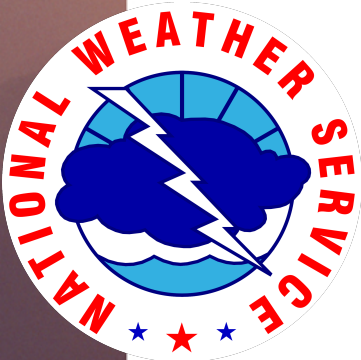
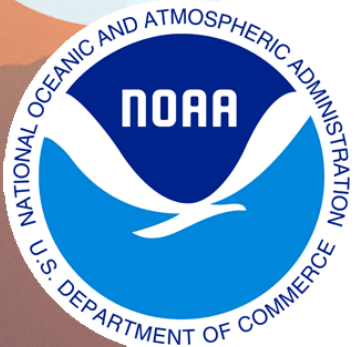
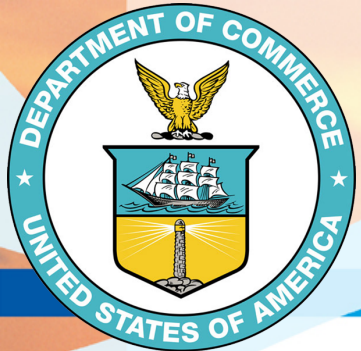


CBRFC Water Supply Webinar – May7th 11 a.m. MDT



Presented By:

Greg Smith
Sr. Hydrologist

Today's Presentation

2

- April weather
- The winter of 2015
- Current conditions driving the forecast
- May water supply forecast summary
- Future weather outlook

This Presentation will be available at:

<http://www.cbrfc.noaa.gov/present/present2015.cgi>

Recorded version:

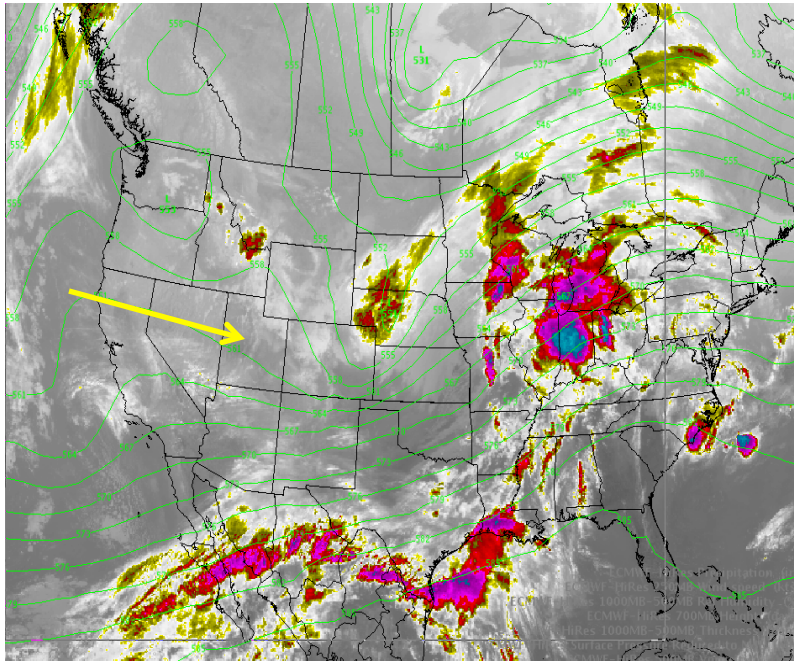
<http://www.cbrfc.noaa.gov/podcasts/podcasts.php>



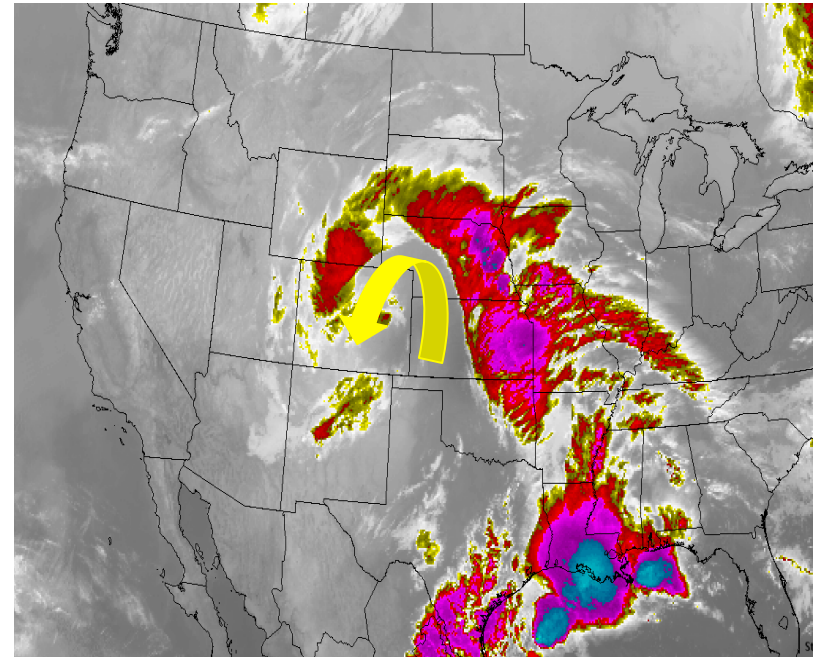
April Weather

3

April 9 2015



April 18 2015

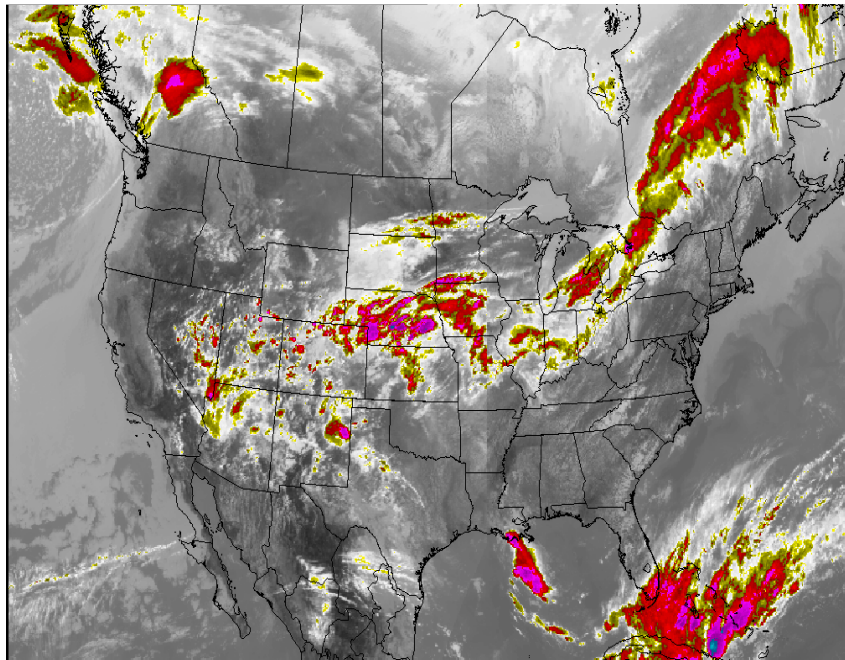


A cooler more active pattern developed than what occurred in March
April 9 – Storm exiting region and now over eastern Colorado.
April 18 – Closed low pressure centered over central Colorado

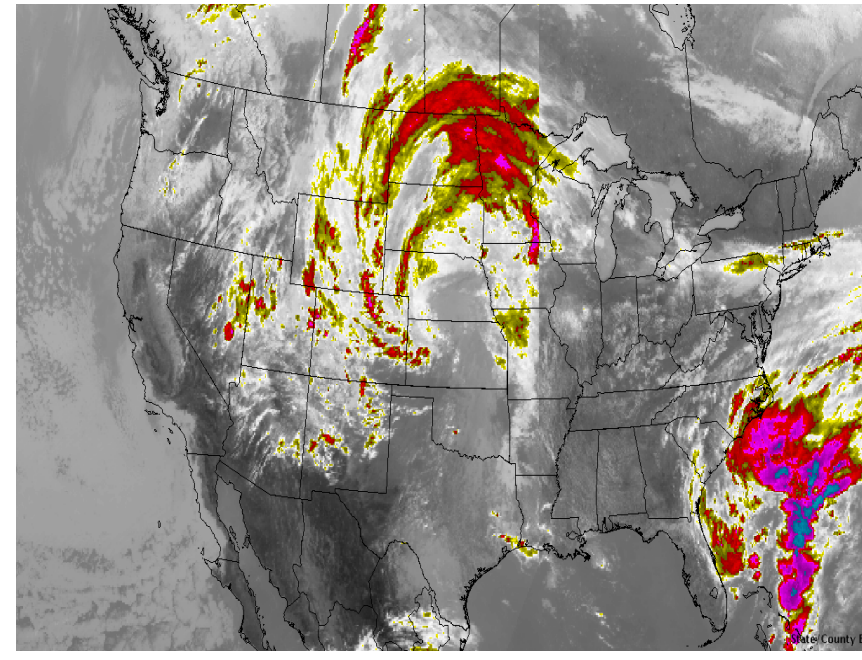
Late April-Early May Weather

4

May 4 2015



May 6 2015



Very moist air mass associated with large low pressure system moved through the area in late April and early May.

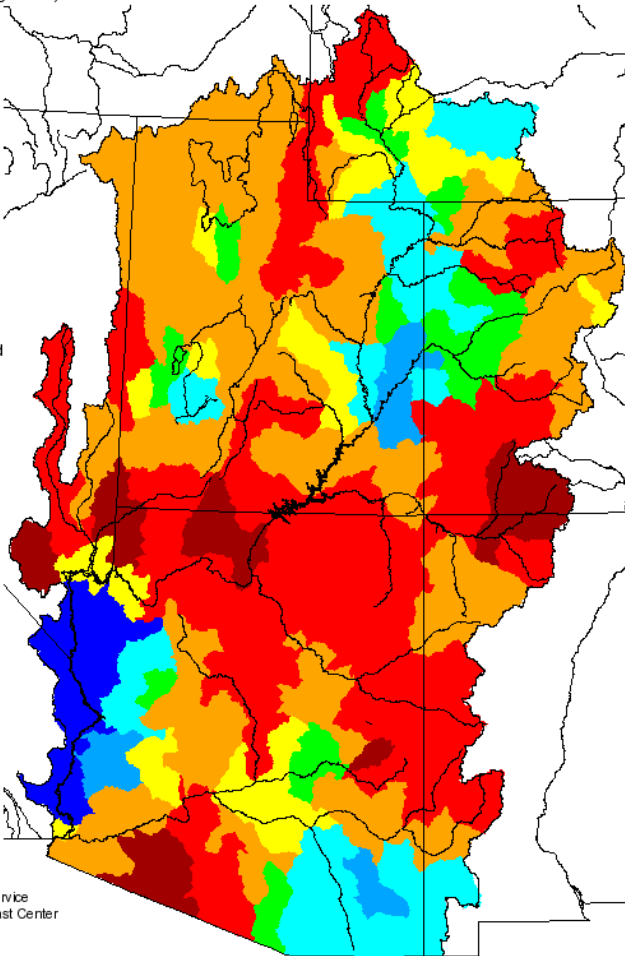
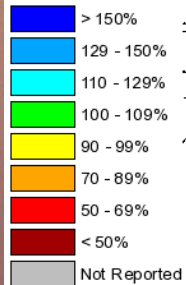
April and Seasonal Precipitation

5

Monthly Precipitation for April 2015

(Averaged by Hydrologic Unit)

% Average

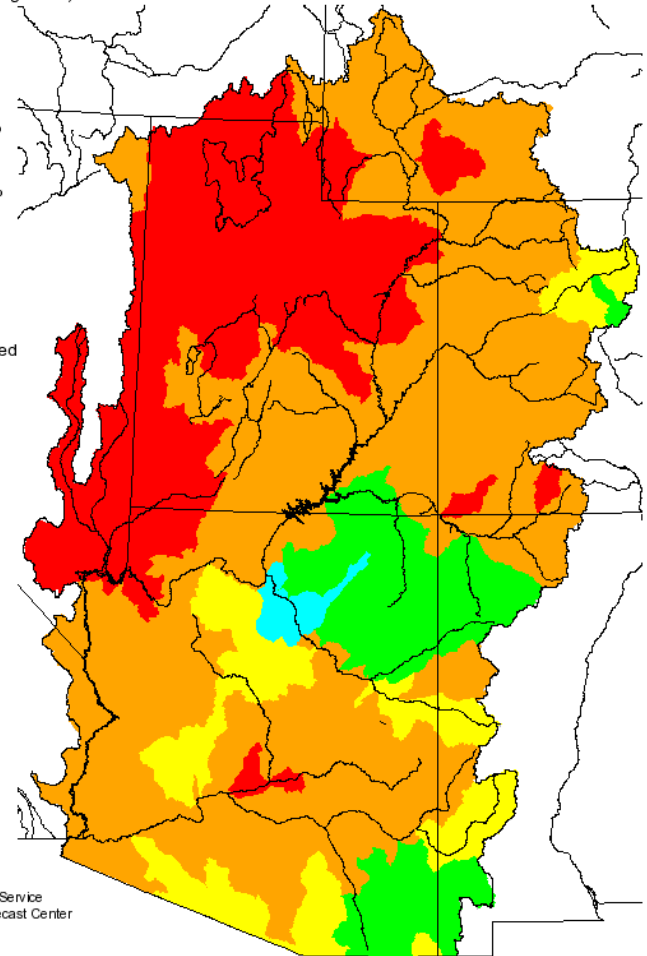
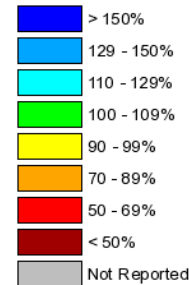


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbafc.noaa.gov

Seasonal Precipitation, October 2014 - April 2015

(Averaged by Hydrologic Unit)

% Average



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

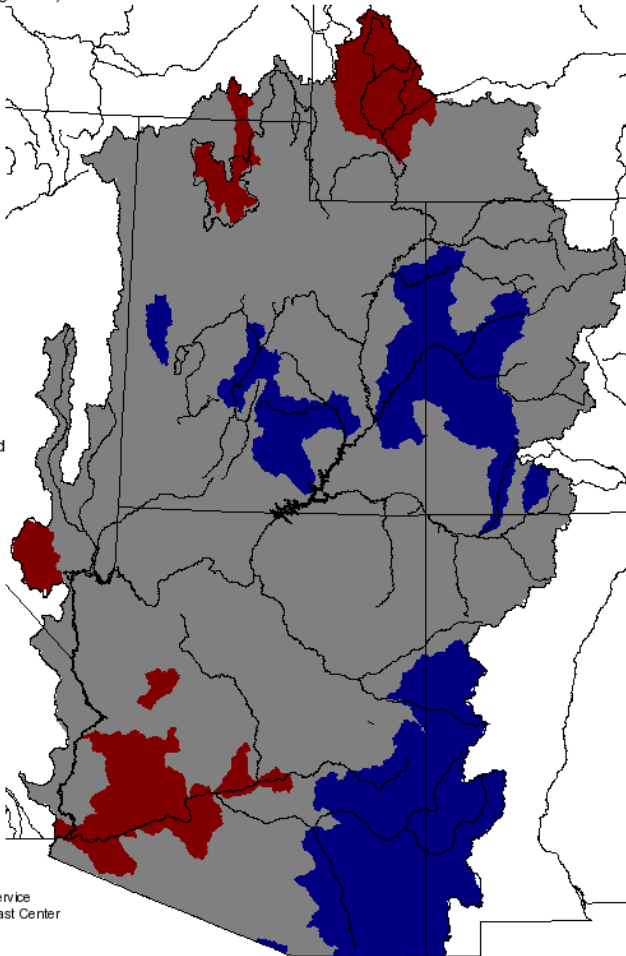
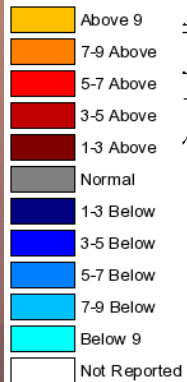
April Temperatures

6

Monthly Max Temp Deviation for April 2015

(Averaged by Hydrologic Unit)

Degrees (F)

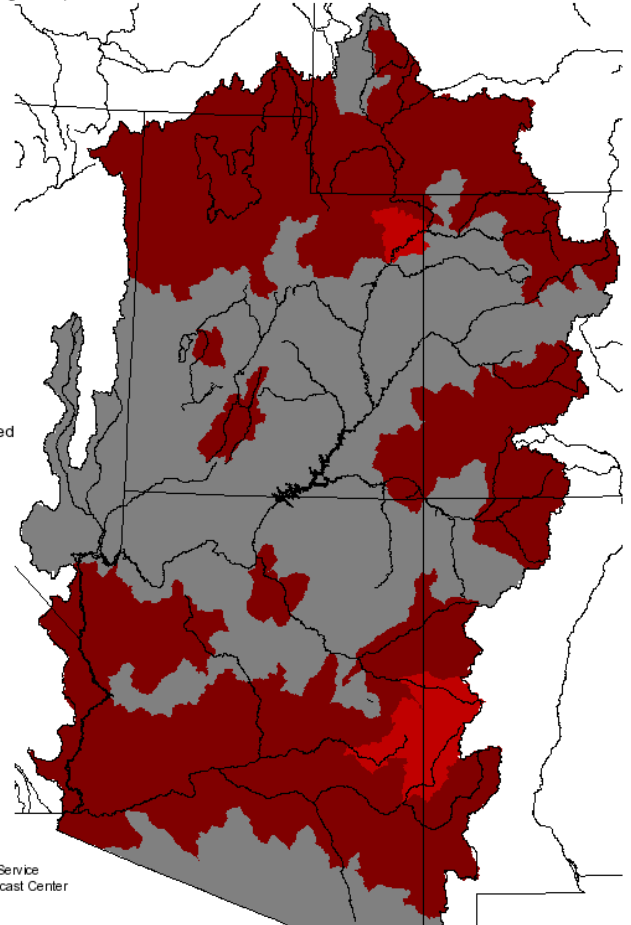


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Monthly Min Temp Deviation for April 2015

(Averaged by Hydrologic Unit)

Degrees (F)



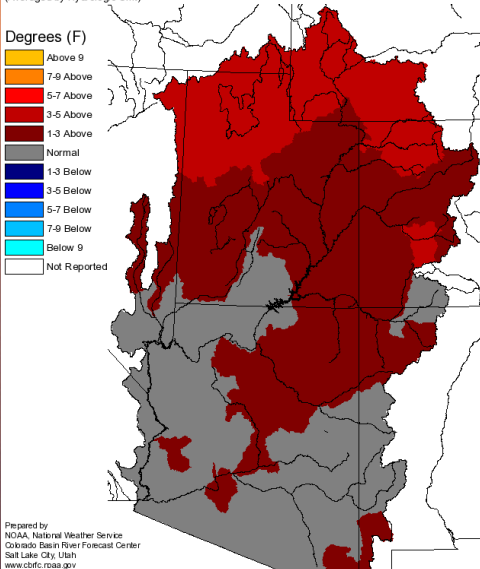
Prepared by
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Salt Lake City, Utah
www.cbrfc.noaa.gov



Winter Temperatures

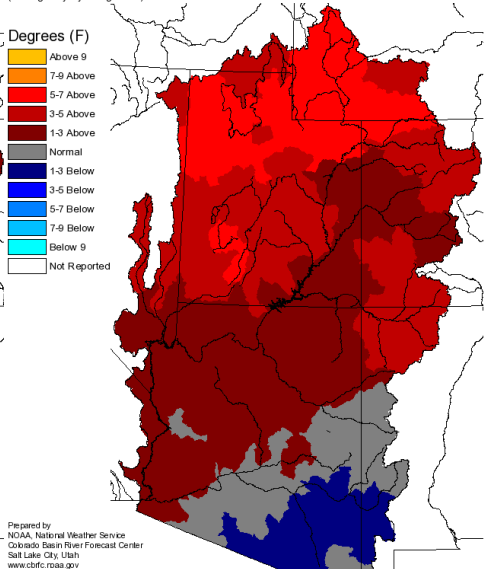
7

Monthly Max Temp Deviation for December 2014
(Averaged by Hydrologic Unit)



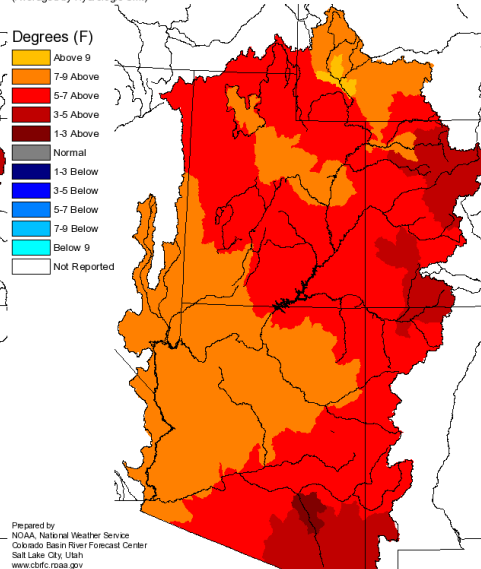
Dec 2014

Monthly Max Temp Deviation for January 2015
(Averaged by Hydrologic Unit)



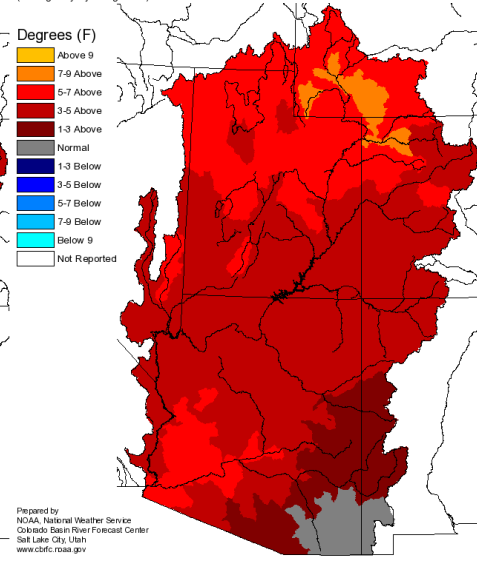
Jan 2015

Monthly Max Temp Deviation for February 2015
(Averaged by Hydrologic Unit)



Feb 2015

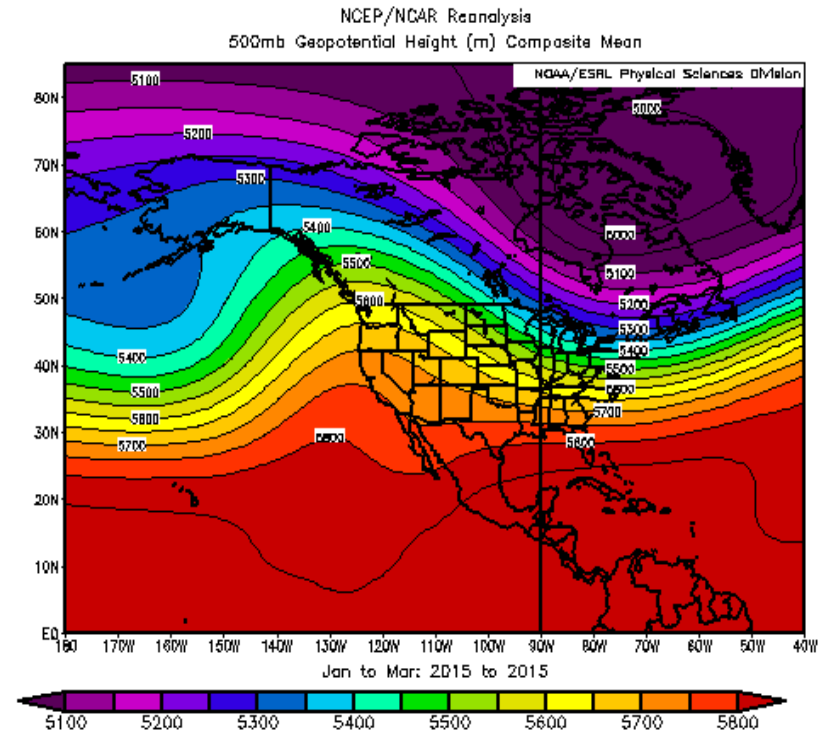
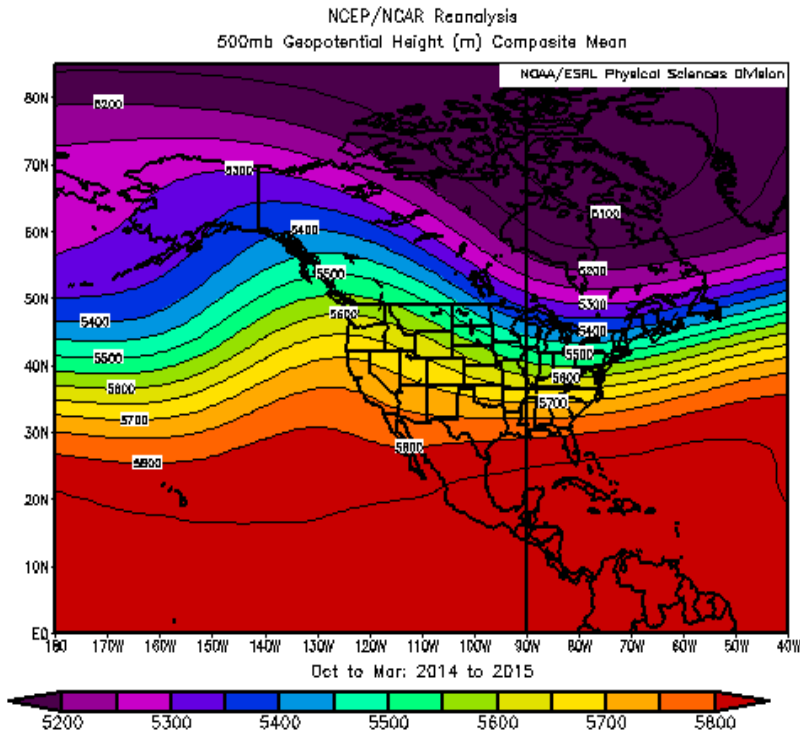
Monthly Max Temp Deviation for March 2015
(Averaged by Hydrologic Unit)



Mar 2015

Four consecutive months of widespread above average temperatures prior to April 2015 !

Winter 2015 Upper Atmospheric Pattern

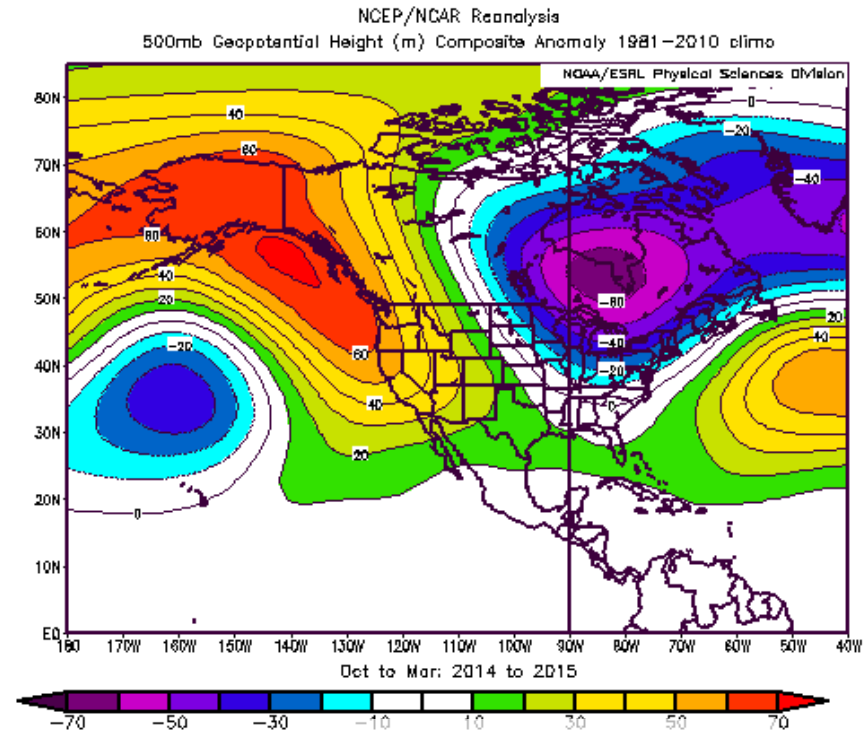
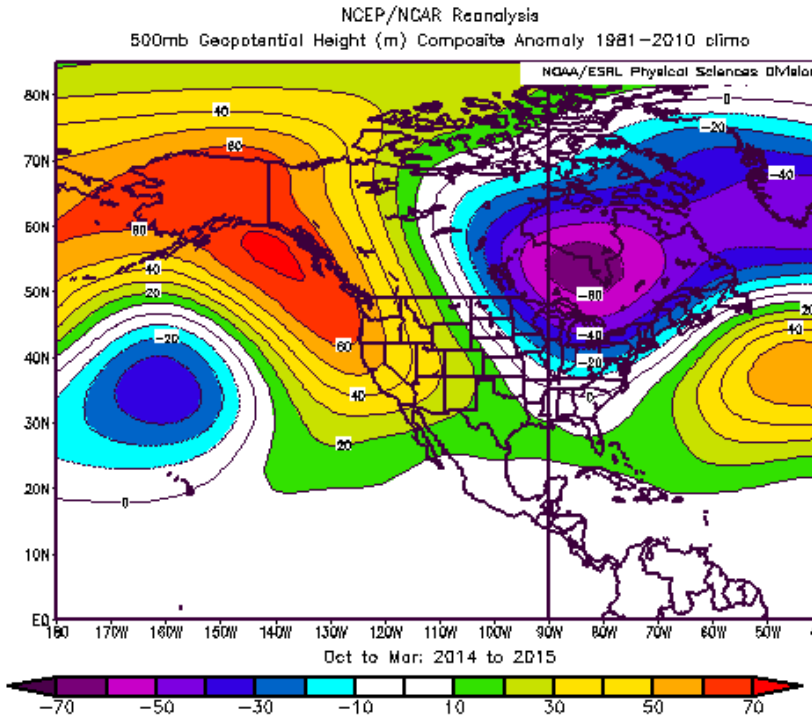


Oct 2014 – Mar 2015

Jan 2015– Mar 2015

Large persistent ridge of high pressure near the west coast limited storm activity and was responsible for record heat.

Winter 2015 Upper Atmospheric Pattern



Oct 2014 – Mar 2015

Jan 2015– Mar 2015

This winter weather pattern anomaly from the 1981-2010 climatology

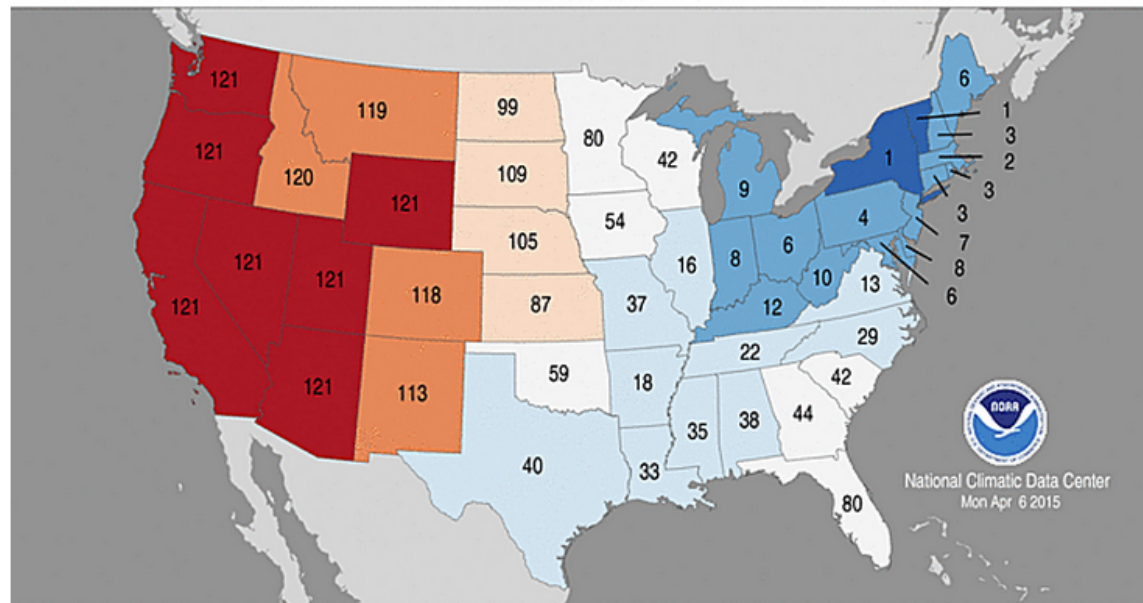
Jan-Mar 2015 Average Temperatures Ranking

10

Statewide Average Temperature Ranks

January–March 2015

Period: 1895–2015



Record Warmest: Utah-Arizona-Wyoming. Much Above-Colorado, NM
121 year period (1 – coldest, 121 – warmest)

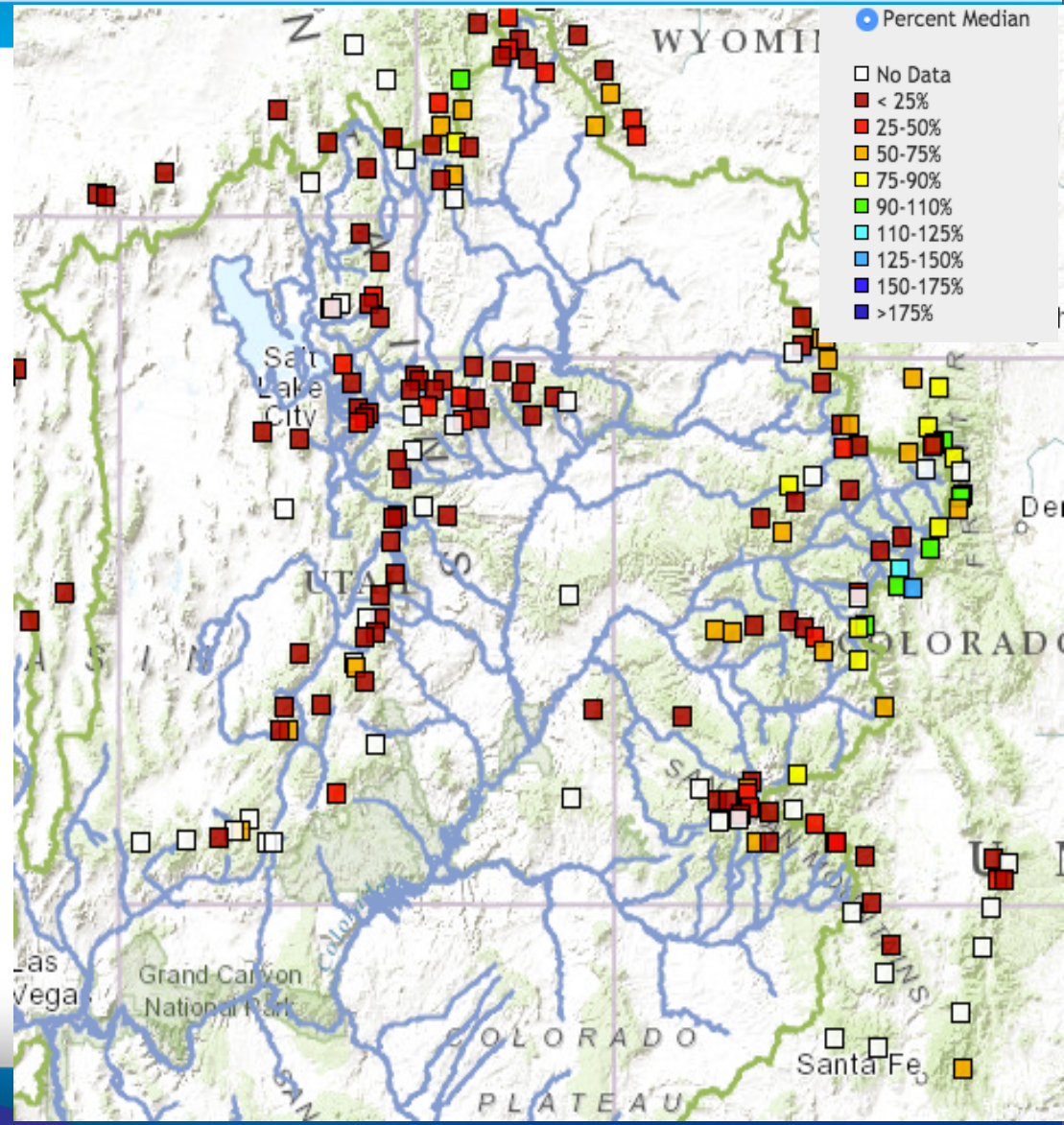
What was the result?

11

- Record warm winter in many locations
- Record low snow conditions due to lack of precipitation and early melt
 - Diurnal flow conditions in January at low elevations
 - Record early melt out at numerous sites
- Highly variable snow conditions even with individual river basins (rain falling during typical snow periods)
- Above average March flows followed by record low flows in April.
- Record low April-July volume forecasts for some areas
- Rain events play a larger part of spring peak flow magnitude.

Current Snowpack Conditions

- Many measuring sites have melted out
- Snow is limited to the higher elevations.
- Where snow remains, many are in the bottom 5 of record

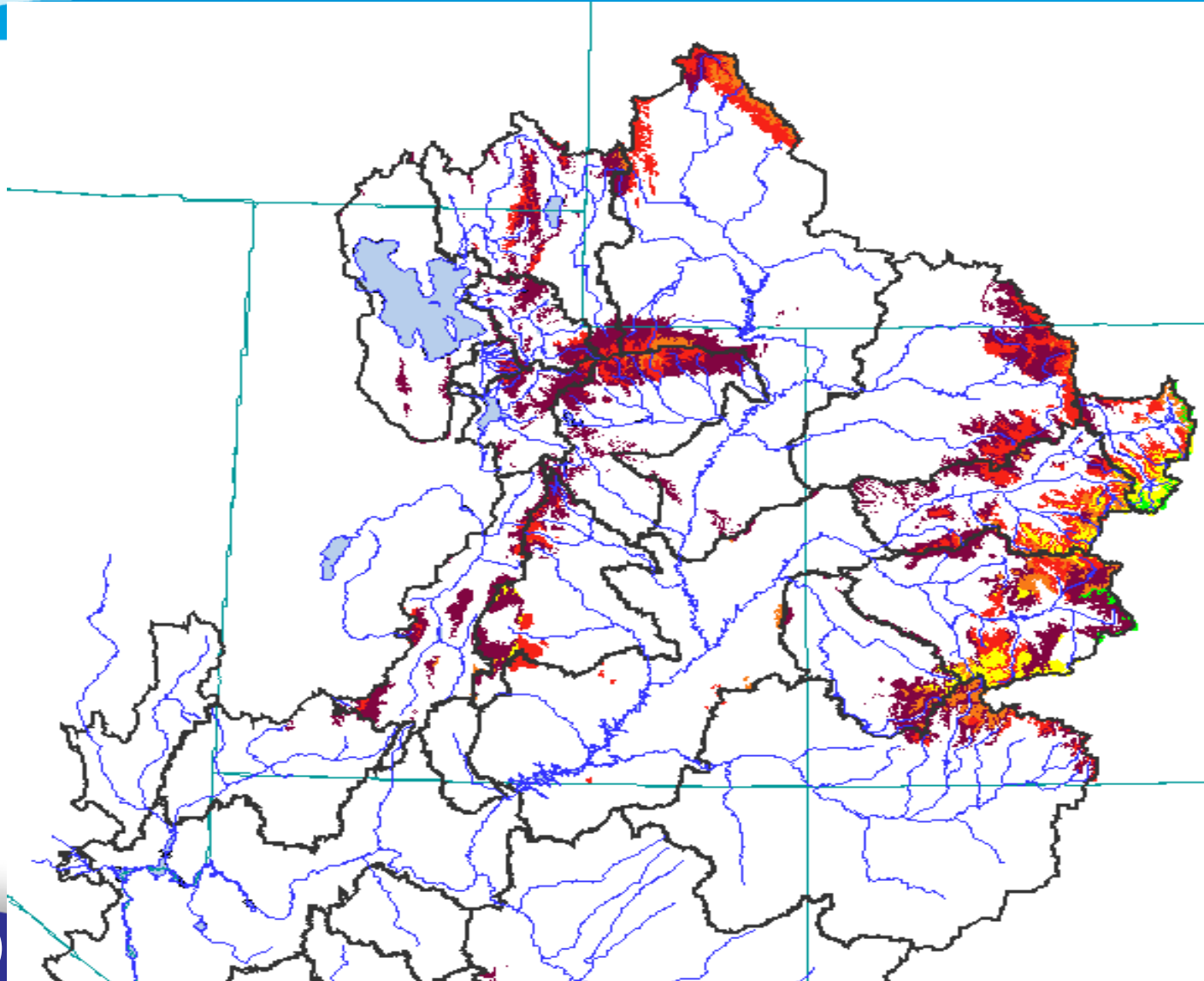
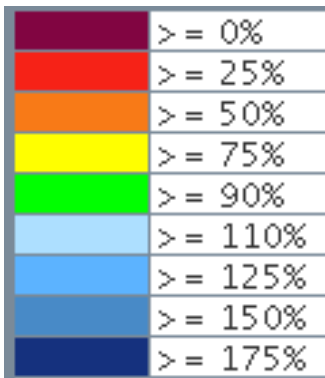


Modeled Snowpack Conditions

13

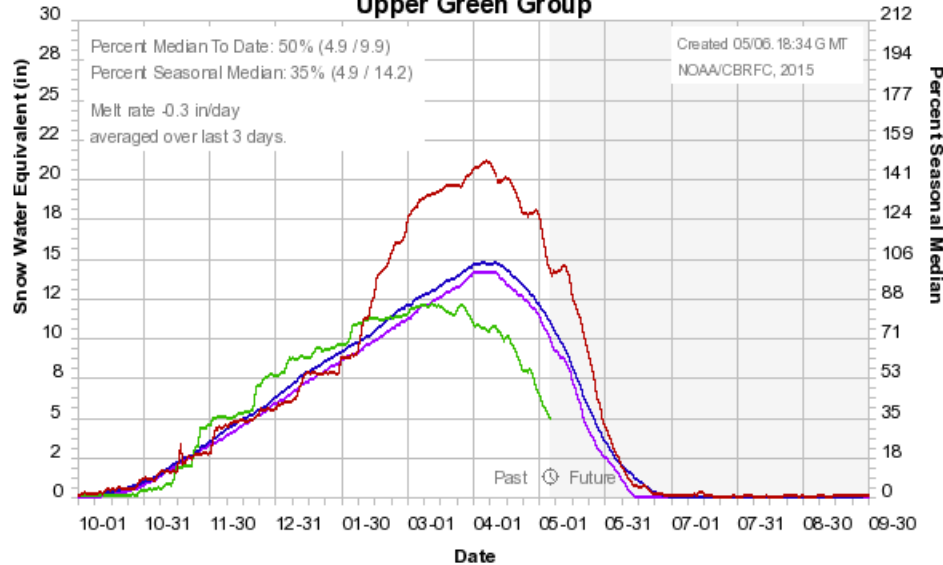
Model Snow
5/6/2015

% Average

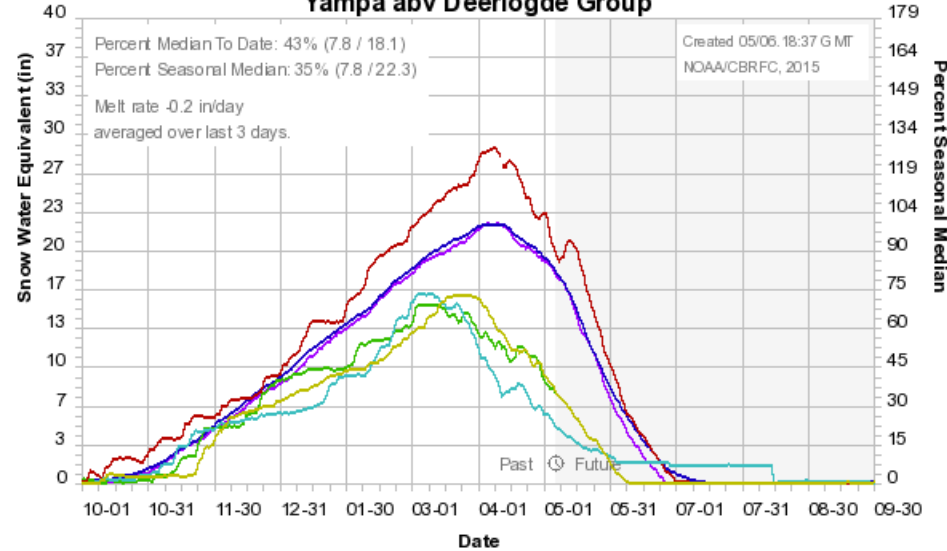


Basin Snow Groups

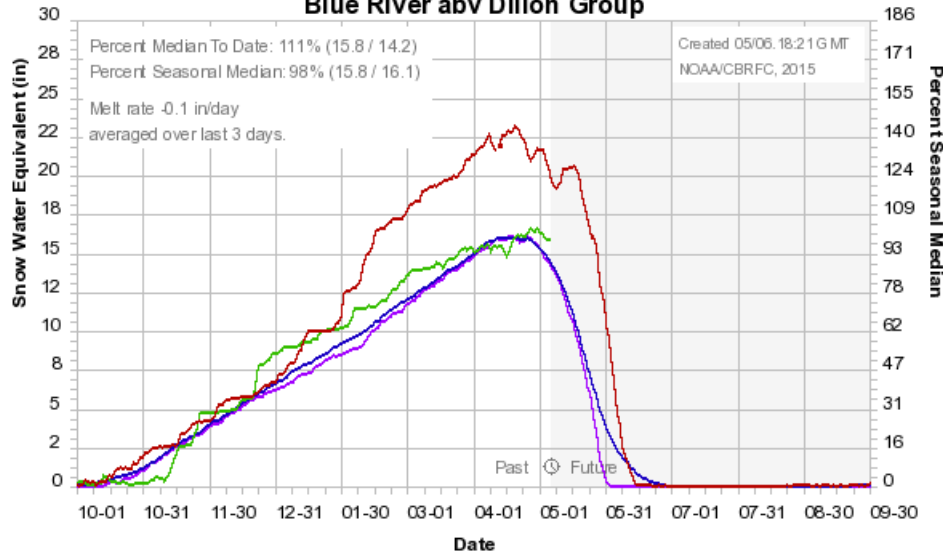
Colorado Basin River Forecast Center
Upper Green Group



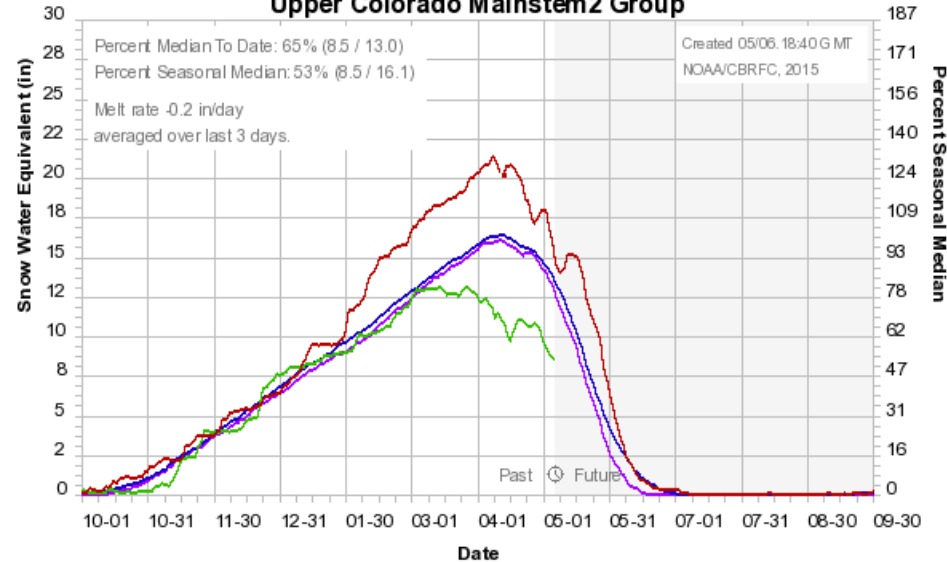
Colorado Basin River Forecast Center
Yampa abv Deerlogde Group



Colorado Basin River Forecast Center
Blue River abv Dillon Group

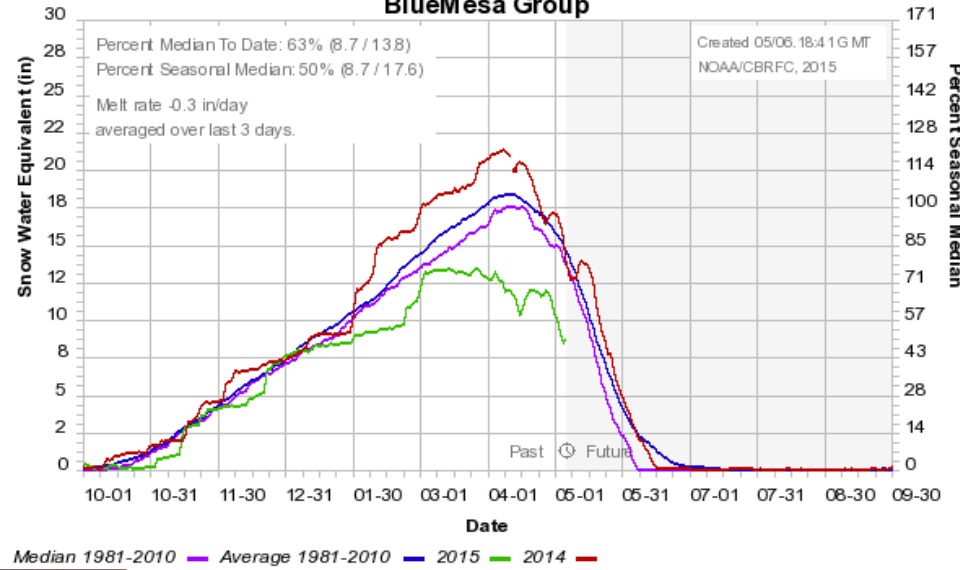


Colorado Basin River Forecast Center
Upper Colorado Mainstem2 Group

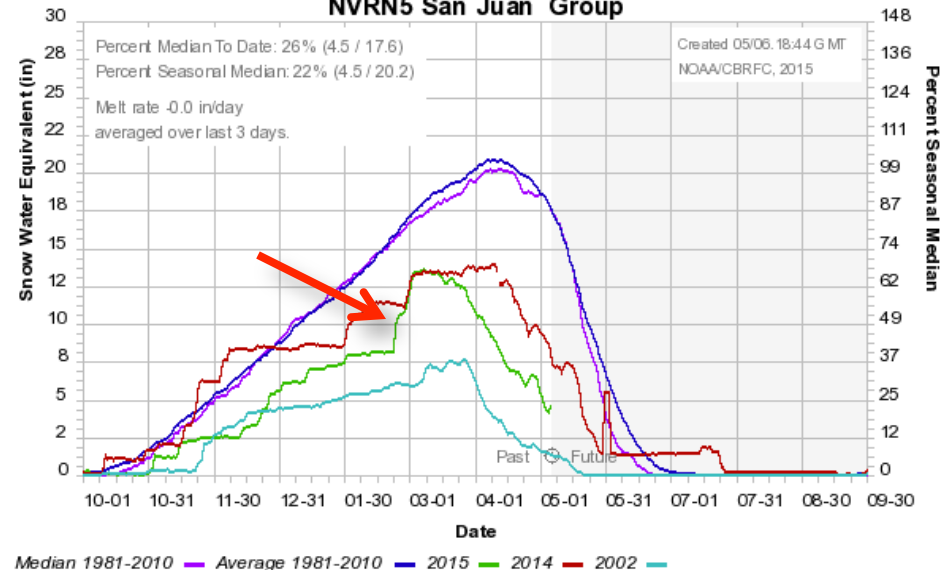


Basin Snow Groups

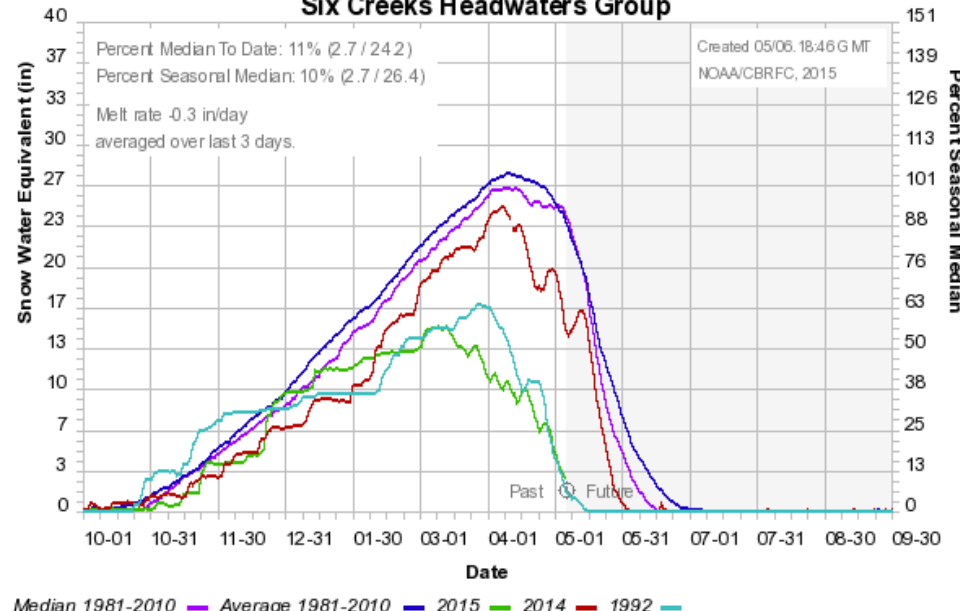
Colorado Basin River Forecast Center
BlueMesa Group



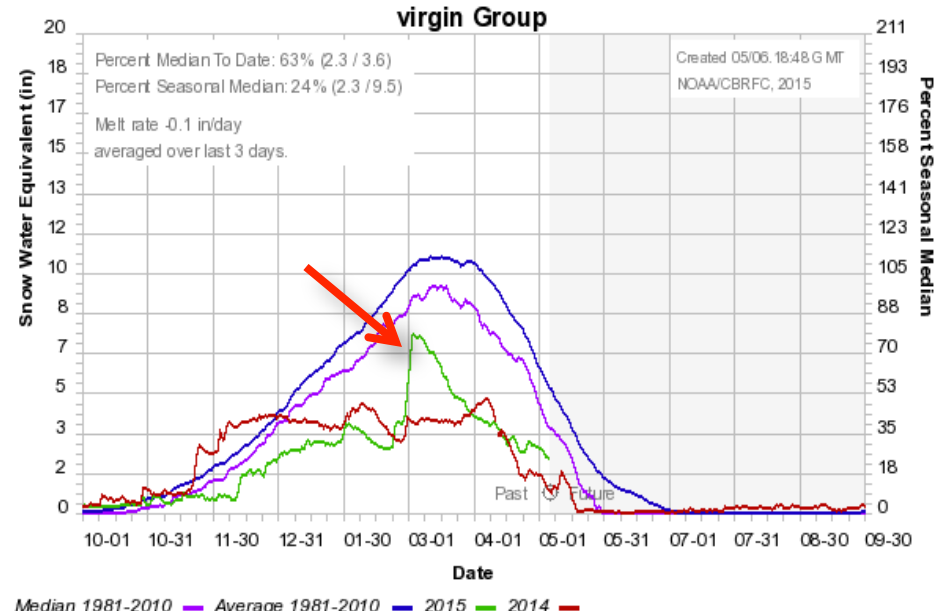
Colorado Basin River Forecast Center
NVRN5 San Juan Group



Colorado Basin River Forecast Center
Six Creeks Headwaters Group



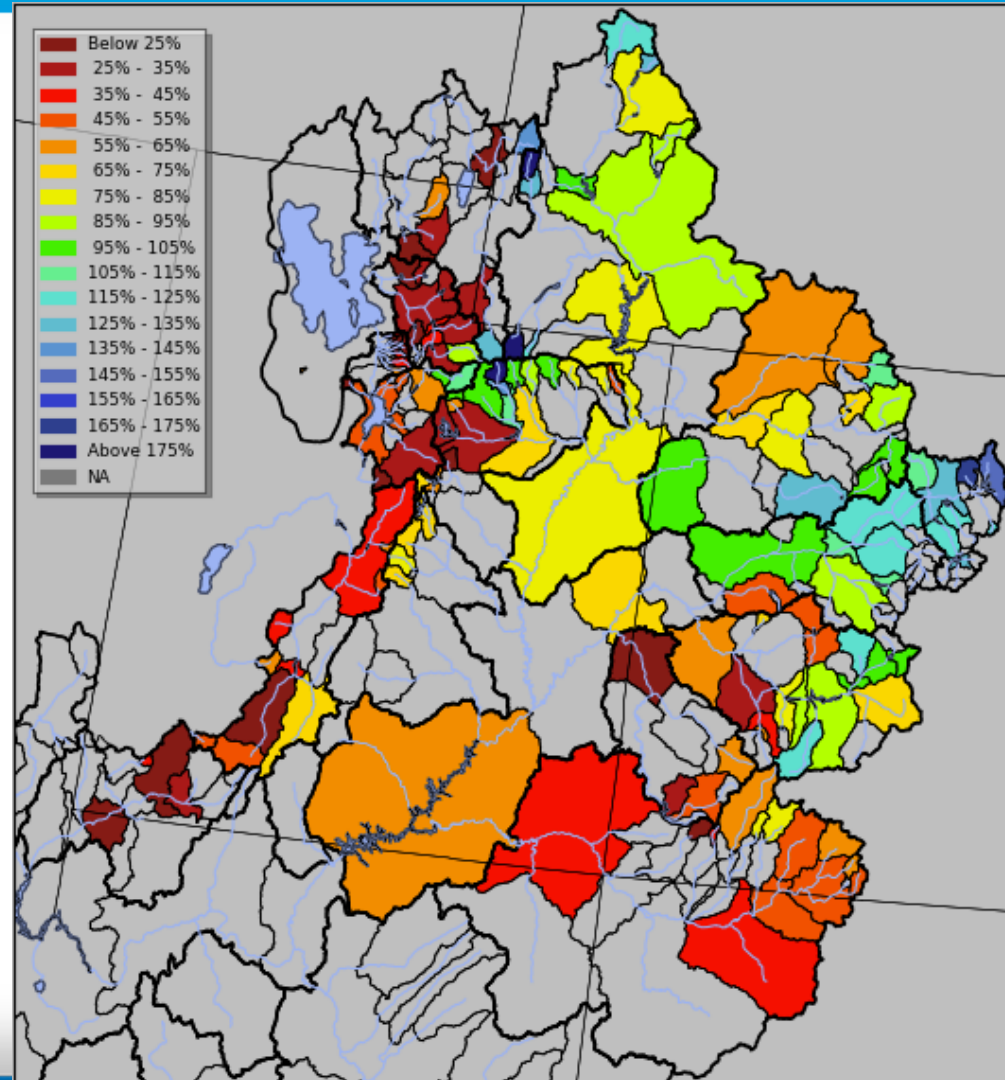
Colorado Basin River Forecast Center
virgin Group



April Observed Flows

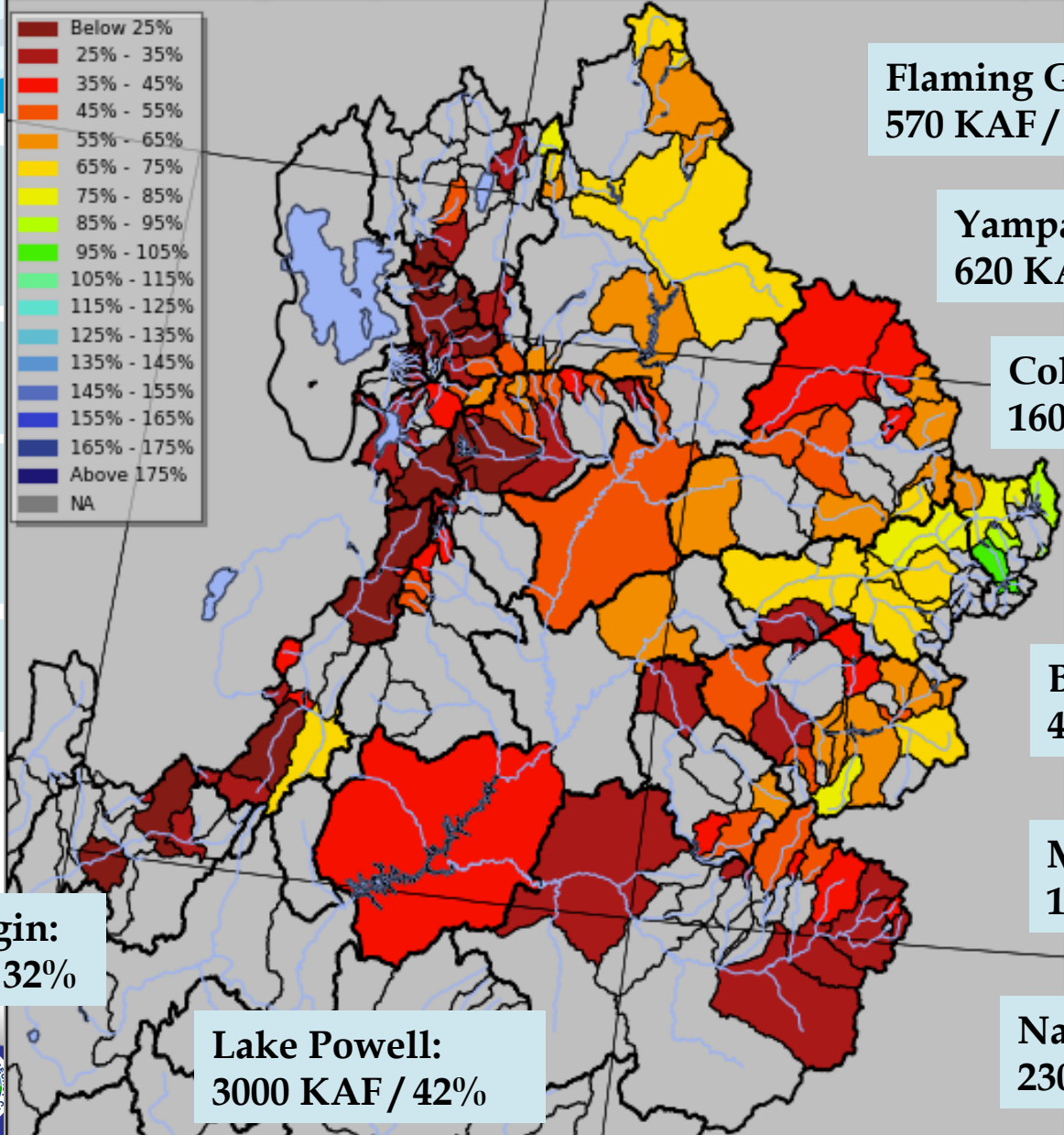
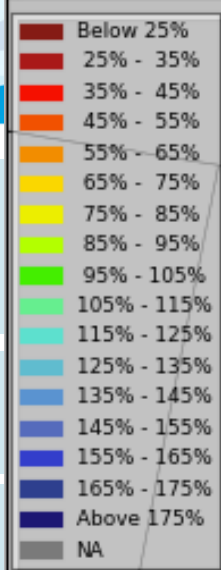
16

- Low snow to begin with
- Early melt – lack of snow to melt in April
- Some areas above average due to rainfall
- Some areas had record low April flows



April 1st Water Supply Forecasts

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



Flaming Gorge:
570 KAF / 58%

Yampa-Deerlodge:
620 KAF / 50%

Colorado-Cameo:
1600 KAF / 68%

Blue Mesa:
440 KAF / 65%

McPhee Res:
110 KAF / 37%

Navajo Res:
230 KAF / 31%

**Bear-UT/WY
Stateline:**
61 KAF / 54%

Weber-Oakley:
54 KAF / 46%

**Little Cottonwood -
SLC:**
18 KAF / 47% *

Provo-Woodland:
55 KAF / 55%

Virgin-Virgin:
18.6 KAF / 32%

Lake Powell:
3000 KAF / 42%



May 1st Water Supply Forecasts - Difference from April 1st Forecasts

18

**Bear-UT/WY
Stateline:**
-29 KAF

Weber-Oakley:
-18 KAF

**Little Cottonwood -
SLC:**
-2 KAF

Provo-Woodland:
-7 KAF

Virgin-Virgin:
-1.4 KAF

Lake Powell:
-750 KAF

Flaming Gorge:
-80 KAF

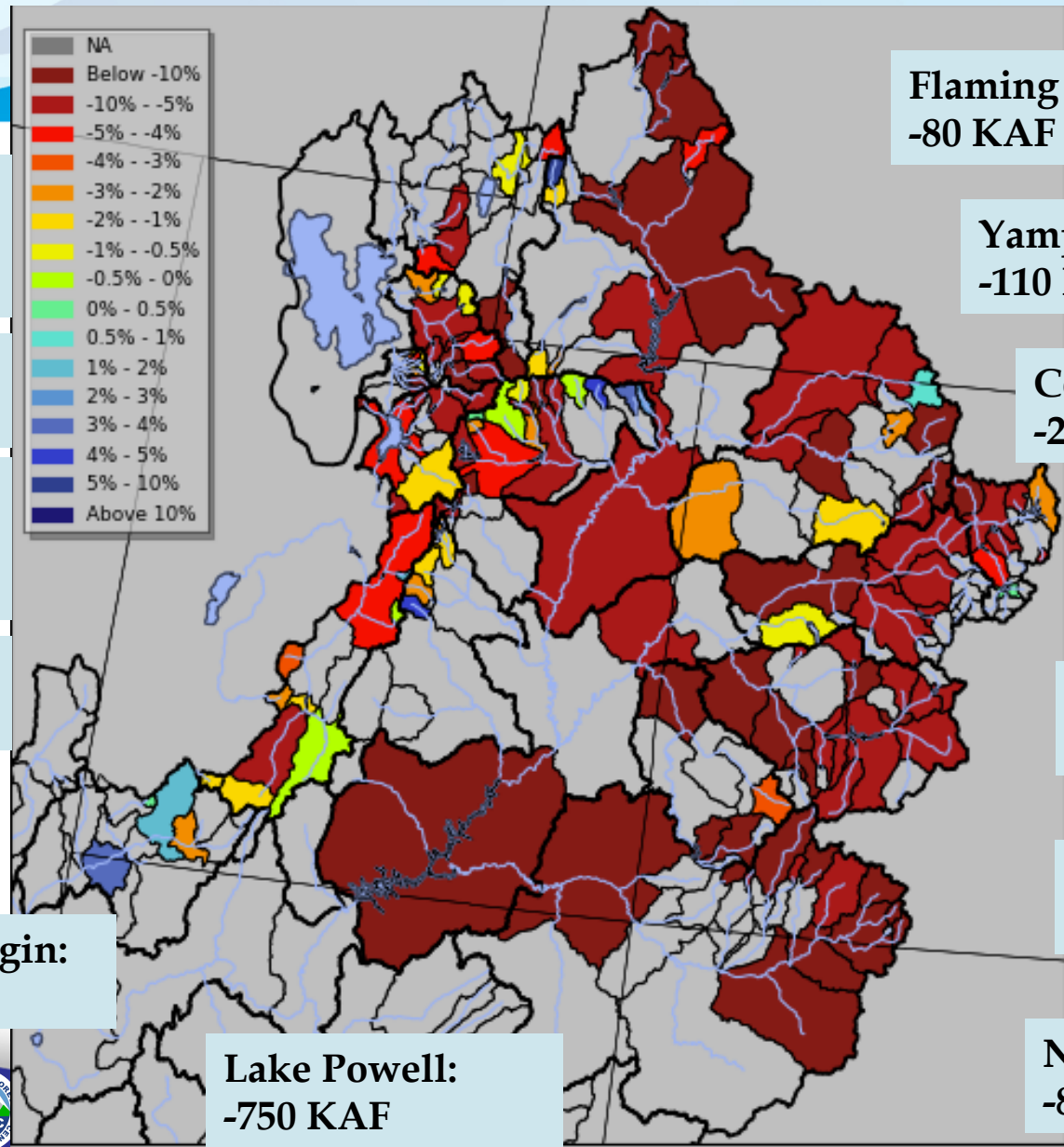
Yampa-Deerlodge:
-110 KAF

Colorado-Cameo:
-240 KAF

Blue Mesa:
-40 KAF

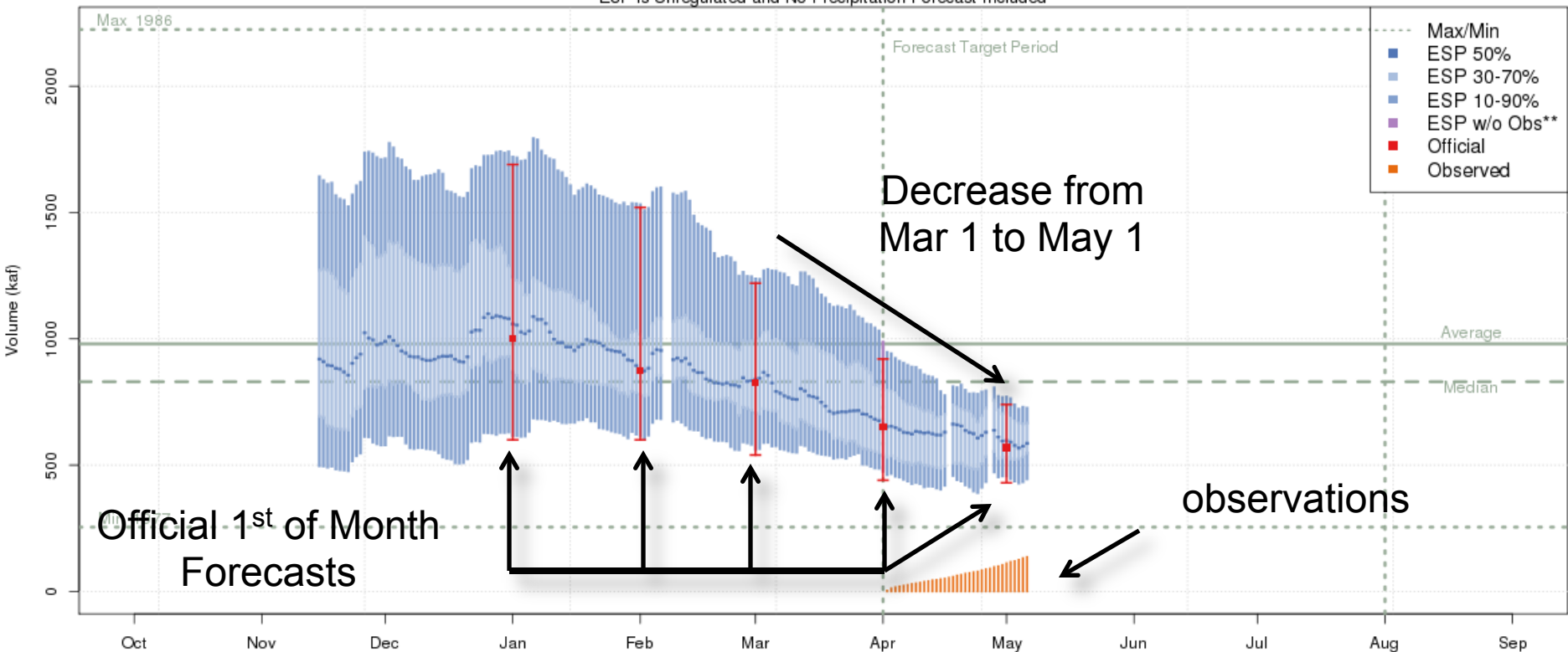
McPhee Res:
-35 KAF

Navajo Res:
-80 KAF



Green River at Flaming Gorge

Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1)
2015-05-01 Apr-Jul Official 50% Forecast: 570 kaf (58% of average)
 ESP is Unregulated and No Precipitation Forecast Included

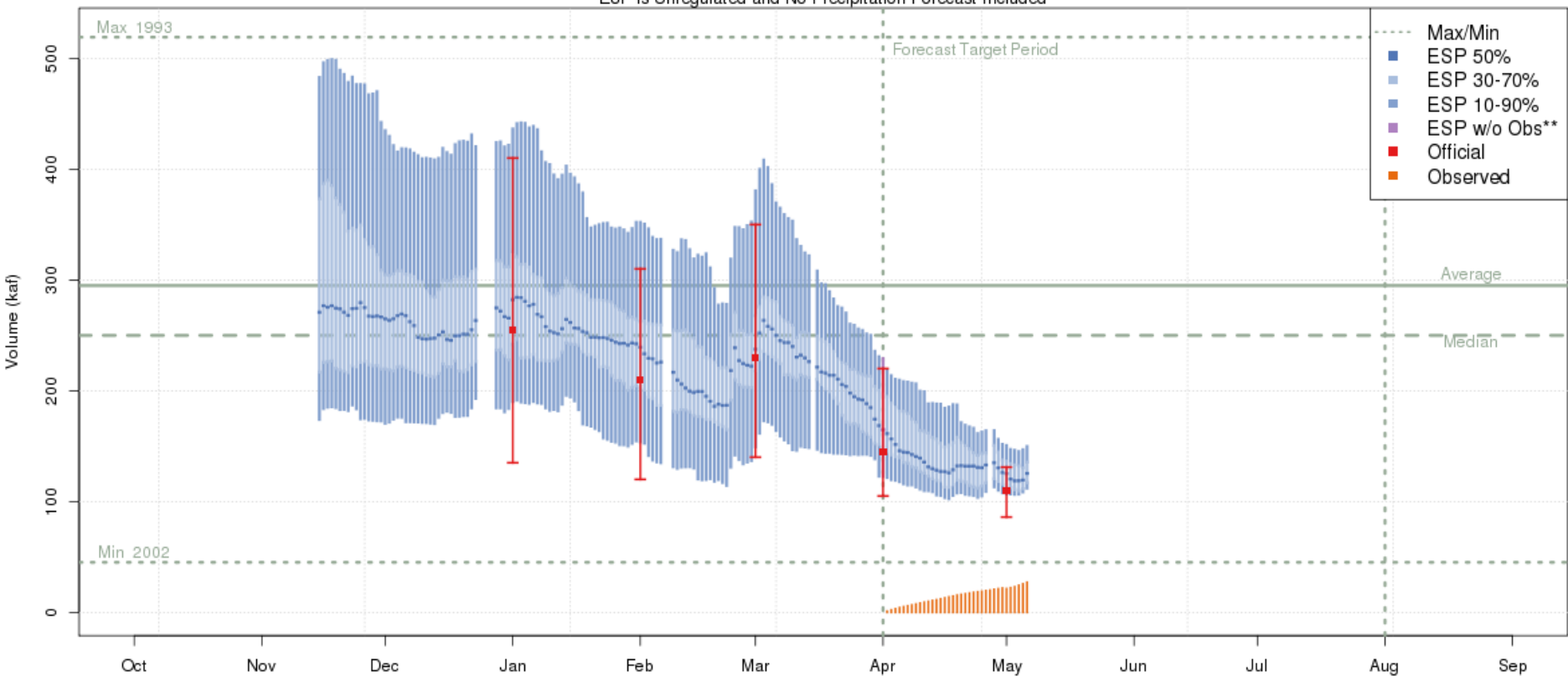


The latest (2015-05-06) 50% ESP forecast is 586 kaf.
 Plot Created 2015-05-06 14:27:11, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.



Dolores - McPhee Reservoir Inflow

Dolores - McPhee Res (MPHC2)
2015-05-01 Apr-Jul Official 50% Forecast: 110 kaf (37% of average)
ESP is Unregulated and No Precipitation Forecast Included

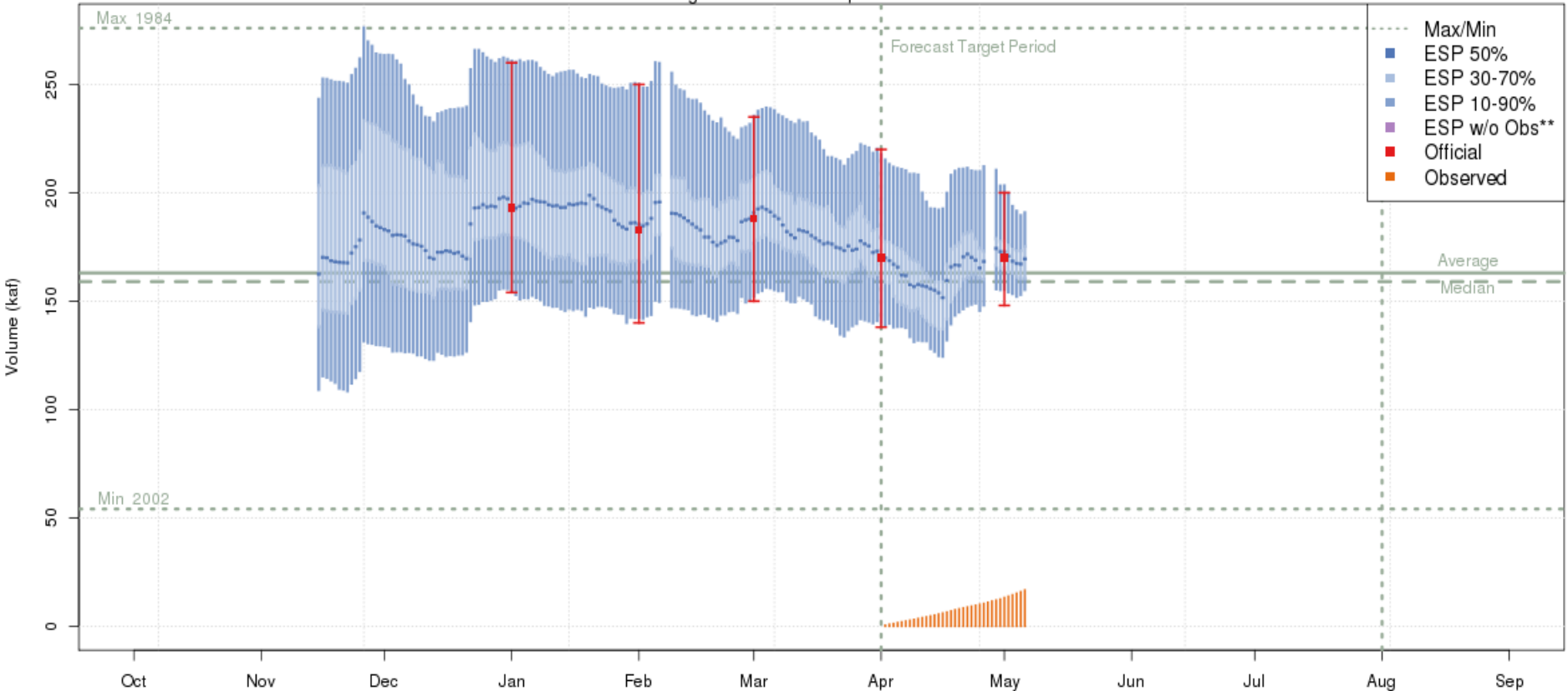


The latest (2015-05-06) 50% ESP forecast is 125 kaf.
Plot Created 2015-05-06 14:35:23, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Raw Model Guidance Forecast Evolution Plots

Blue – Dillon Reservoir Inflow

Blue - Dillon Res (DIRC2)
2015-05-01 Apr-Jul Official 50% Forecast: 170 kaf (104% of average)
ESP is Unregulated and No Precipitation Forecast Included

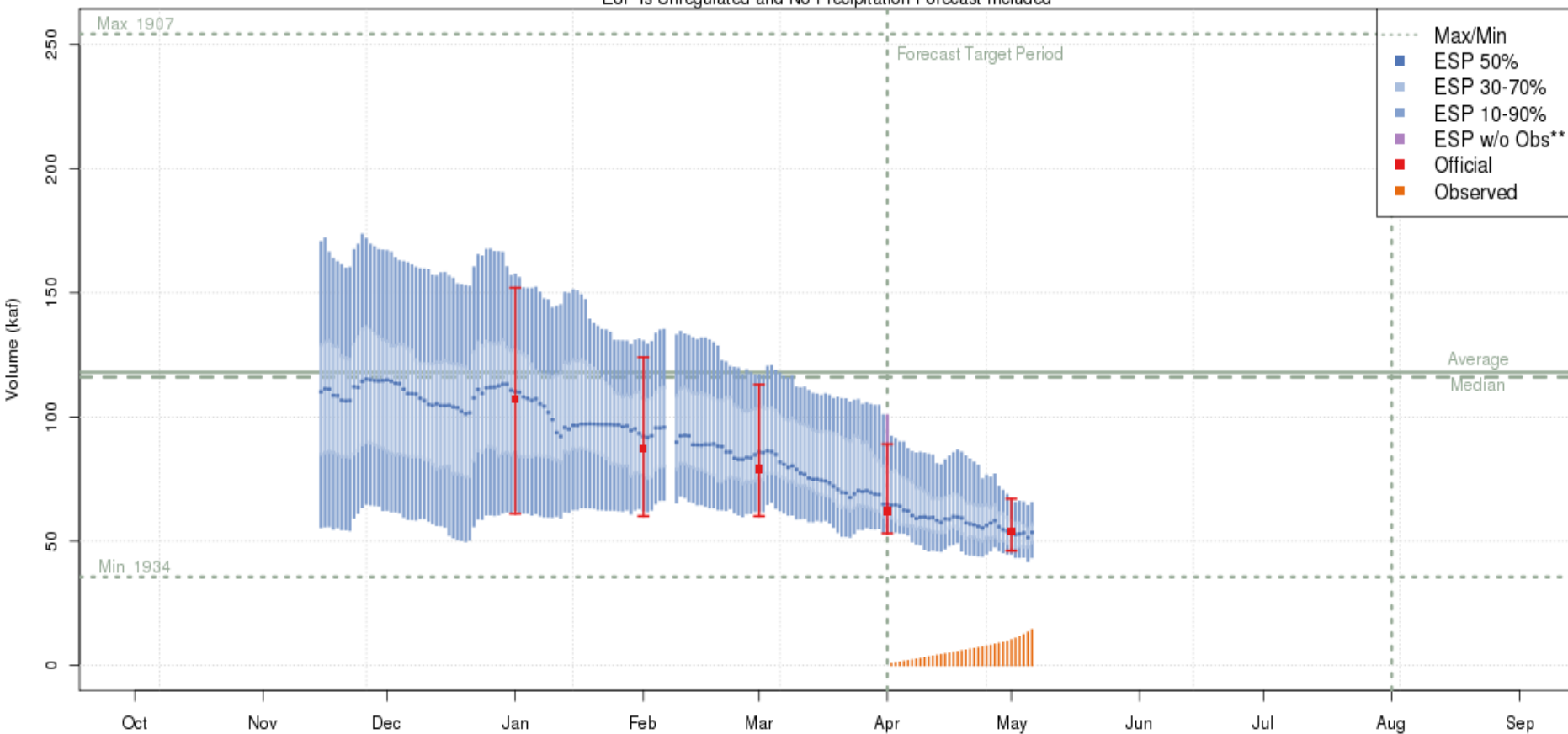


The latest (2015-05-06) 50% ESP forecast is 169 kaf.
Plot Created 2015-05-06 14:19:29, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Raw Model Guidance Forecast Evolution Plots

Weber Near Oakley

Weber - Oakley- Nr (OAWU1)
2015-05-01 Apr-Jul Official 50% Forecast: 54 kaf (46% of average)
ESP is Unregulated and No Precipitation Forecast Included

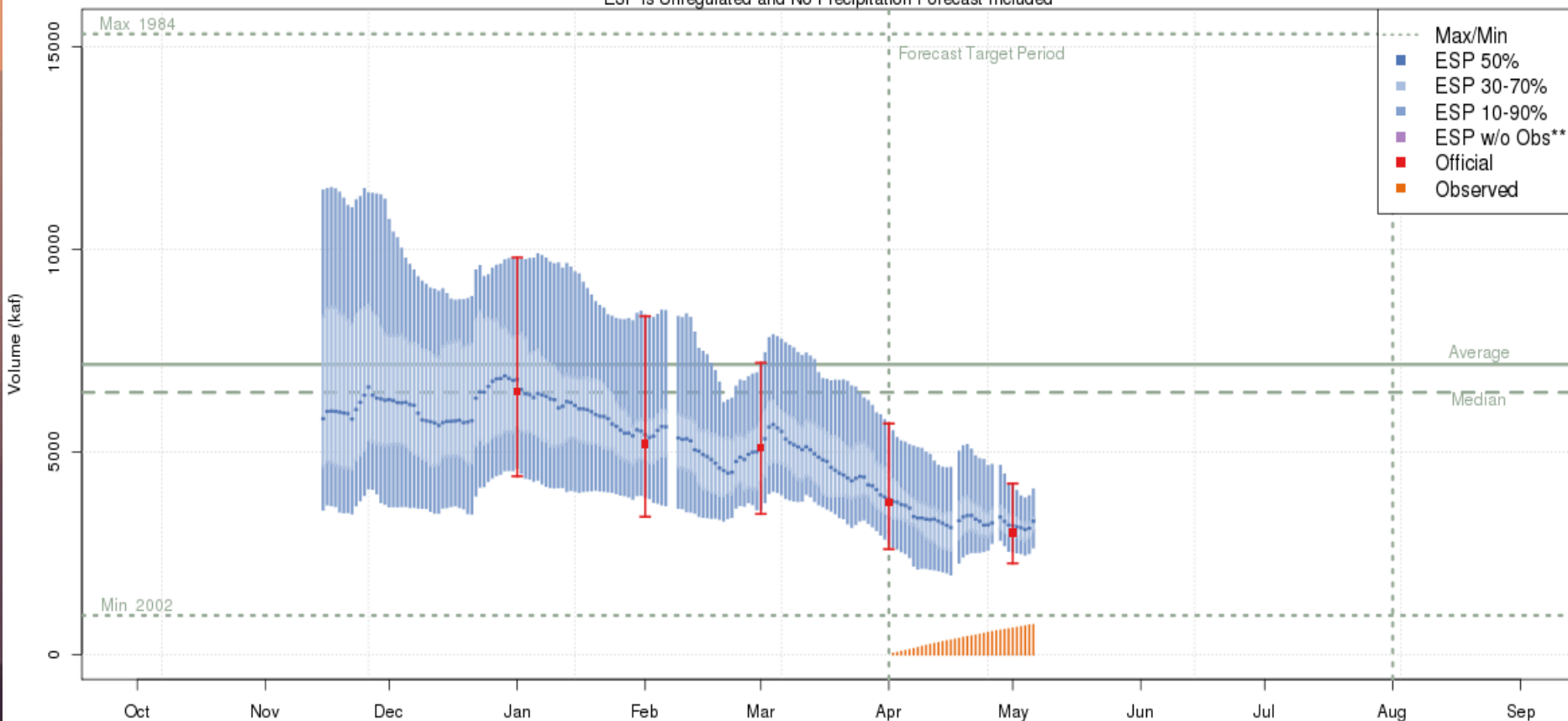


The latest (2015-05-06) 50% ESP forecast is 53 kaf.
Plot Created 2015-05-06 14:36:59, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.



Lake Powell at Glen Canyon Dam

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
 2015-05-01 Apr-Jul Official 50% Forecast: 3000 kaf (42% of average)
 ESP is Unregulated and No Precipitation Forecast Included

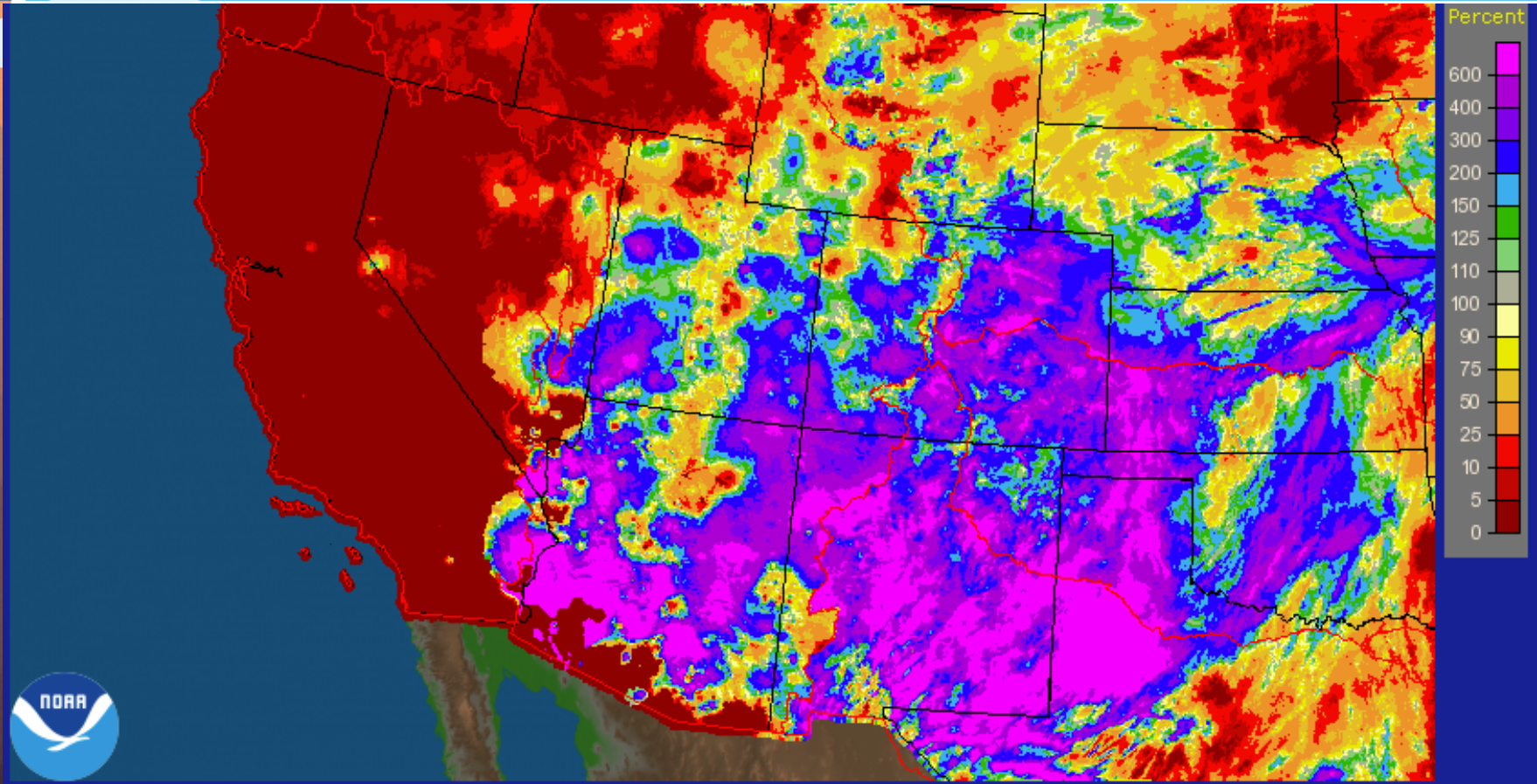


The latest (2015-05-06) 50% ESP forecast is 3290 kaf.
 Plot Created 2015-05-06 14:26:06, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.



Recent Weather

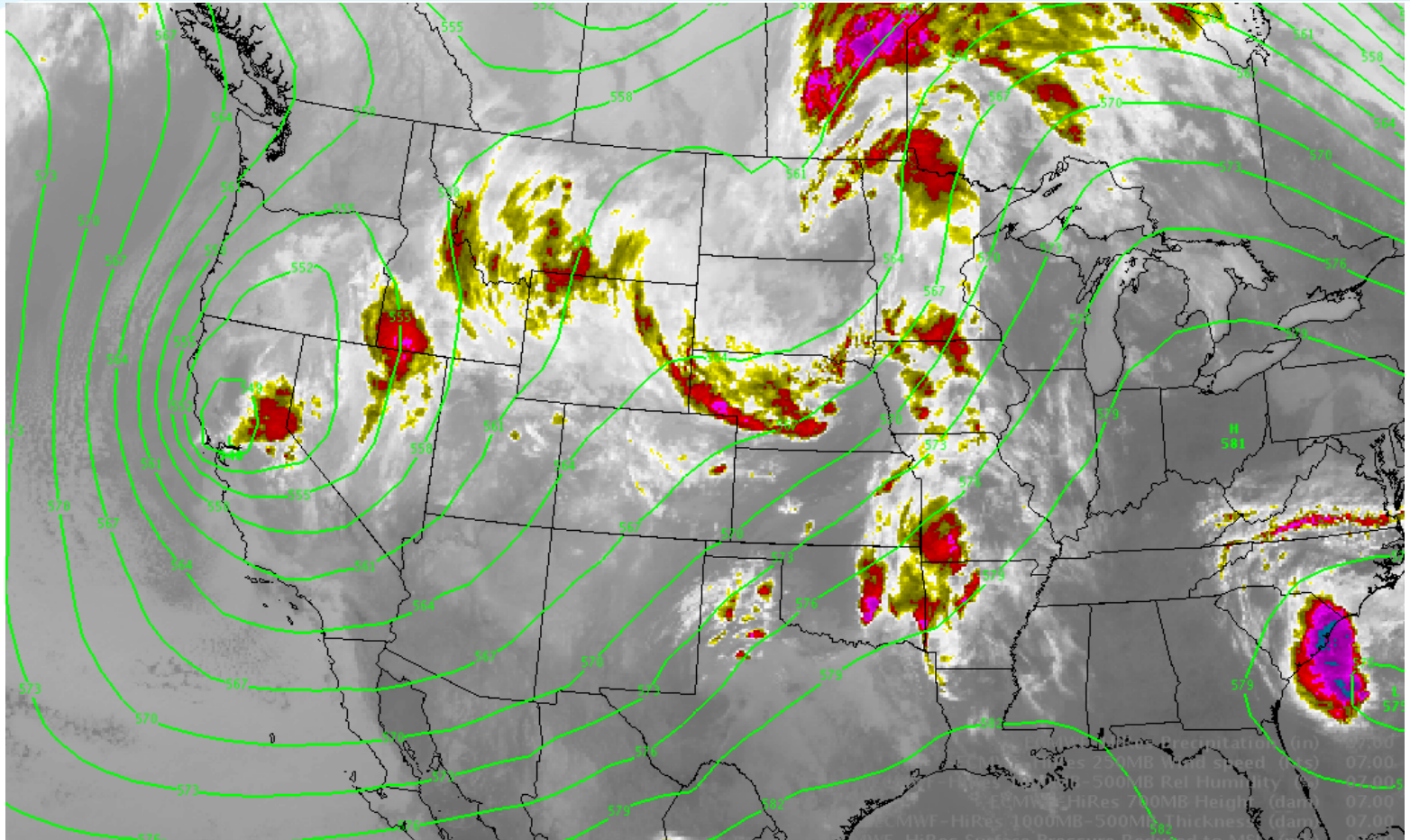
24



Widespread precipitation to start the month of May

Current Weather

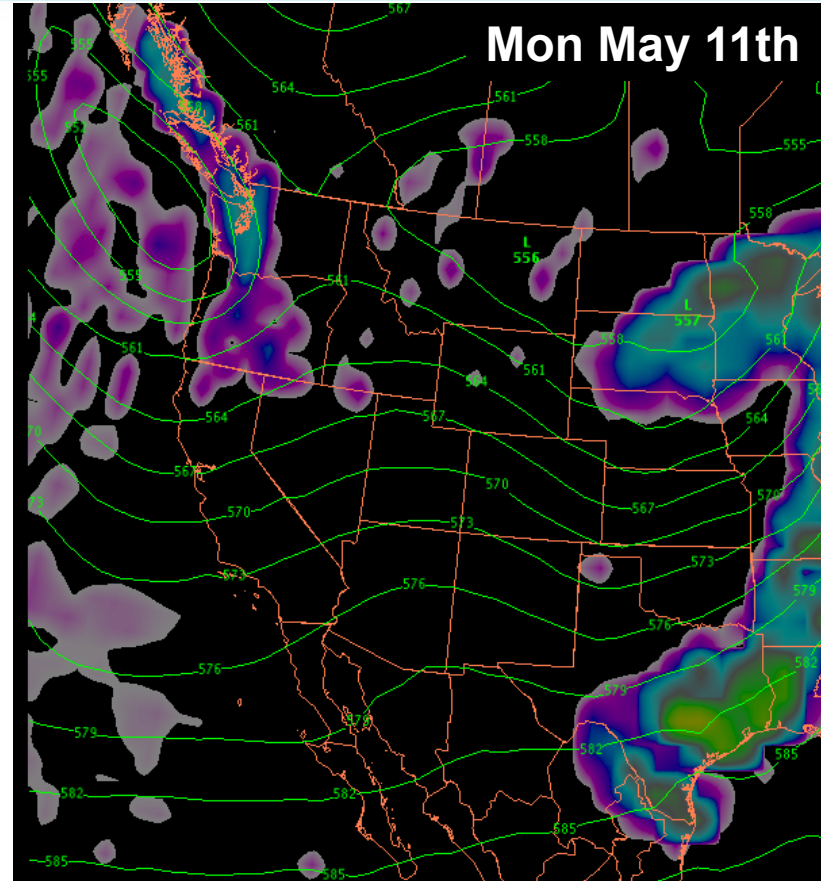
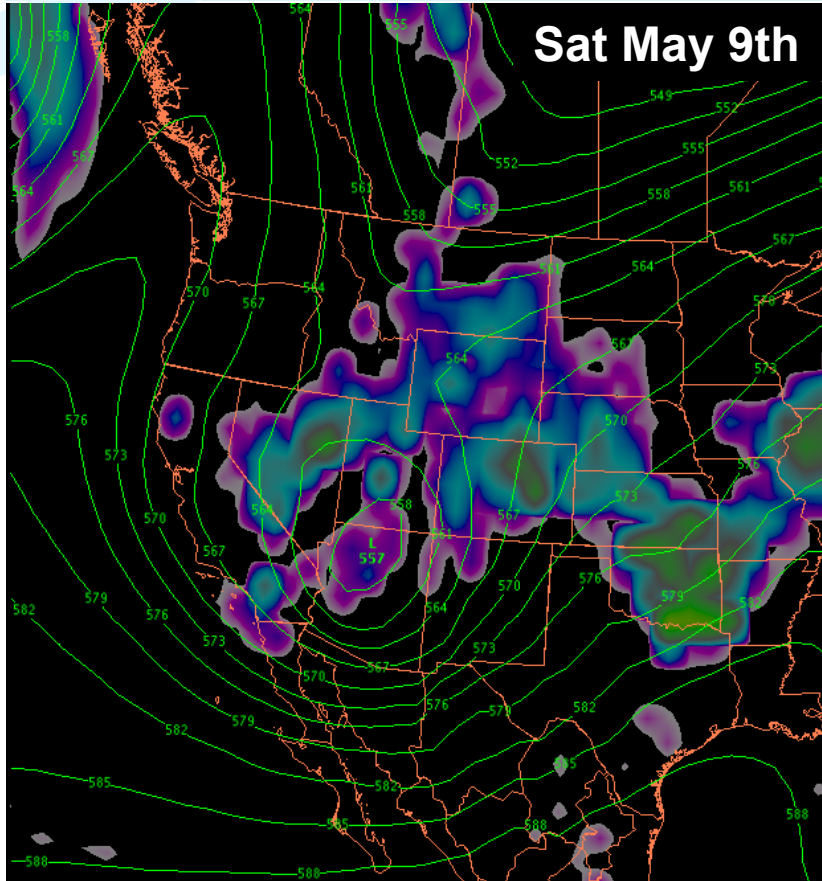
25



Storm system poised to move through the region this weekend. Widespread rain and snow expected

Upcoming Weather

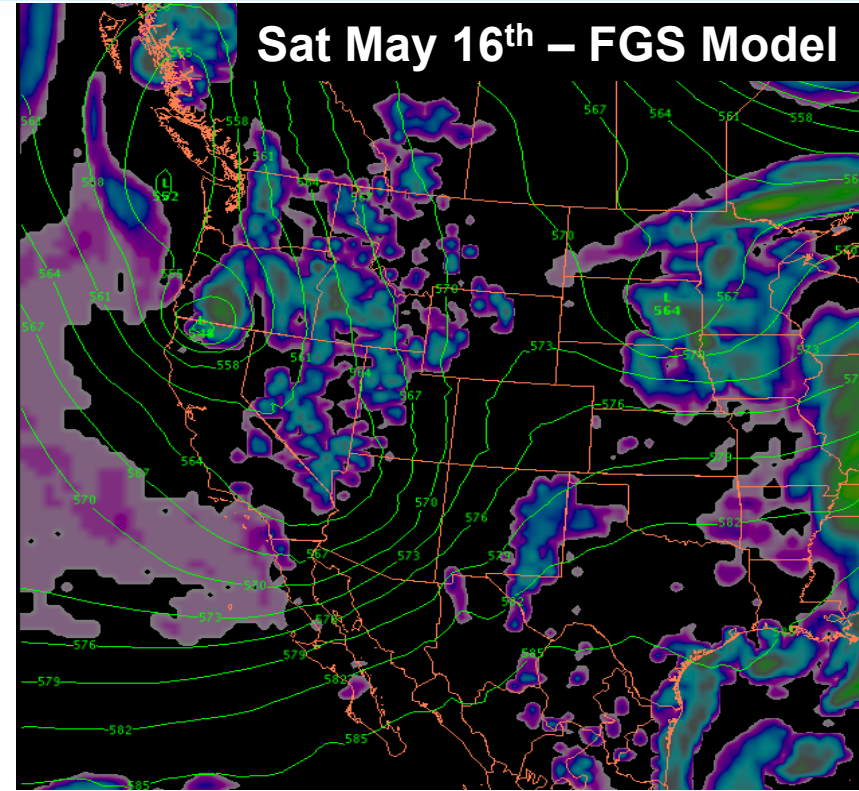
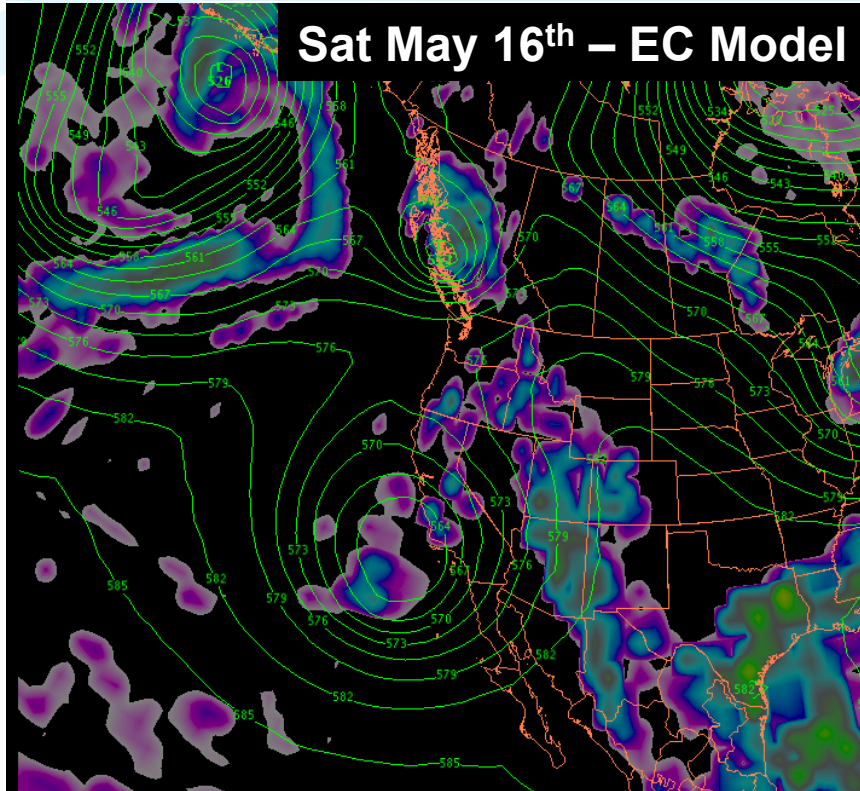
26



Weekend rain and high elevation snow. Dry with a temporary ridge of high pressure early next week.

Upcoming Weather

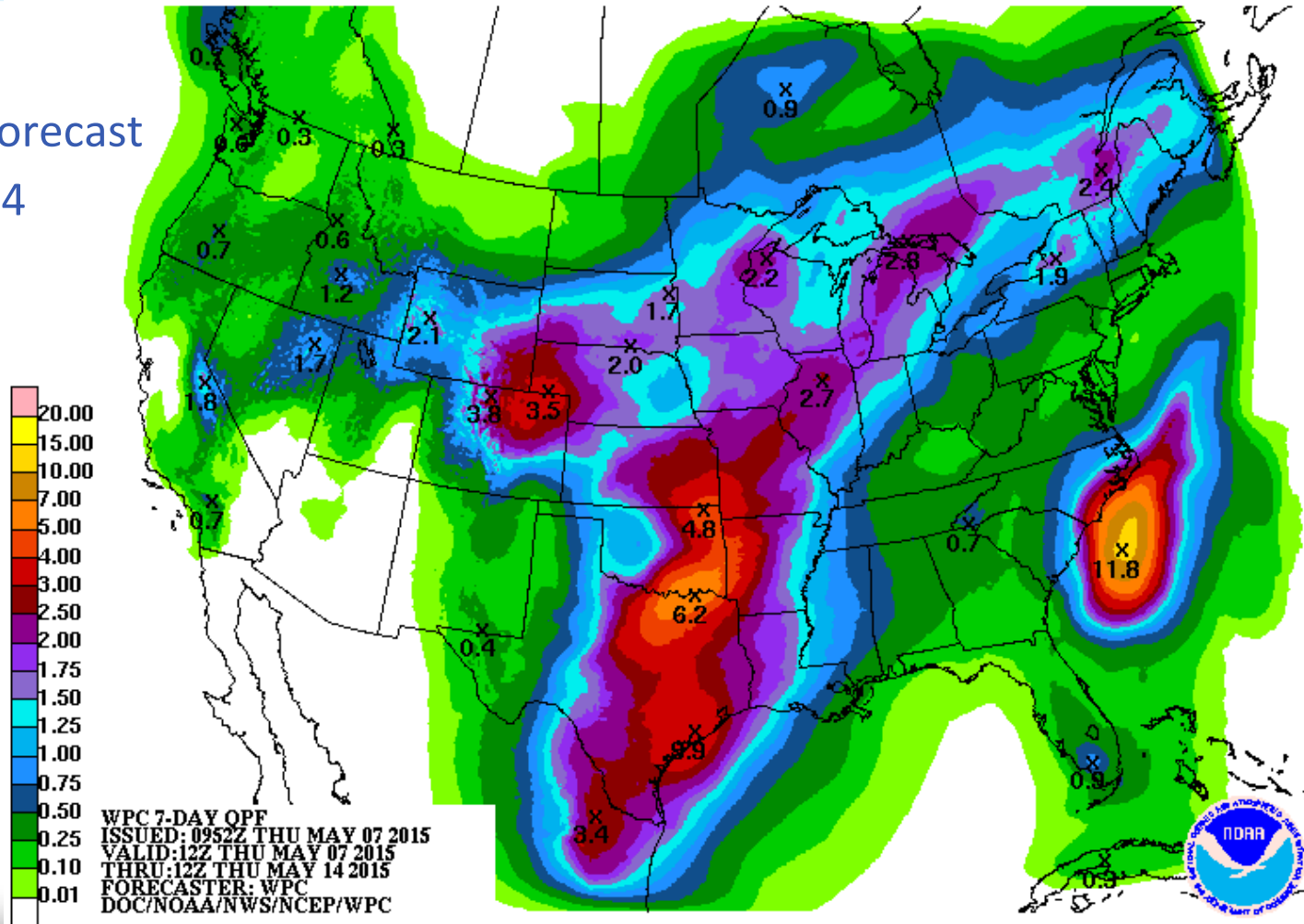
27



Different model solutions beyond a week however the weather pattern remains active

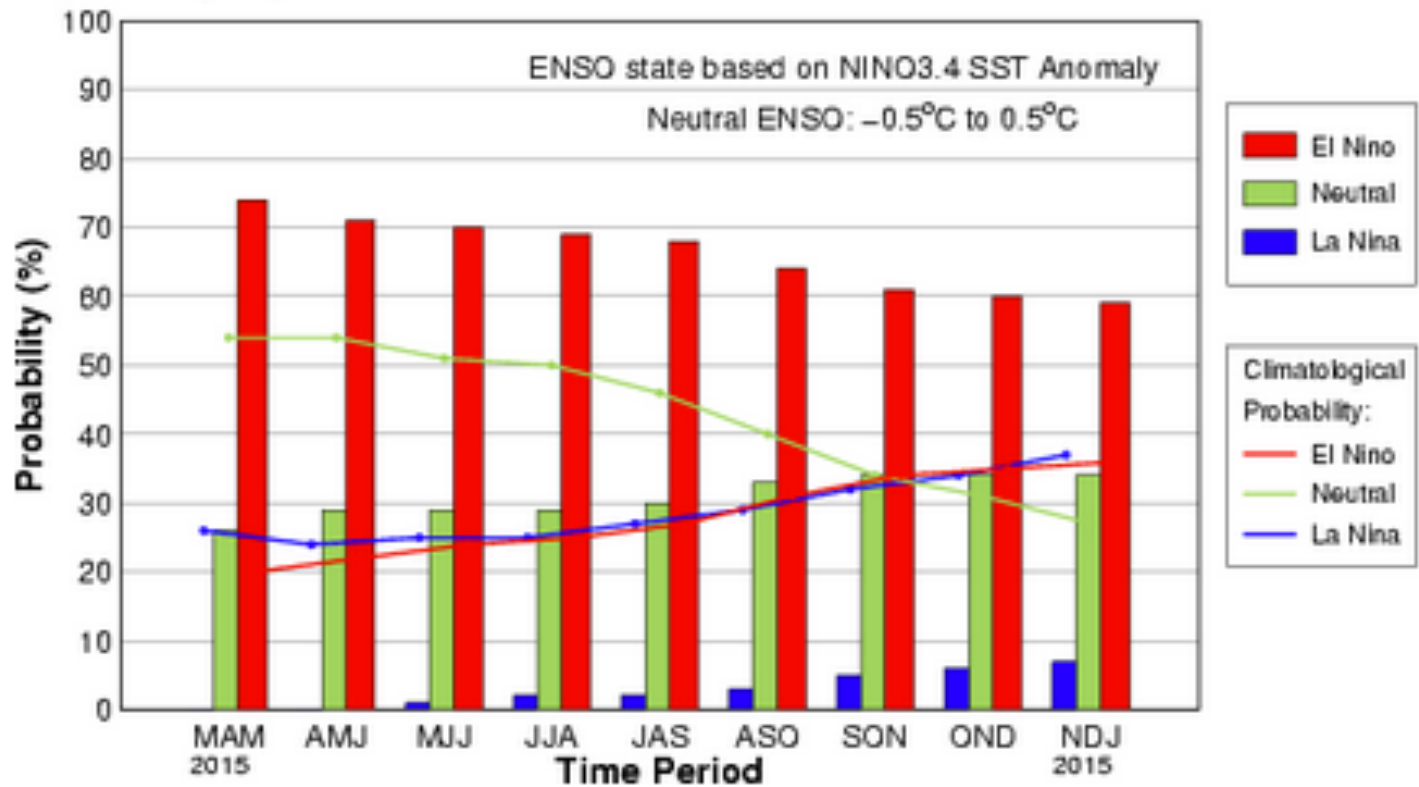
Upcoming Weather

Precipitation Forecast May 7 – May 14



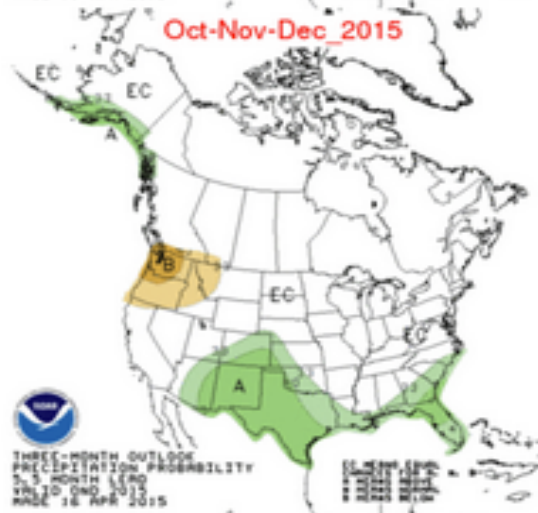
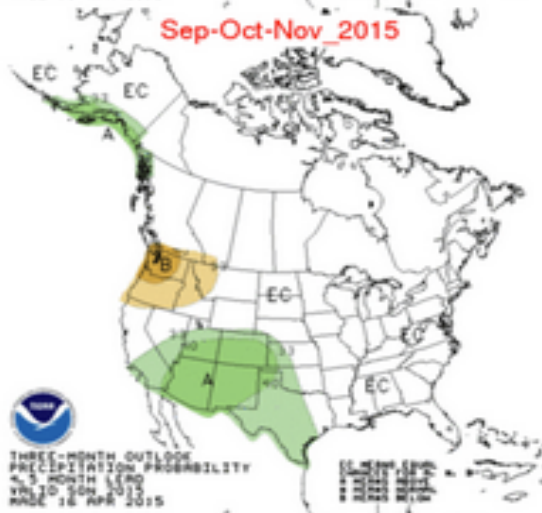
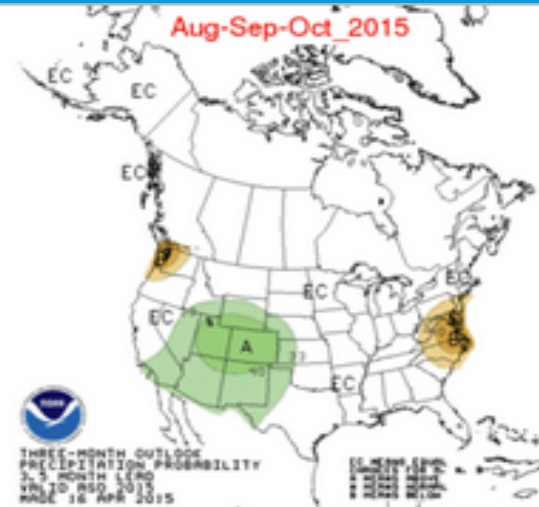
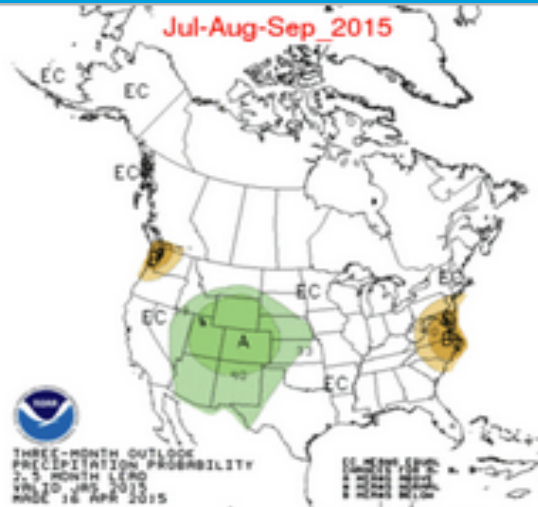
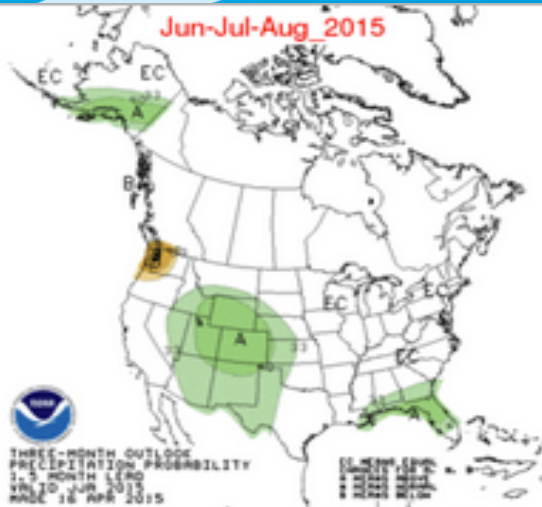
Long-Term Weather

Early-Apr CPC/IRI Consensus Probabilistic ENSO Forecast



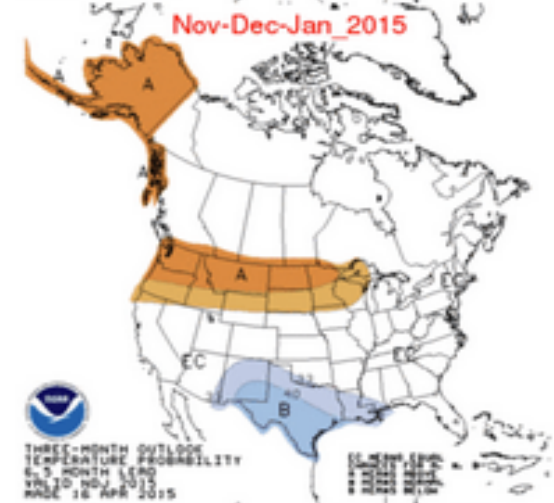
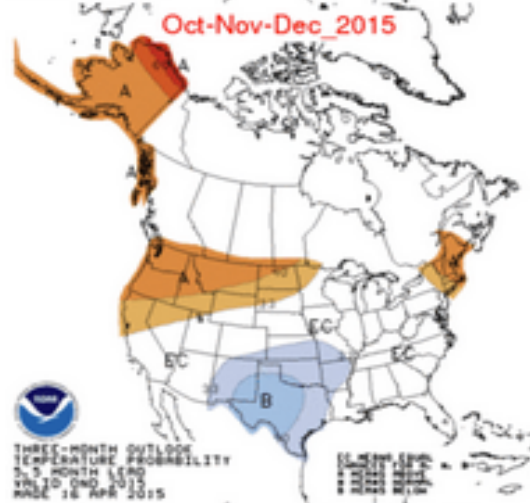
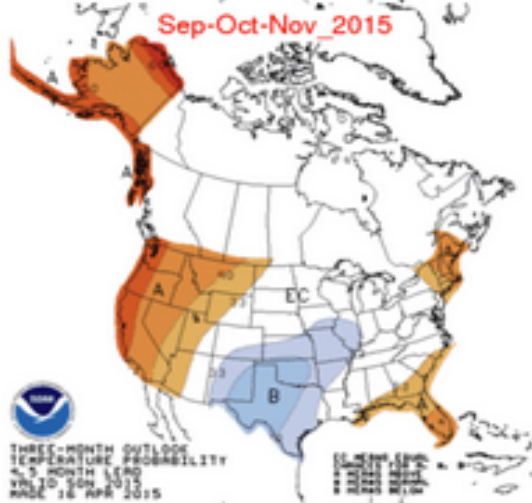
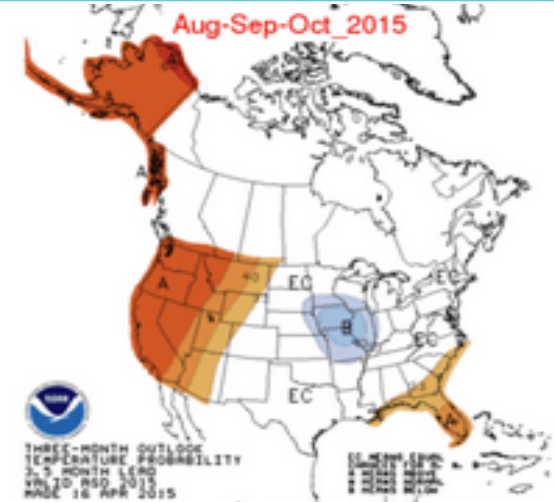
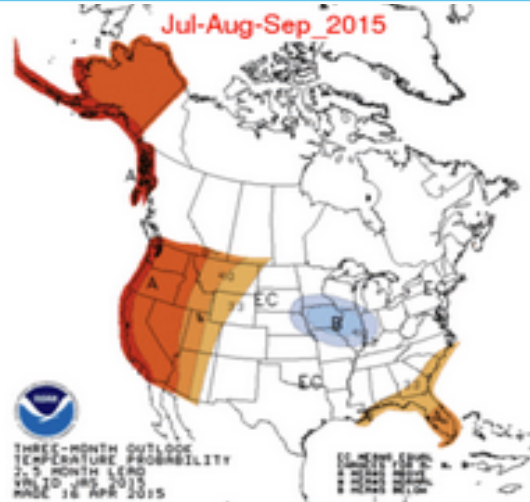
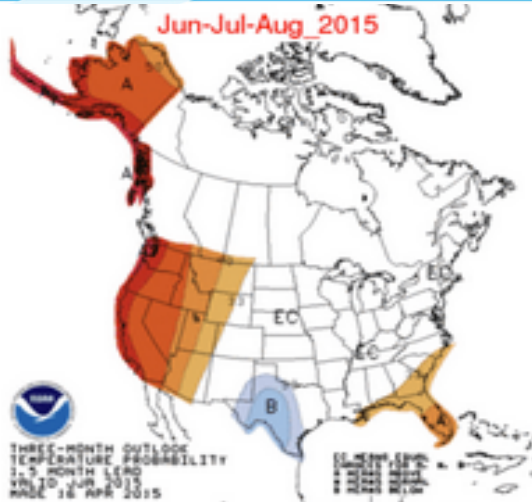
CPC PRECIP: Long-Term Weather

30



CPC TEMP: Long-Term Weather

31



Peak Flows

32

- Peak flows in the process of being updated
 - Expecting peaks below average, many earlier than normal
 - Some peaks are occurring now/soon due to recent rain
 - 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>
 - Begin looking at daily forecasts now



CBRFC / NOAA News

33

- CBRFC Stakeholder Meeting
 - During the week of October 19th?
 - Verification will play a large role
 - More details to come
- National Water Center – Tuscaloosa Alabama
 - Ribbon Cutting May 26th
 - Collaborative national center to support NWS water mission



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Questions ?

Final water supply briefing webinar of 2015

Suggestions and feedback are welcome at any time

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