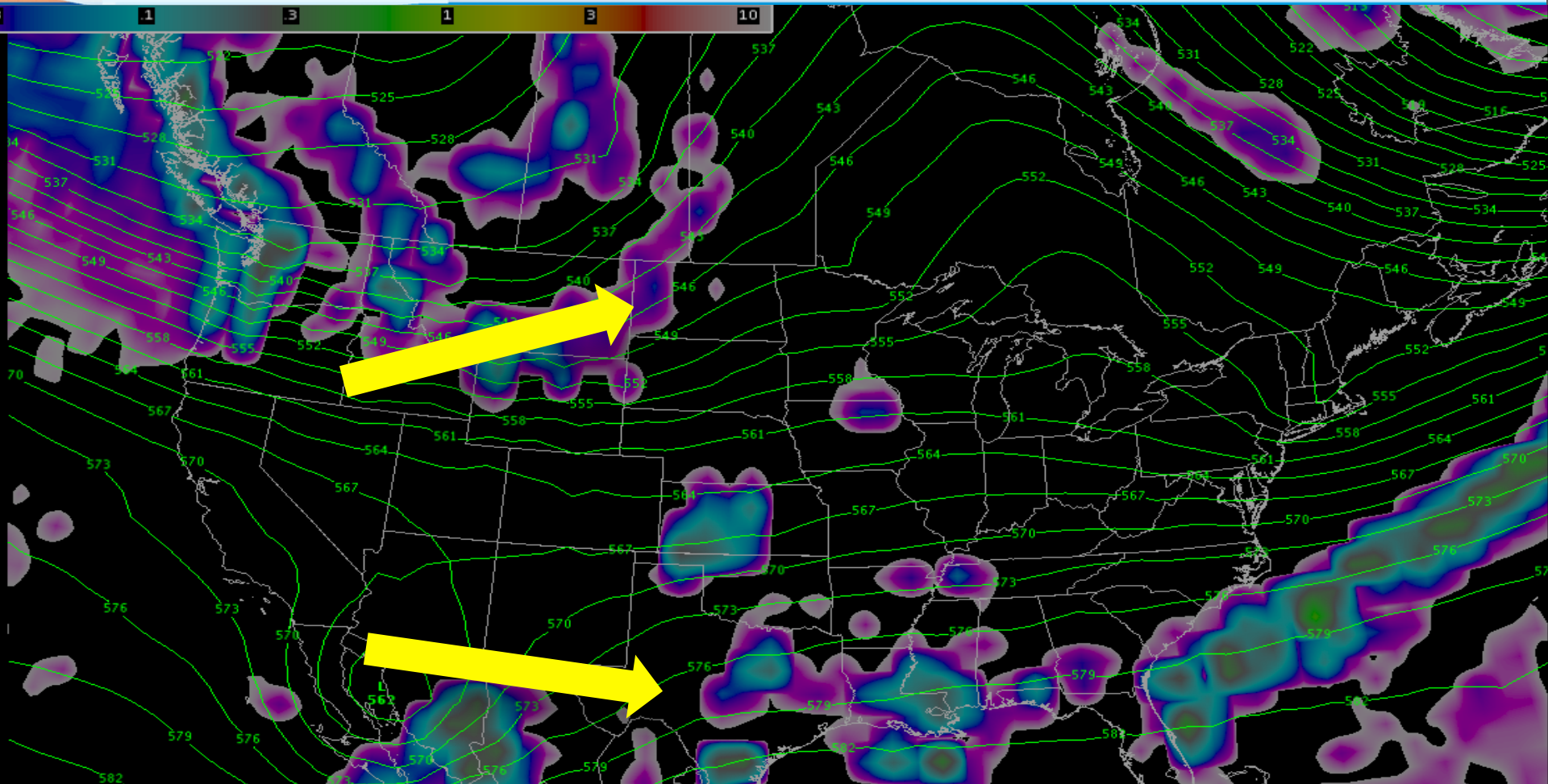
Upcoming Weather



0.75
0.50
0.25
0.10
0.01

DAY 1-3 OPF
VALID 12Z MON APR 06 2015
THRU 12Z THU APR 09 2015
ISSUED: 0938Z MON APR 06 2015
FORECASTER: WPC
NOAA/NWS/NCEP/WPC

Not Upcoming Weather?



There's more activity about a week out, but the models are showing the storm splitting and going around the region. This might change though...

Peak Flows

32

- Peak flows have been updated
 - Expecting peaks below average, earlier than normal
 - Available on our website in graphical form:
<http://www.cbrfc.noaa.gov/lmap/lmap.php?interface=peak>
 - In list form:
<http://www.cbrfc.noaa.gov/rmap/peak/peaklist.php>
- Probably won't have another peak flow webinar unless there's a want for it



Other NOAA News

33

- Coming Soon: National Centers for Environmental Information (NCEI)
 - Merger between the National Climatic Data Center (NCDC), National Geophysical Data Center, National Oceanographic Data Center, and National Coastal Data Development Center
 - Will provide access to environmental data and archives
 - Top priority to maintain products and services currently delivered
 - No current products or services currently slated to be cut or reduced



Contact us!

- Michelle Stokes – Hydrologist In Charge
 - michelle.stokes@noaa.gov
- Brenda Alcorn – Colorado Headwaters Basin Focal Point
 - brenda.alcorn@noaa.gov
- Greg Smith – San Juan Basin, Gunnison-Dolores Focal Point
 - greg.smith@noaa.gov
- Ashley Nielson – Green River Basin Focal Point
 - ashley.nielson@noaa.gov
- Tracy Cox – Lower Colorado Basin Focal Point
 - tracy.cox@noaa.gov
- Paul Miller – Great Basin Focal Point
 - paul.miller@noaa.gov

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The background features a stylized landscape. On the left, a vertical strip shows a sunset over mountains. The top half of the slide is light blue with a horizontal blue band. The bottom has a dark blue wave-like shape.

QUESTIONS?