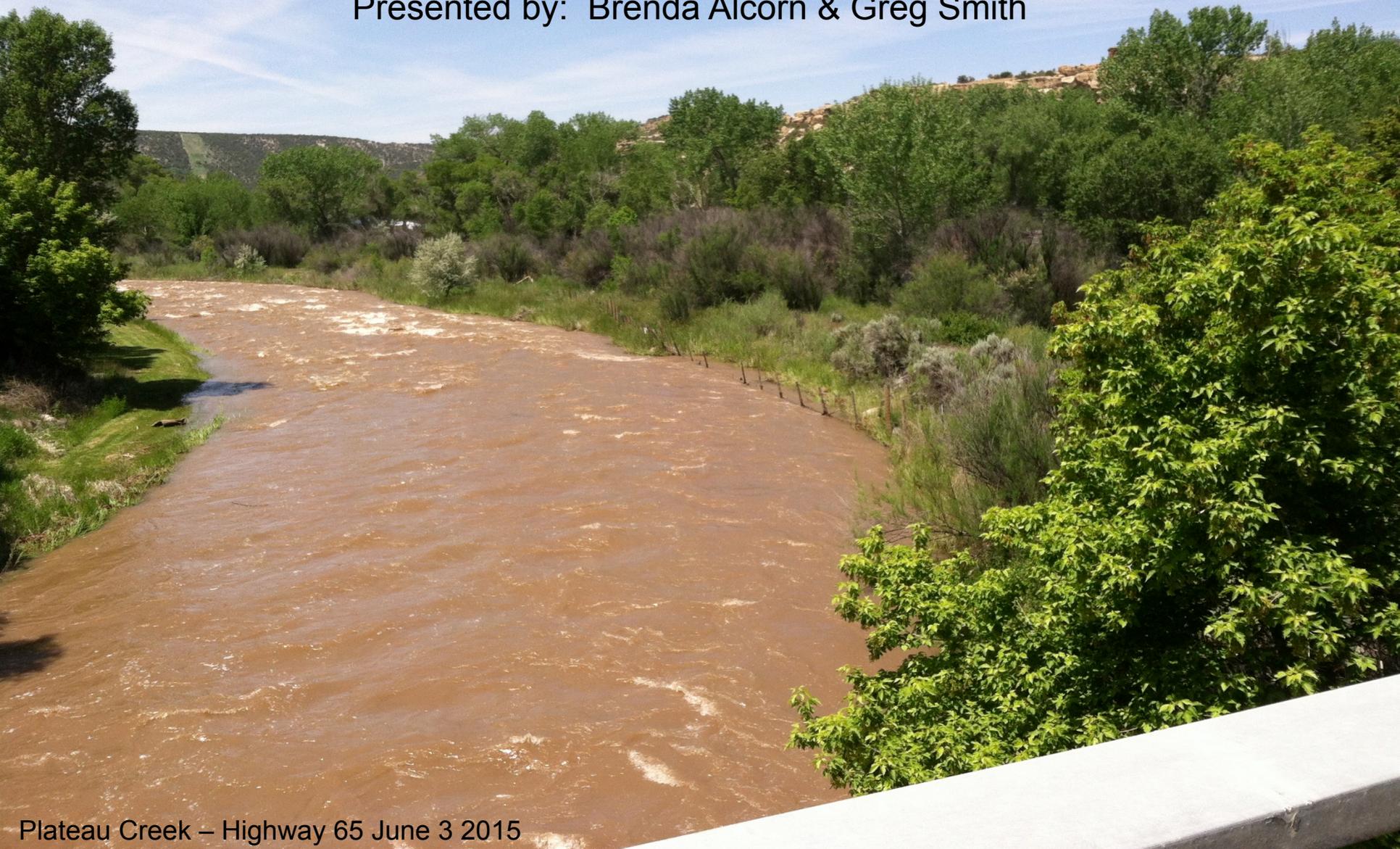


CBRFC Water Supply Briefing – June 5th 2015

Presented by: Brenda Alcorn & Greg Smith



Plateau Creek – Highway 65 June 3 2015



Aldis Strautins – NWS Grand Junction

Today's Presentation

2

- May Weather – Wow !
- Primary Impacts of the May Weather
- June Final Water Supply Forecast Summary
- Future Weather Outlook
- State of ENSO
- CPC Summer Outlook



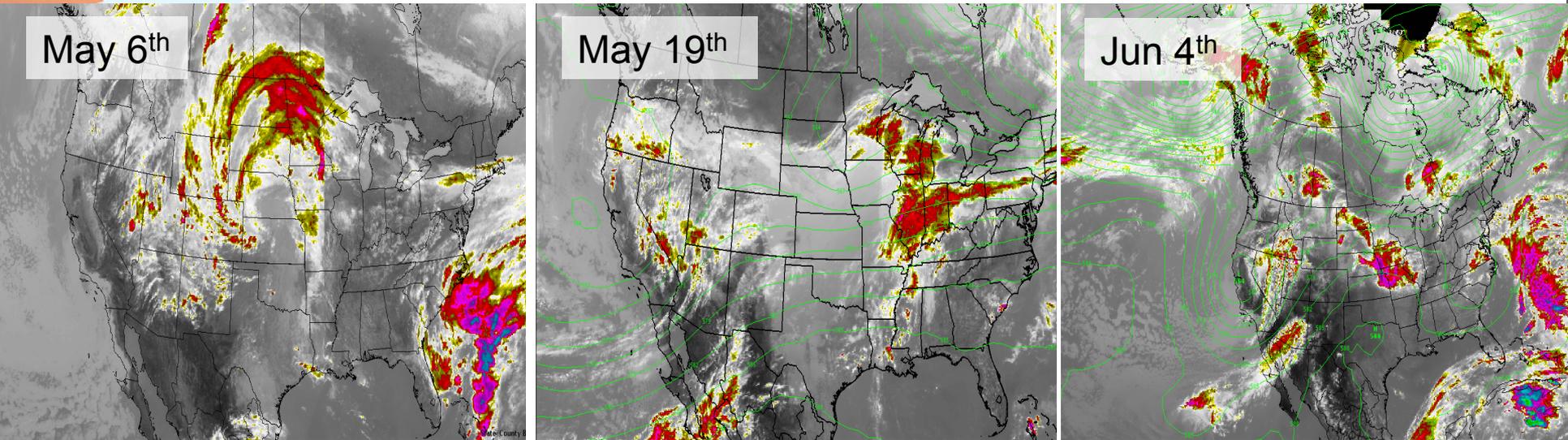
May Weather

3

May 6th

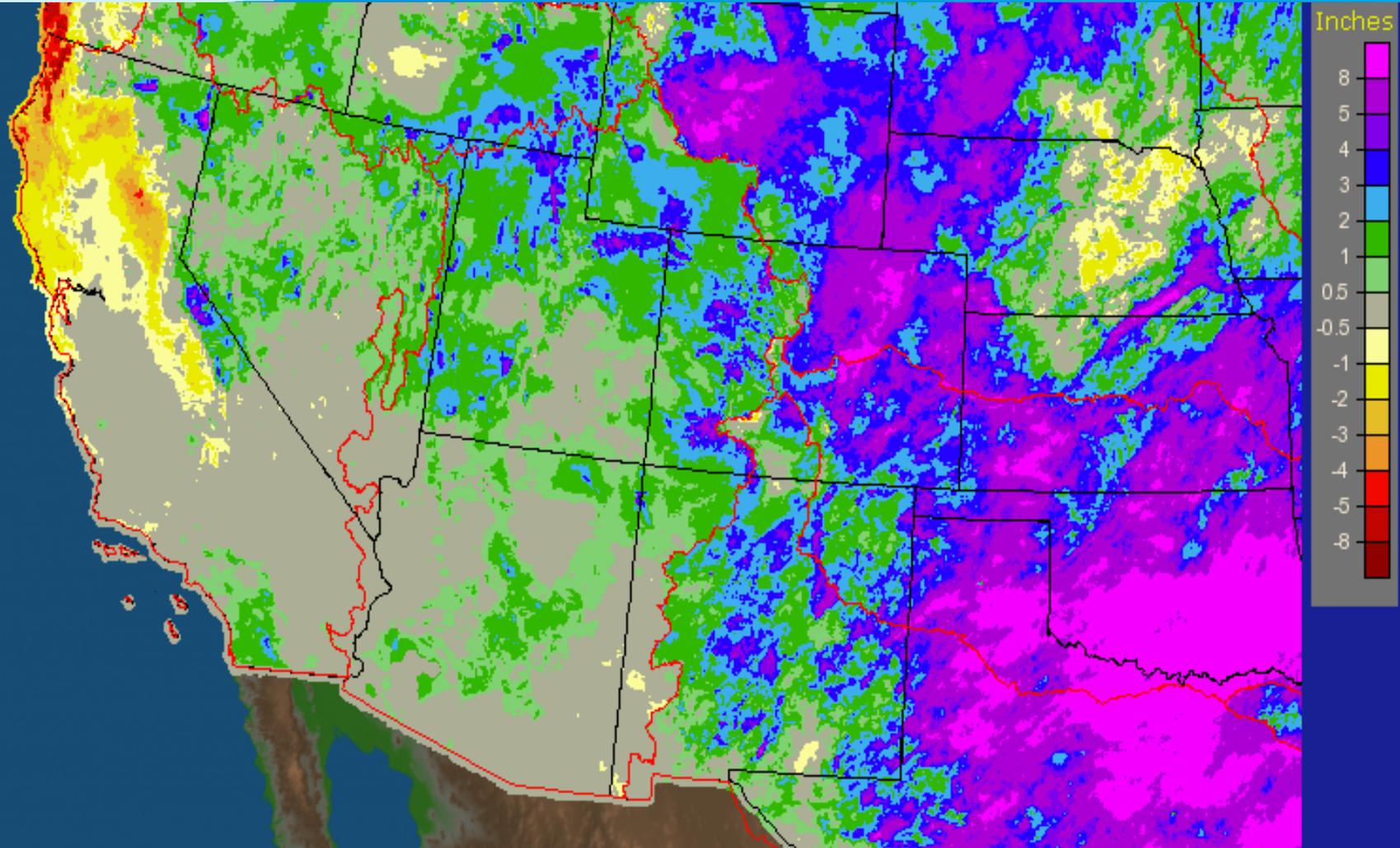
May 19th

Jun 4th



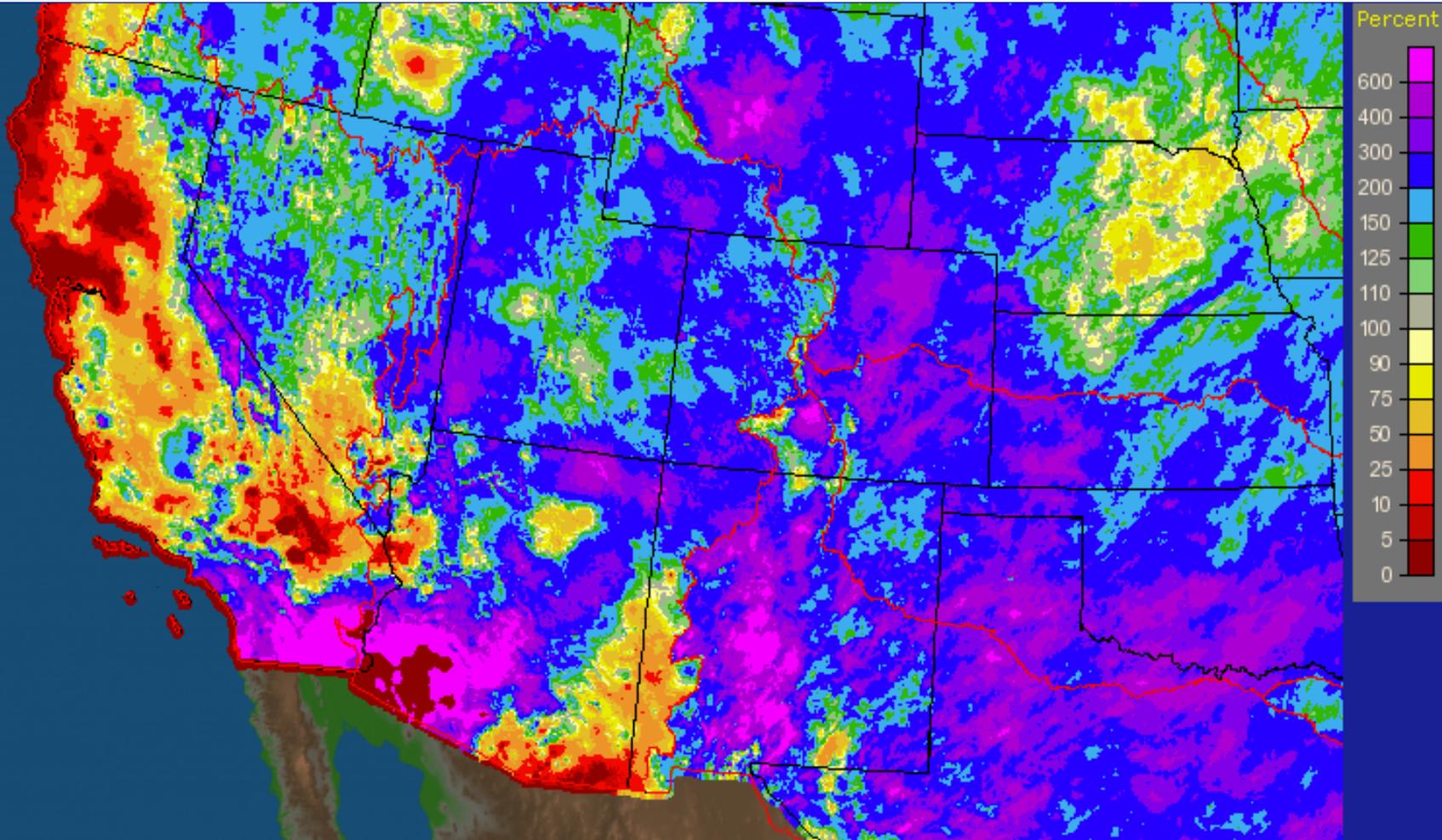
Pattern change occurred in April & carried into May. Frequent moist storms systems bringing heavy rainfall. Track and speed of storms were favorable for significant precipitation in many locations.

May Precipitation – Departure from Average



May Precipitation – Percent of Average

5



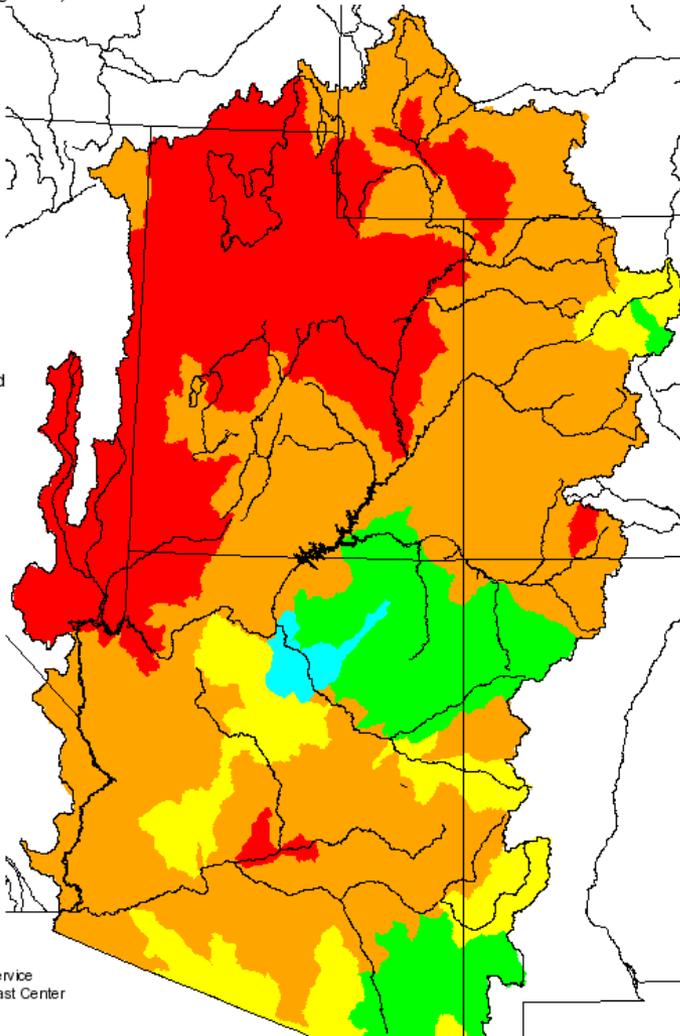
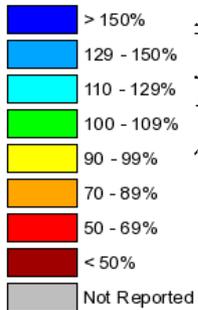
Seasonal Precipitation – Percent of Average

6

Seasonal Precipitation, October 2014 - April 2015

(Averaged by Hydrologic Unit)

% Average

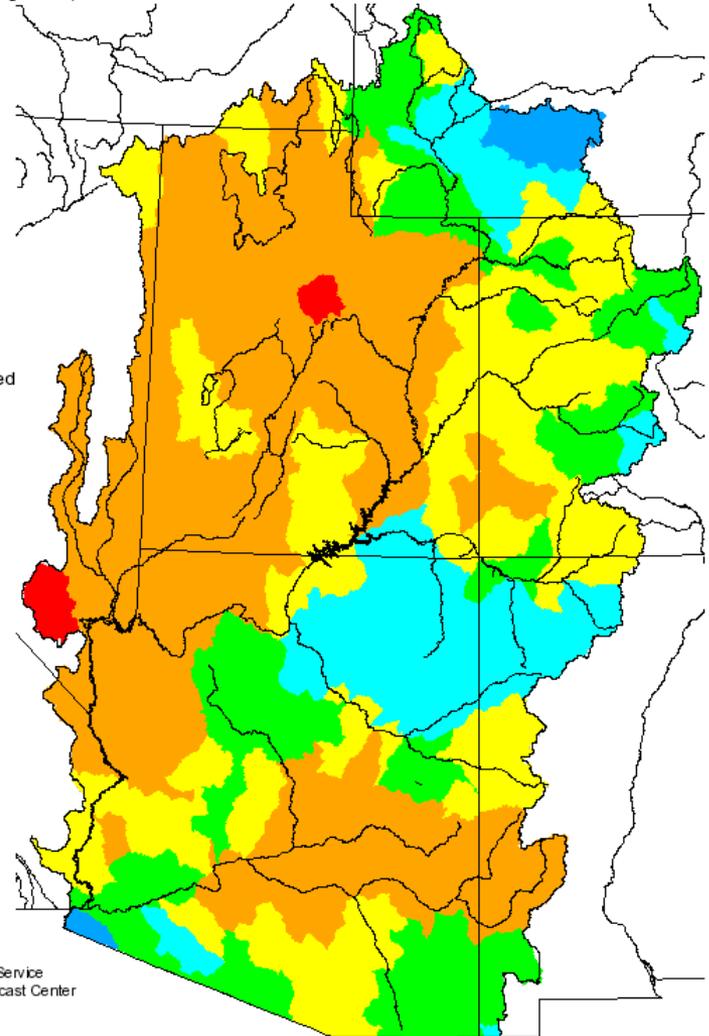
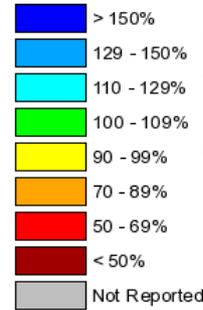


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbffc.noaa.gov

Seasonal Precipitation, October 2014 - May 2015

(Averaged by Hydrologic Unit)

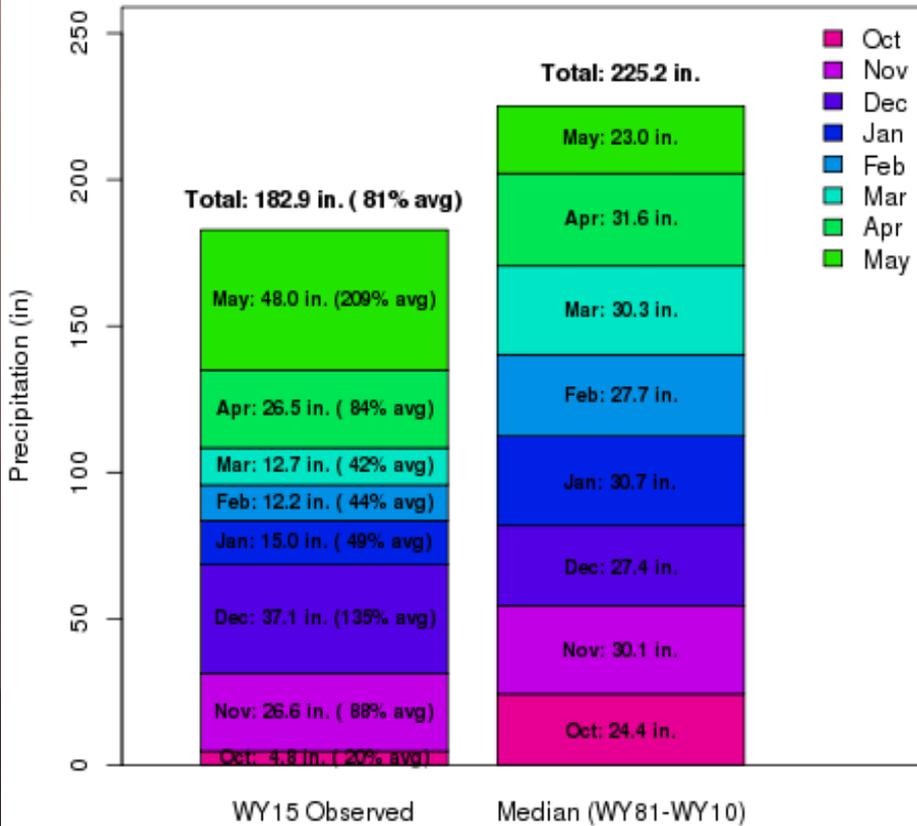
% Average



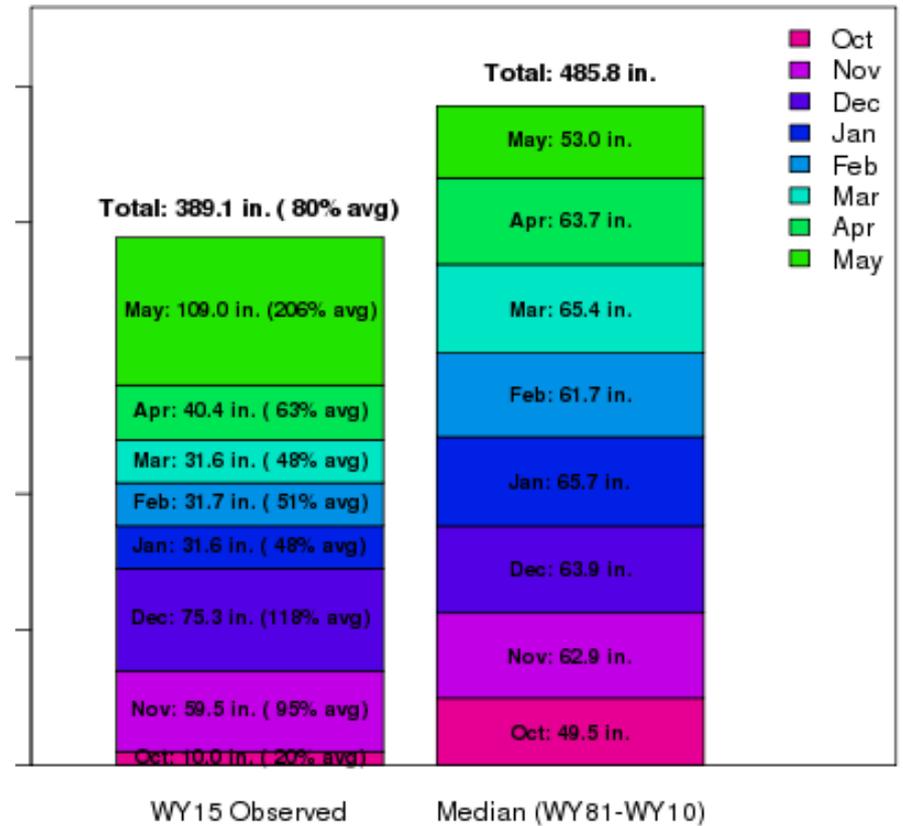
Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbffc.noaa.gov

Seasonal Precipitation Distribution Six Creeks & Weber River Basin

SIXCKS - (Elev. = NA ft)
2015 Water Year Precipitation

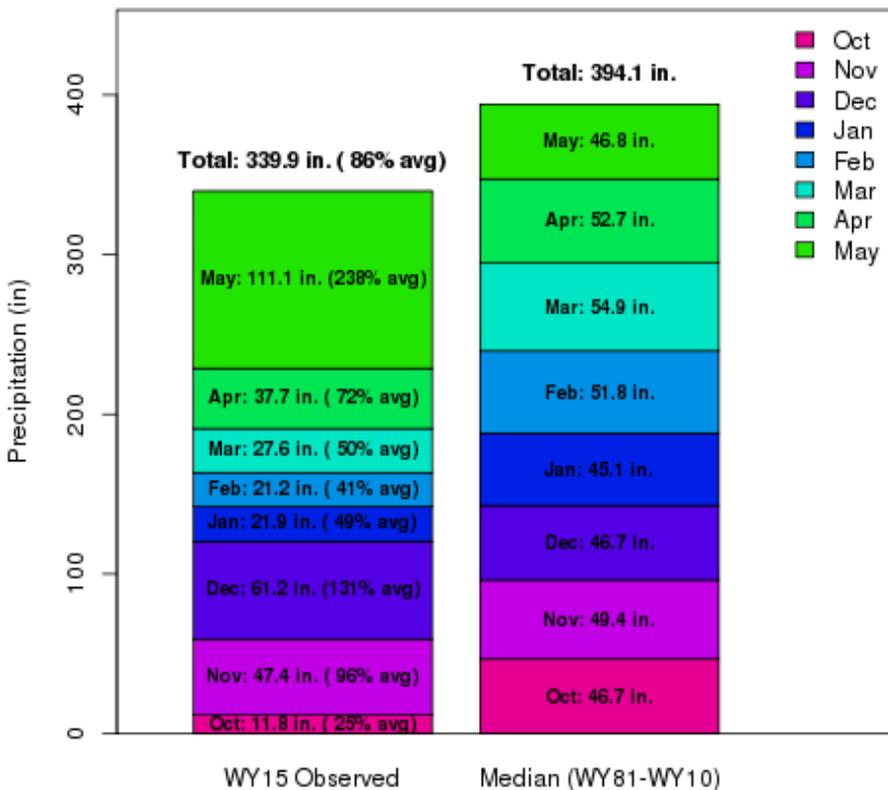


WEBER - (Elev. = NA ft)
2015 Water Year Precipitation

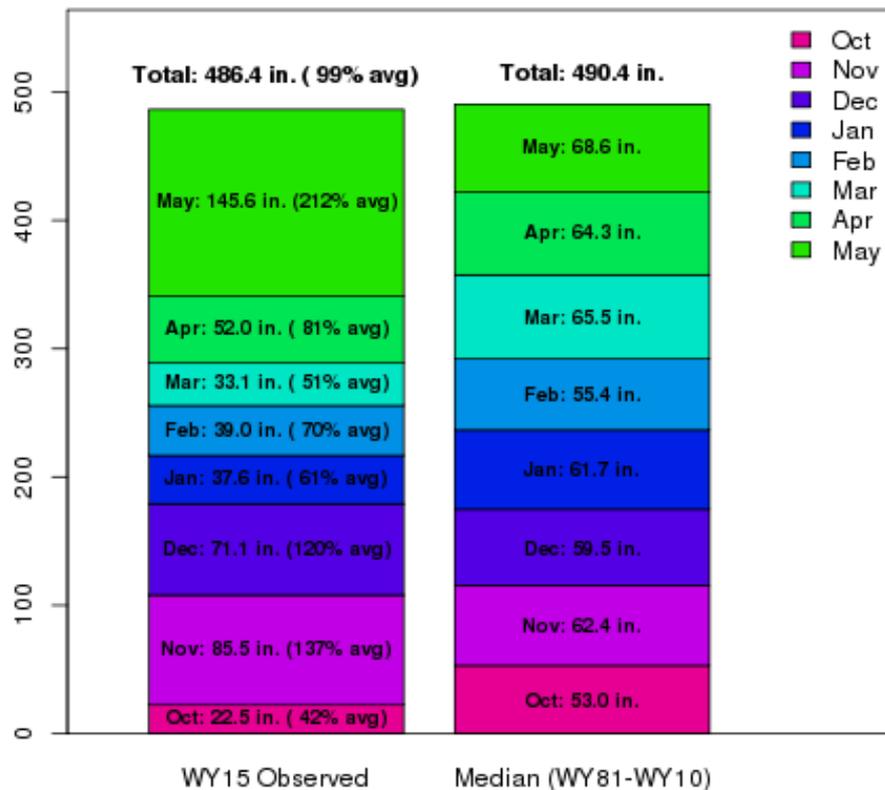


Seasonal Precipitation Distribution Green River Basin

**DUCHPR - (Elev. = NA ft)
2015 Water Year Precipitation**

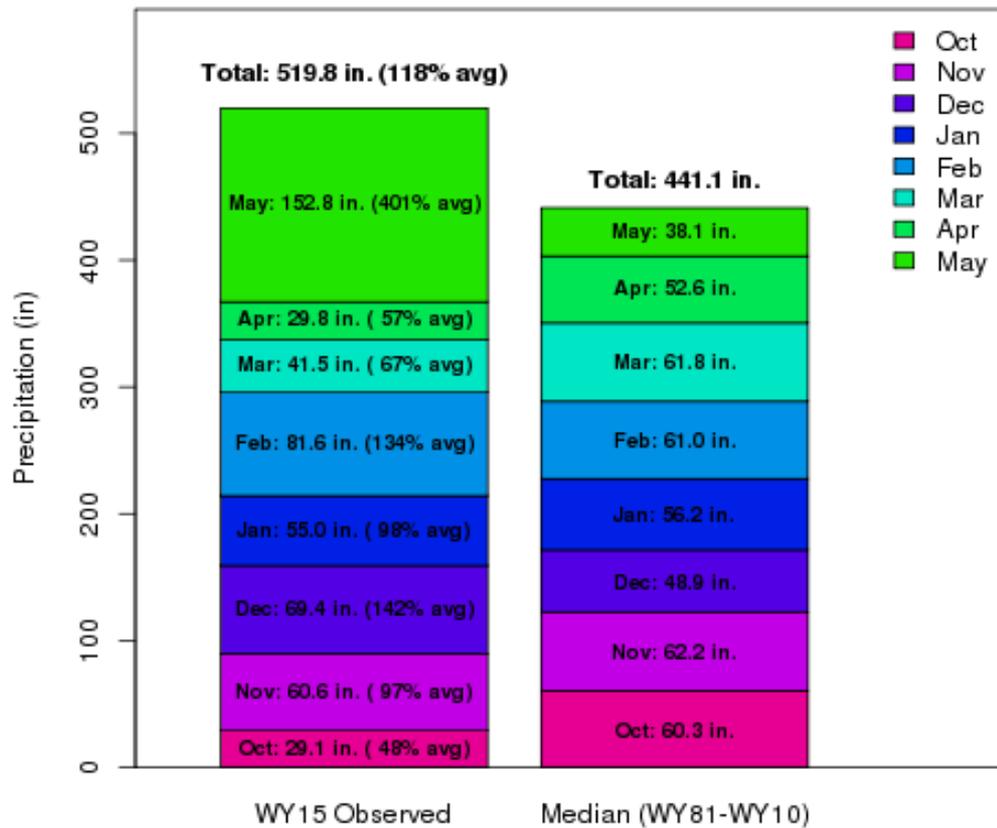


**GREEN - (Elev. = NA ft)
2015 Water Year Precipitation**



Seasonal Precipitation Distribution San Juan (Animas) River Basin

**SANJUAN - (Elev. = NA ft)
2015 Water Year Precipitation**

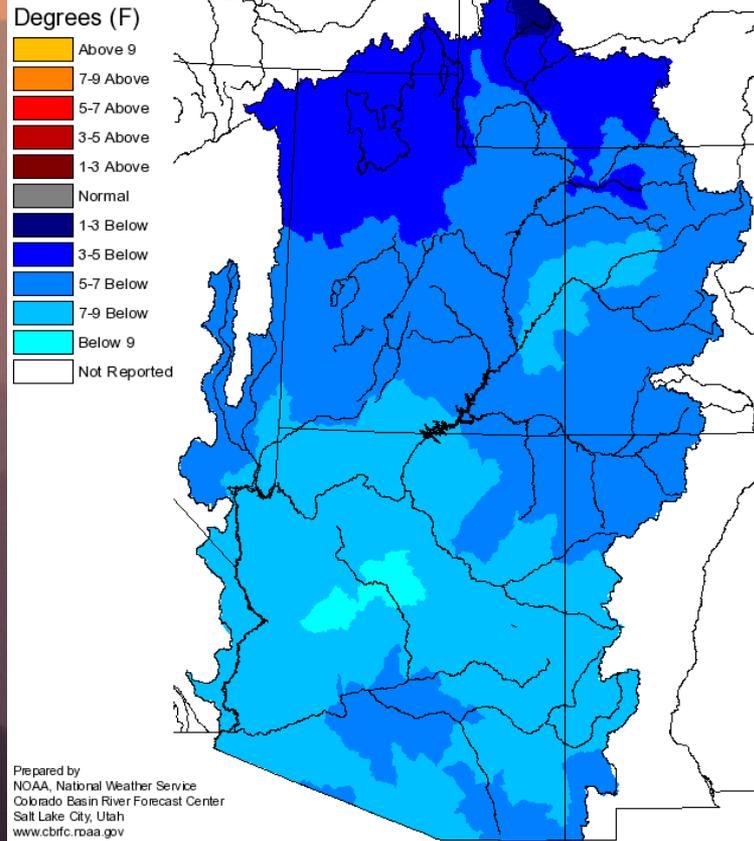


May Temperatures

10

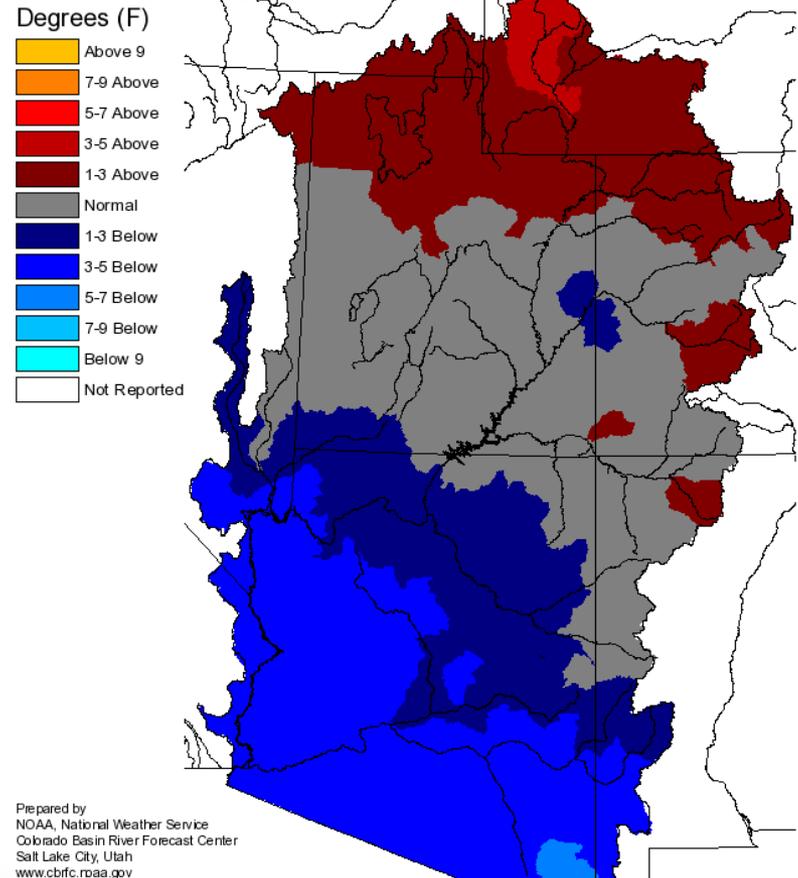
Monthly Max Temp Deviation for May 2015

(Averaged by Hydrologic Unit)



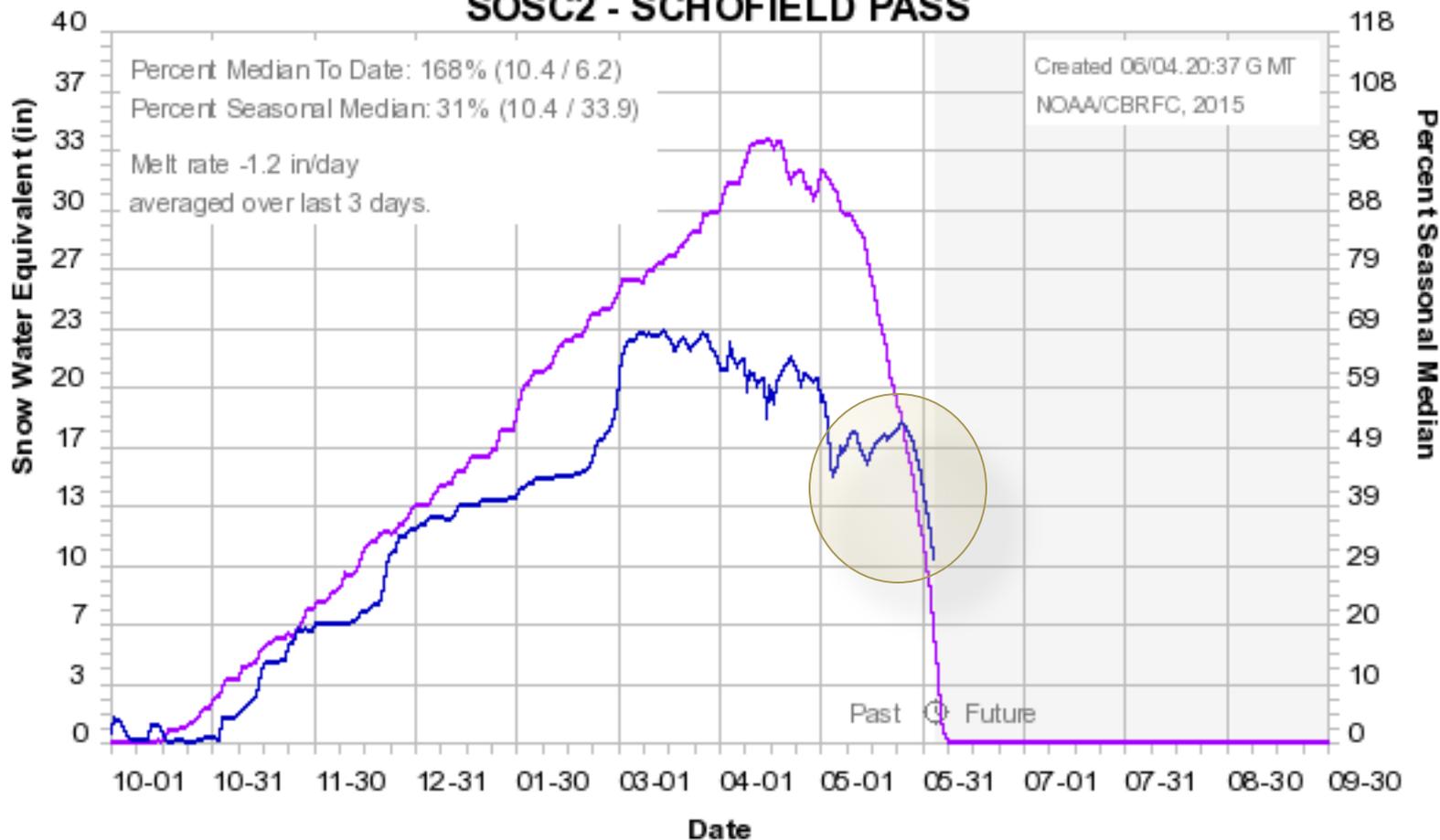
Monthly Min Temp Deviation for May 2015

(Averaged by Hydrologic Unit)



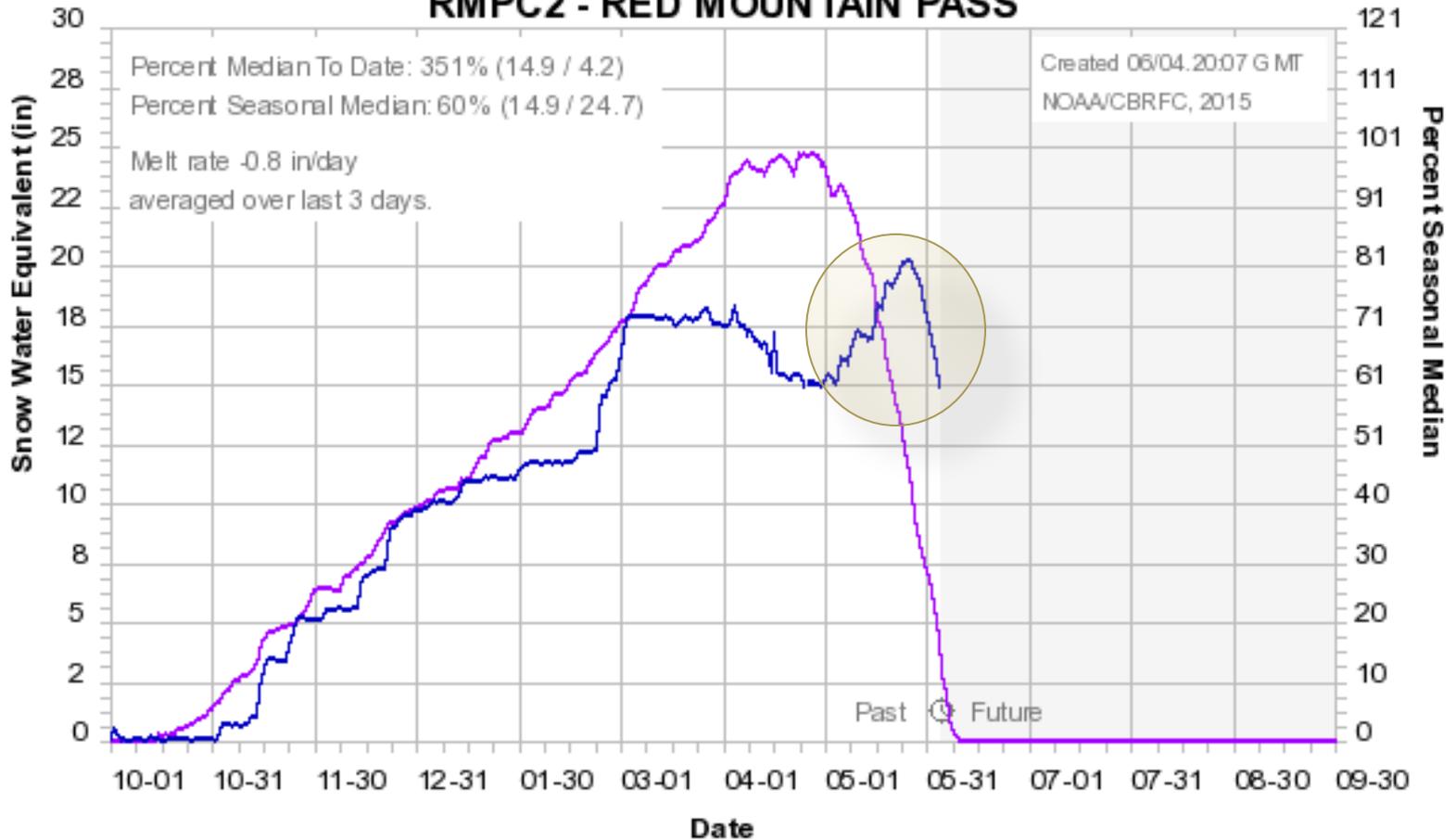
May Temperatures – Impact on Snowpack

Colorado Basin River Forecast Center SOSC2 - SCHOFIELD PASS



May Precipitation & Temperatures Impact on Snowpack

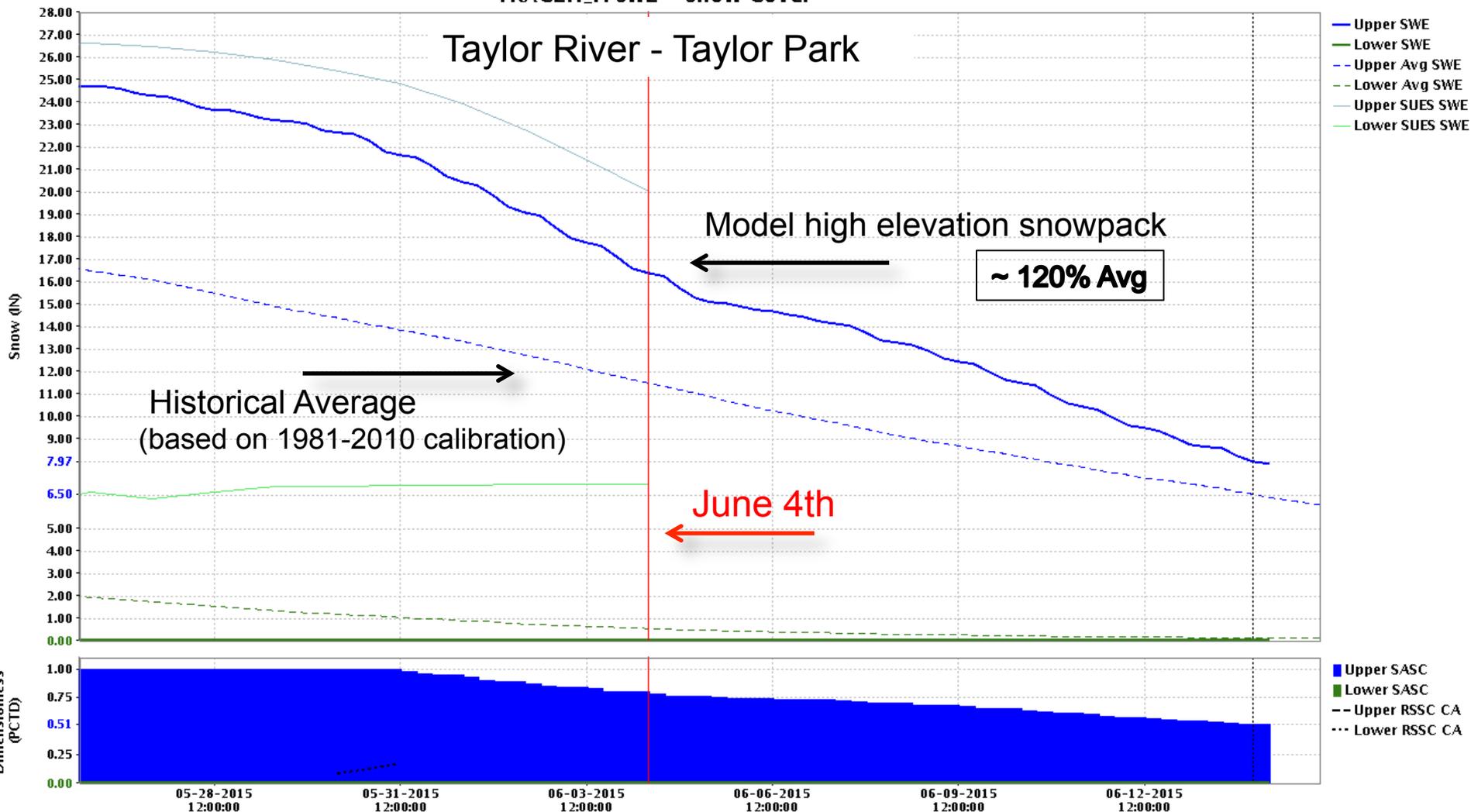
Colorado Basin River Forecast Center RMPC2 - RED MOUNTAIN PASS



May Temperatures – Impact on Snowpack

TRAC2H_F: SWE - Snow Cover

Taylor River - Taylor Park



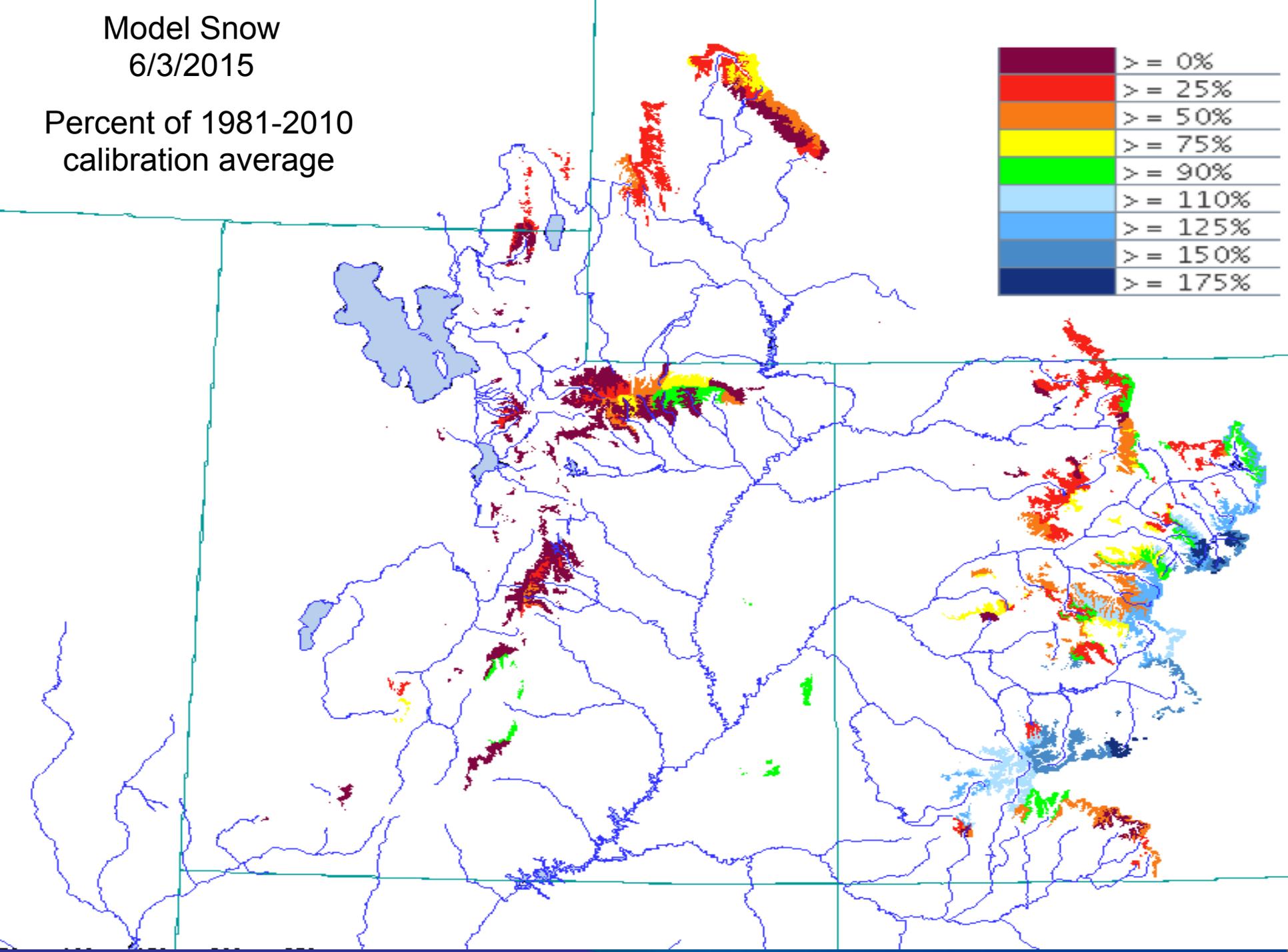
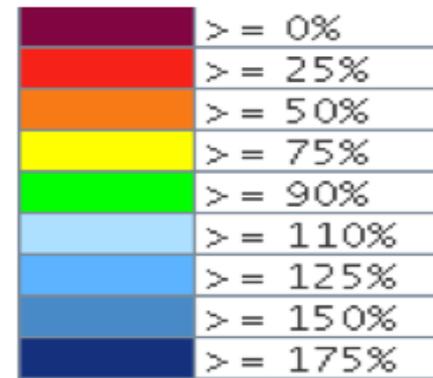
GUN_Approved_Forecast: [1] 06-04-2015 12:00:00 Current



Model Snow

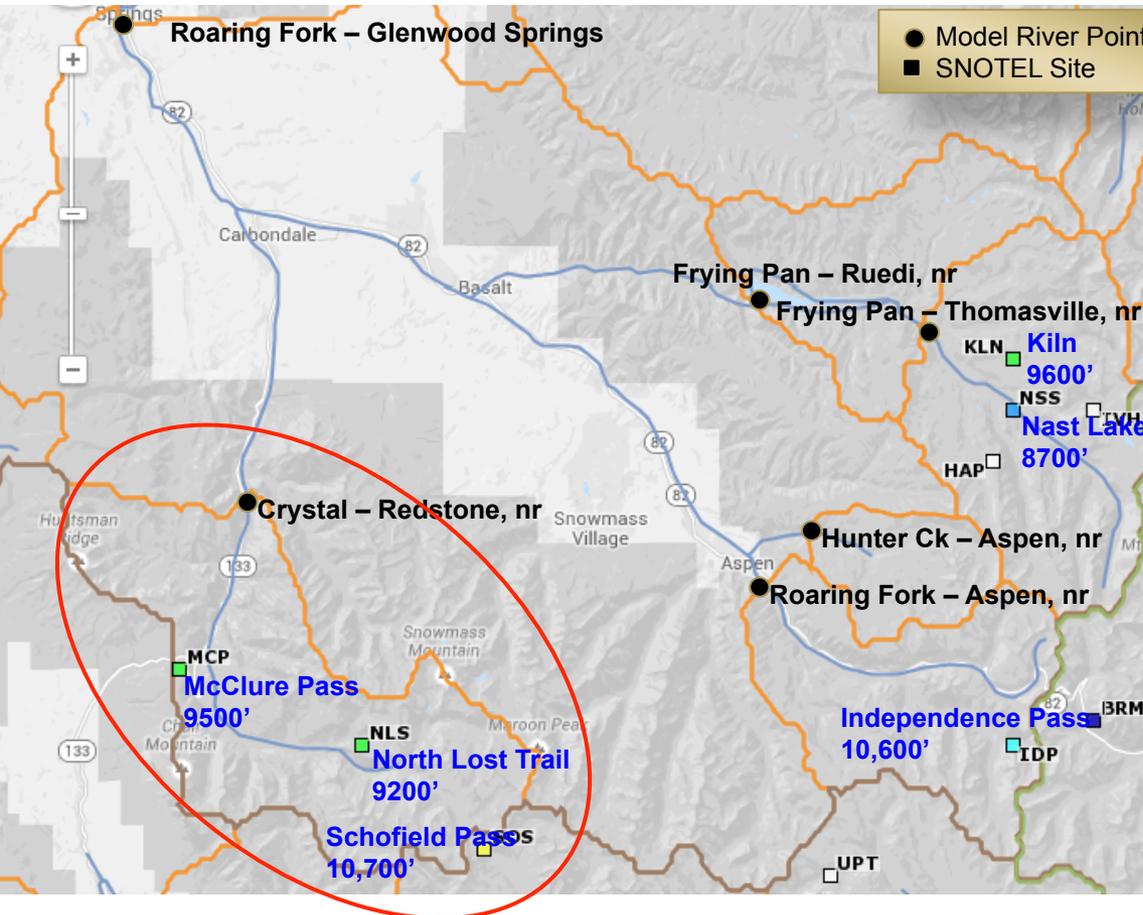
6/3/2015

Percent of 1981-2010
calibration average



SNOTEL Elevations vs. Flow Contribution

Roaring Fork River Basin



Crystal - Redstone

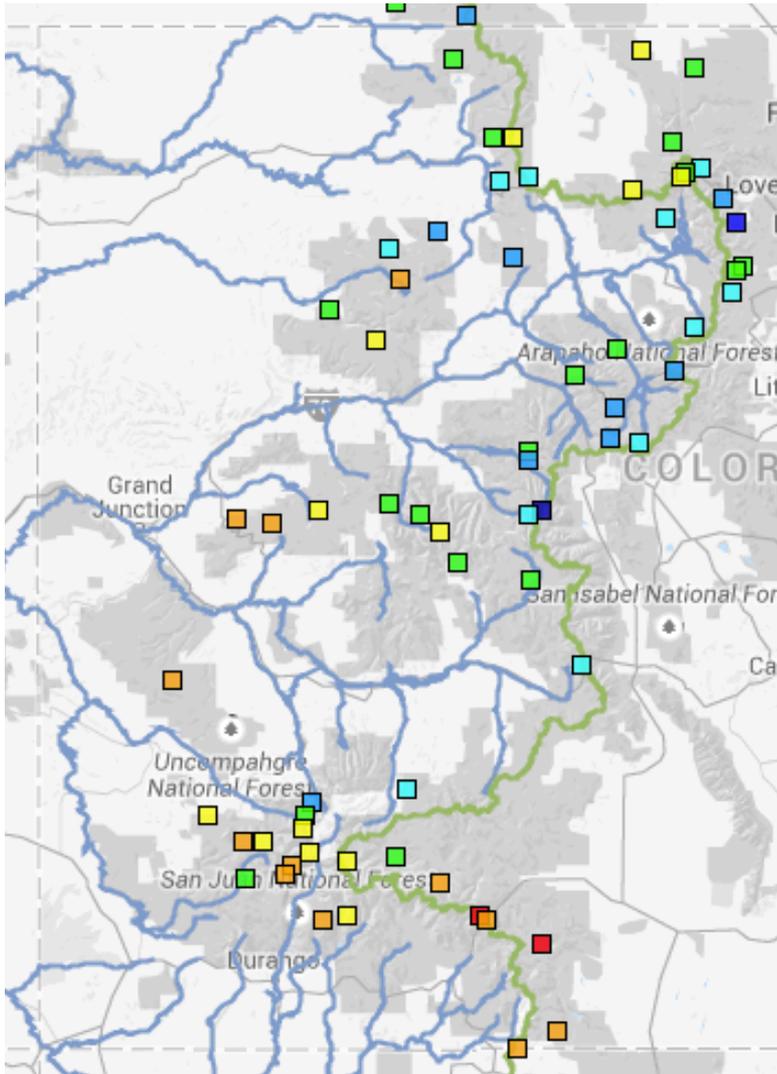
Modeled basin is broken into three elevation zones with stats as follows:

Elevation Band	% Total Area	% Flow Contribution
11,000' - 13,000'	33.5%	56%
9500' - 11,000'	33.5%	33%
7100' - 9500'	33%	11%

→ More than half of the flow comes from elevations above the highest SNOTEL station

SNOTEL Elevations vs. Flow Contribution

Colorado River Basin SNOTEL Sites within the state of Colorado



Colorado River Basin within Colorado

Modeled basin breakdown is as follows:

Elevation Band	% Total Area	% Flow Contribution (estimated)	% SNOTEL sites within band
>11,000'	16%	36%	16%
9500' - 11,000'	31%	41%	58%
<9500'	53%	23%	26%

→ There are no SNOTELs above 11,600', so the highest area is poorly represented.

May Weather – Forecast Impacts

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- **Great Basin**
 - Record May Precipitation several areas (Logan, Cedar City, Bryce Canyon)
 - Some May 1st April-July volume forecasts already exceeded
 - Forecast Increases of up to nearly 90% over May 1st forecasts
- **Green/ Yampa Basin**
 - Record May Precipitation several areas (Kemmerer, Fontenelle, Indian Creek)
 - Local inflow between Fontenelle and F.G. was 147% of May 1 forecast
 - High May streamflow volumes upper Yampa 125-175% of average
 - Forecast Increases 20-50% in general over May 1st forecasts
- **San Juan Basin**
 - Over 10 inches of precipitation in some areas
 - Navajo May 1st April-July inflow forecast already exceeded
 - Forecast Increases 30-90% over May 1st forecasts



May Weather – Forecast Impacts

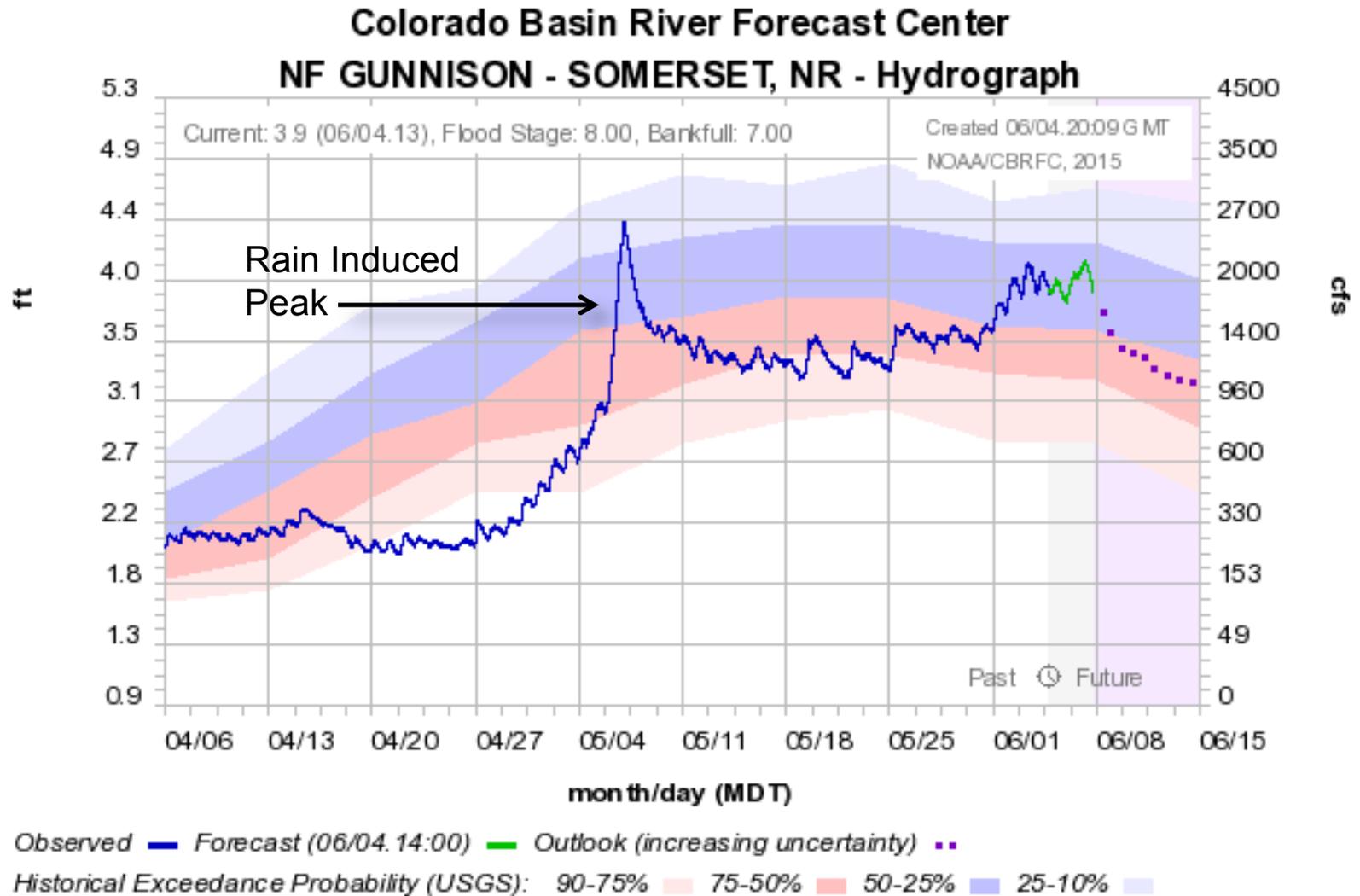
18

- **Gunnison / Dolores Basins**
 - Significant rain event early May – resulted in significant peaks (North Fork)
 - McPhee May 1st inflow forecast exceeded in early June
 - Forecast Increases of 20-70% over May 1st forecasts
- **Duchesne Basin**
 - Some sites already exceeded the May 1st April-July forecast volume.
 - Forecast Increases 25-95 % over May 1st forecasts
- **Lake Powell**
 - Largest ever forecast increase between May 1st and June 1st
 - Forecast increase 2 million acre-feet (2nd was 1.4 million acre-feet)
- **Everywhere**
 - Preservation of remaining high elevation snowpack
 - Reduced water demands / less diversions



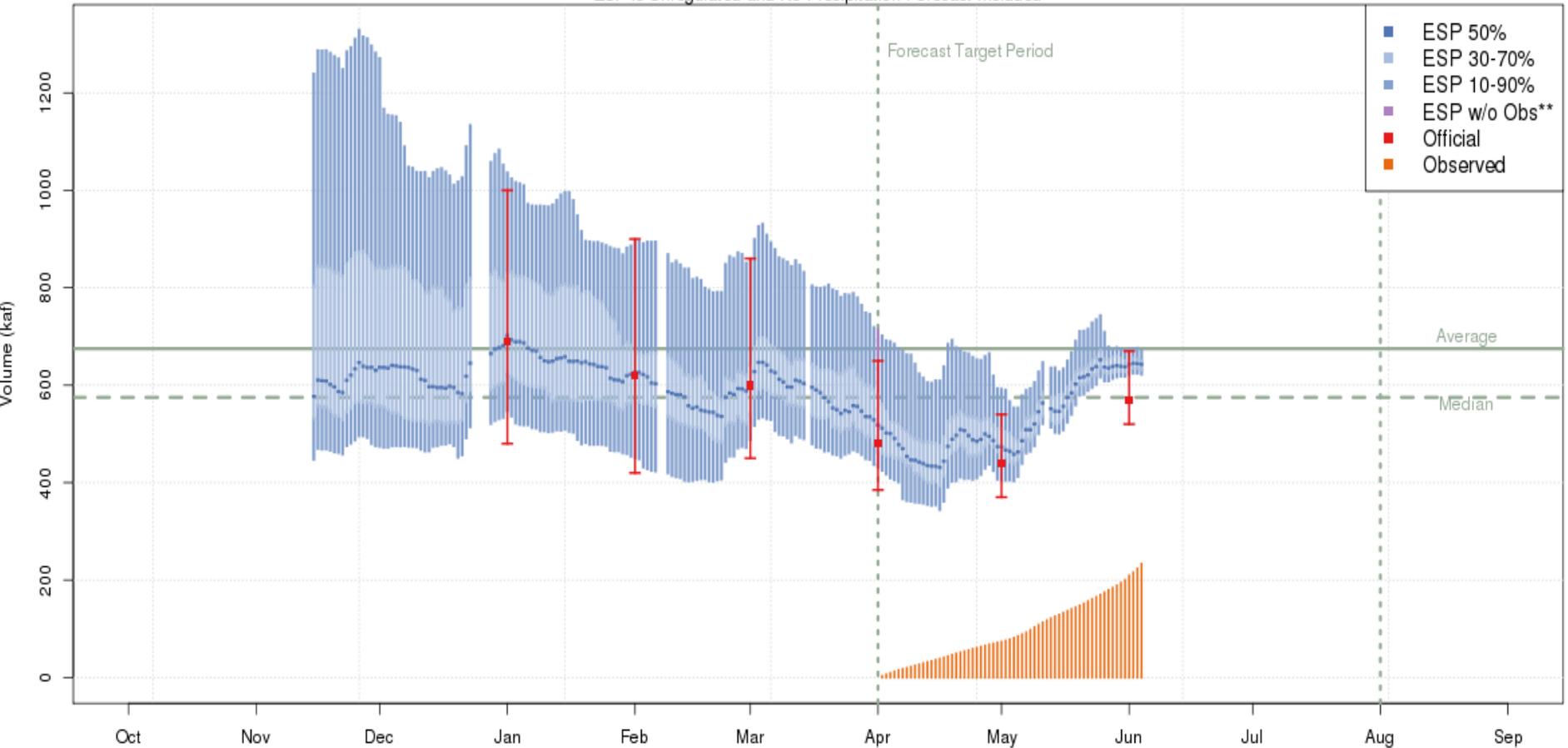
Heavy Rain – Impact on Stream flow/Peaks

19



May Precipitation– Impact on Water Supply

Gunnison - Blue Mesa Res (BMDC2)
2015-06-01 Apr-Jul Official 50% Forecast: 570 kaf (84% of average)
ESP is Unregulated and No Precipitation Forecast Included



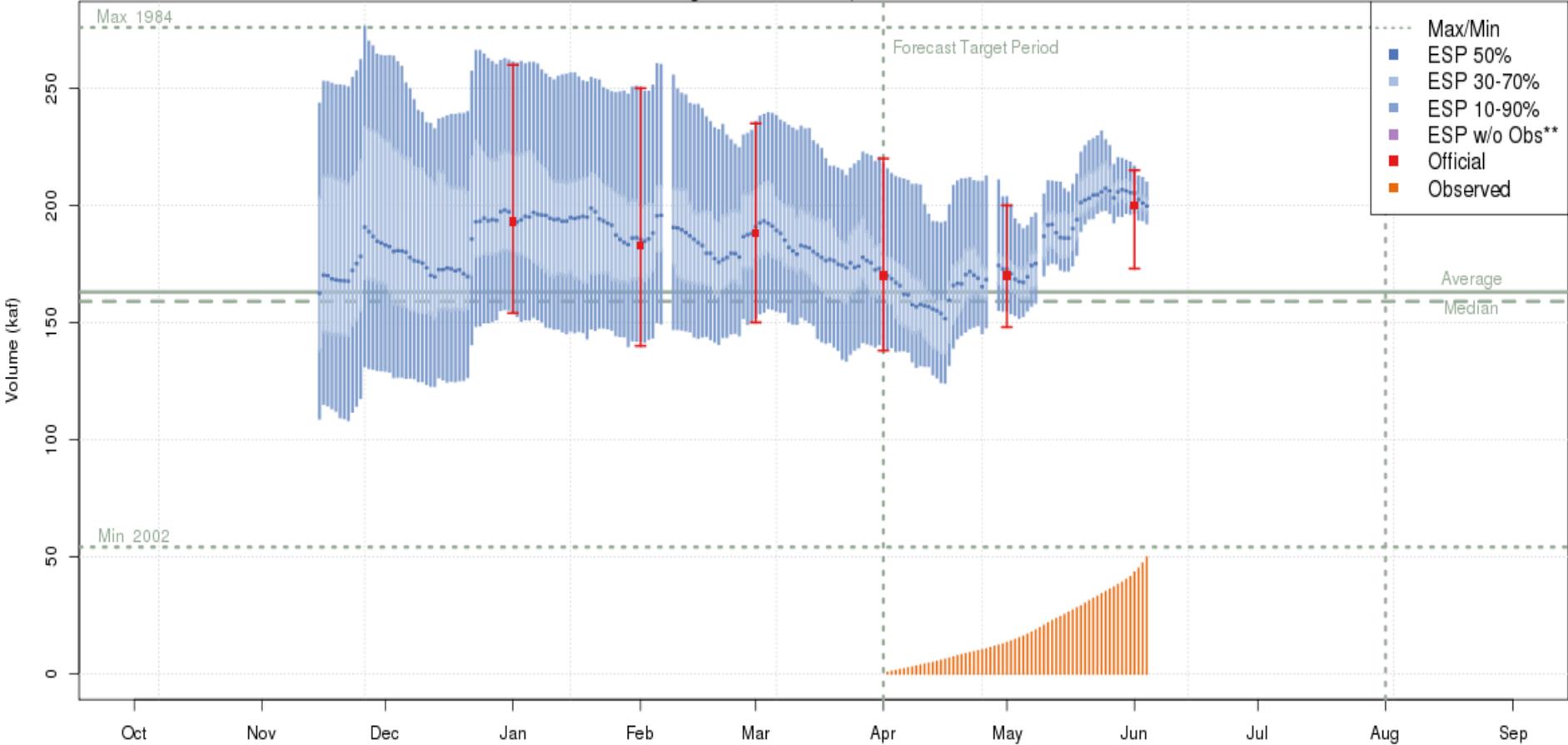
The latest (2015-06-04) 50% ESP forecast is 643 kaf.
Plot Created 2015-06-04 14:02:29, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

May Precipitation– Impact on Water Supply

Blue - Dillon Res (DIRC2)

2015-06-01 Apr-Jul Official 50% Forecast: 200 kaf (123% of average)

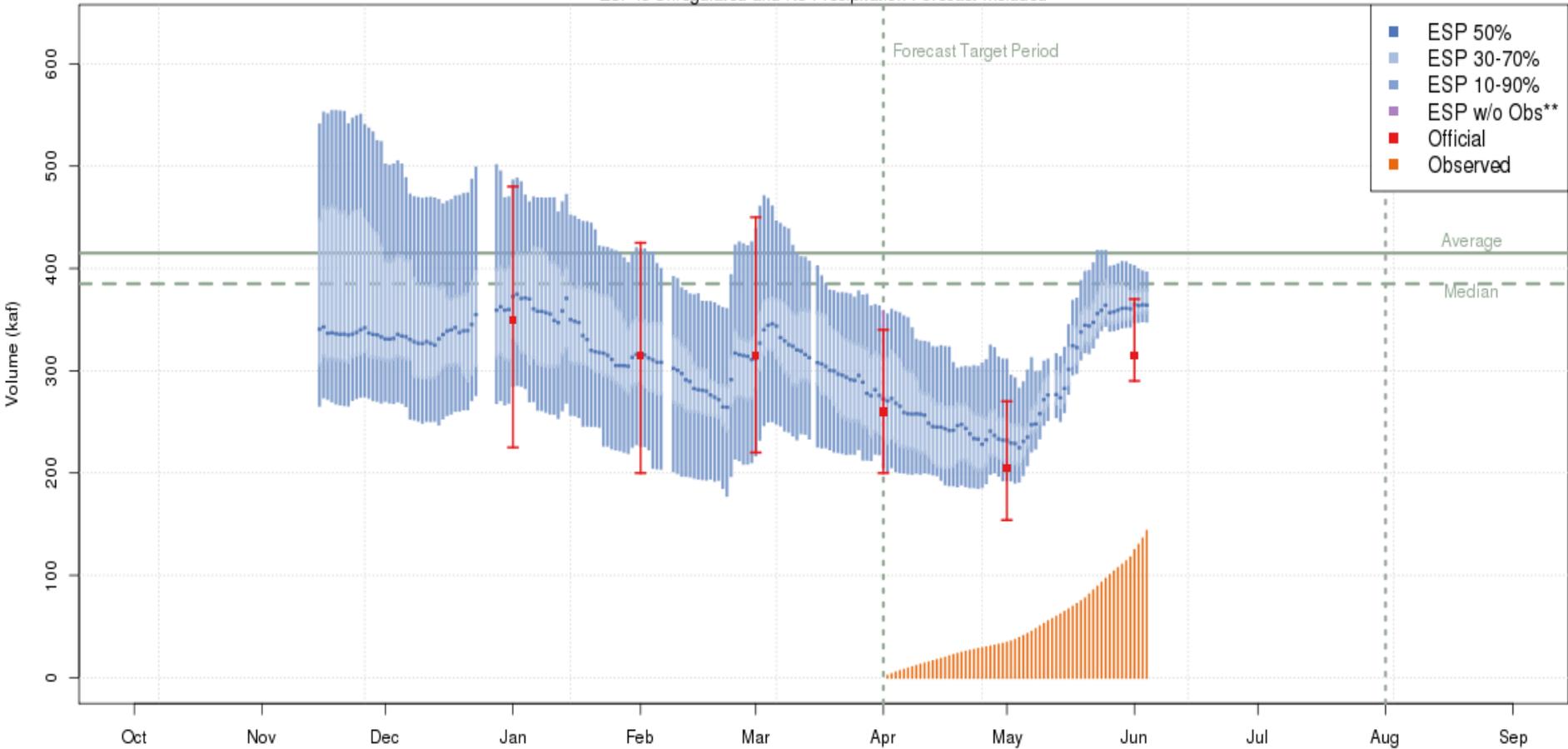
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 200 kaf.
 Plot Created 2015-06-04 14:08:50, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.

May Precipitation– Impact on Water Supply

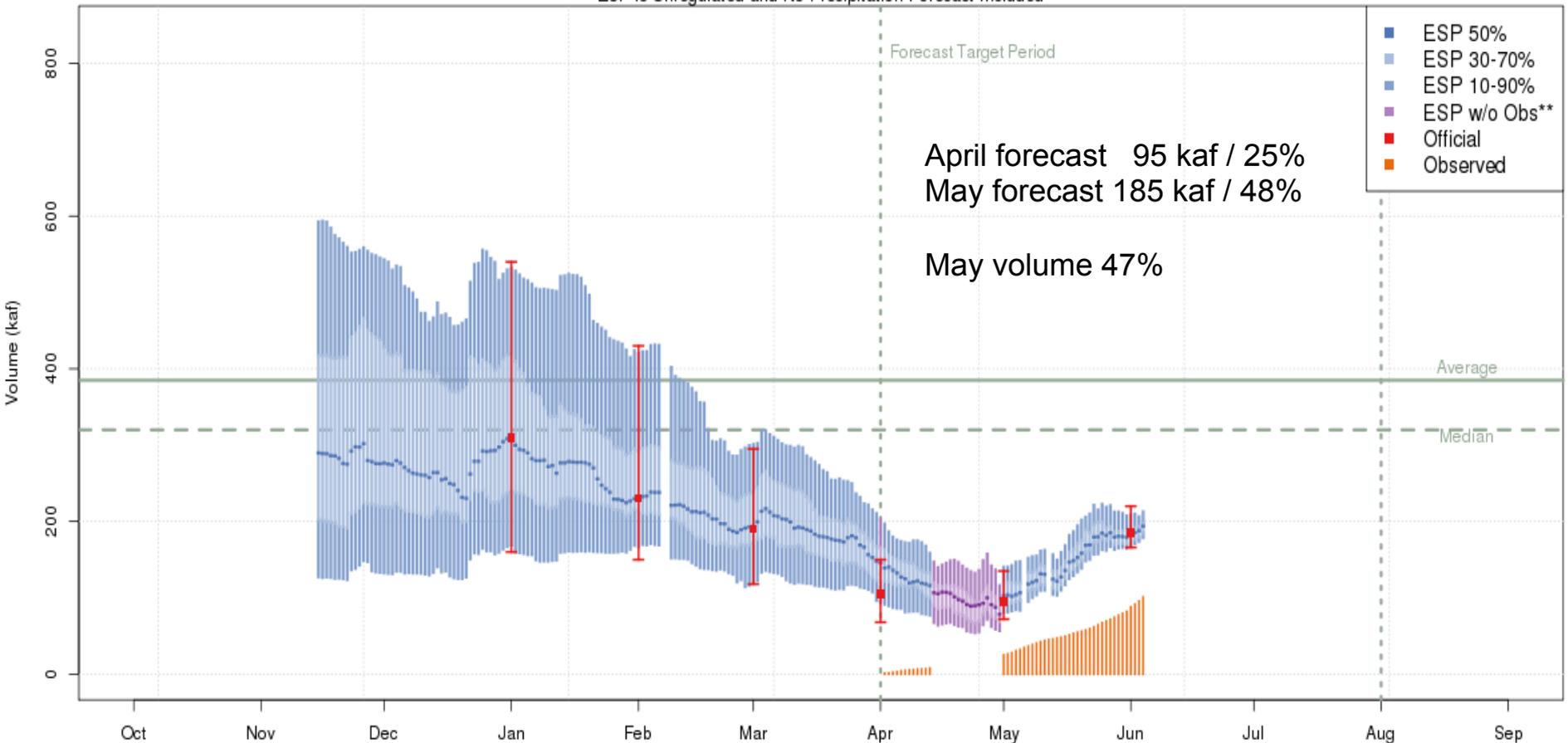
Animas - Durango (DRGC2)
2015-06-01 Apr-Jul Official 50% Forecast: 315 kaf (76% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 364 kaf.
Plot Created 2015-06-04 14:09:58, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

May Precipitation– Impact on Water Supply

Duchesne - Randlett- Nr (DURU1)
 2015-06-01 Apr-Jul Official 50% Forecast: 185 kaf (48% of average)
 ESP is Unregulated and No Precipitation Forecast Included



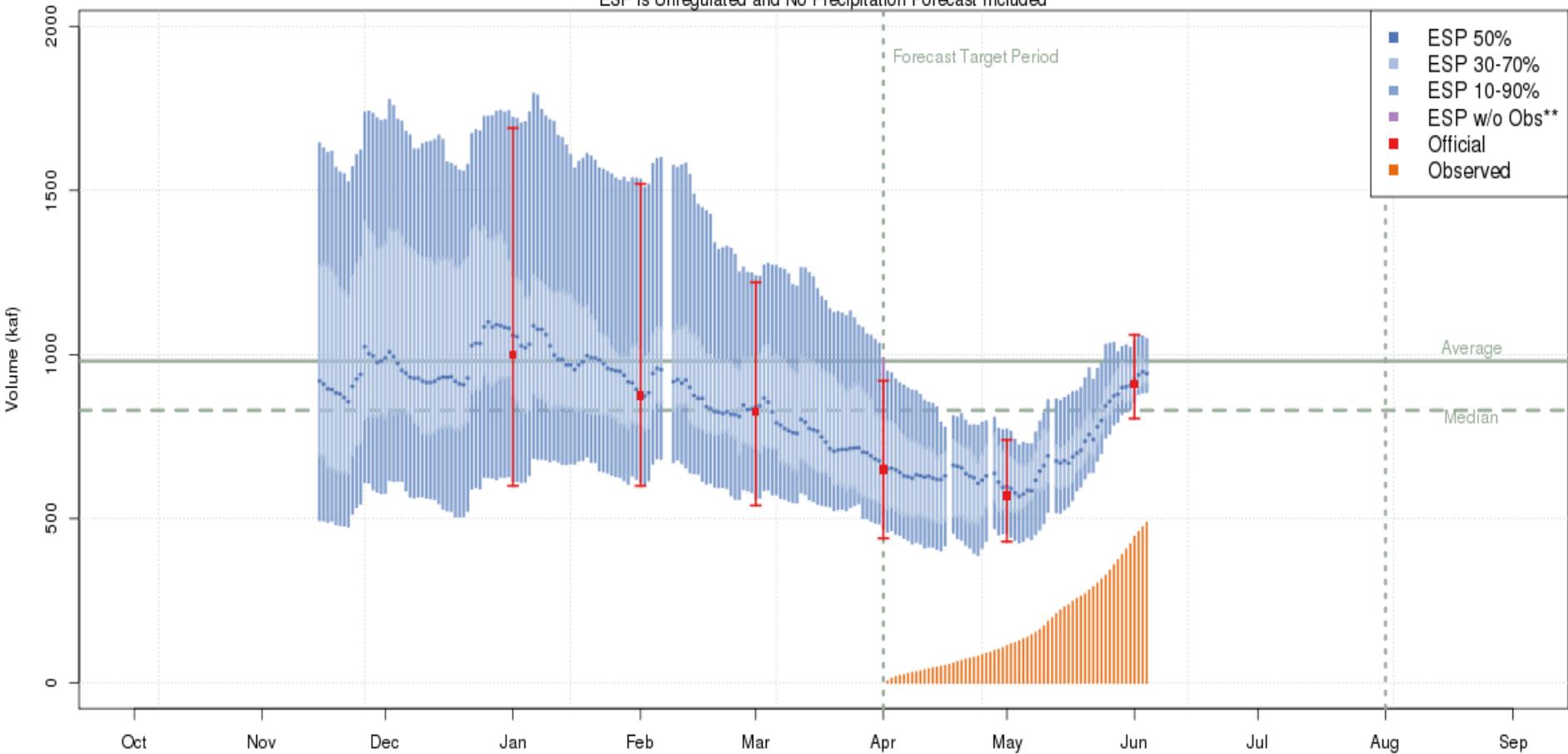
The latest (2015-06-04) 50% ESP forecast is 194 kaf.

Plot Created 2015-06-04 14:10:15, NOAA / NWS / CBRFC

**Purple ESP forecasts do not include observed and are not total runoff.

May Precipitation– Impact on Water Supply

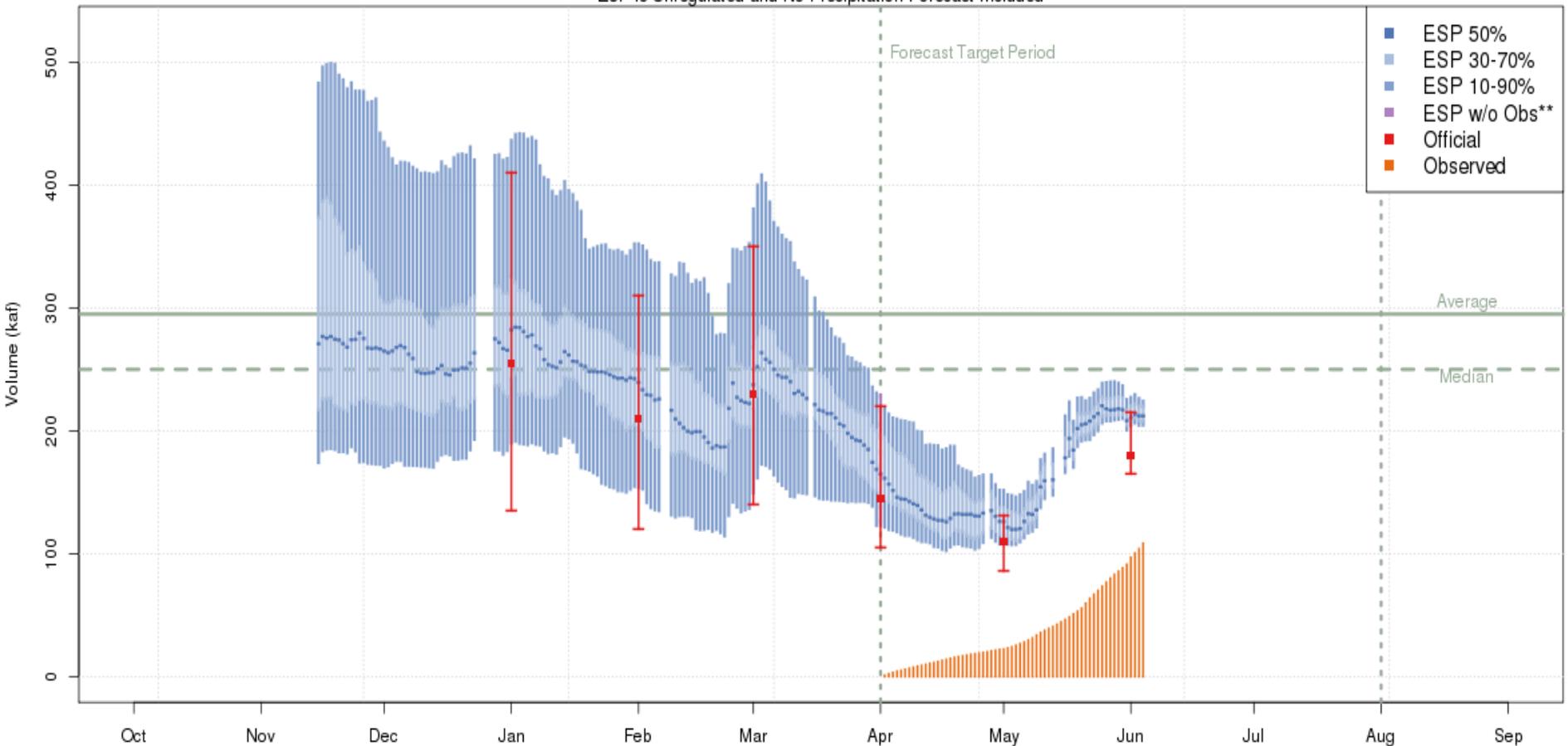
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1)
2015-06-01 Apr-Jul Official 50% Forecast: 910 kaf (93% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 942 kaf.
Plot Created 2015-06-04 14:16:41, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

May Precipitation– Impact on Water Supply

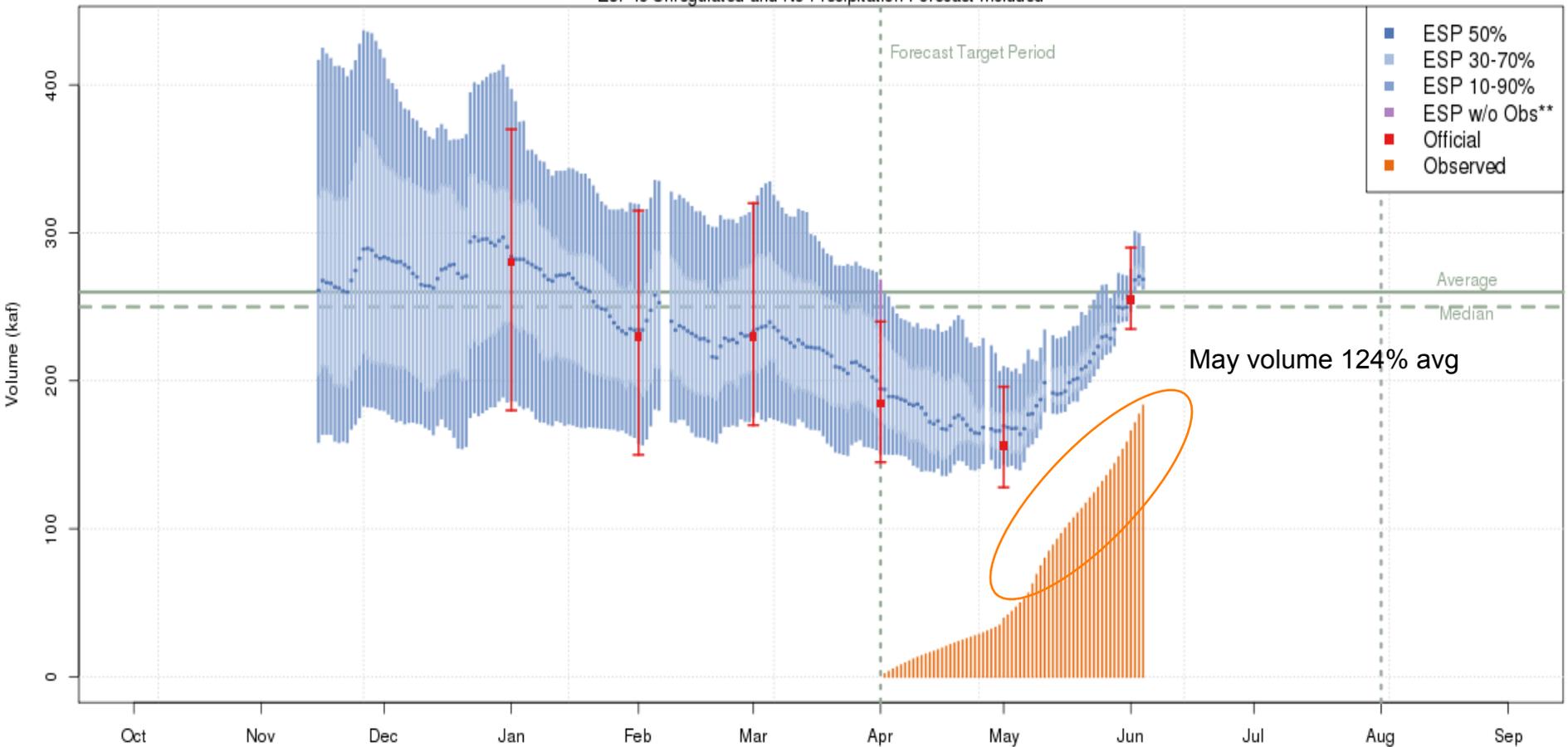
Dolores - Mcphee Res (MPHC2)
2015-06-01 Apr-Jul Official 50% Forecast: 180 kaf (61% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 212 kaf.
Plot Created 2015-06-04 14:25:00, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

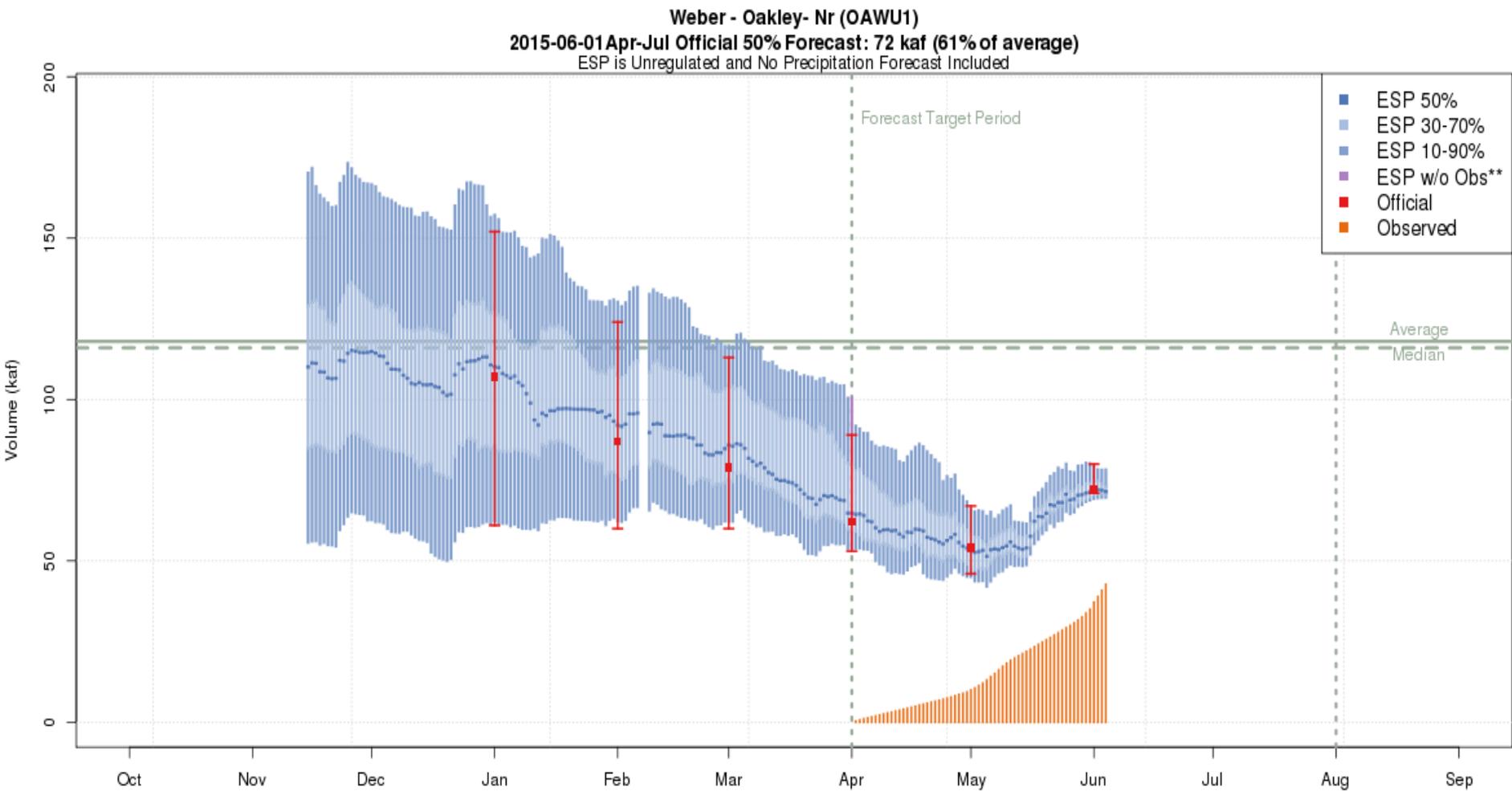
May Precipitation– Impact on Water Supply

Yampa - Steamboat Springs (STMC2)
2015-06-01 Apr-Jul Official 50% Forecast: 255 kaf (98% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 269 kaf.
Plot Created 2015-06-04 14:36:19, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

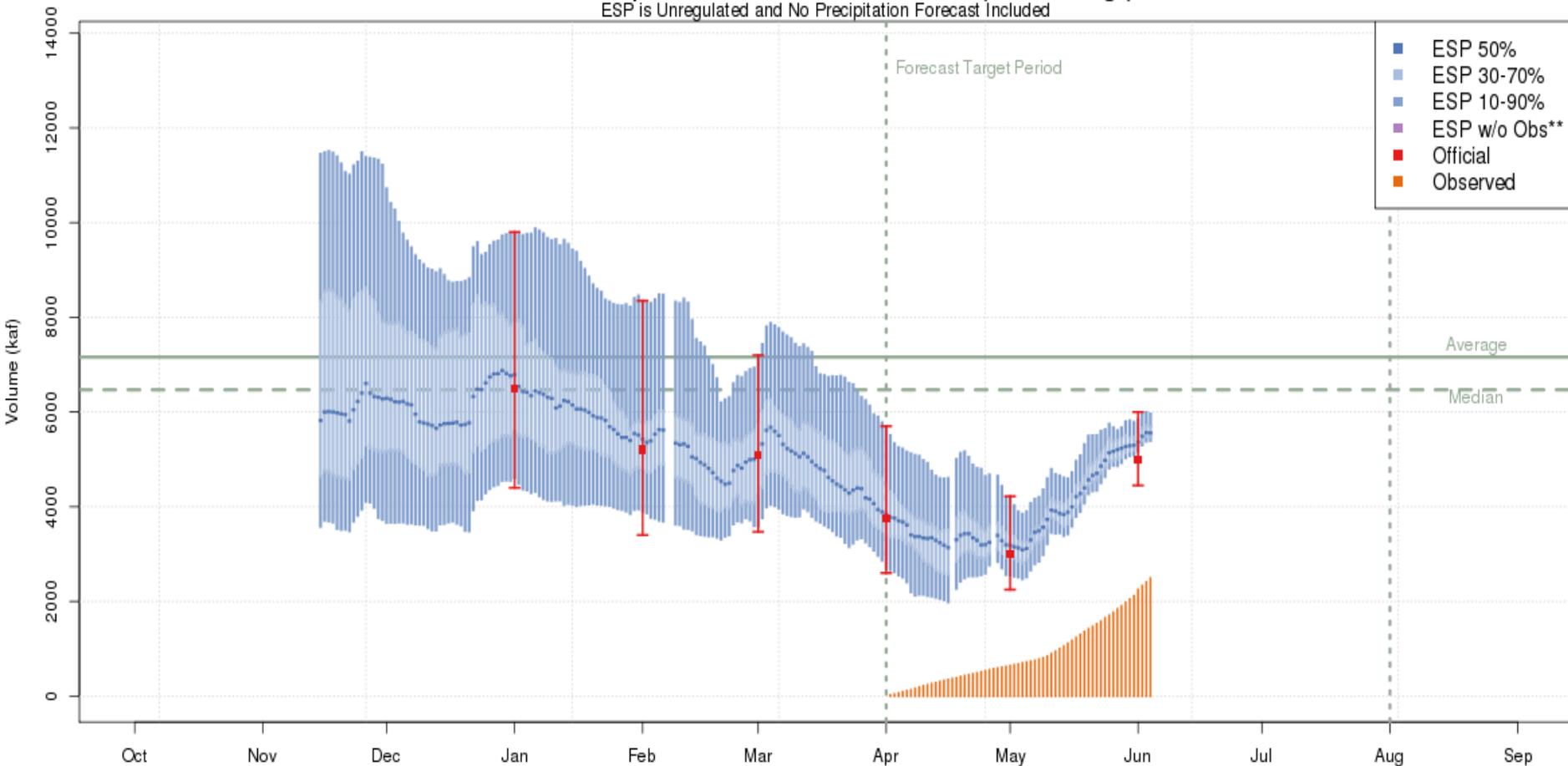
May Precipitation– Impact on Water Supply



The latest (2015-06-04) 50% ESP forecast is 71 kaf.
Plot Created 2015-06-04 14:26:40, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

May Precipitation– Impact on Water Supply

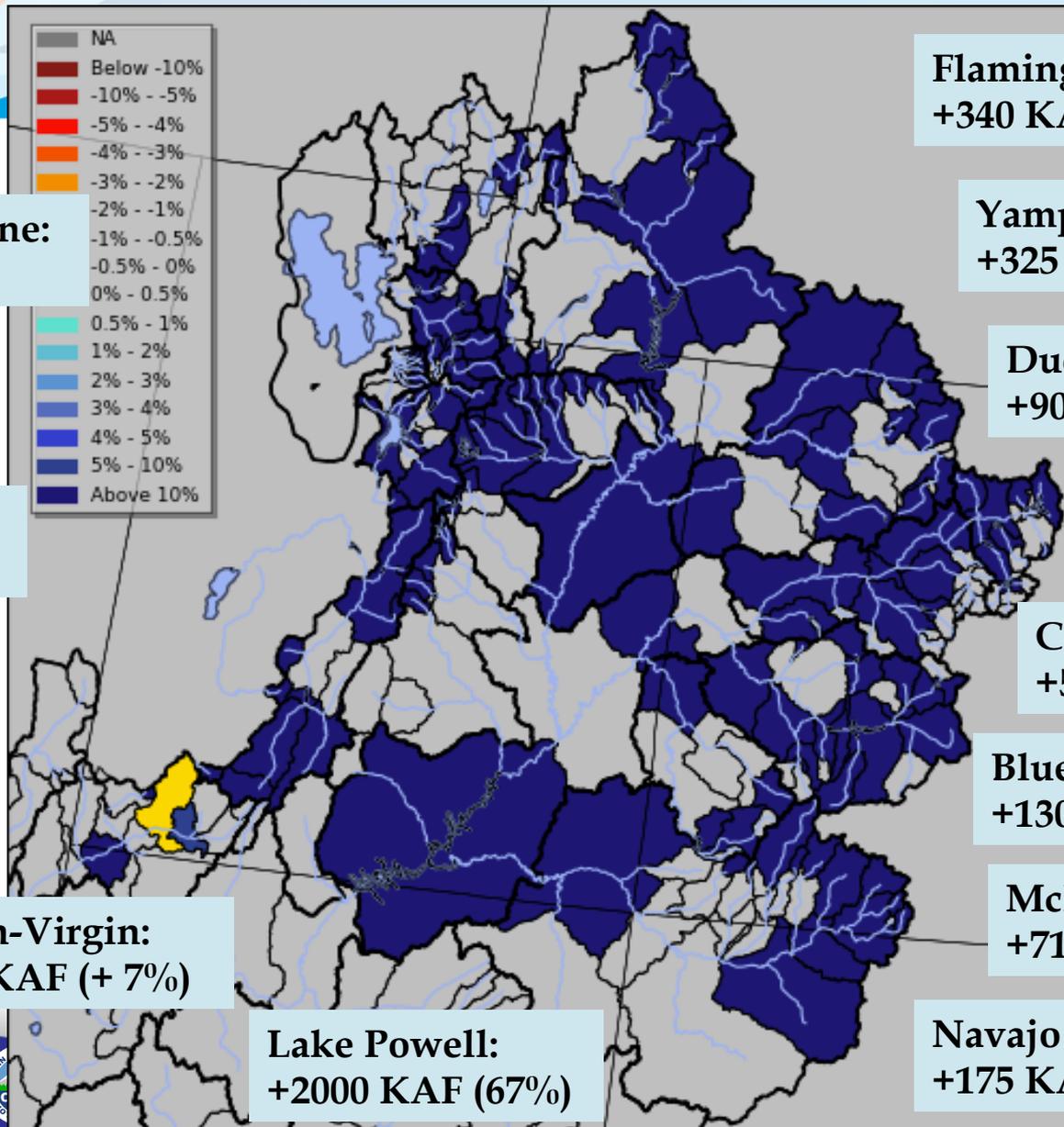
Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
2015-06-01 Apr-Jul Official 50% Forecast: 5000 kaf (70% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2015-06-04) 50% ESP forecast is 5559 kaf.
Plot Created 2015-06-04 14:15:35, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

June 1st Water Supply Forecasts Change from May 1st Forecasts

Volume Change KAF (% of May 1st volume increase)



Flaming Gorge:
+340 KAF (+ 58%)

Yampa-Deerlodge:
+325 KAF (+ 52%)

Duchesne-Randlett:
+90 KAF (+ 95%)

Colorado-Cameo:
+510 KAF (+ 32%)

Blue Mesa:
+130 KAF (+ 30%)

McPhee Res:
+71 KAF (+ 65%)

Navajo Res:
+175 KAF (+ 76%)

Lake Powell:
+2000 KAF (67%)

Virgin-Virgin:
+ 1.3 KAF (+ 7%)

Bear-UT/WY Stateline:
+14 KAF (+ 23%)

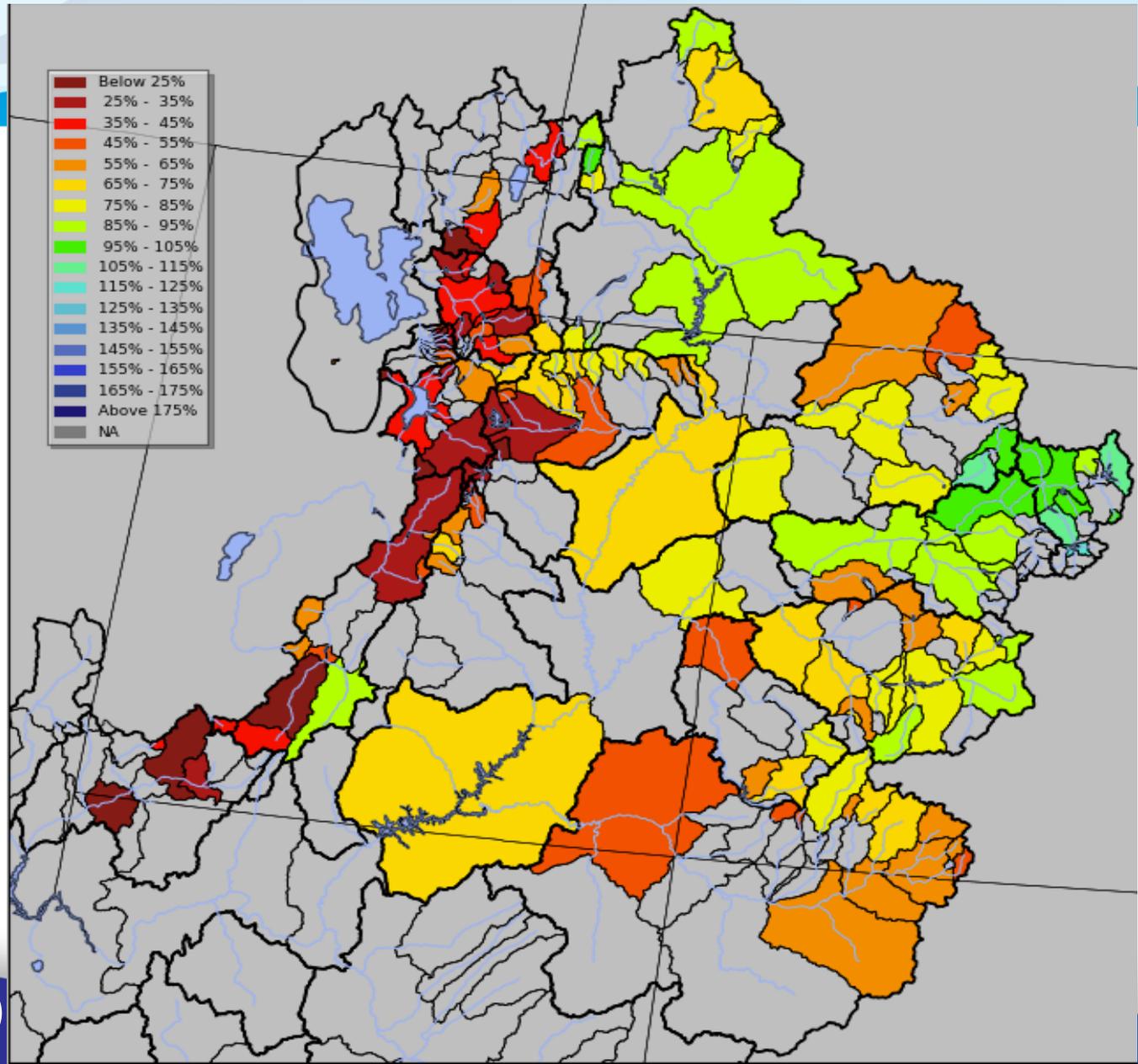
Ogden-Pineview:
+18 KAF (+ 86%)

Weber-Oakley:
+18 KAF (+ 33%)

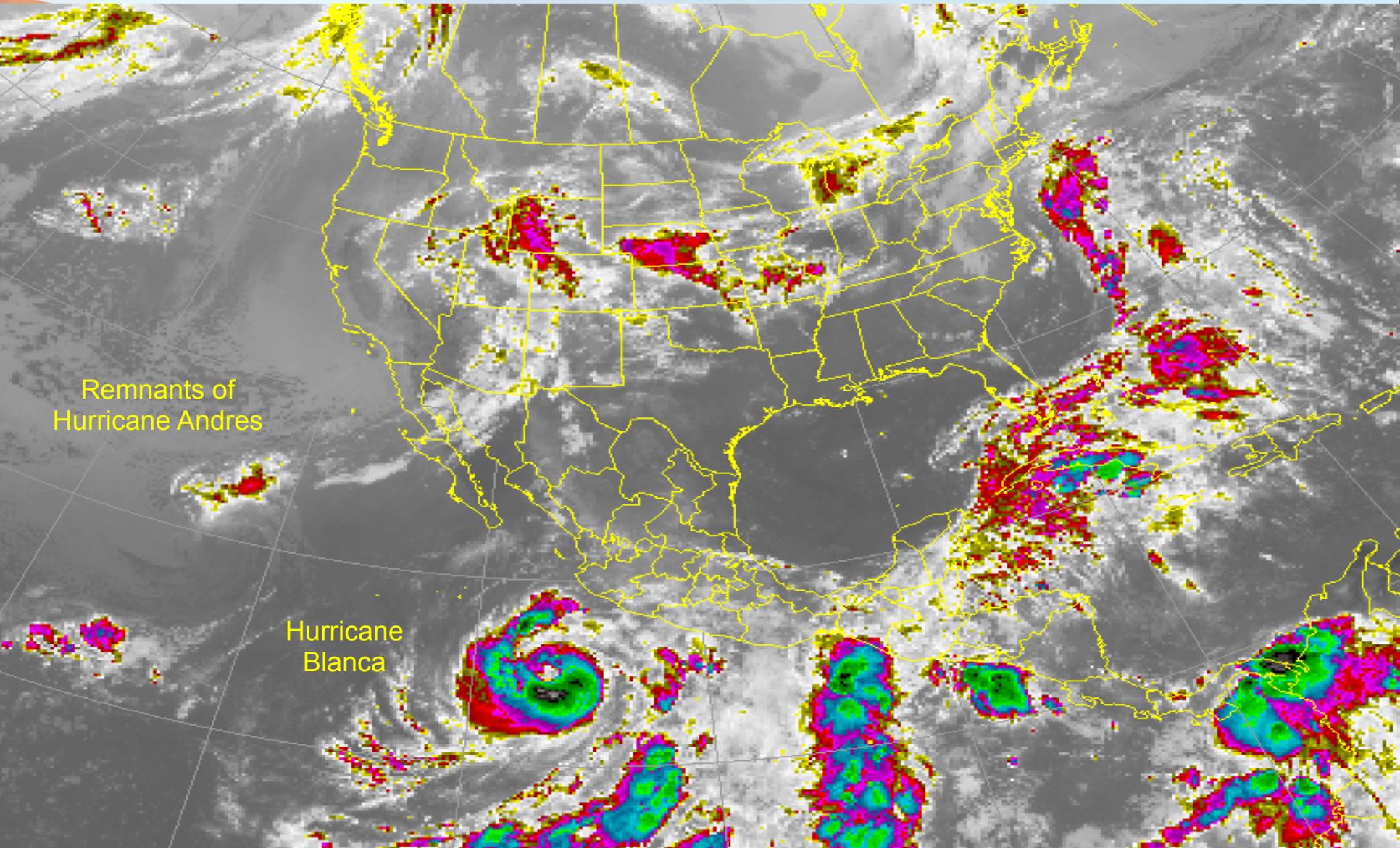
Provo-Woodland:
+17 KAF (+ 31%)



June 1st Water Supply Forecasts (% of Average)

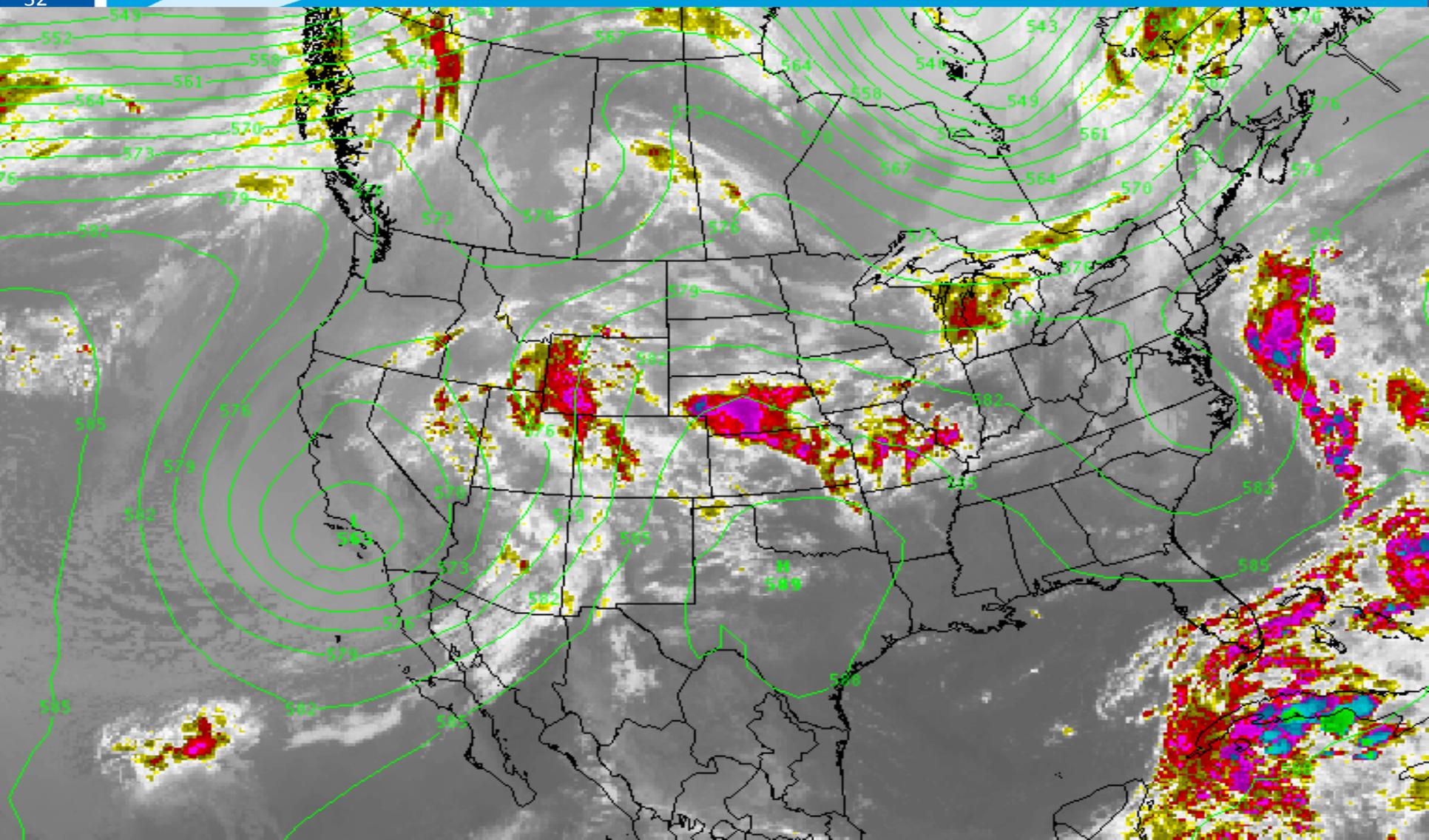


Upcoming Weather



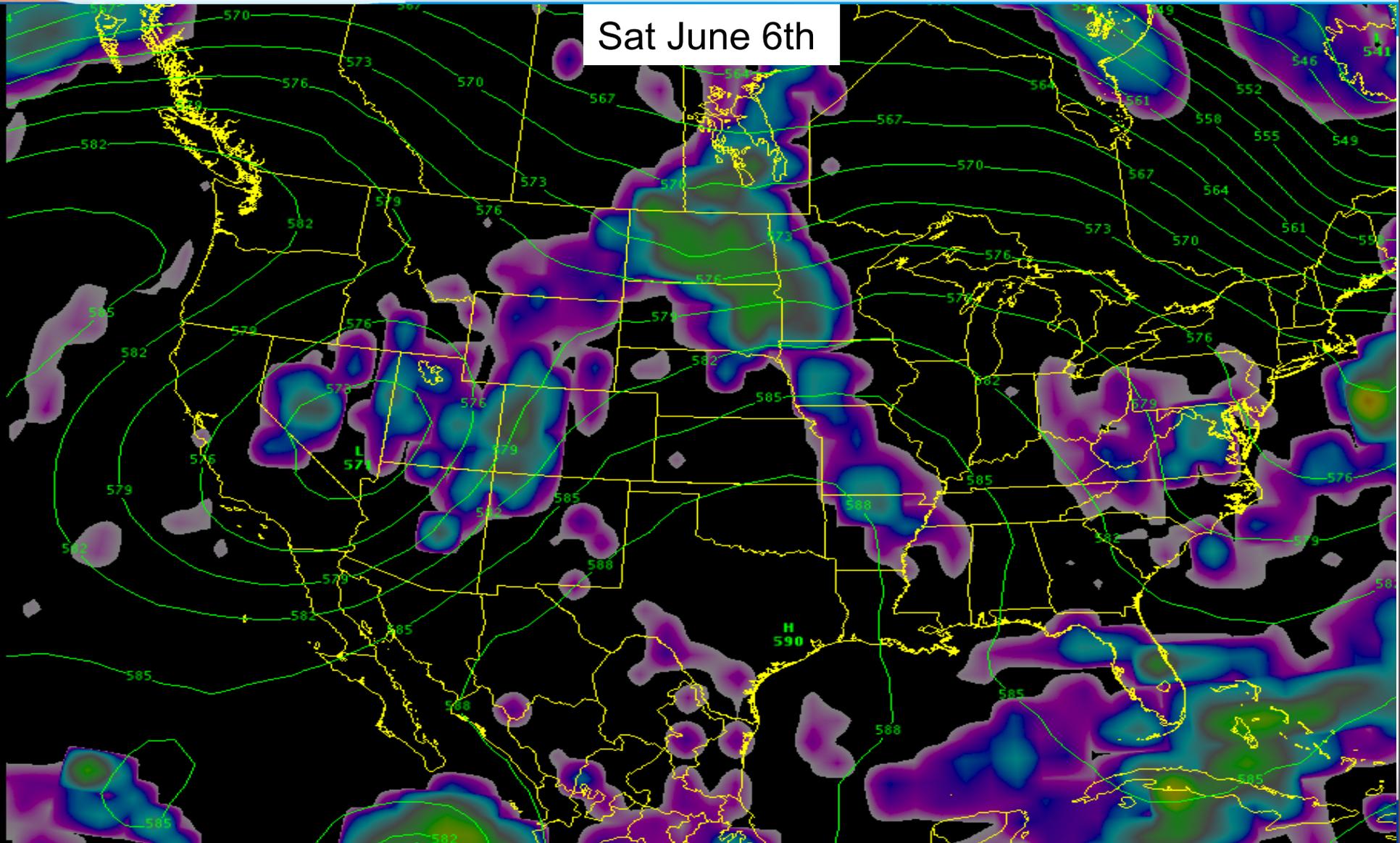
Upcoming Weather

32



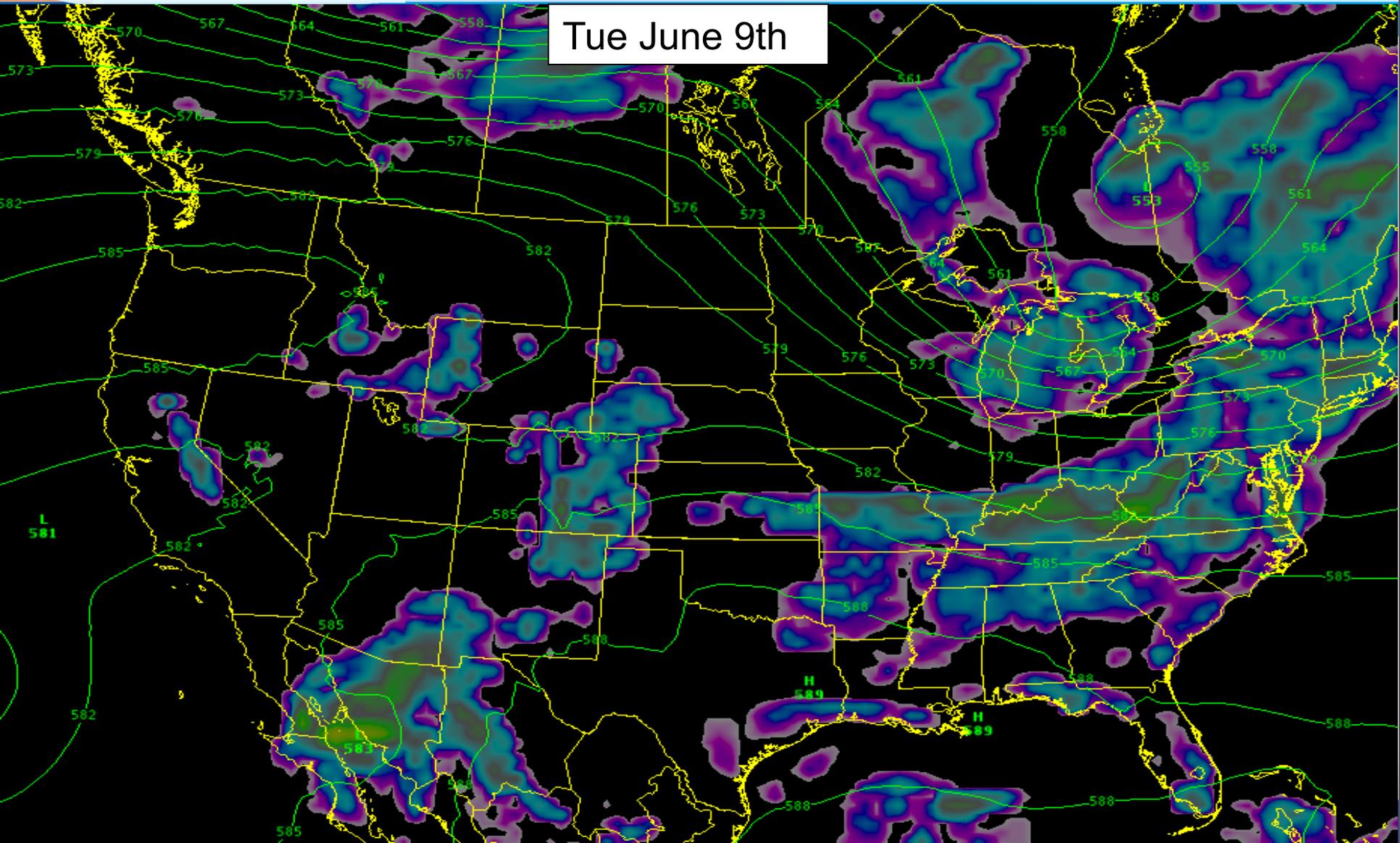
Upcoming Weather

Sat June 6th



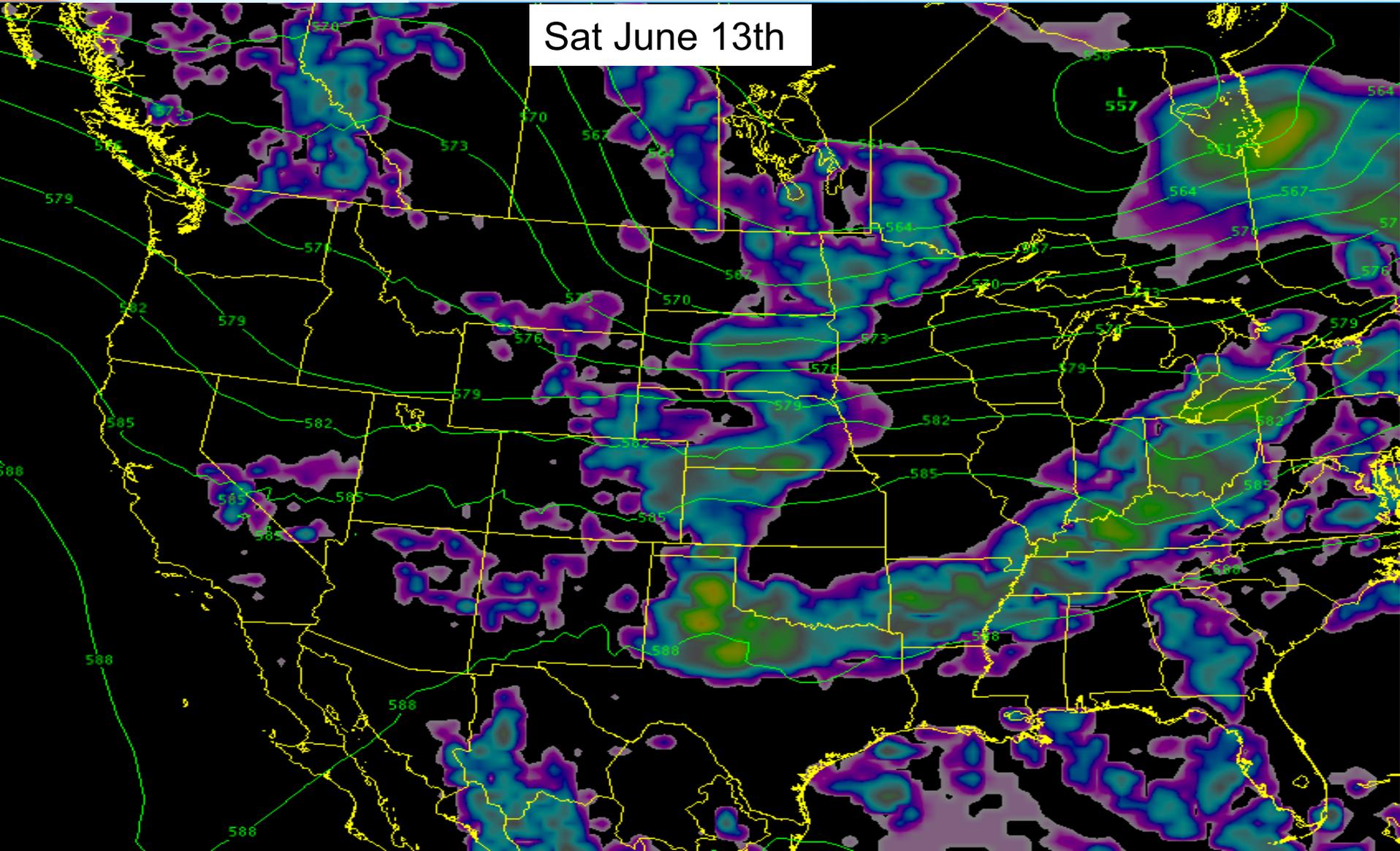
Upcoming Weather

Tue June 9th



Upcoming Weather

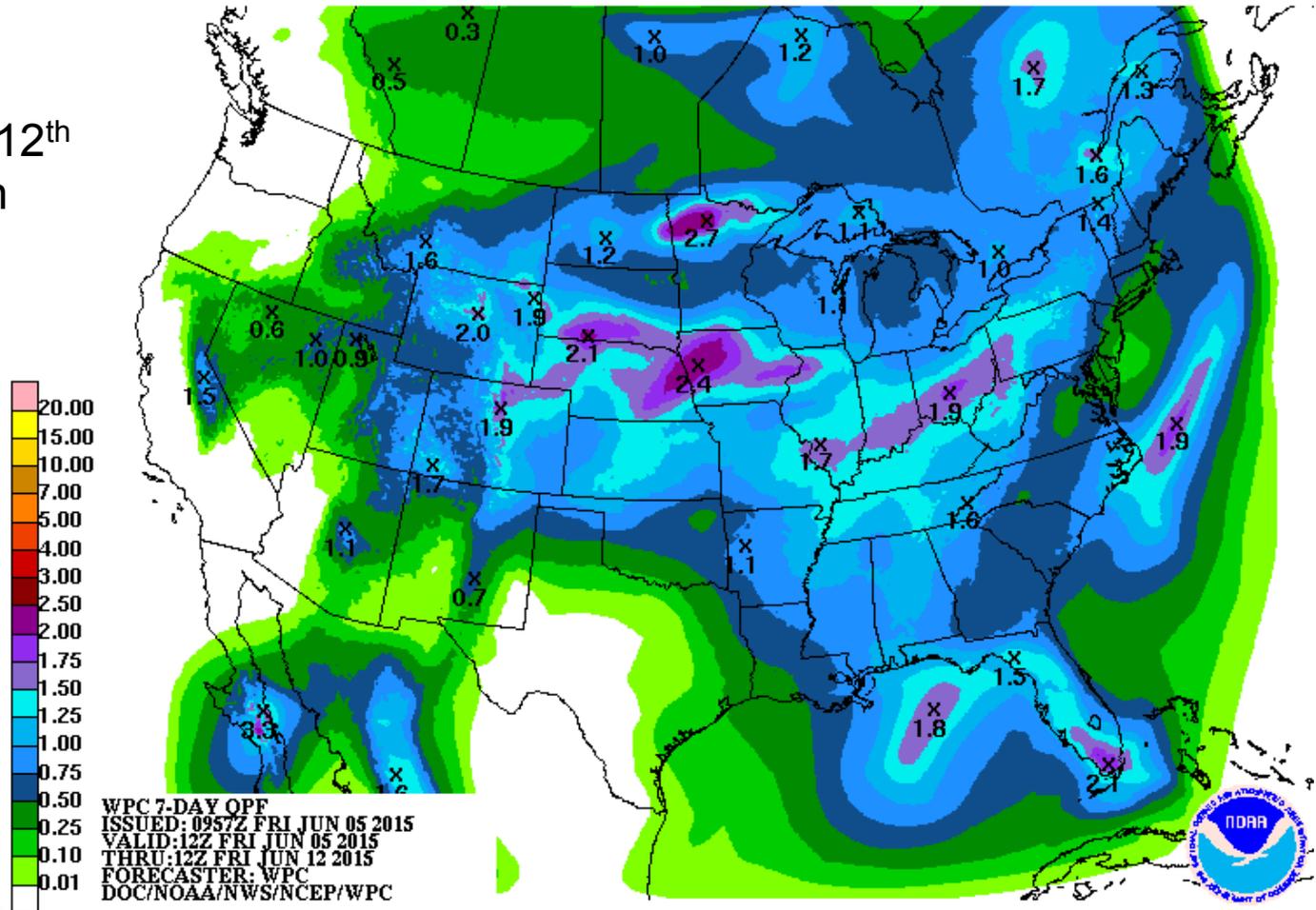
Sat June 13th



Upcoming Weather – Precipitation Forecast

36

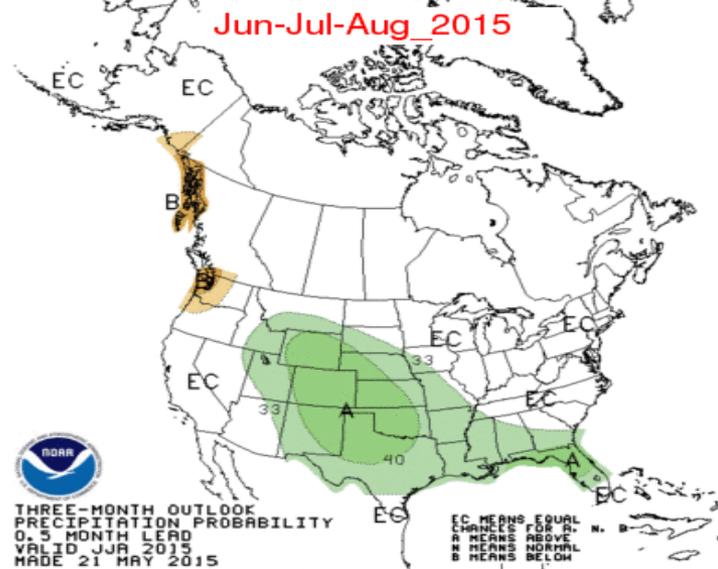
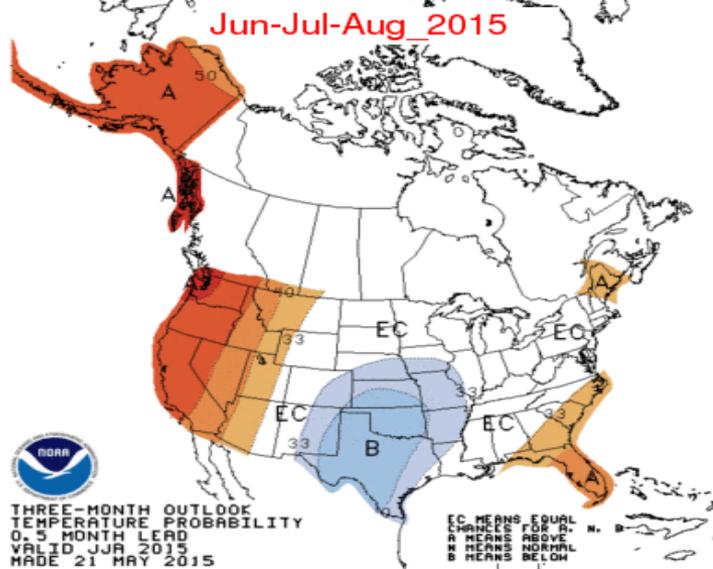
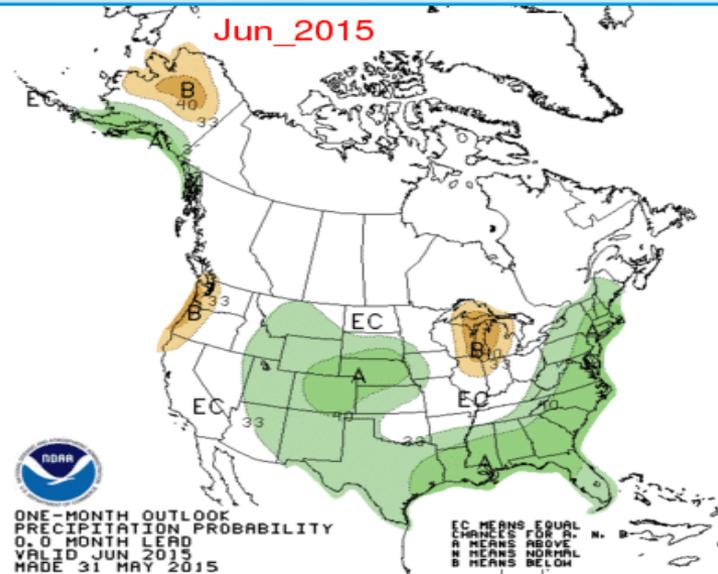
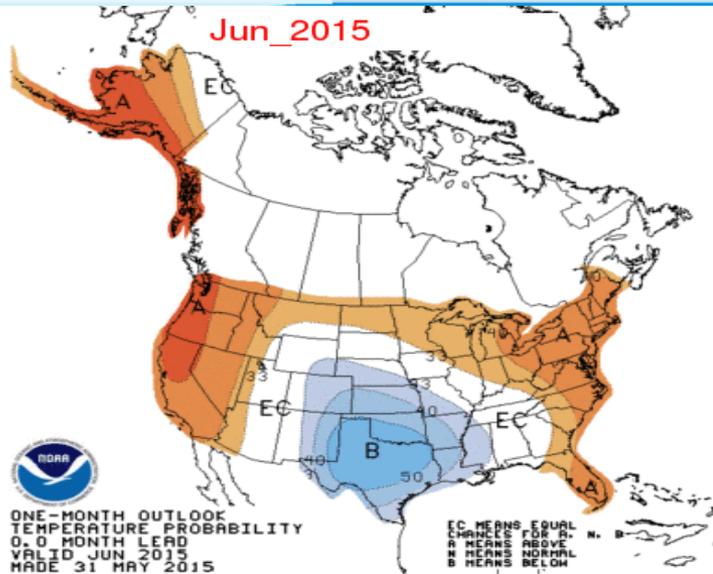
Jun 5th – June 12th
Precipitation



NOAA-NWS Weather Prediction Center

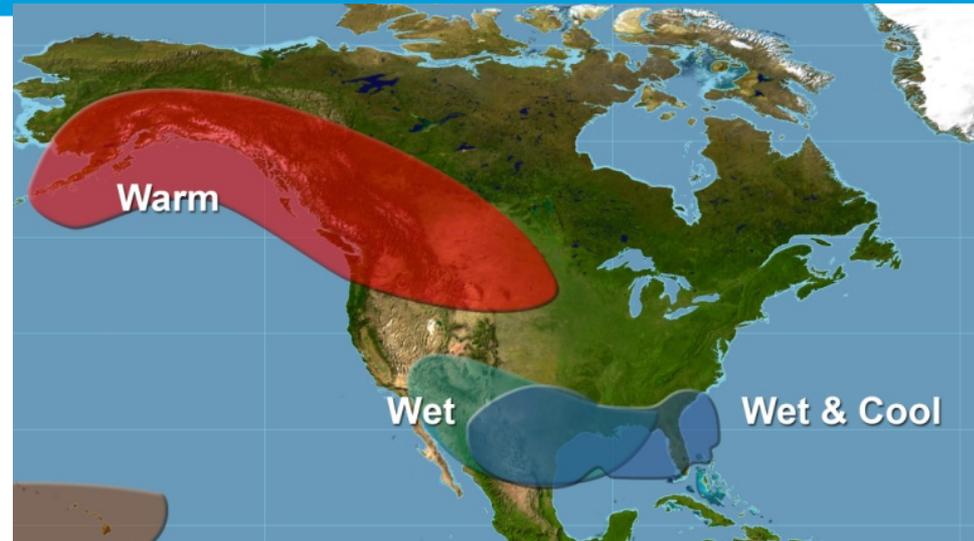


June & June-July CPC outlook

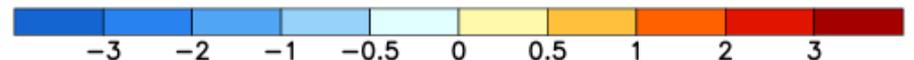
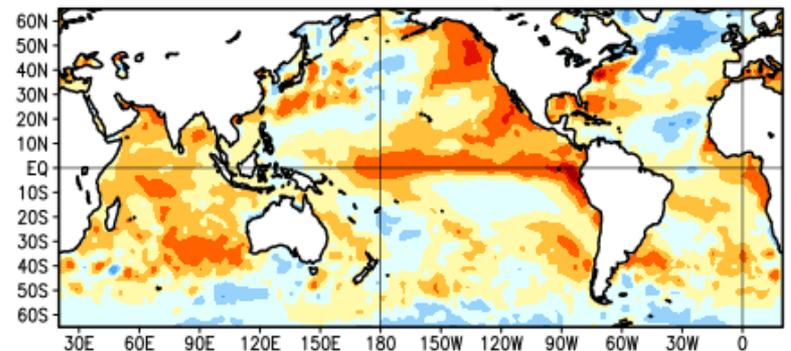


A Few Slides About ENSO

- Model results are showing a strong likelihood for El Nino conditions to persist throughout 2015, which could potentially increase chances for winter precipitation in the southern portion of the CBRFC region



Average SST Anomalies
26 APR 2015 – 23 MAY 2015



A Few Slides About ENSO

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- Impacts to our area typically seen during the winter months of December through February
 - Possible increased precipitation in Southern Arizona
 - Little correlation with other areas within the CBRFC region
- ENSO predictability this time of year is difficult for models – “Spring Predictability Barrier”
 - 90% chance current El Niño will continue through summer, and an 80% chance through 2015.
 - Warm waters, westerly Trade winds, and more rain in the equatorial Pacific – All signs of continued El Niño!

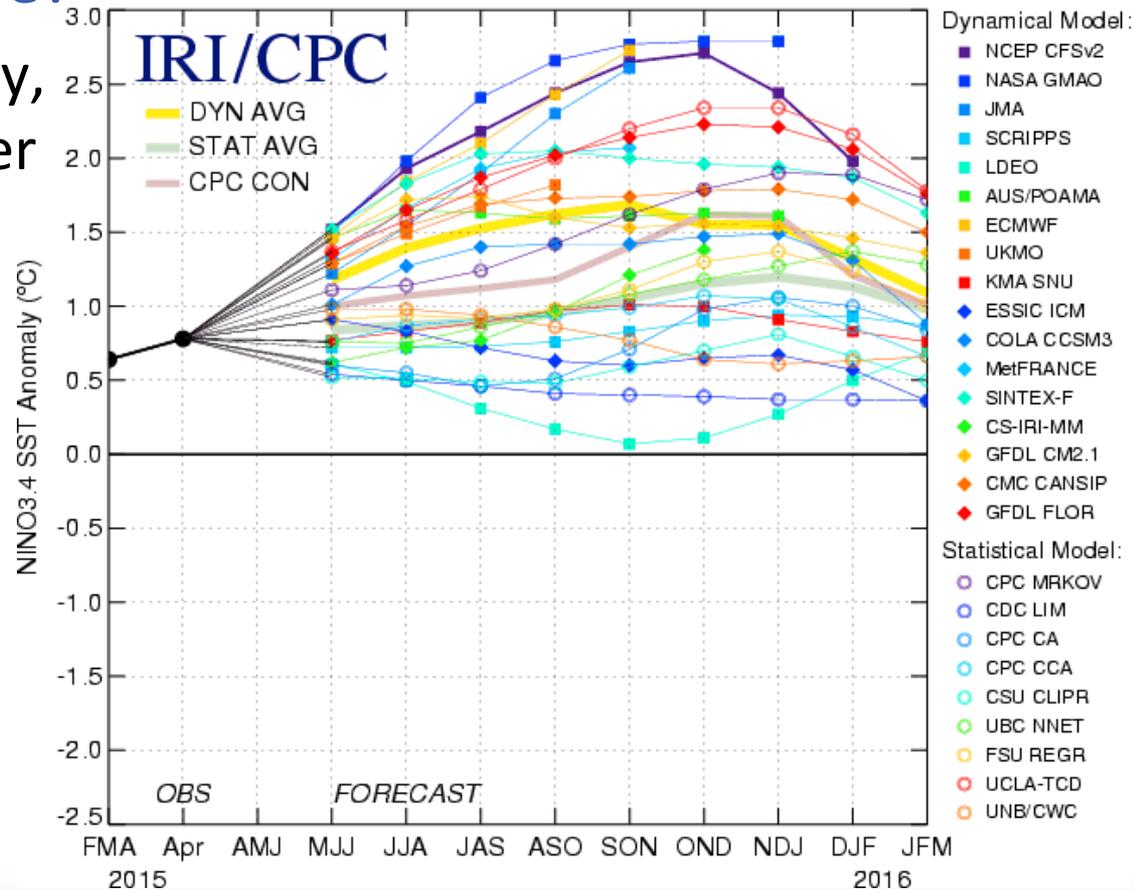


A Few Slides About ENSO

How strong will it be?

- Very difficult to say, but will have better idea next month
- Statistical models favoring a weak El Niño, dynamical models favoring a strong El Niño.

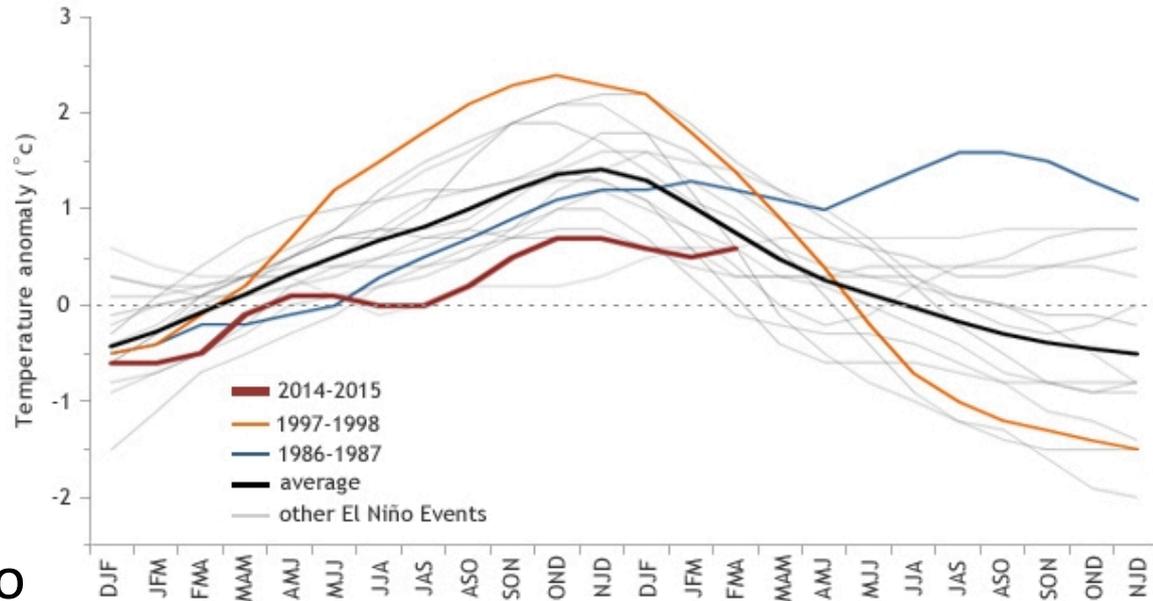
Mid-May 2015 Plume of Model ENSO Predictions



A Few Slides About ENSO

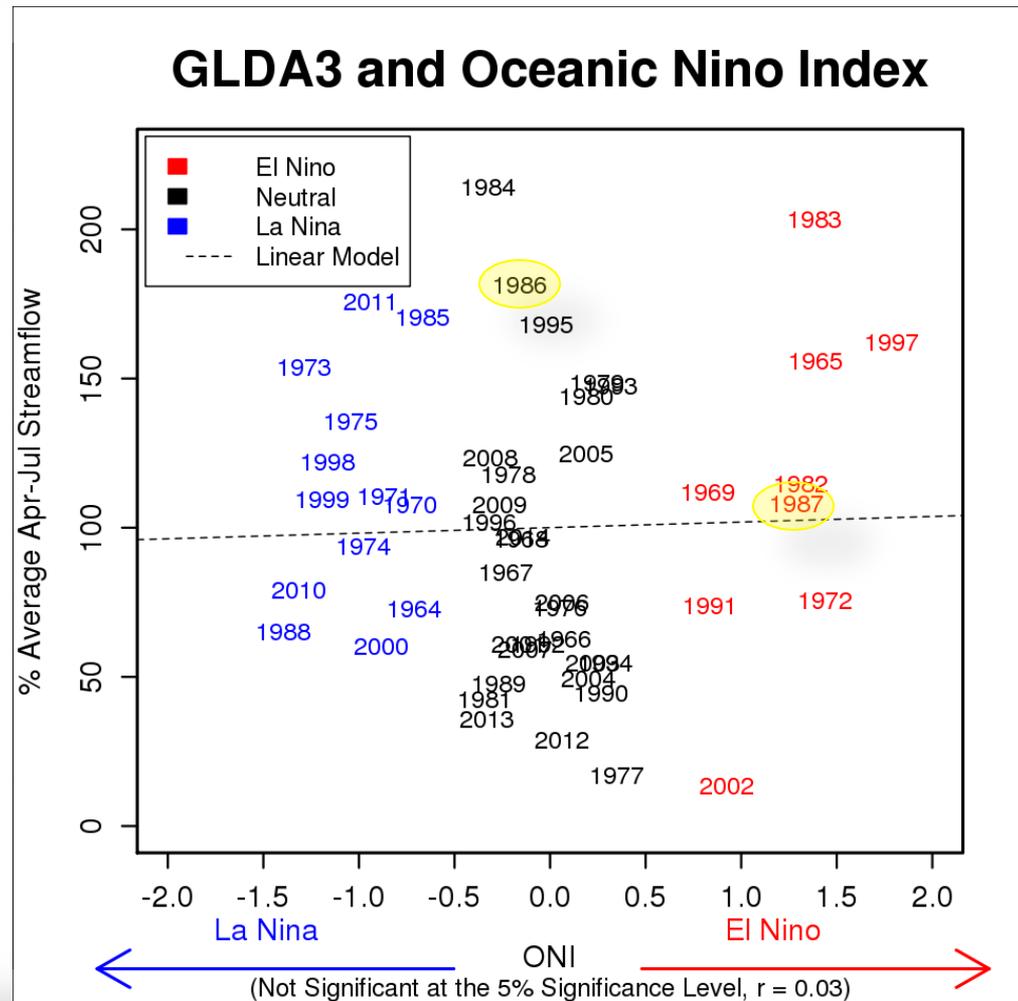
- An unusual start to the El Niño Event...
 - SSTs typically don't start warm in the winter and continue through the spring and summer
 - Only the 1986-1987 El Niño had similar behavior

2014-2015 compared to past El Niños



A Few Slides About ENSO

- Important to keep in mind that, in our area, ENSO has very little correlation to water supply!
- 1986 and 1987 are highlighted just because it seems to be the closest “analog” episode.



Contact us!

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- Paul Miller – Great Basin Focal Point
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