CBRFC Water Supply Briefing – June 5th 2015

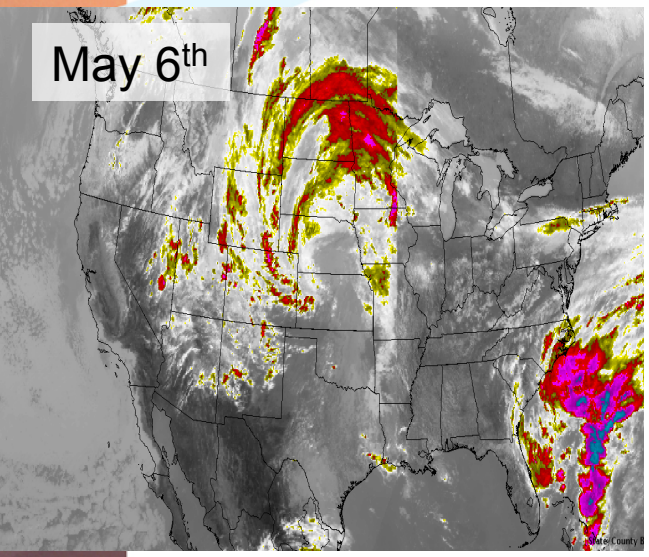
Presented by: Brenda Alcorn & Greg Smith

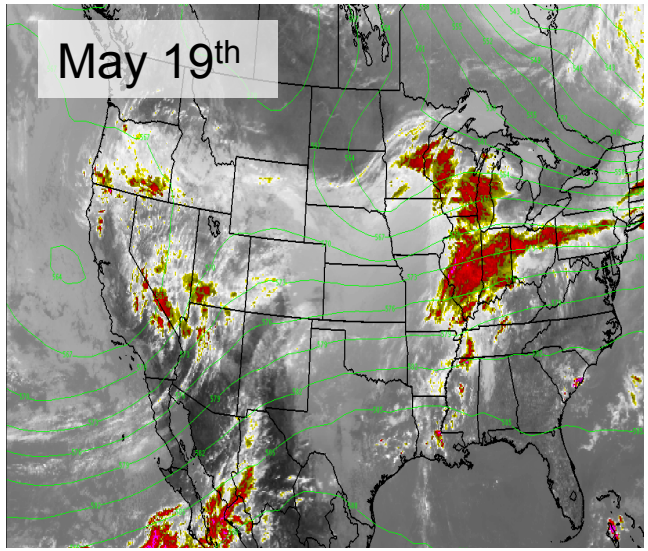
Plateau Creek – Highway 65 June 3 2015

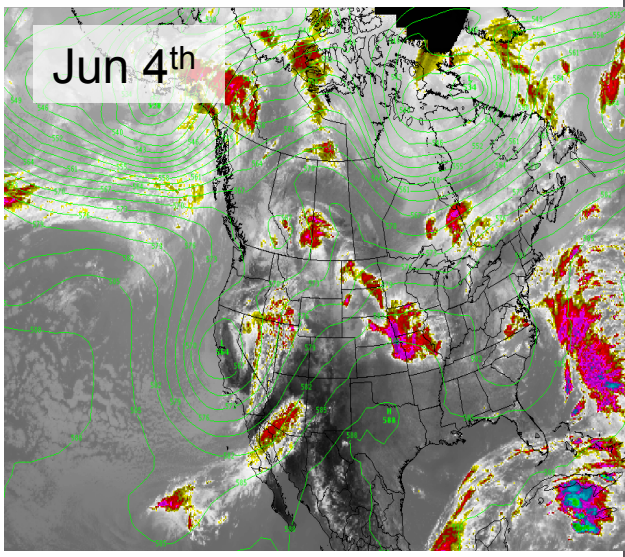
Today's Presentation

- 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





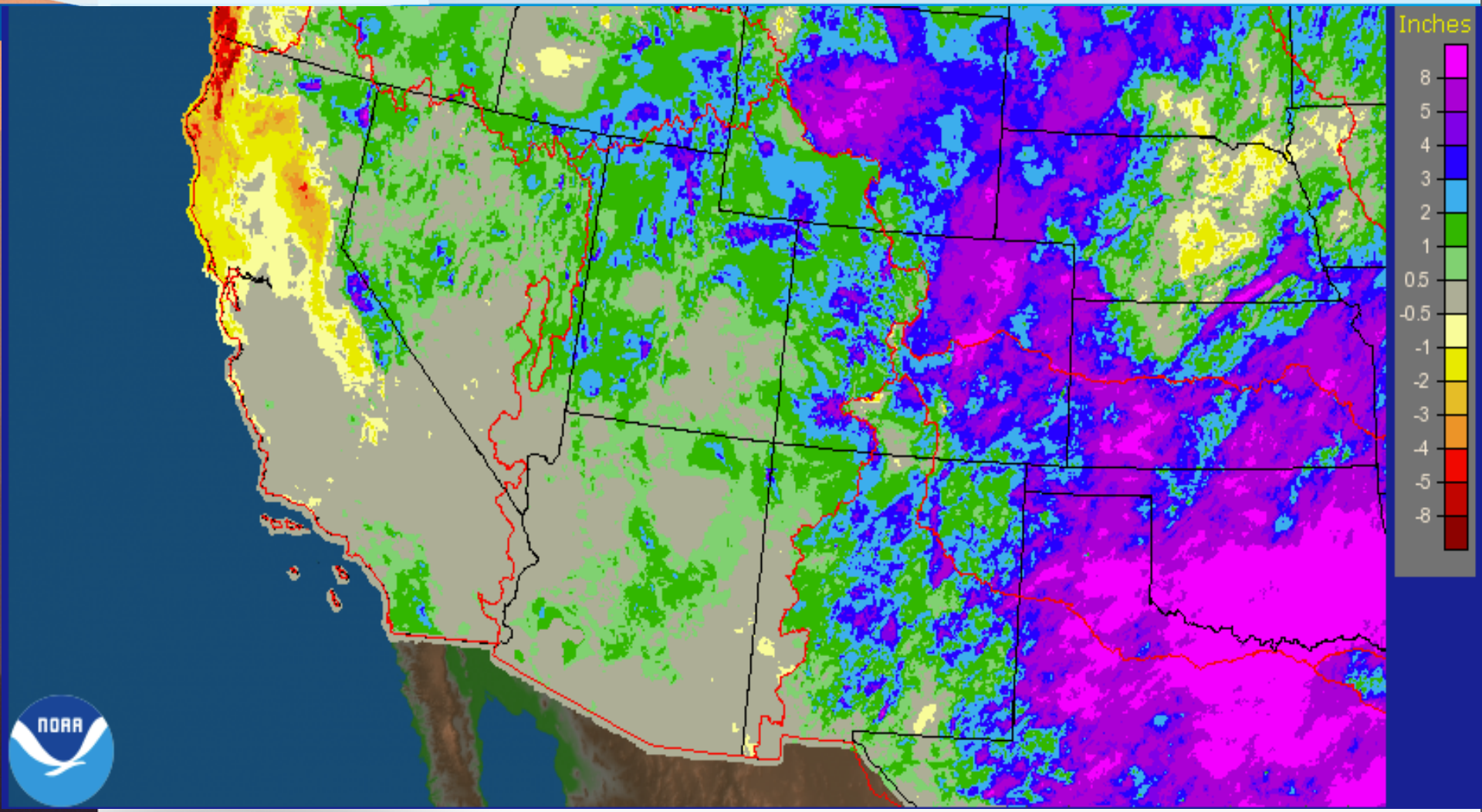


Pattern change occurred in April & carried into May.

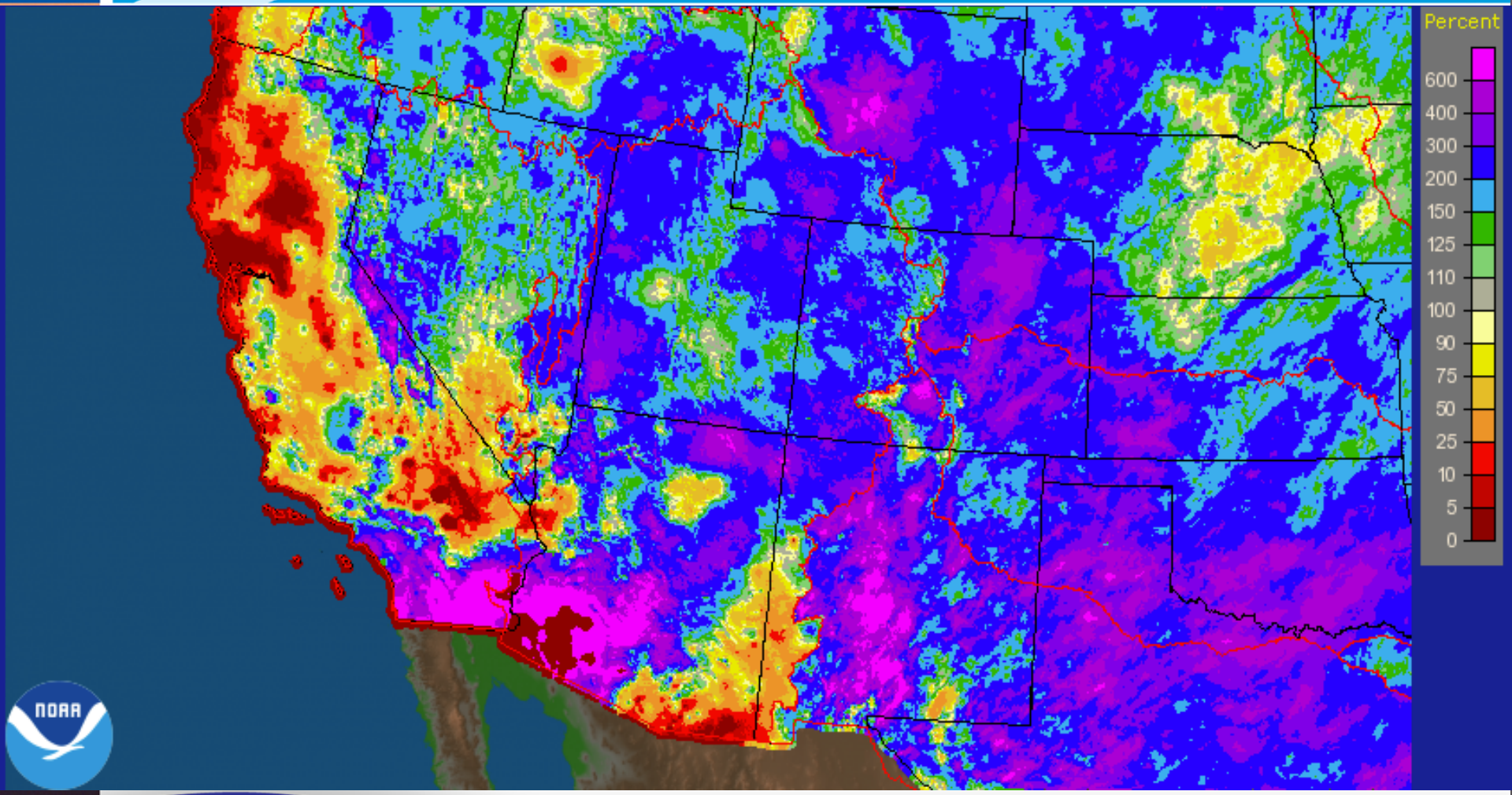
Frequent moist storms systems bringing heavy rainfall.

Track and speed of storms were favorable for significant precipitation in many locations.

May Precipitation – Departure from Average



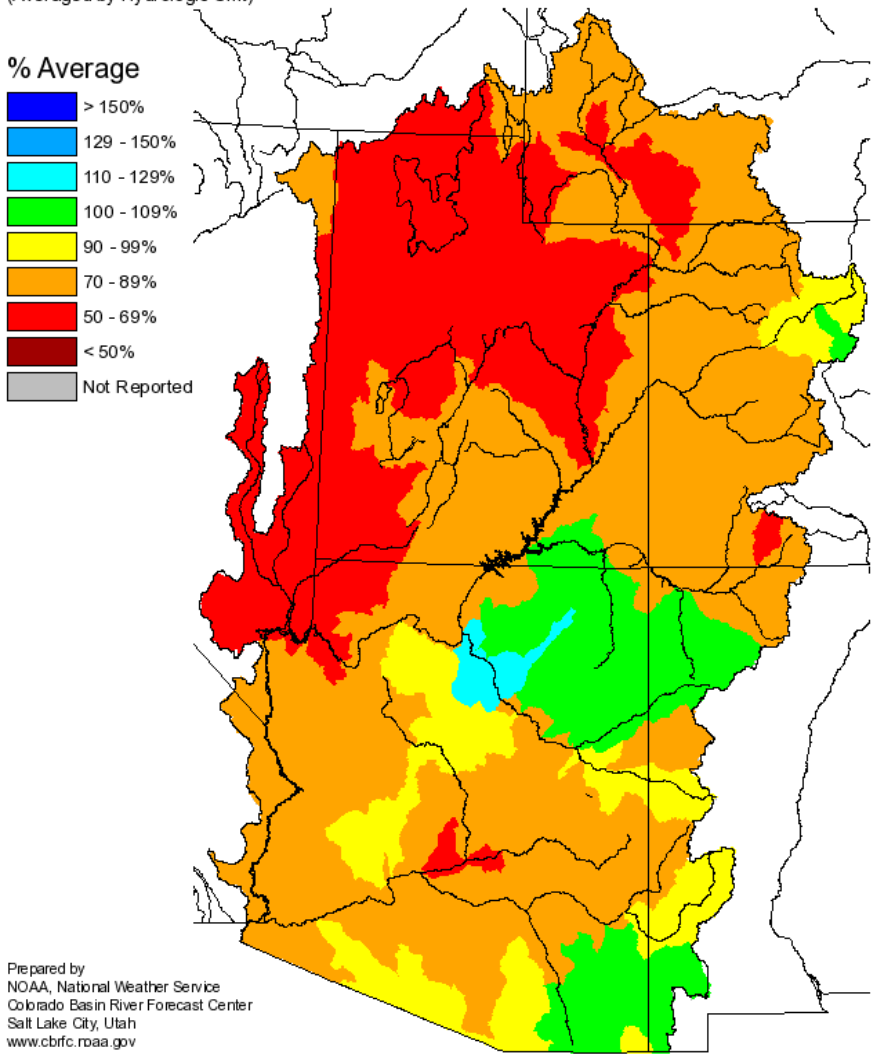
May Precipitation – Percent of Average



Seasonal Precipitation – Percent of Average

Seasonal Precipitation, October 2014 - April 2015

(Averaged by Hydrologic Unit)



Seasonal Precipitation, October 2014 - May 2015

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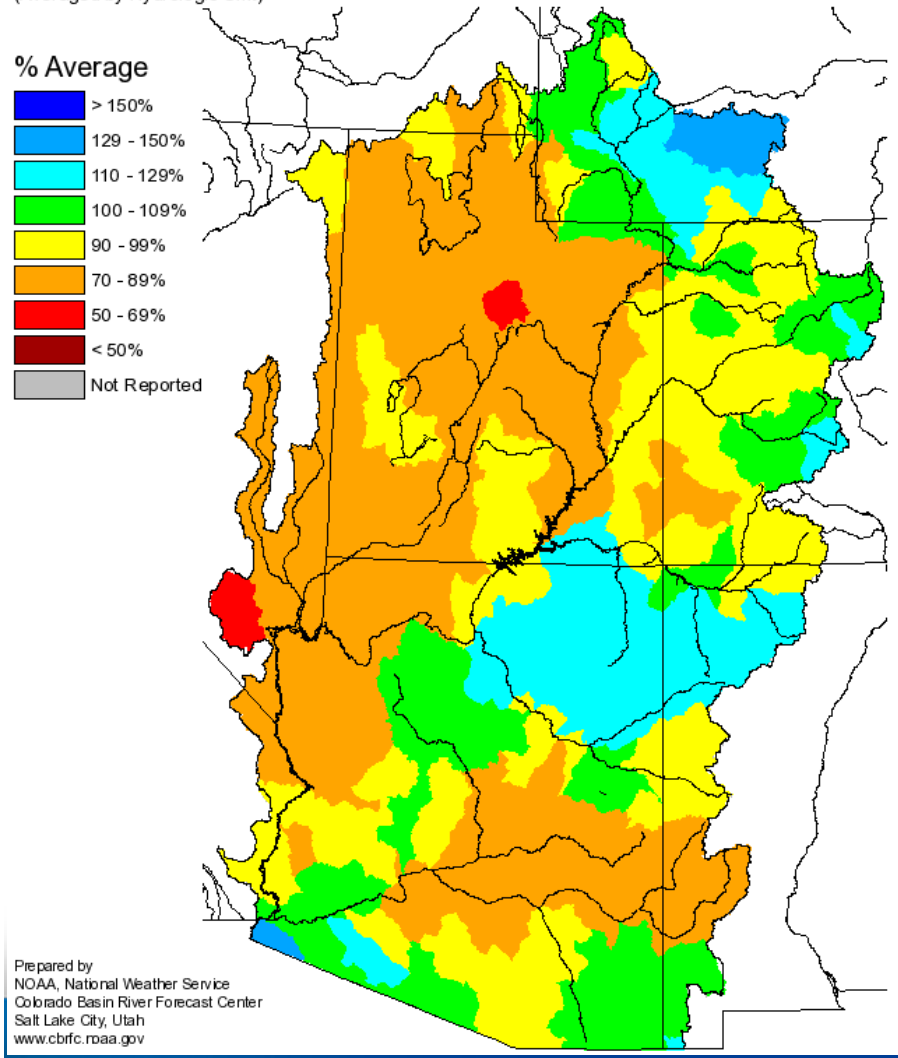
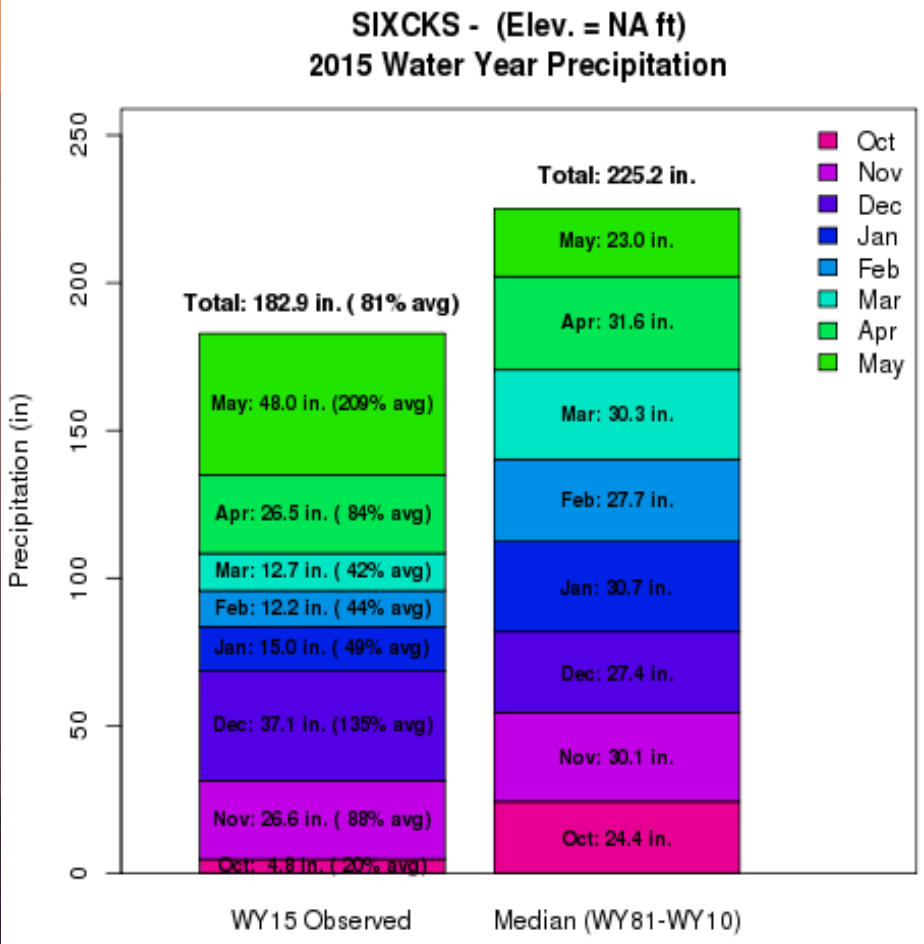
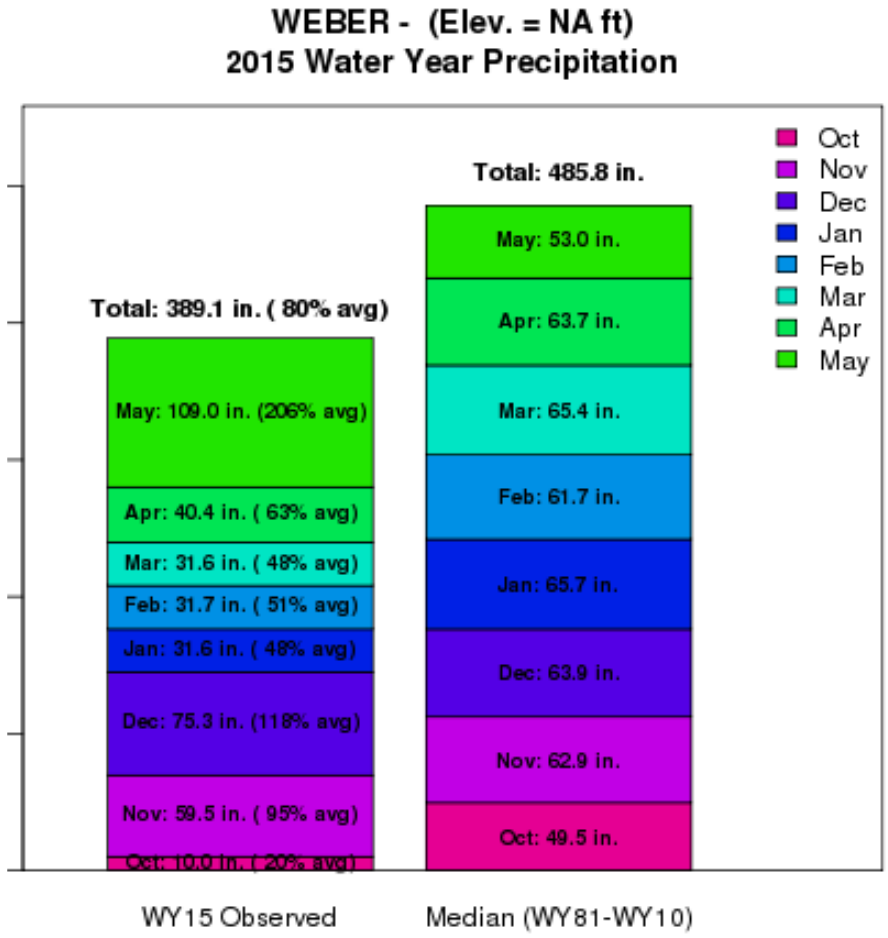
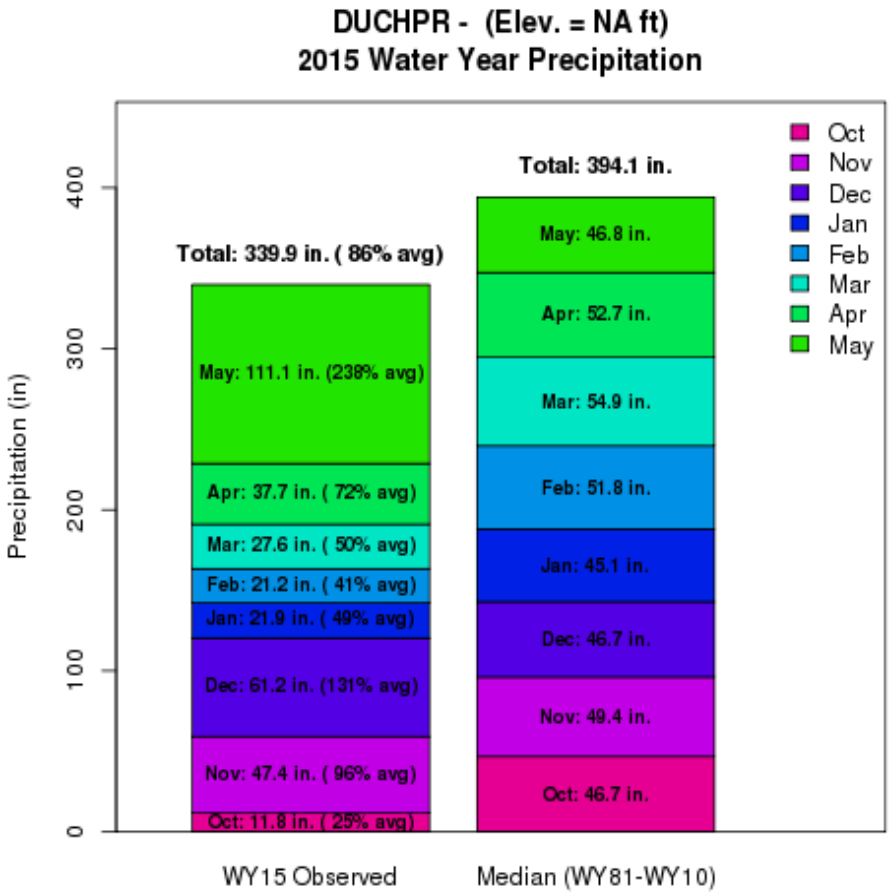


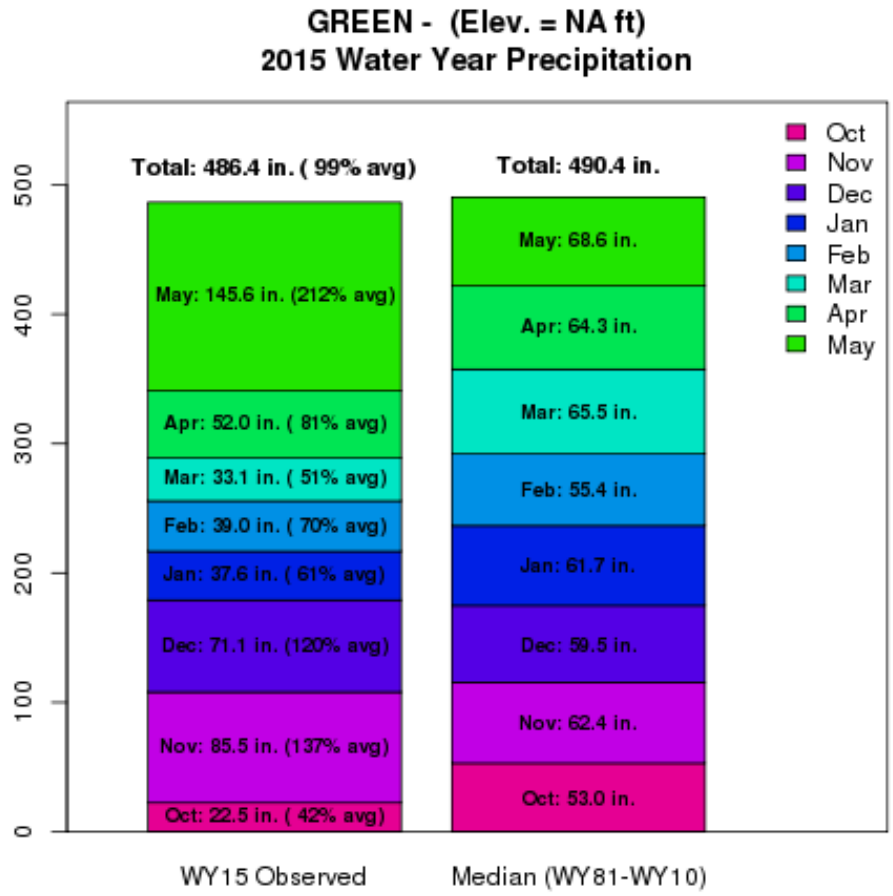
Seasonal Precipitation Distribution
Six Creeks & Weber River Basin



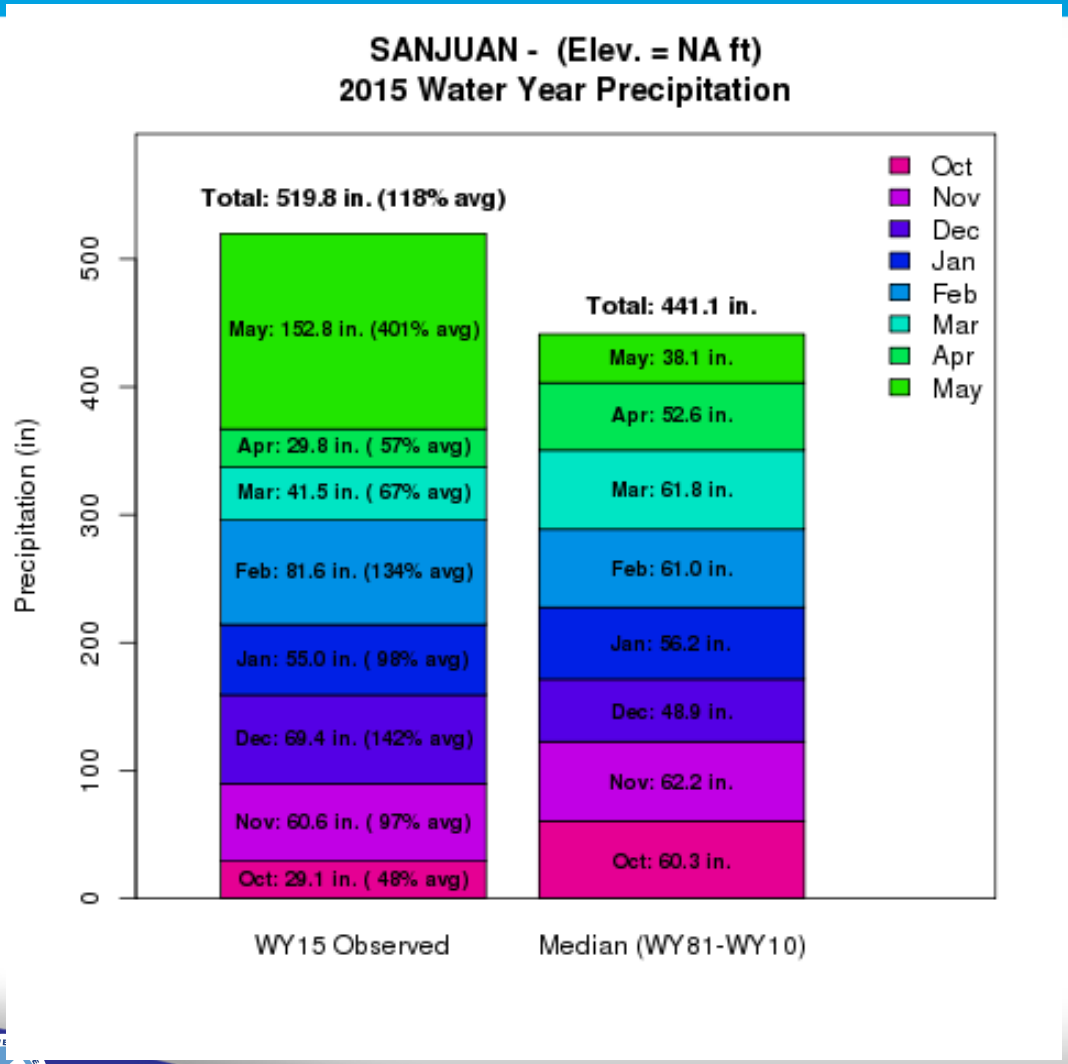


Seasonal Precipitation Distribution
Green River Basin

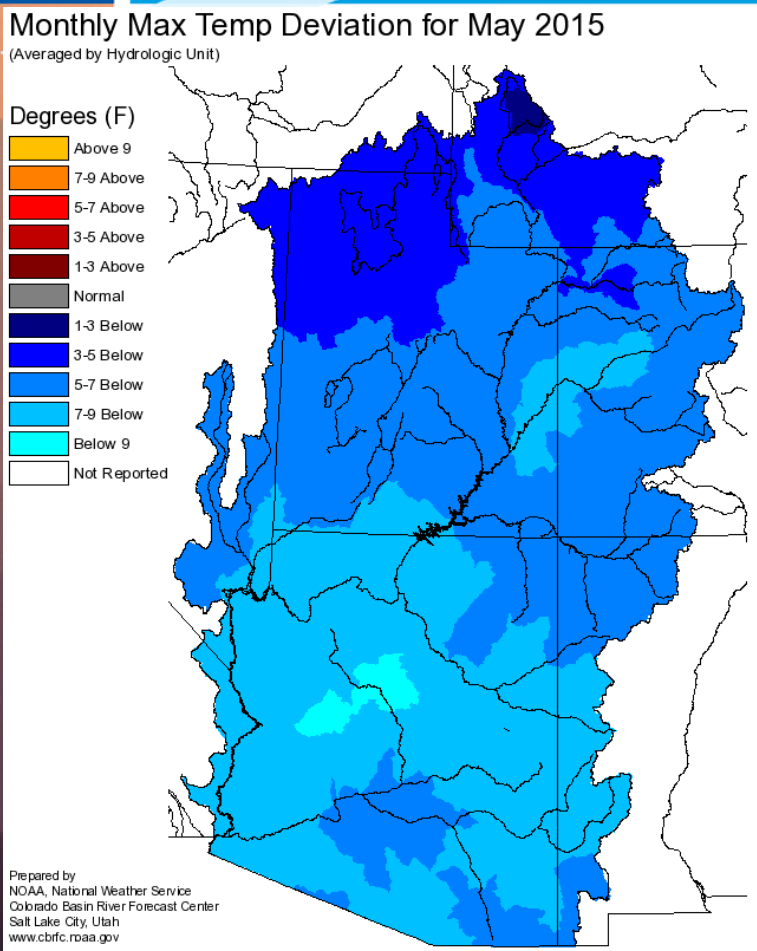


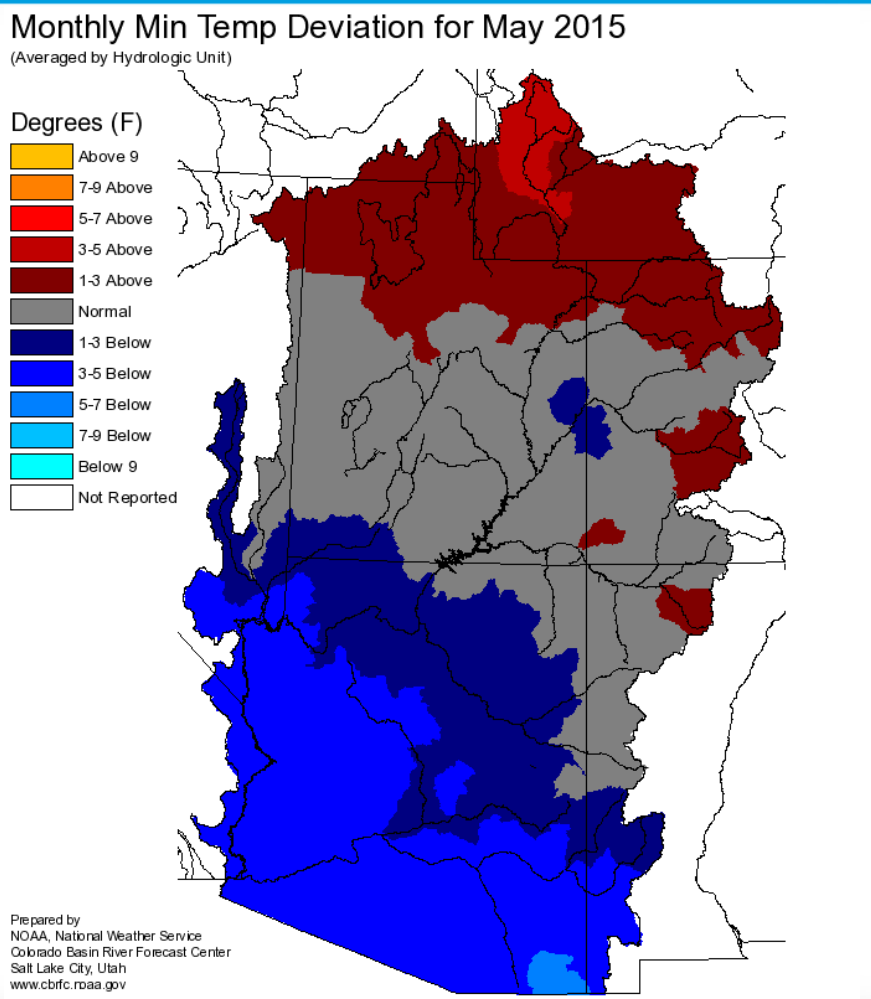


Seasonal Precipitation Distribution
San Juan (Animas) River Basin

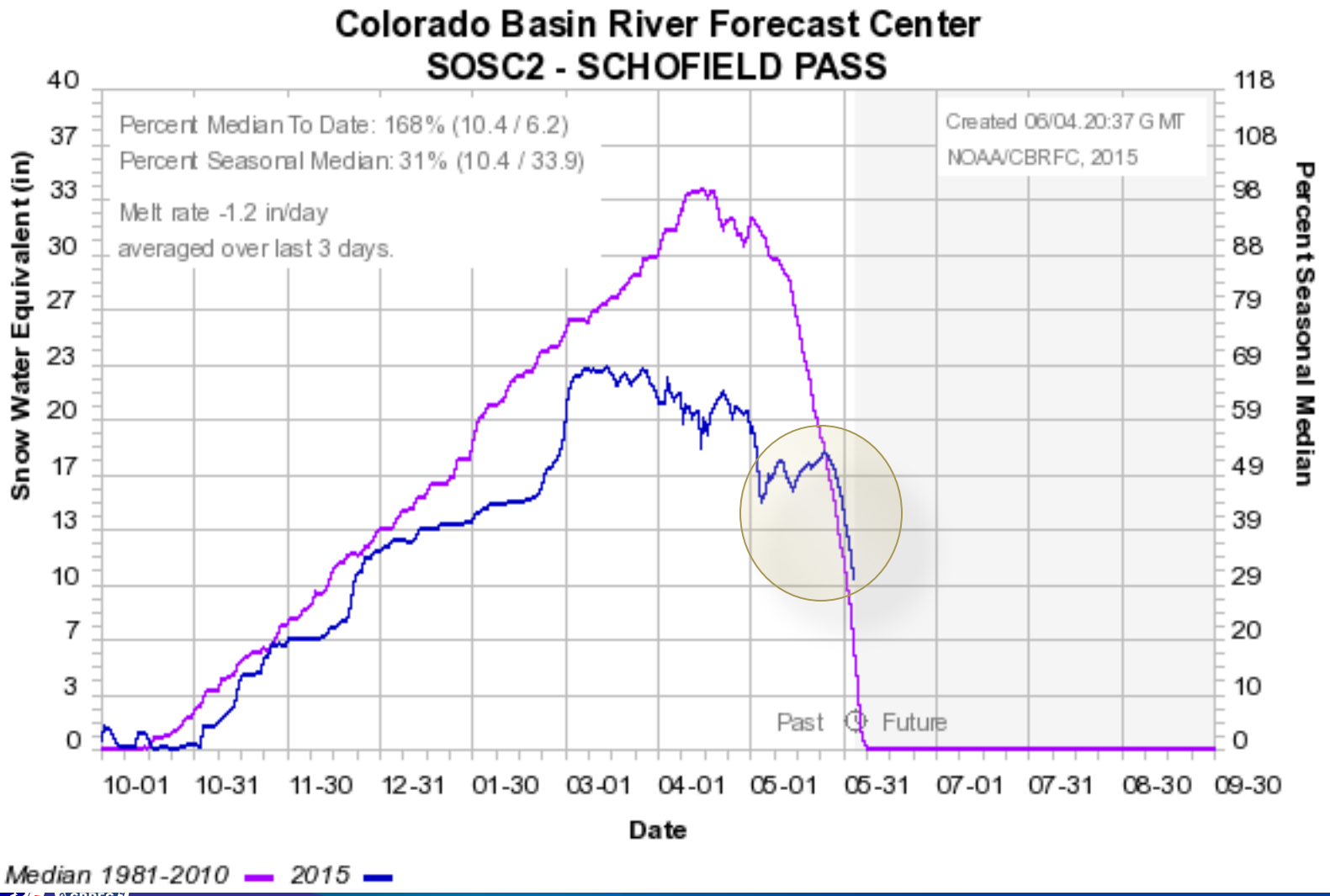


May Temperatures

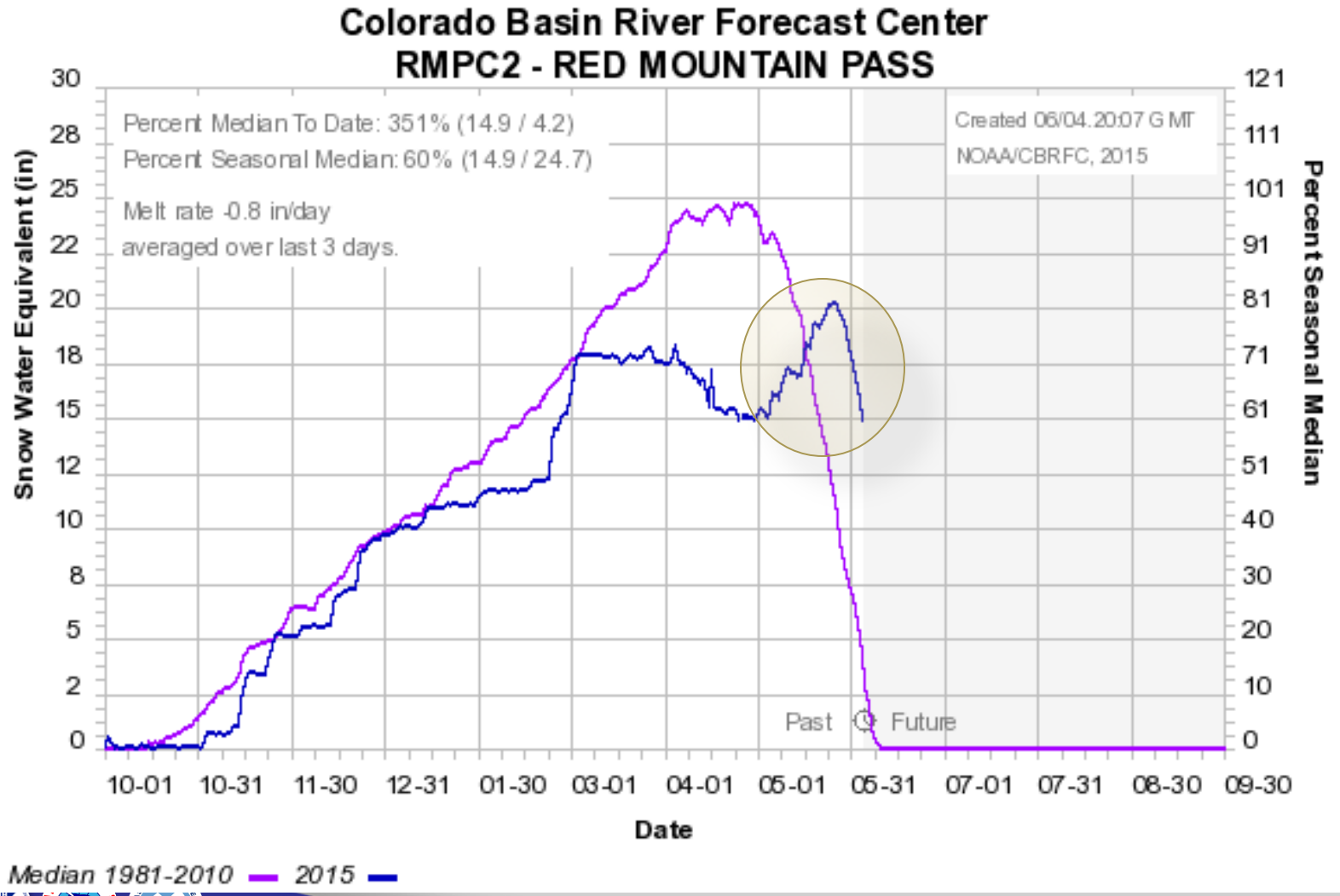




May Temperatures – Impact on Snowpack



May Precipitation & Temperatures Impact on Snowpack



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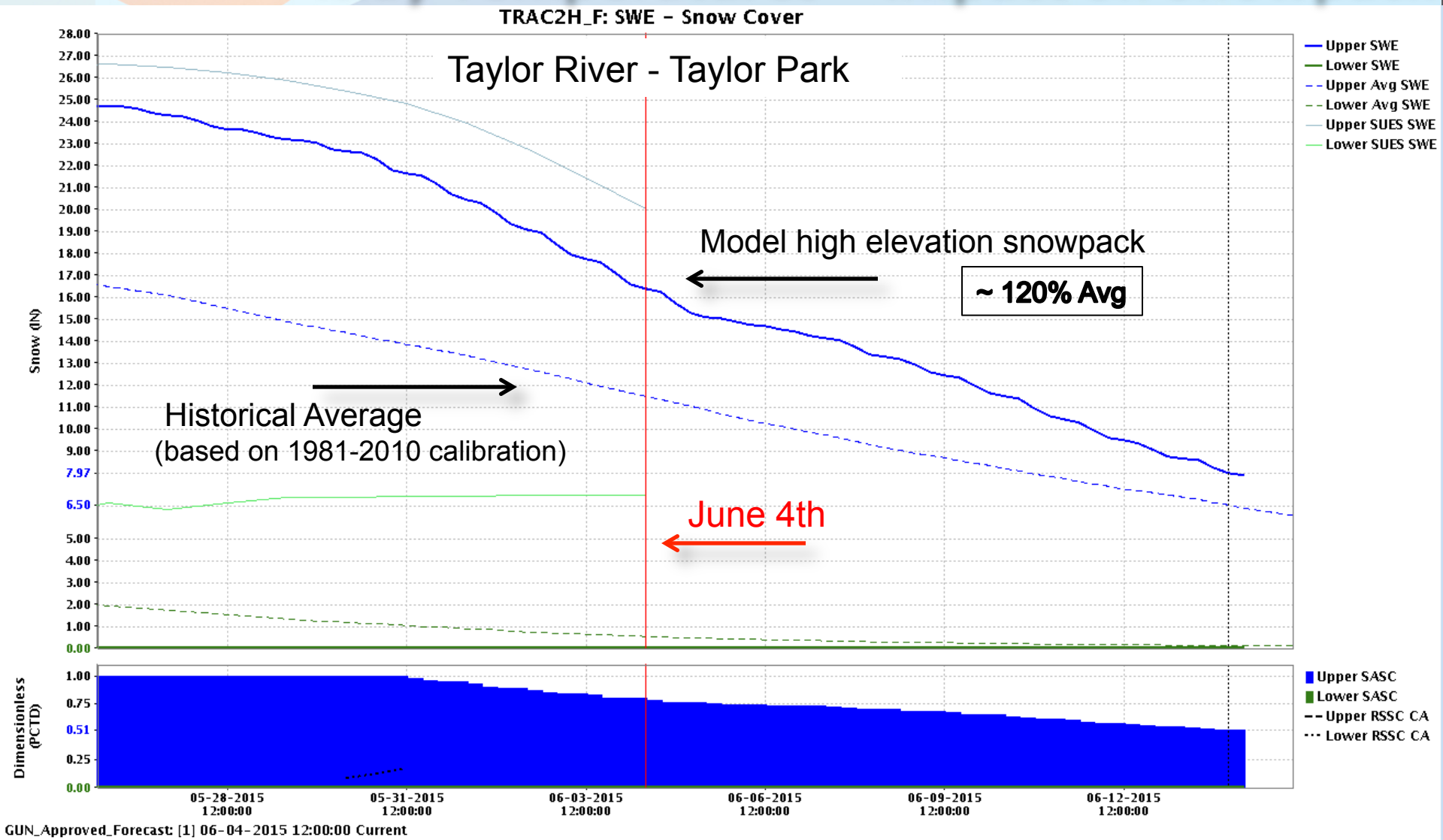
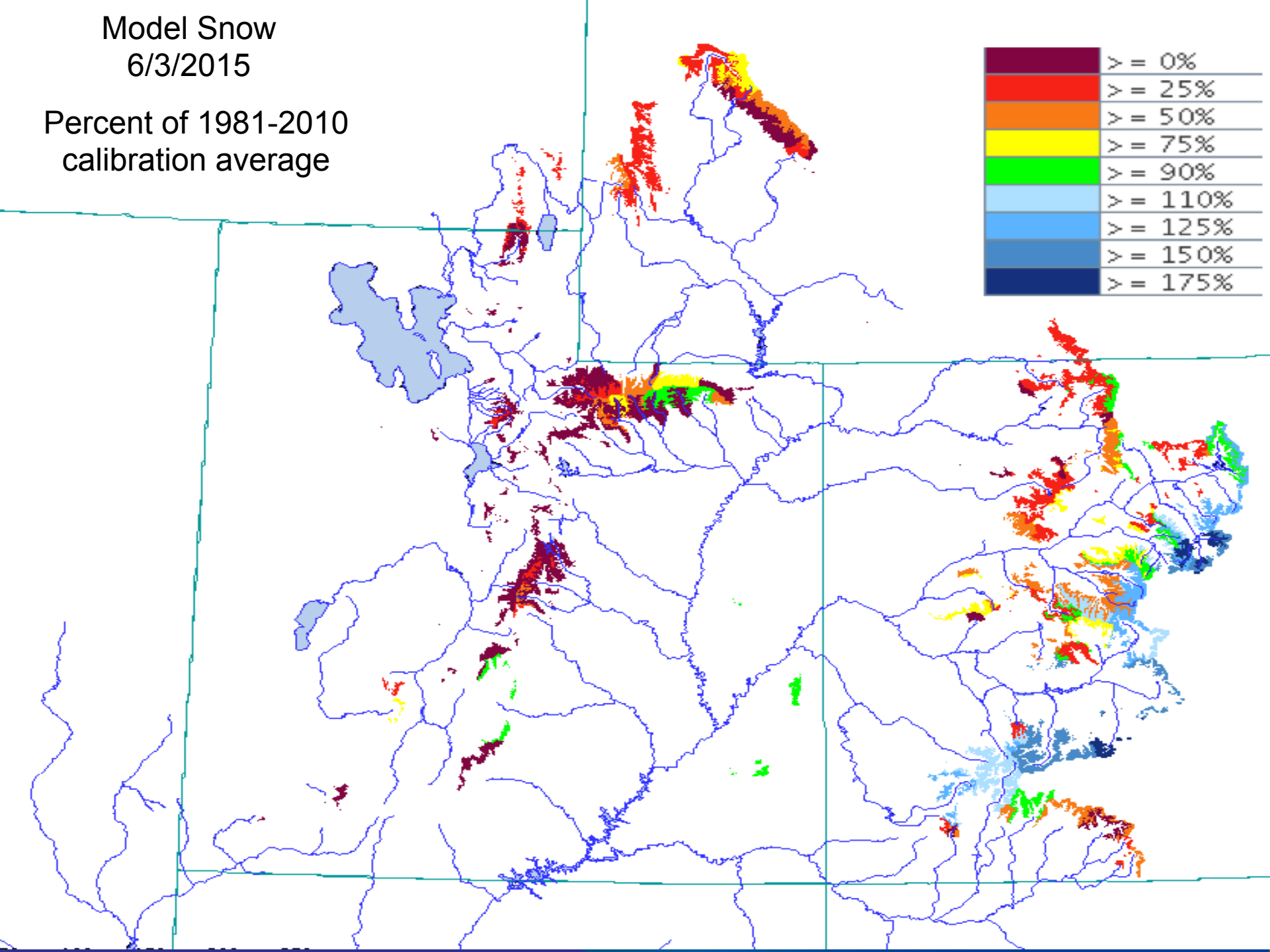


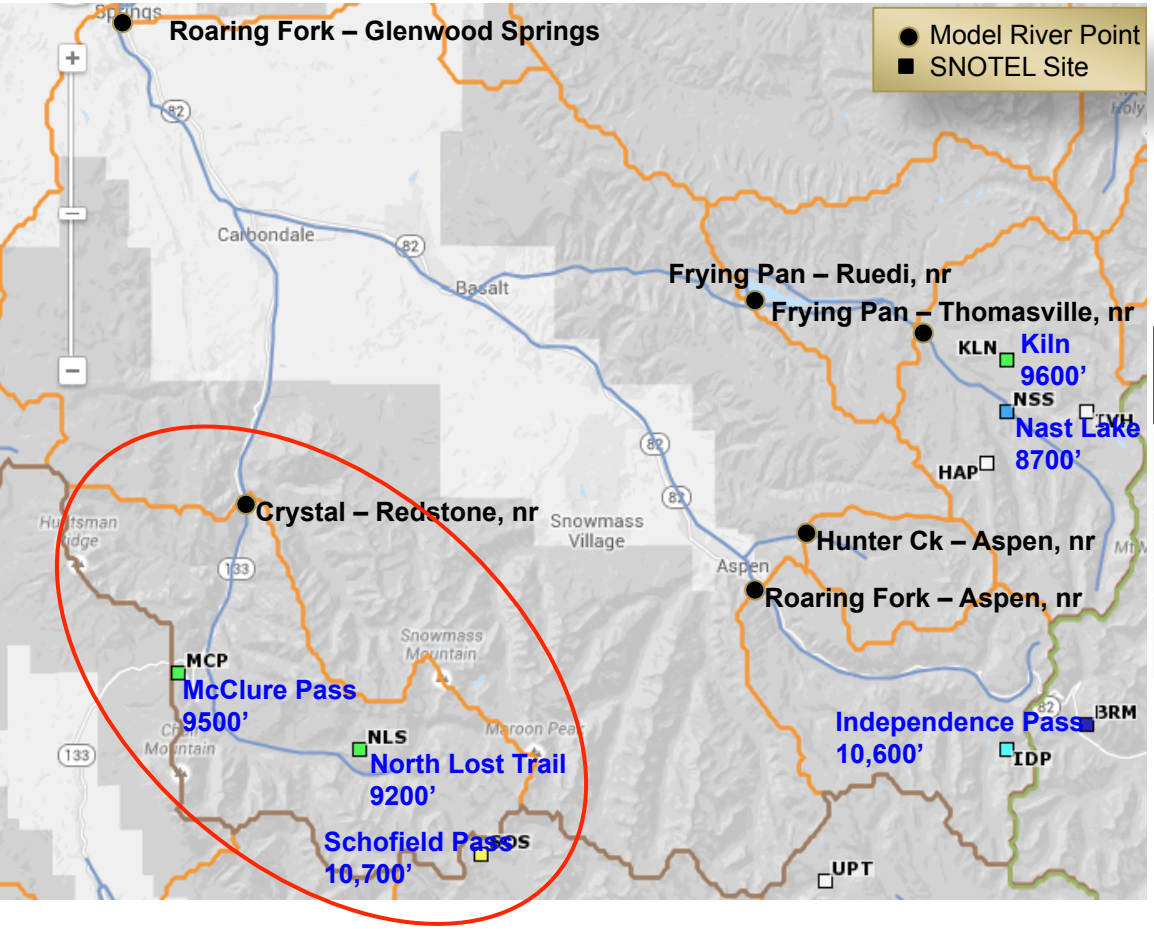
Model Snow
6/3/2015

Percent of 1981-2010
calibration average



SNOTEL Elevations vs. Flow Contribution

Roaring Fork River Basin



Crystal – Redstone

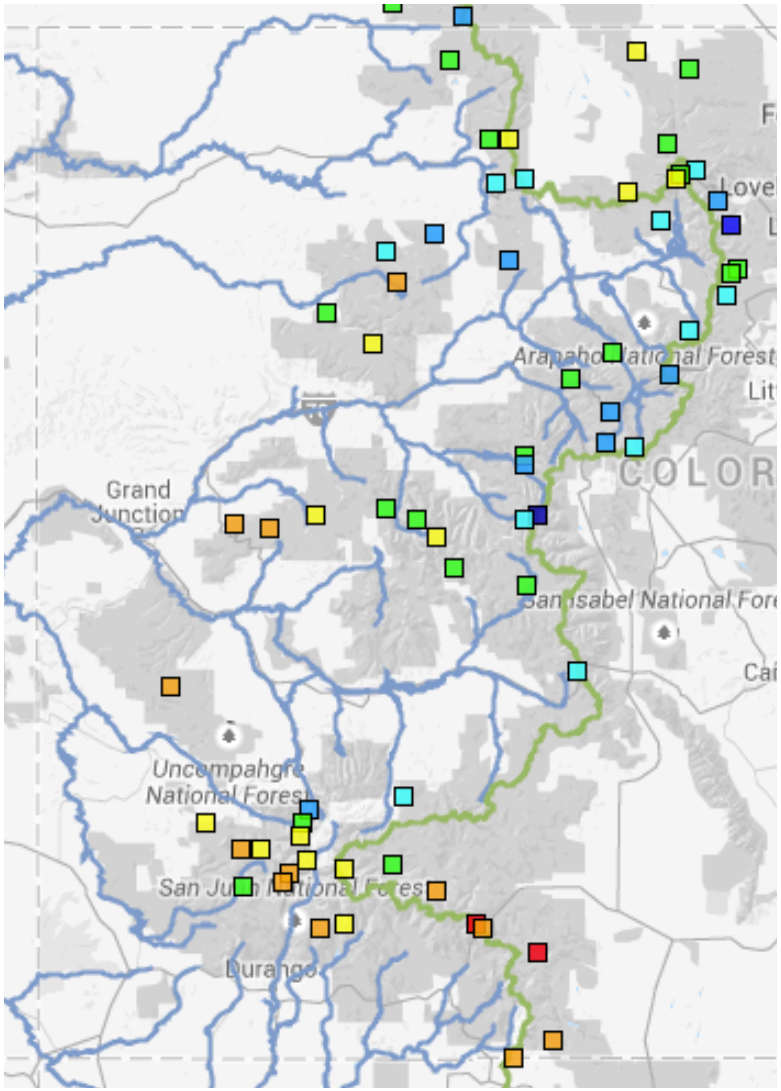
Modeled basin is broken into three elevation zones with stats as follows:

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.

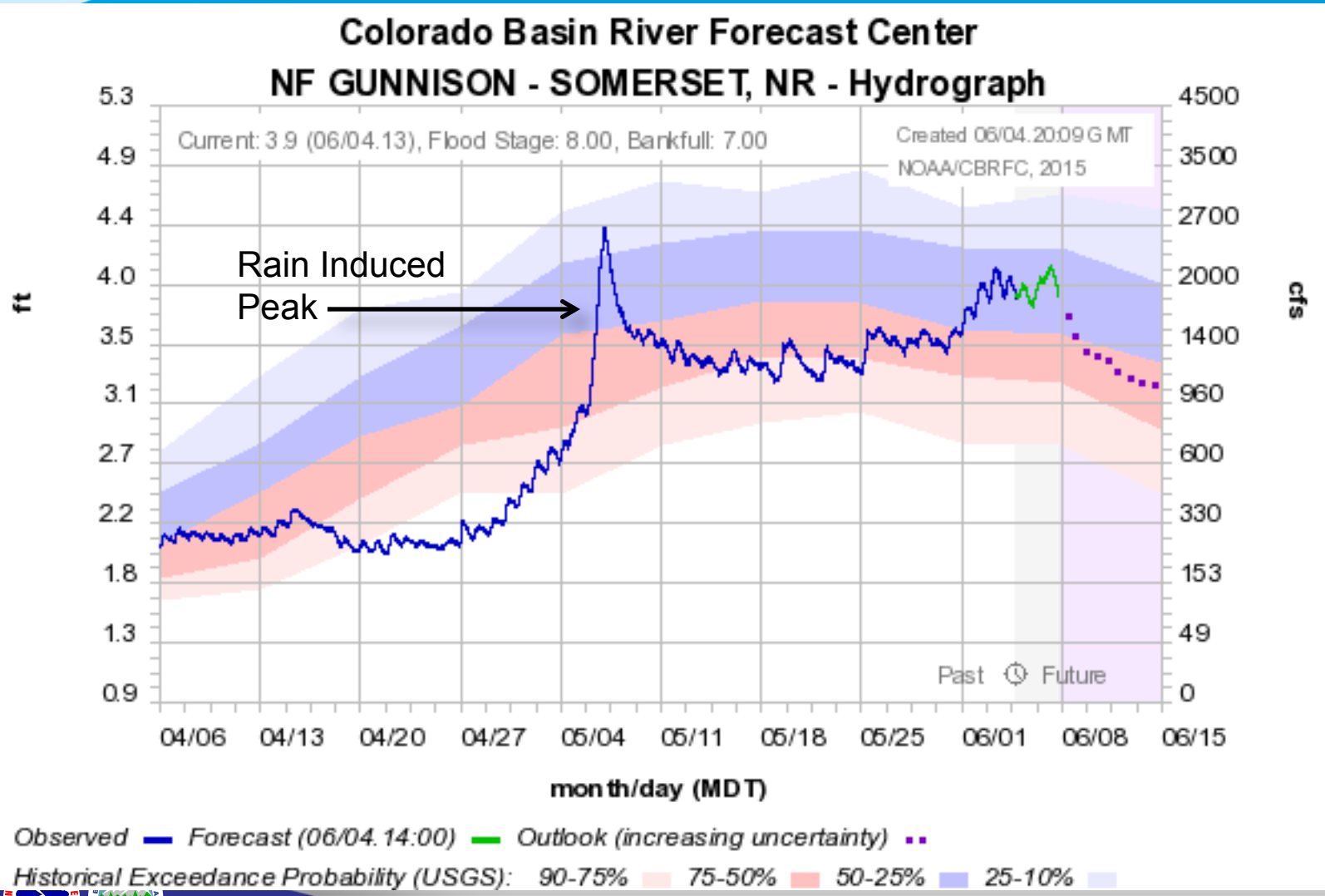
May Weather – Forecast Impacts

- 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

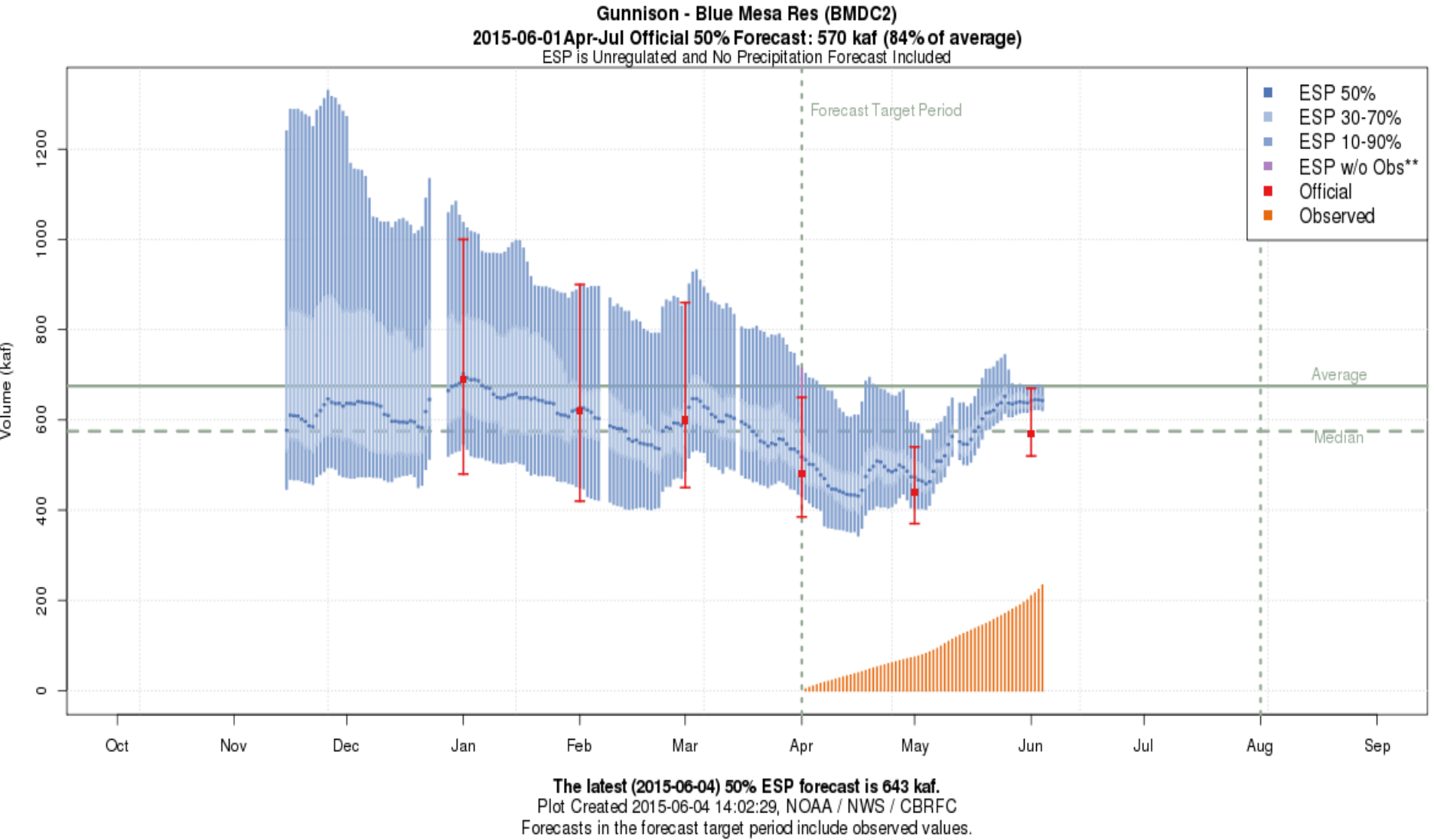
May Weather – Forecast Impacts

- 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



May Precipitation– Impact on Water Supply



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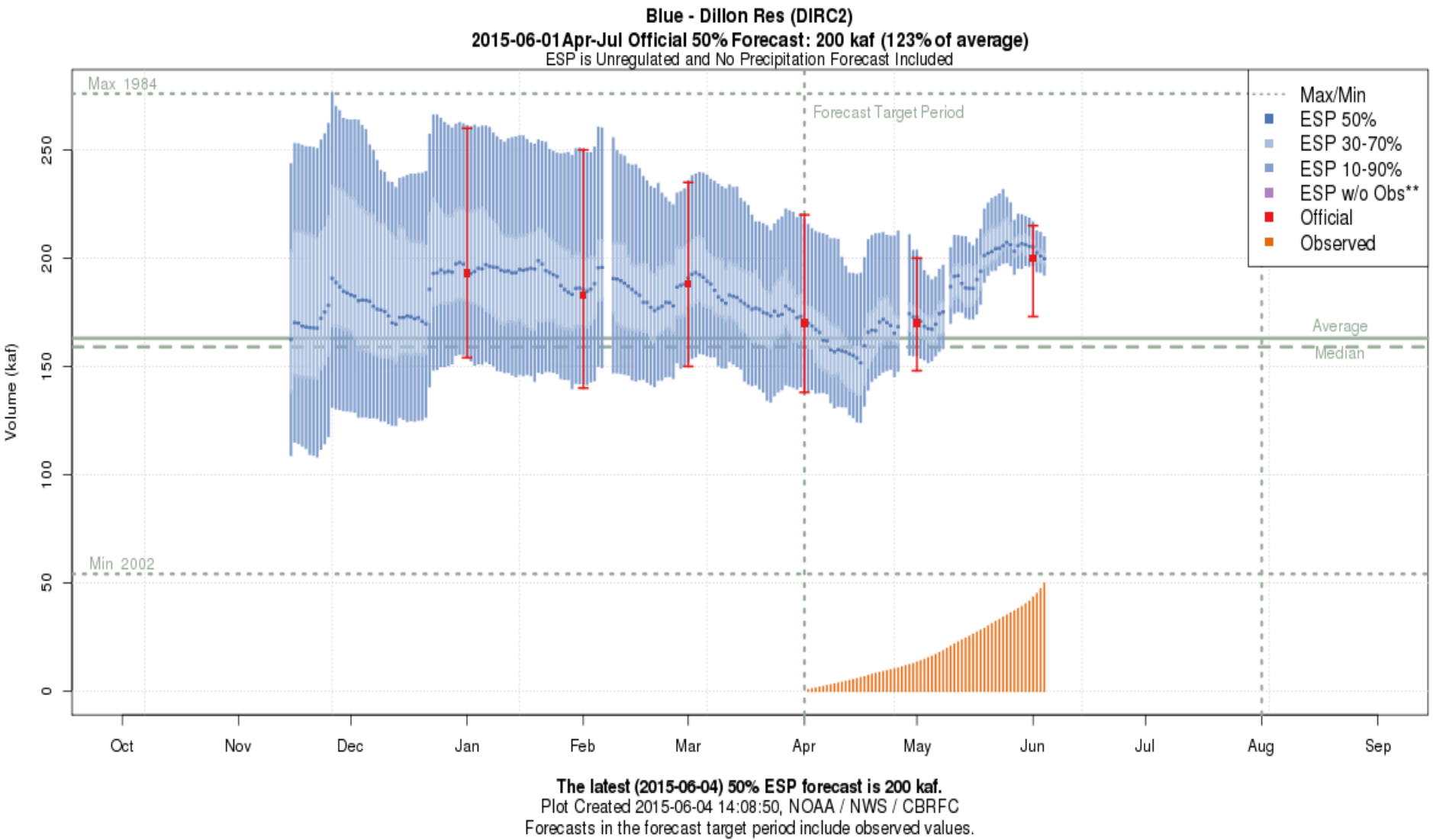

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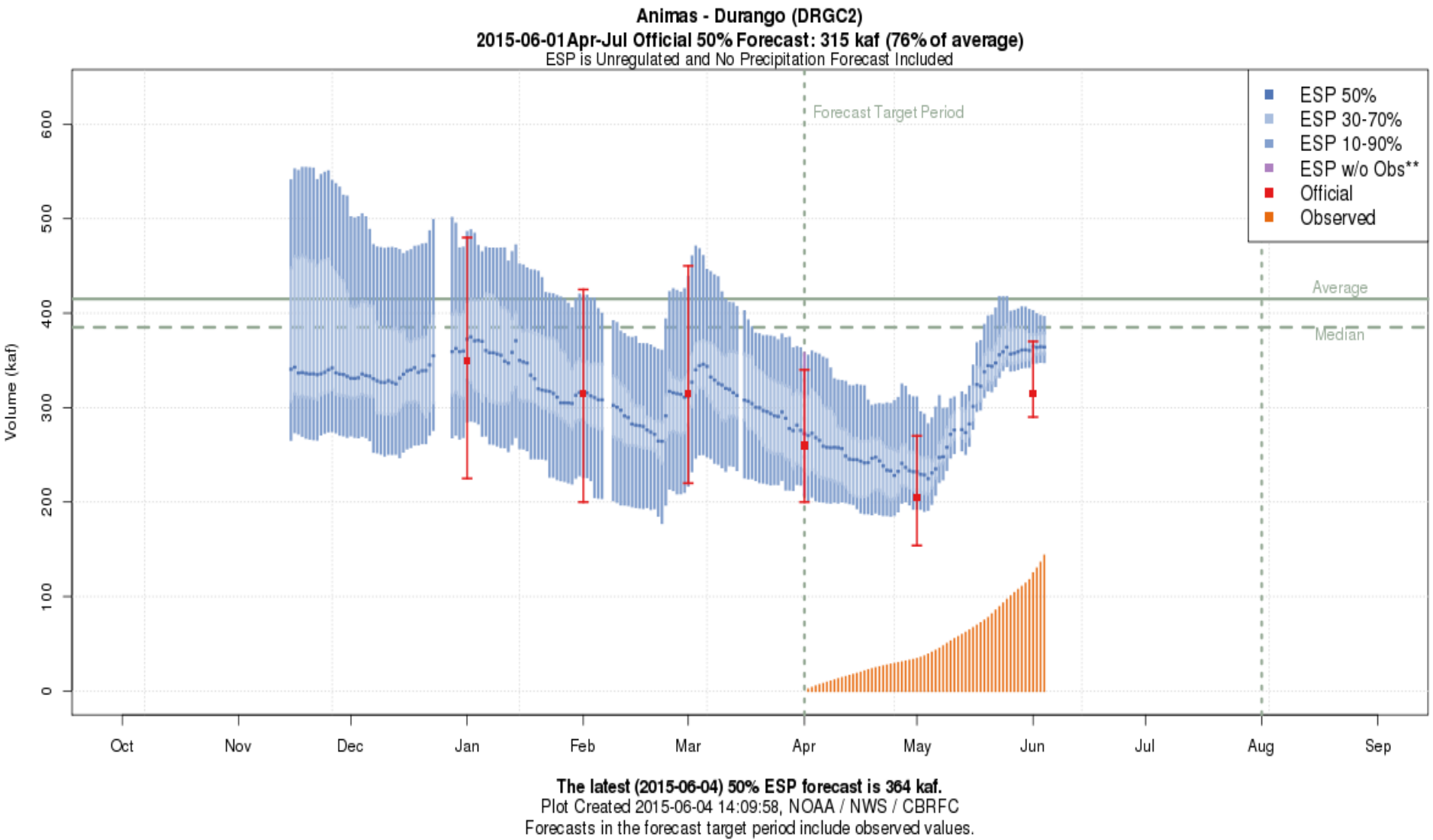

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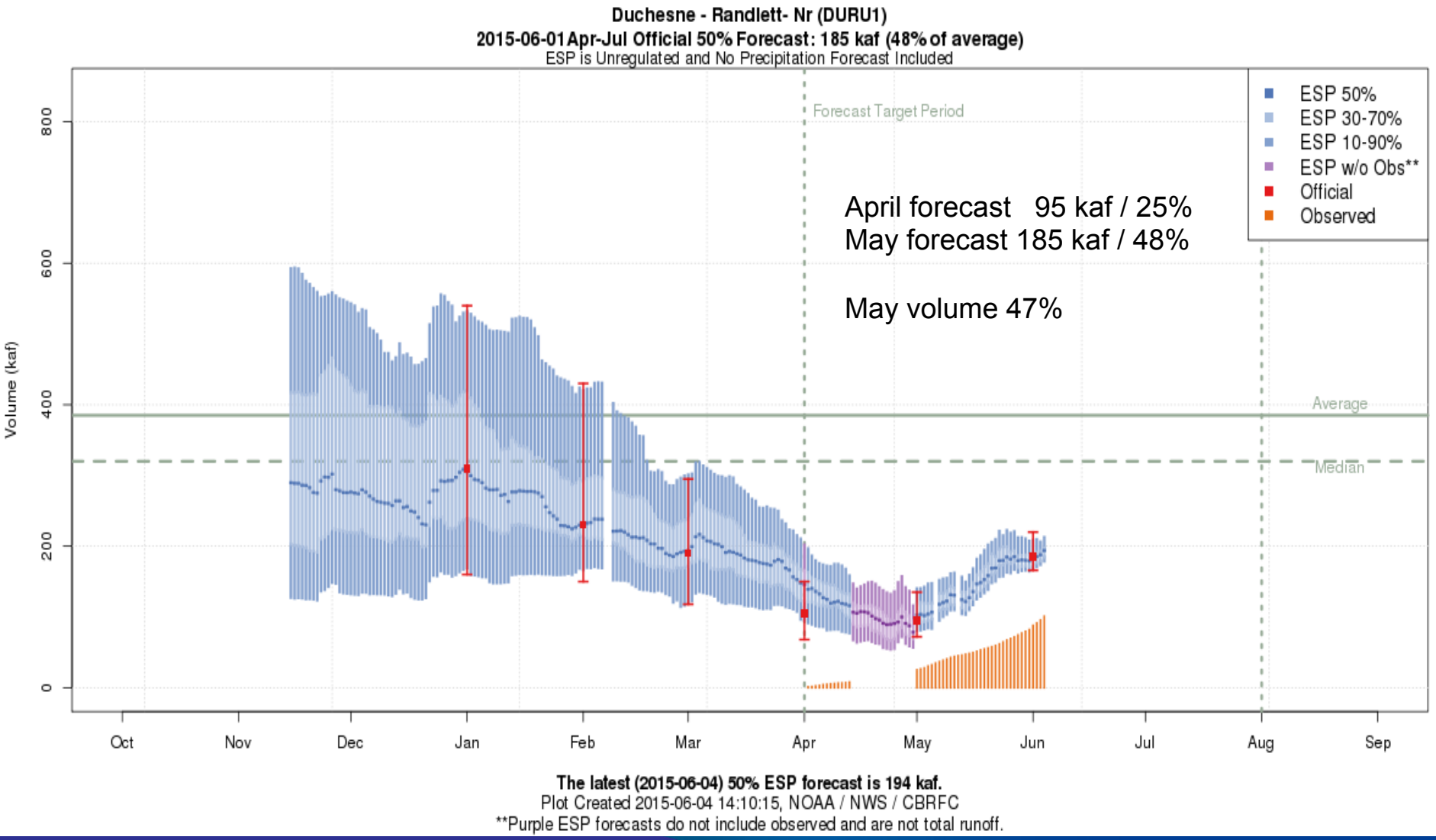

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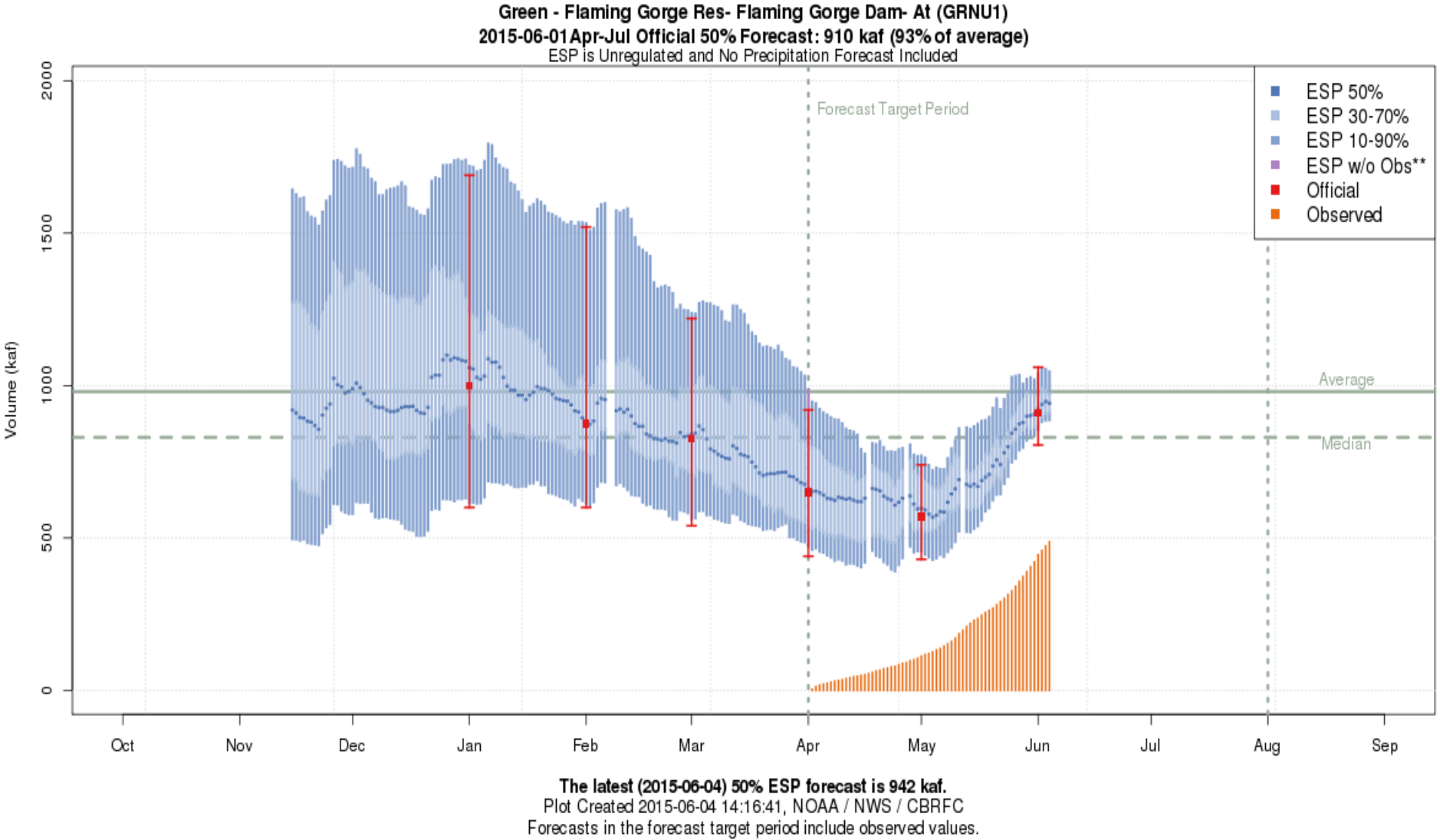

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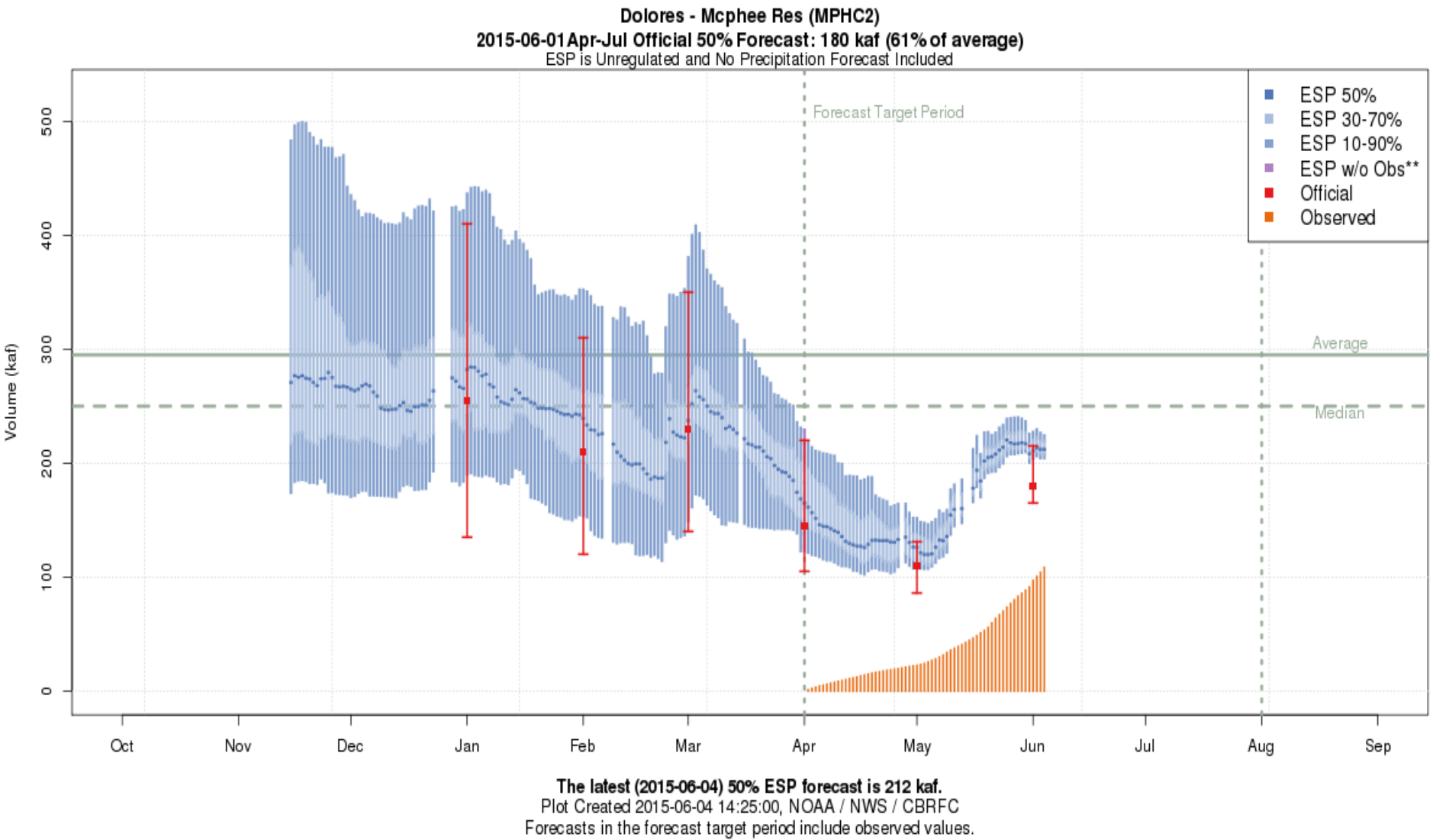

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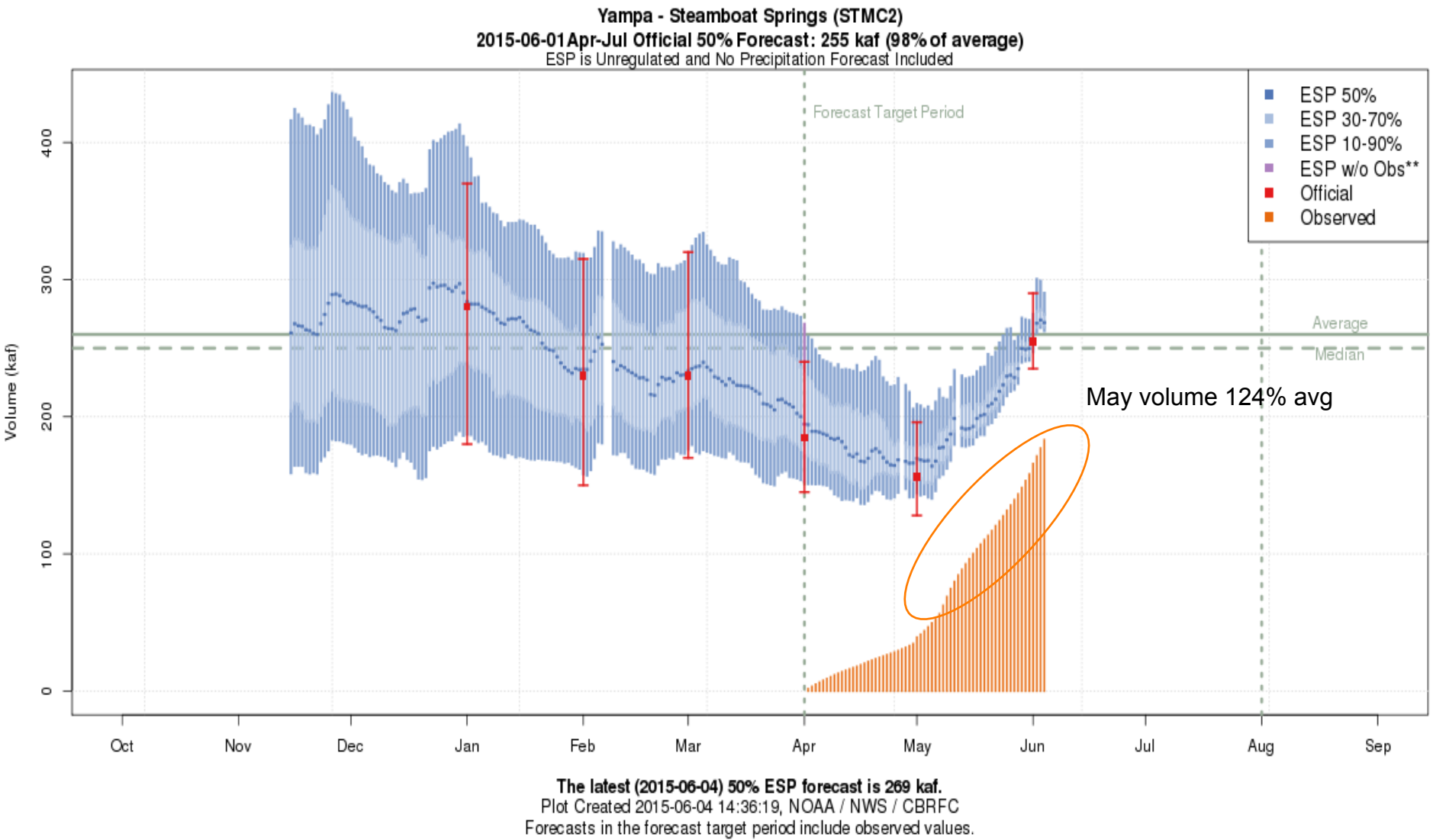

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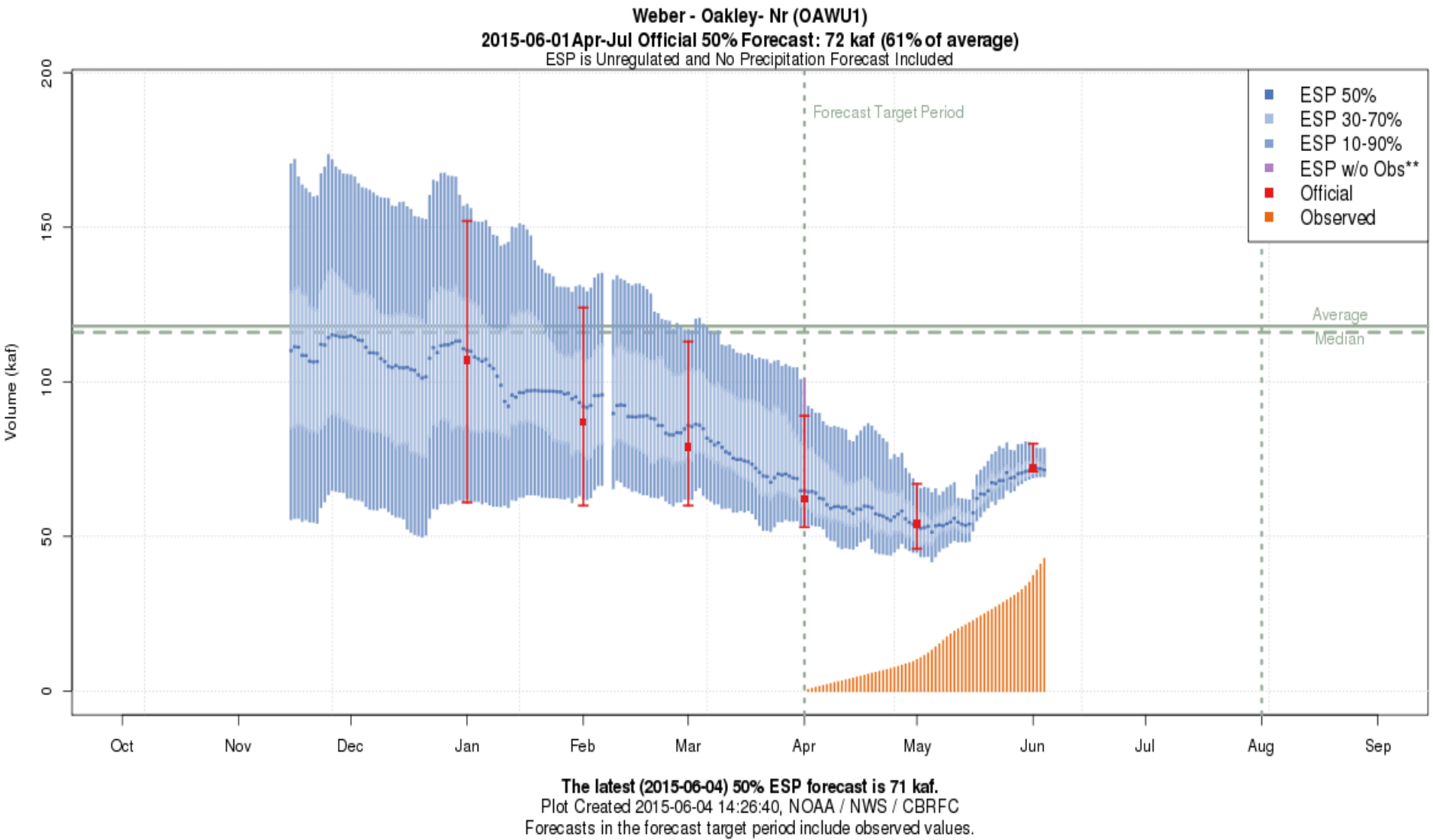
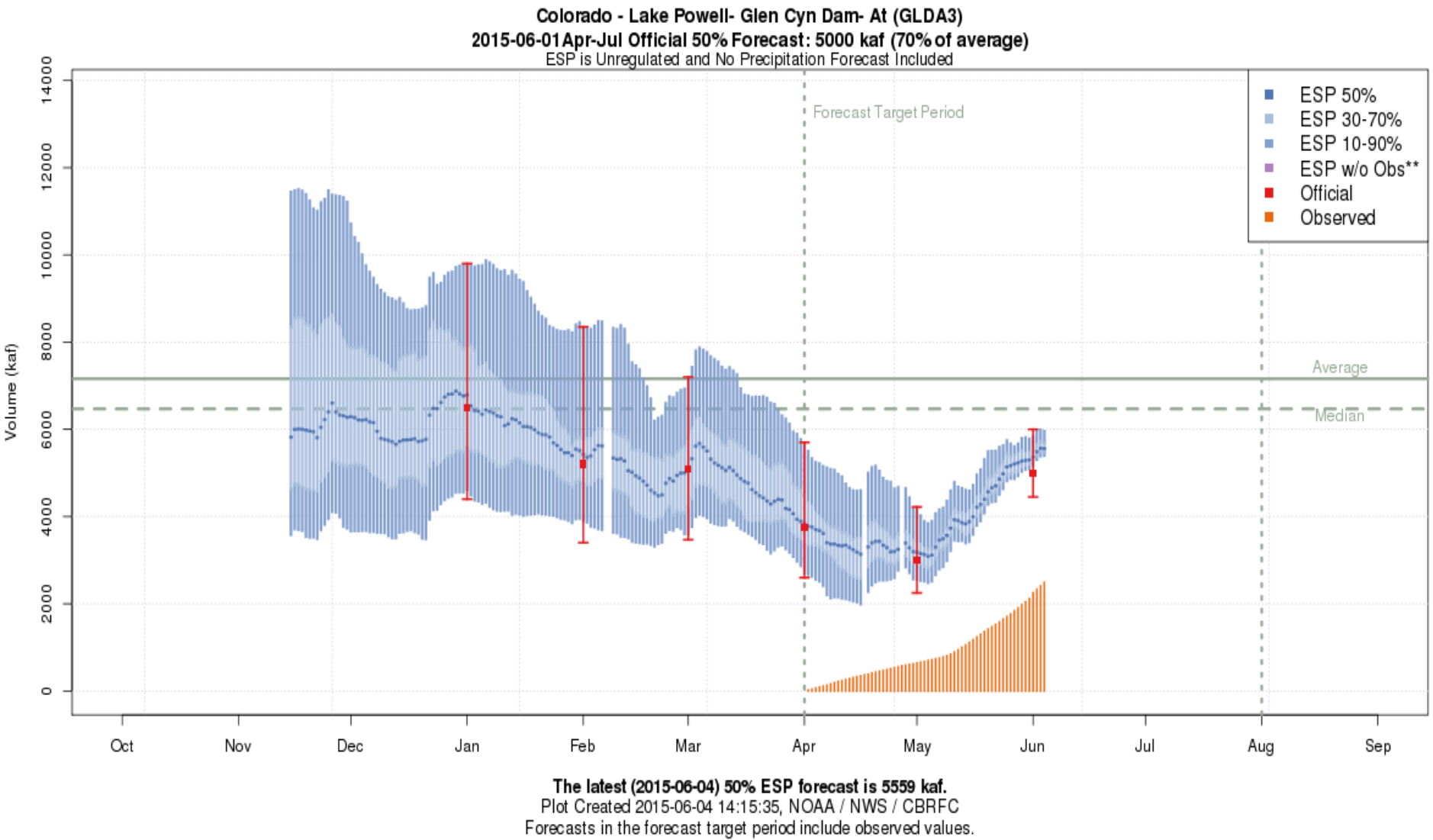
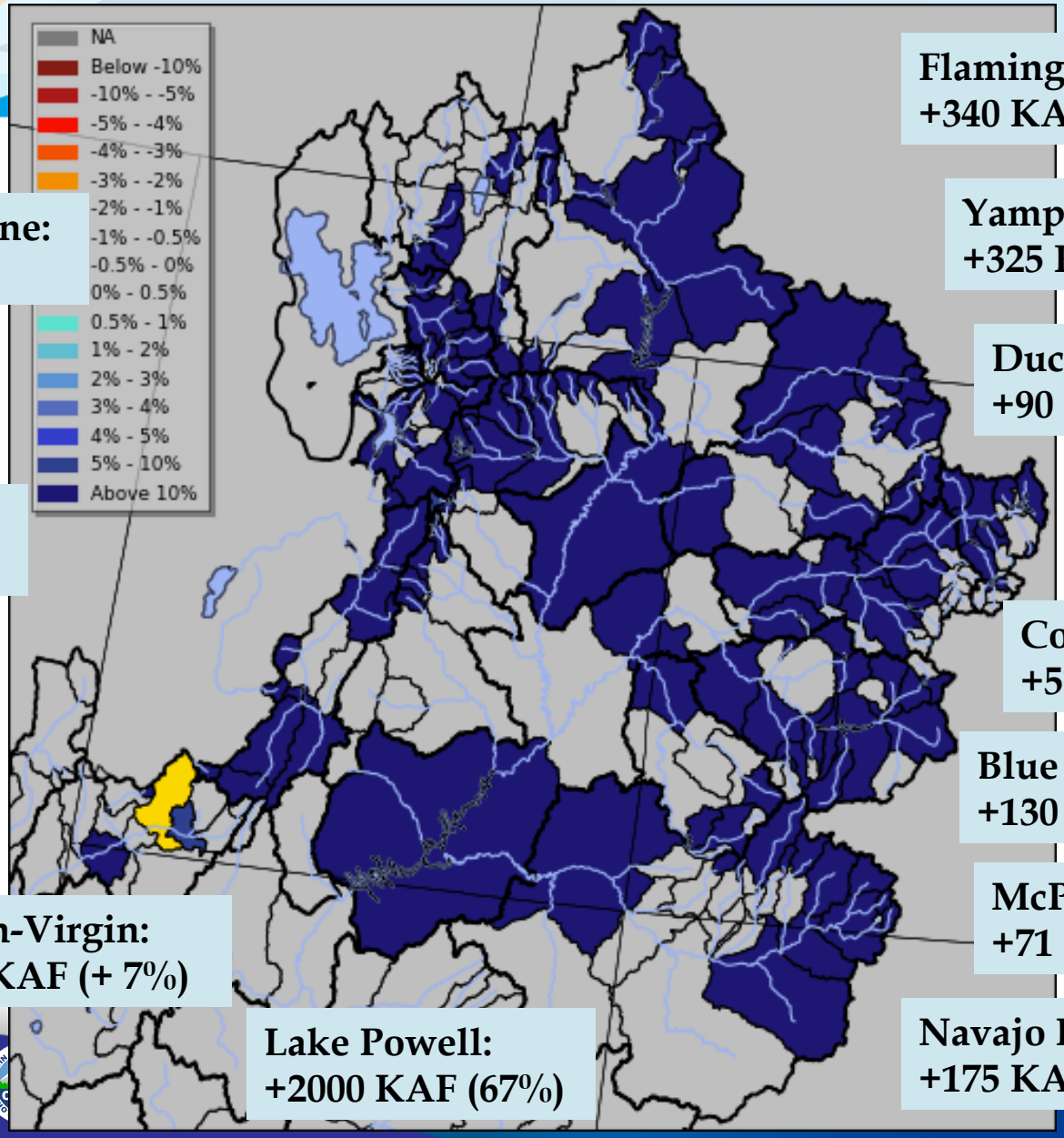


May Precipitation– Impact on Water Supply



June 1st Water Supply Forecasts Change from May 1st Forecasts
Volume Change KAF (% of May 1st volume increase)



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

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

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

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

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

Lake Powell:
+2000 KAF (67%)

Flaming Gorge:
+340 KAF (+ 58%)

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

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

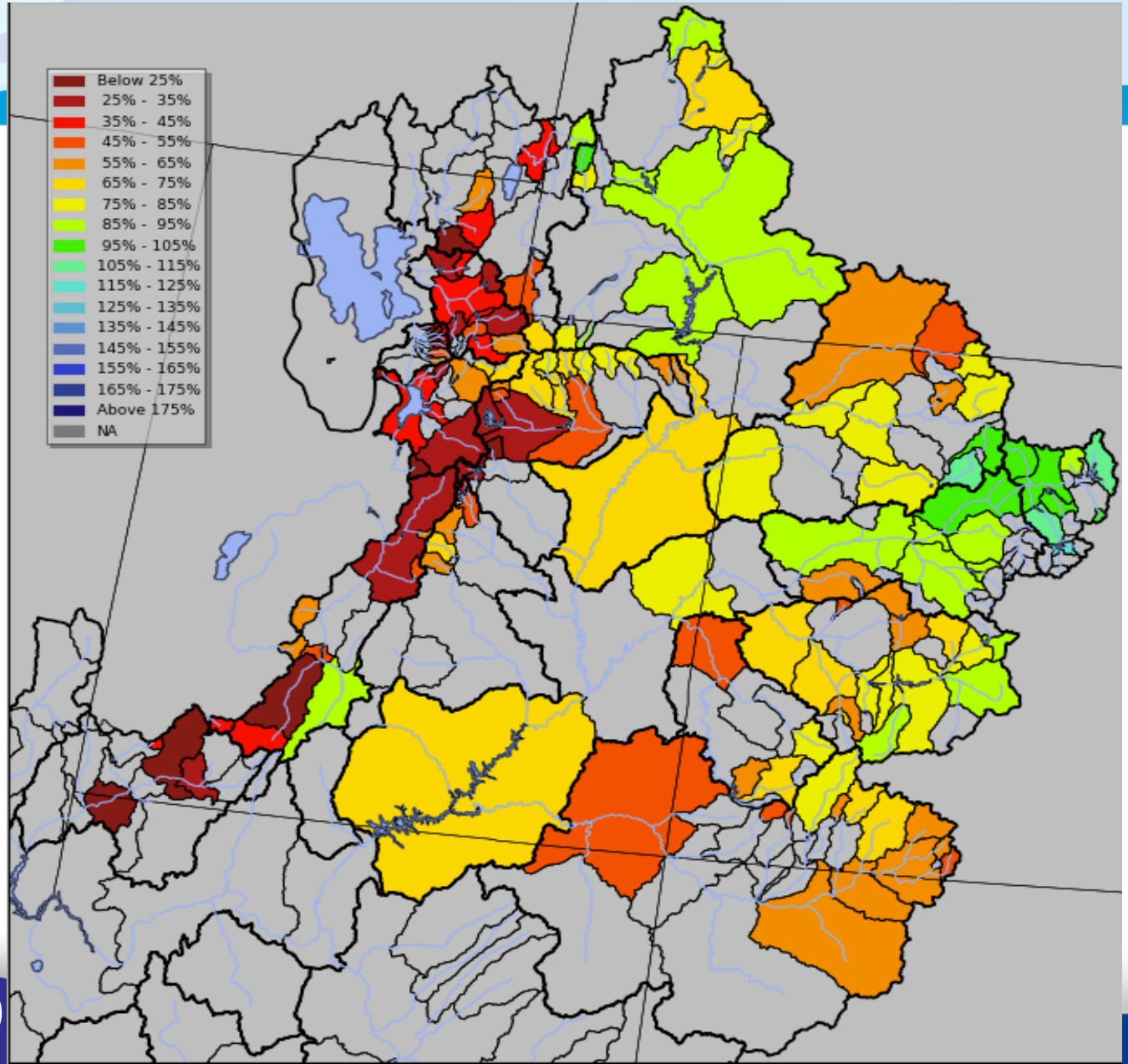
Colorado-Cameo:
+510 KAF (+ 32%)

Blue Mesa:
+130 KAF (+ 30%)

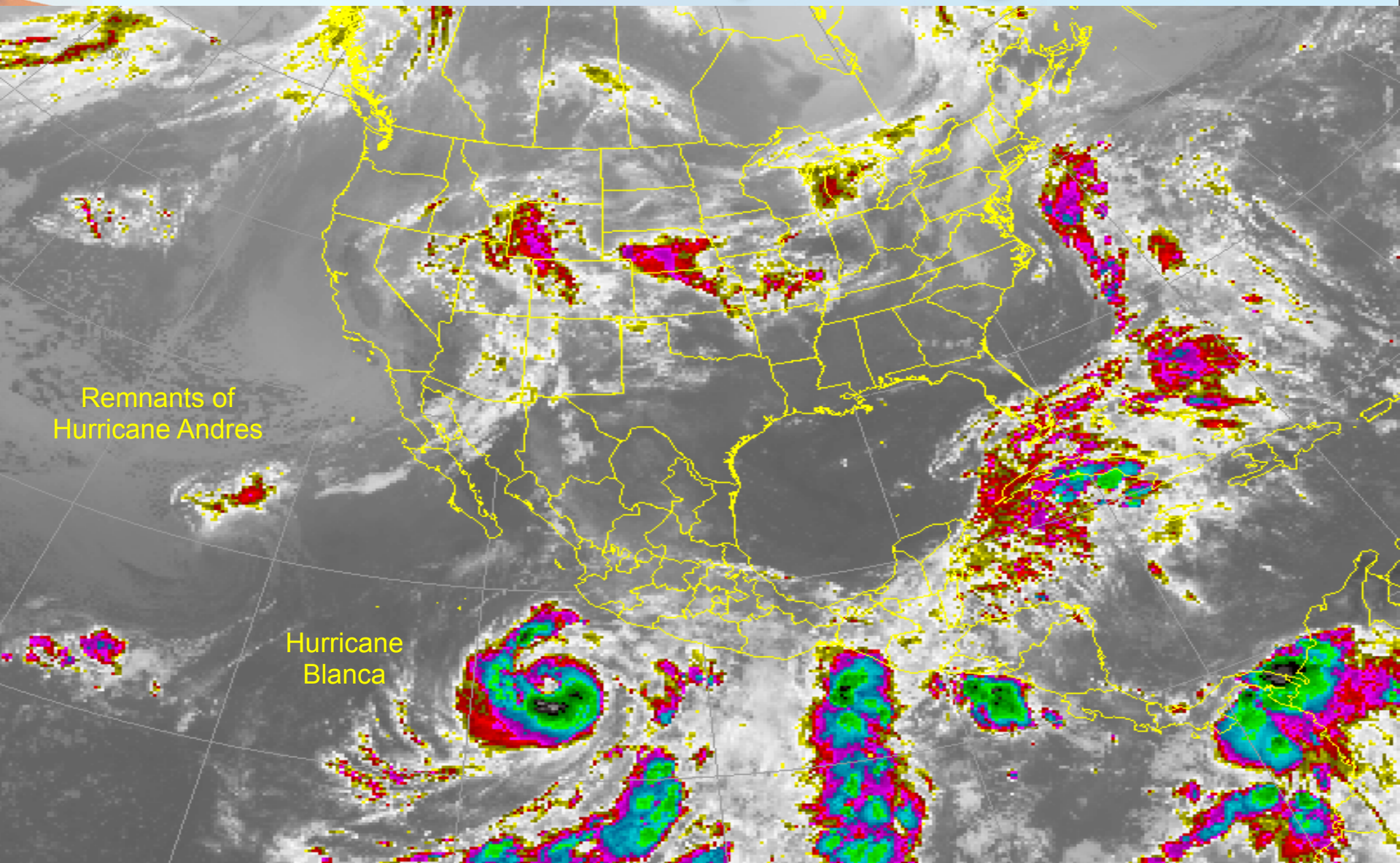
McPhee Res:
+71 KAF (+ 65%)

Navajo Res:
+175 KAF (+ 76%)

June 1st Water Supply Forecasts (% of Average)



Upcoming Weather



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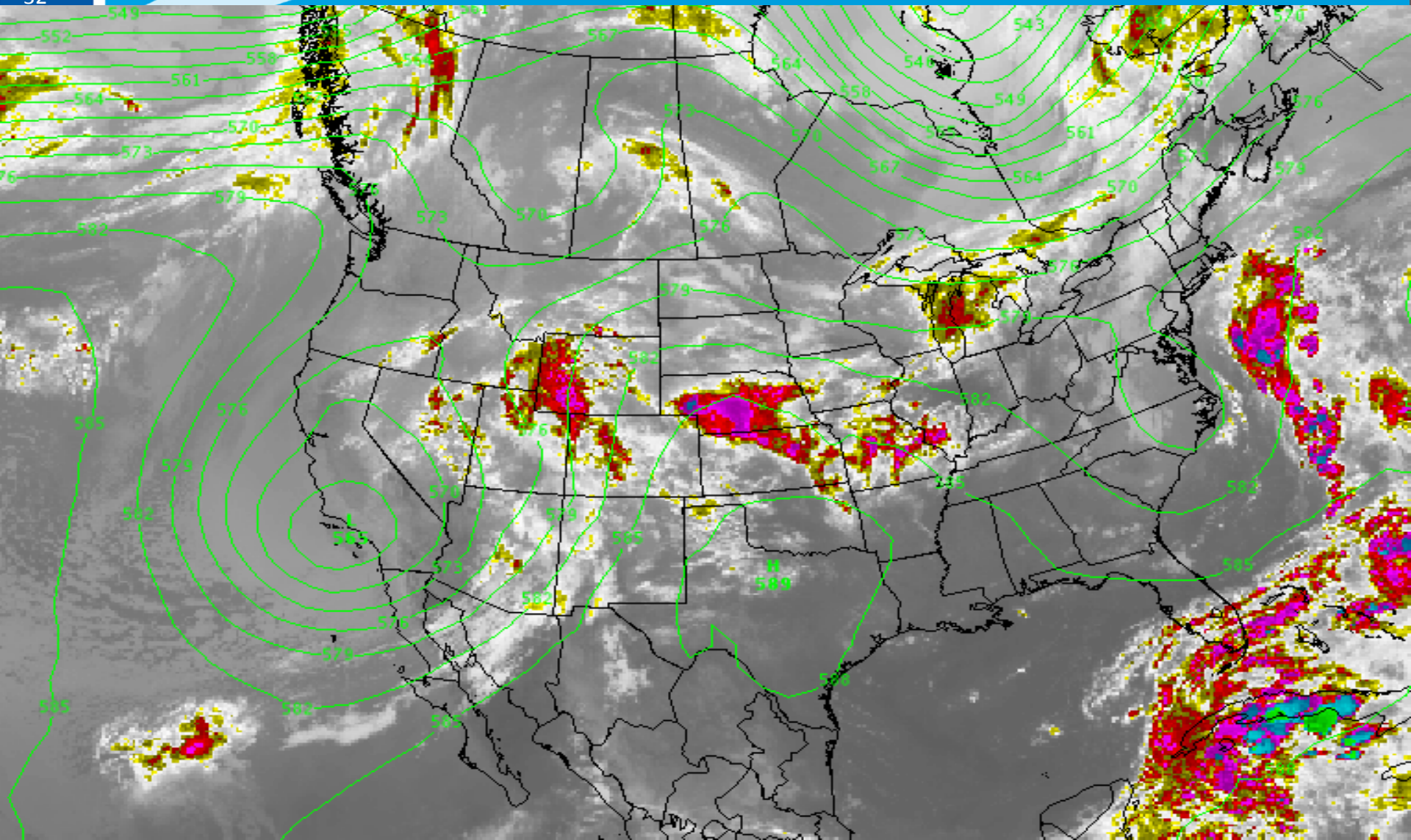

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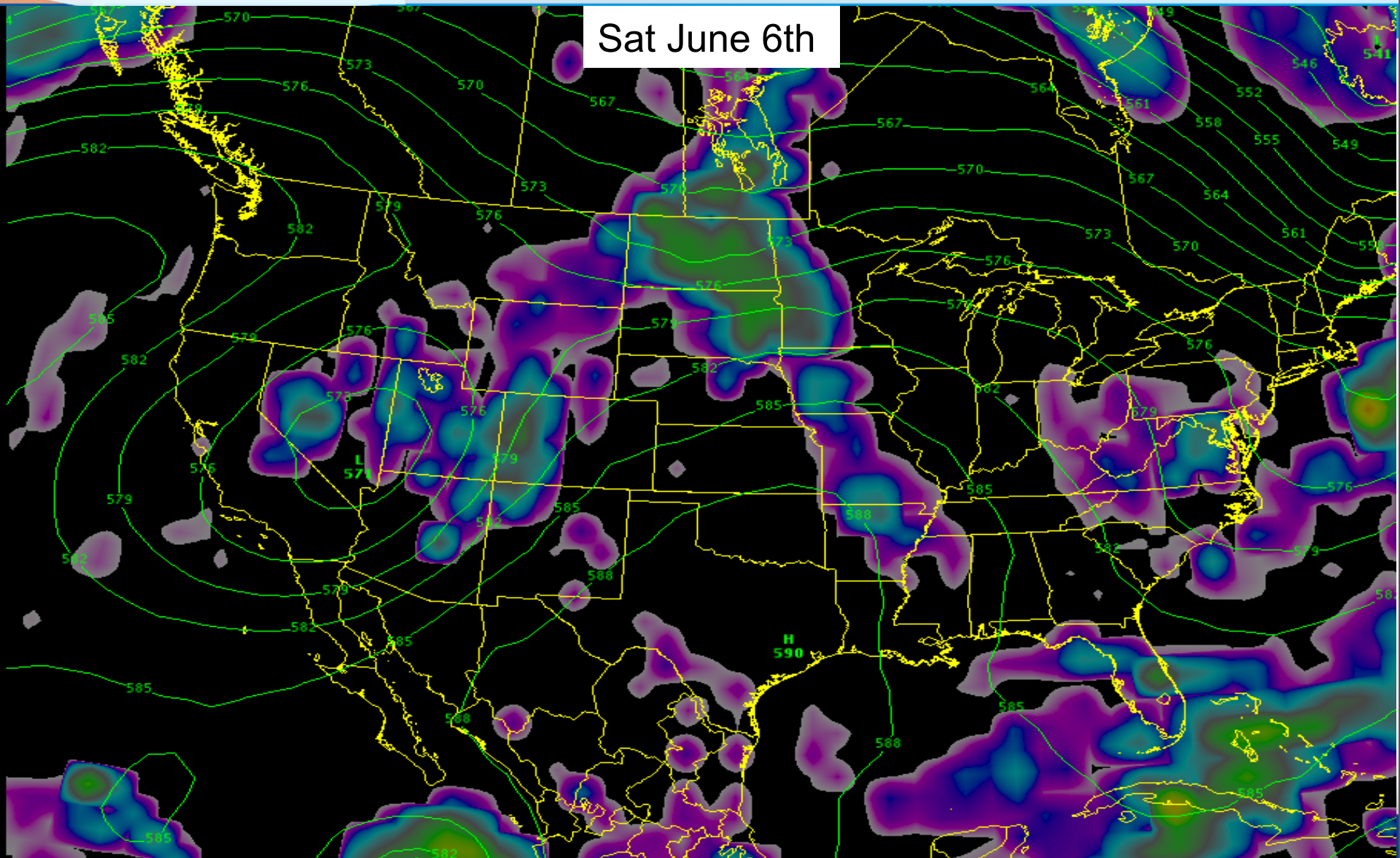

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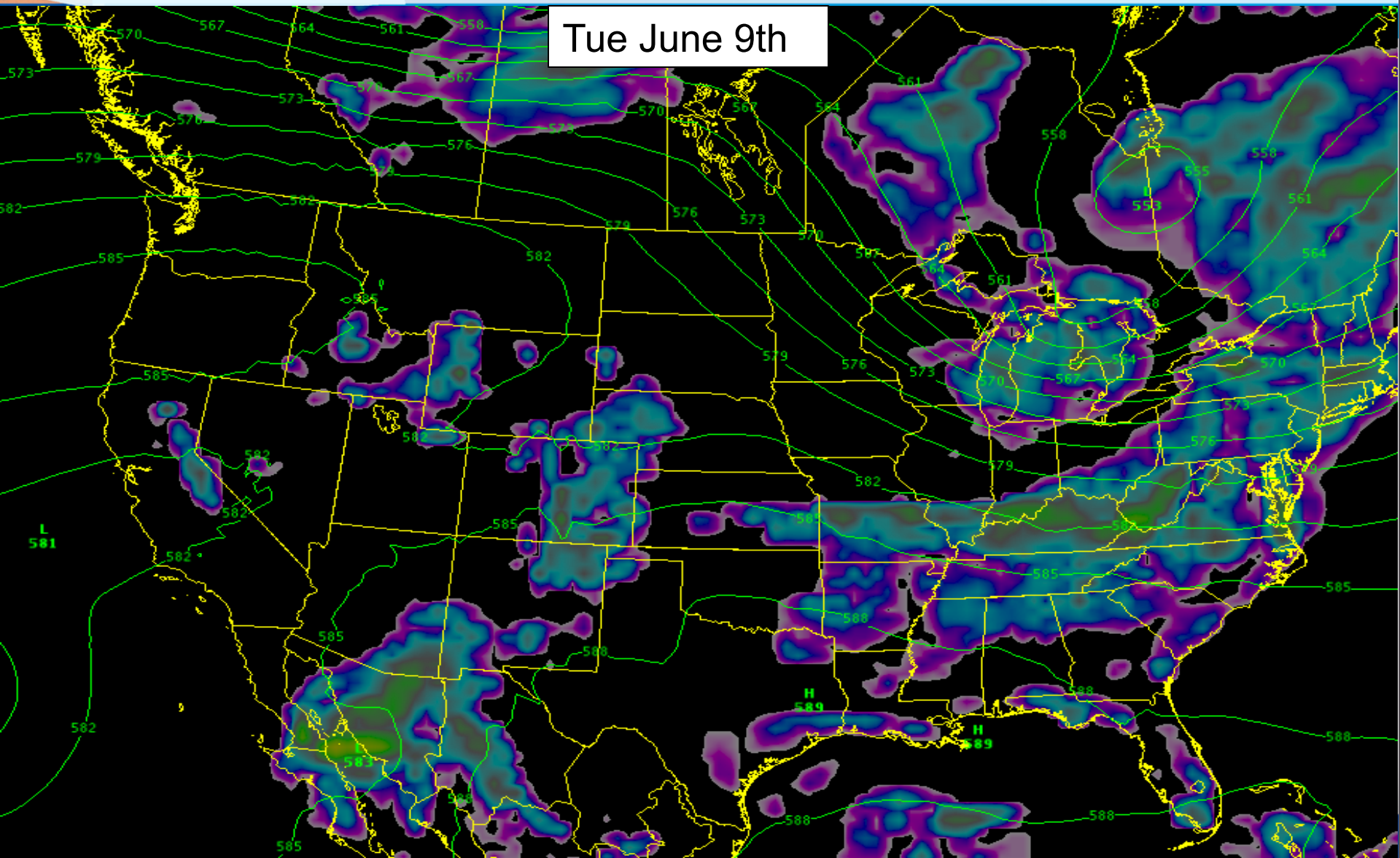
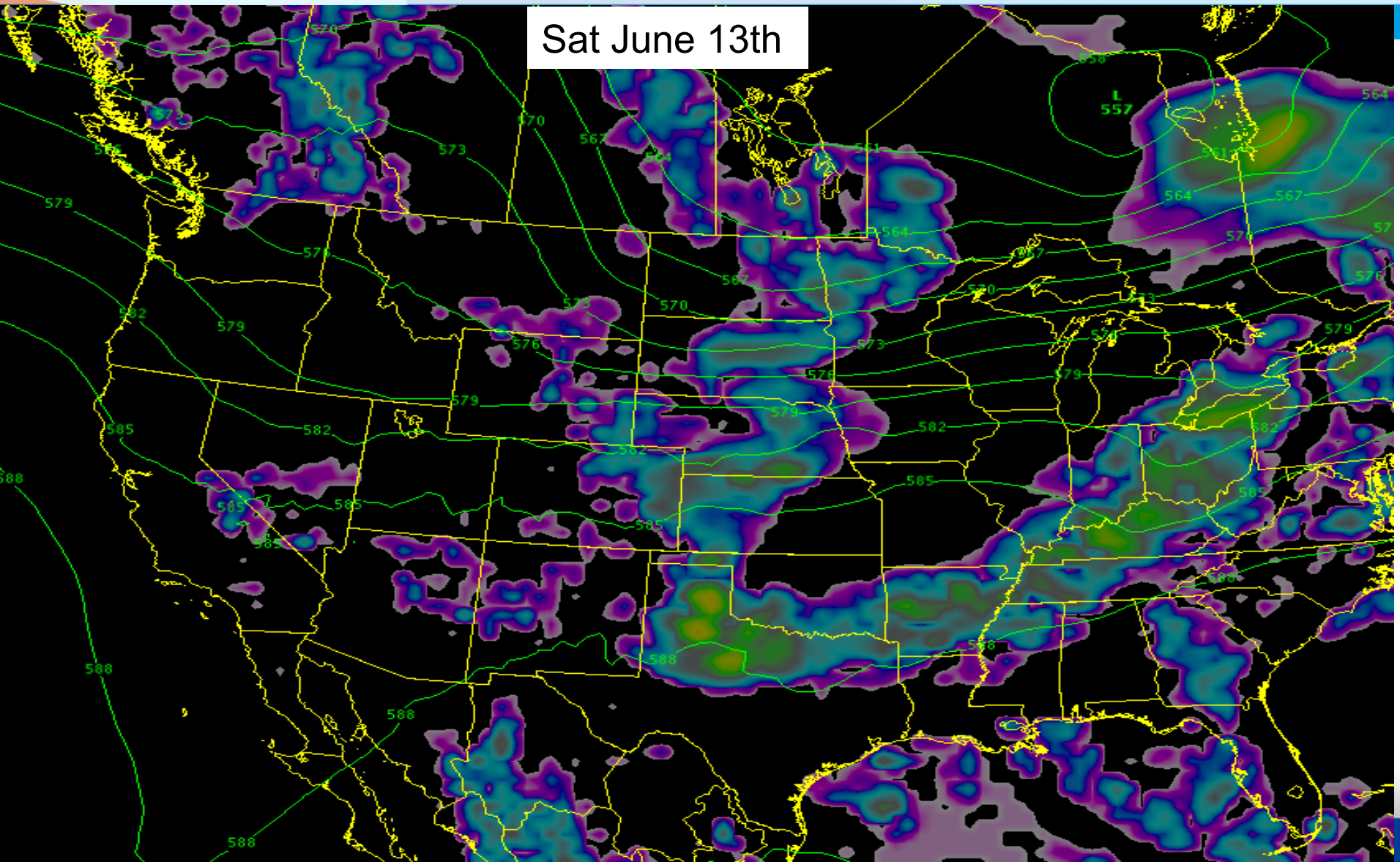
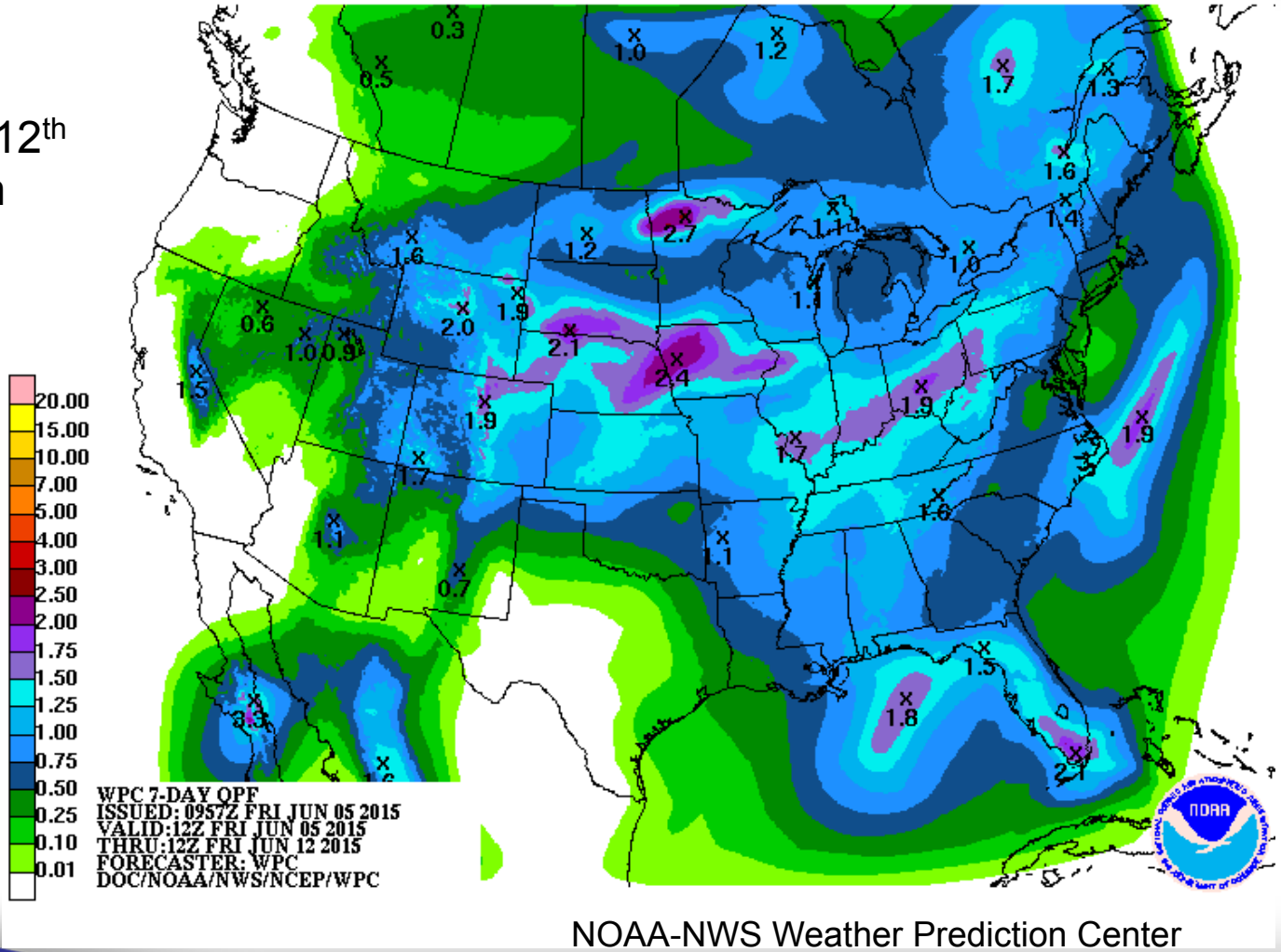


Upcoming Weather



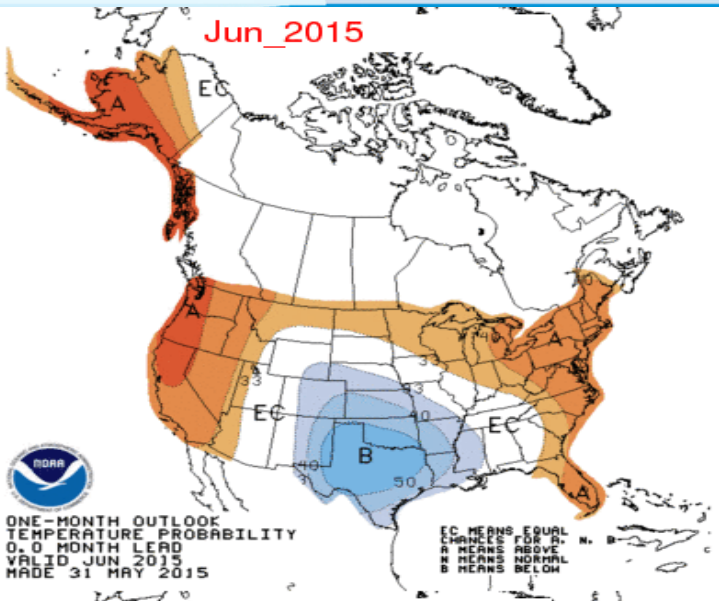
Upcoming Weather – Precipitation Forecast

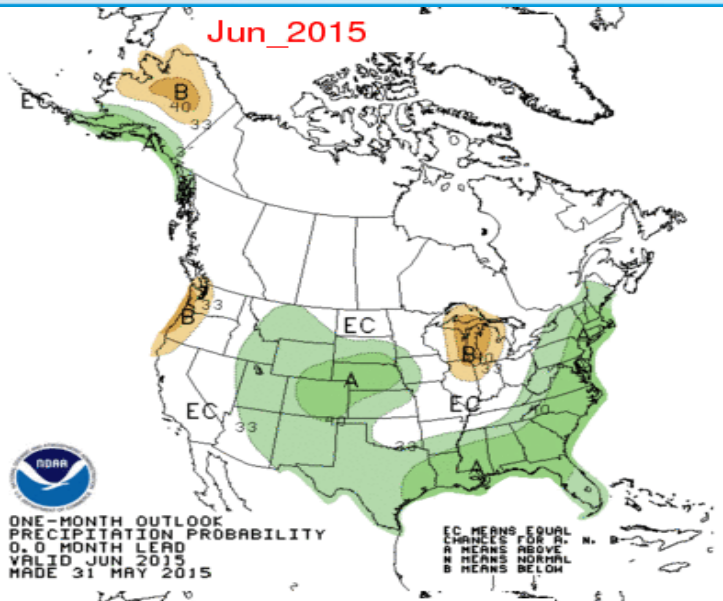
Jun 5th – June 12th
Precipitation

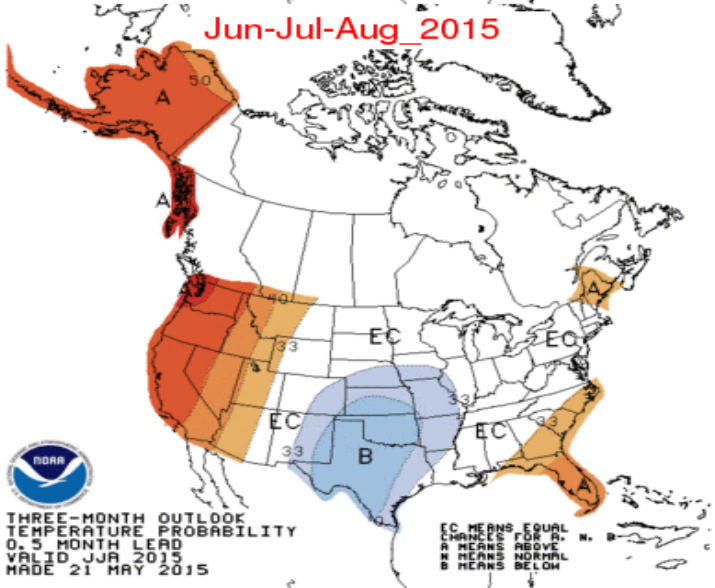


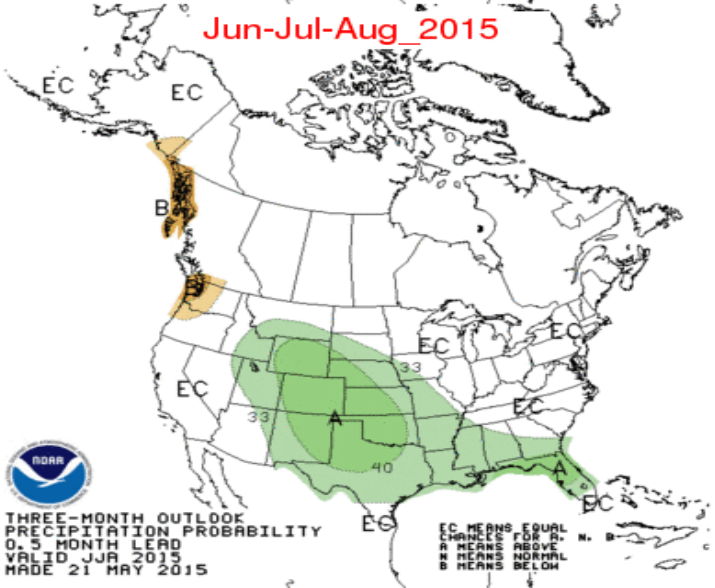
NOAA-NWS Weather Prediction Center

June & June-July CPC outlook



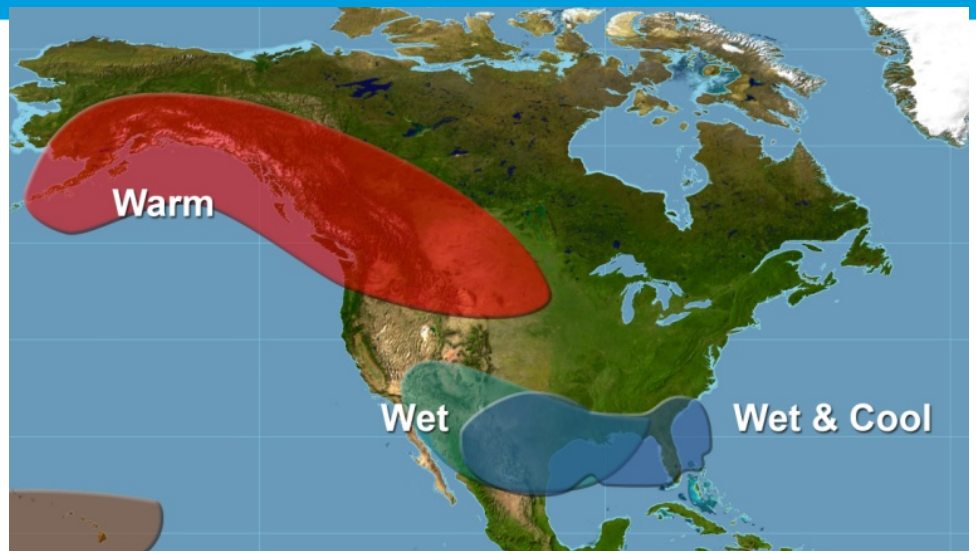


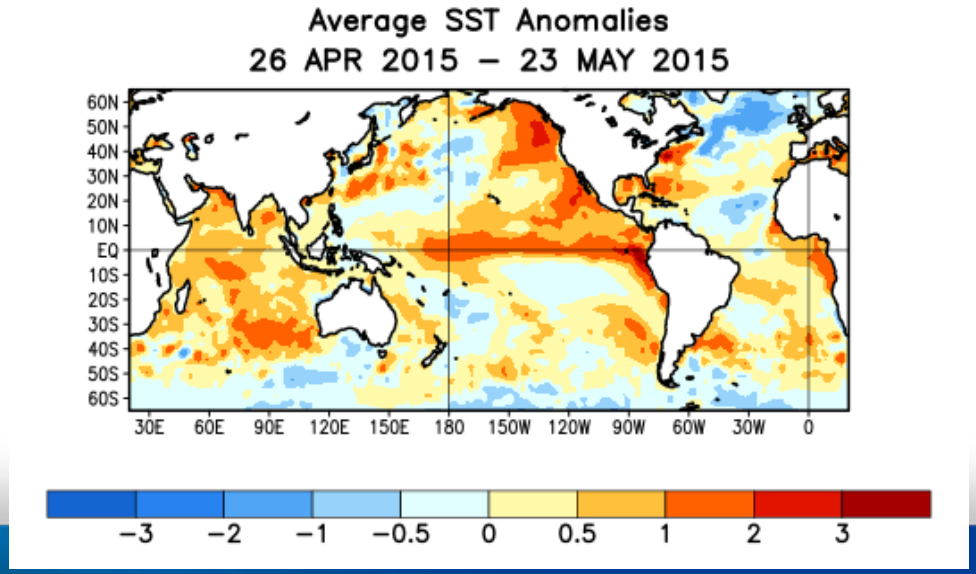




A Few Slides About ENSO

- 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



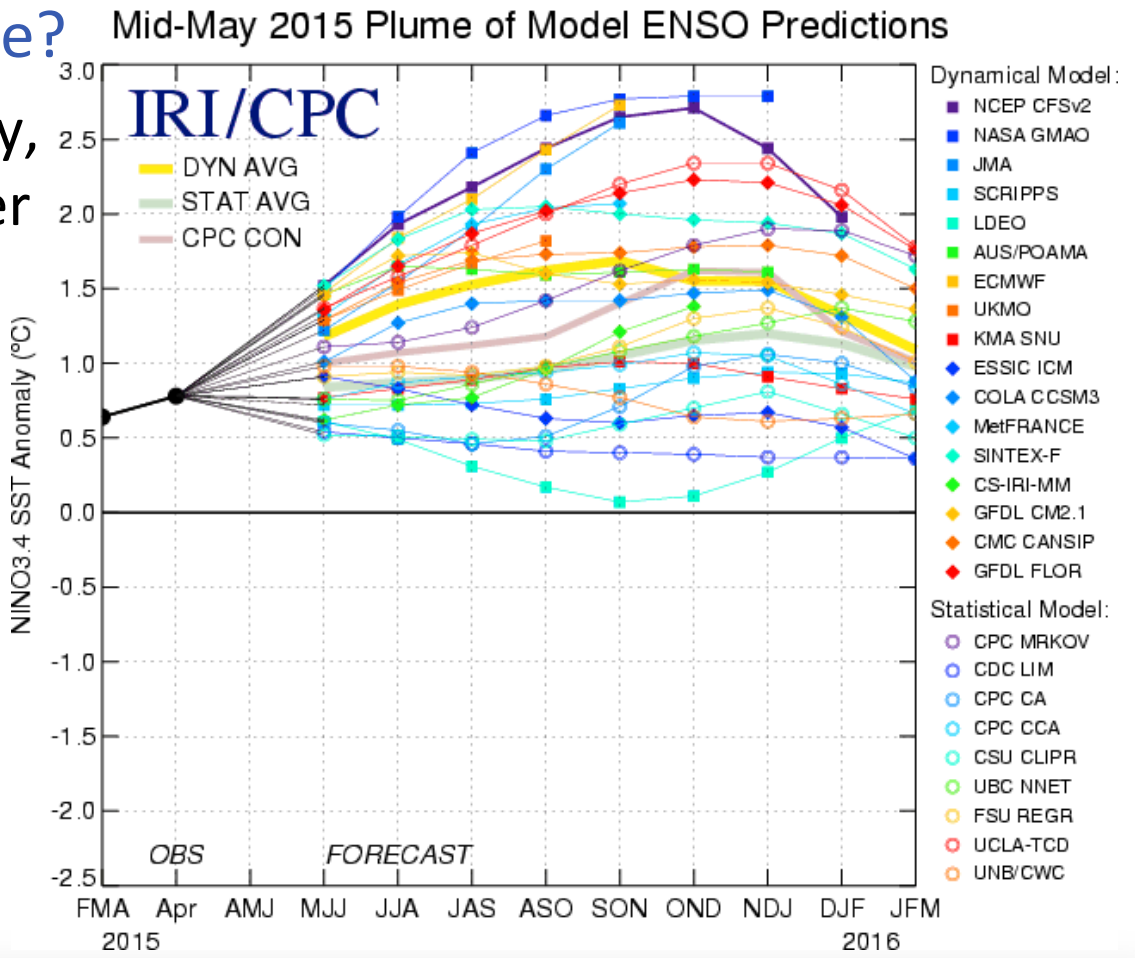


A Few Slides About ENSO

- 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!

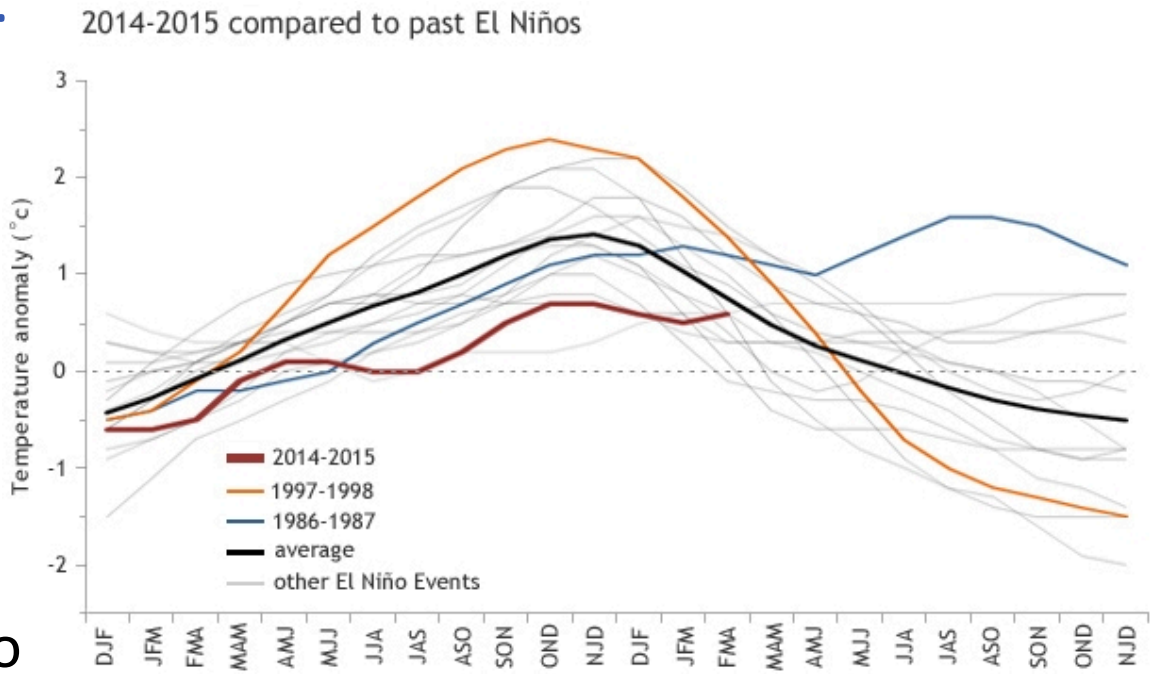
A Few Slides About ENSO

- 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.



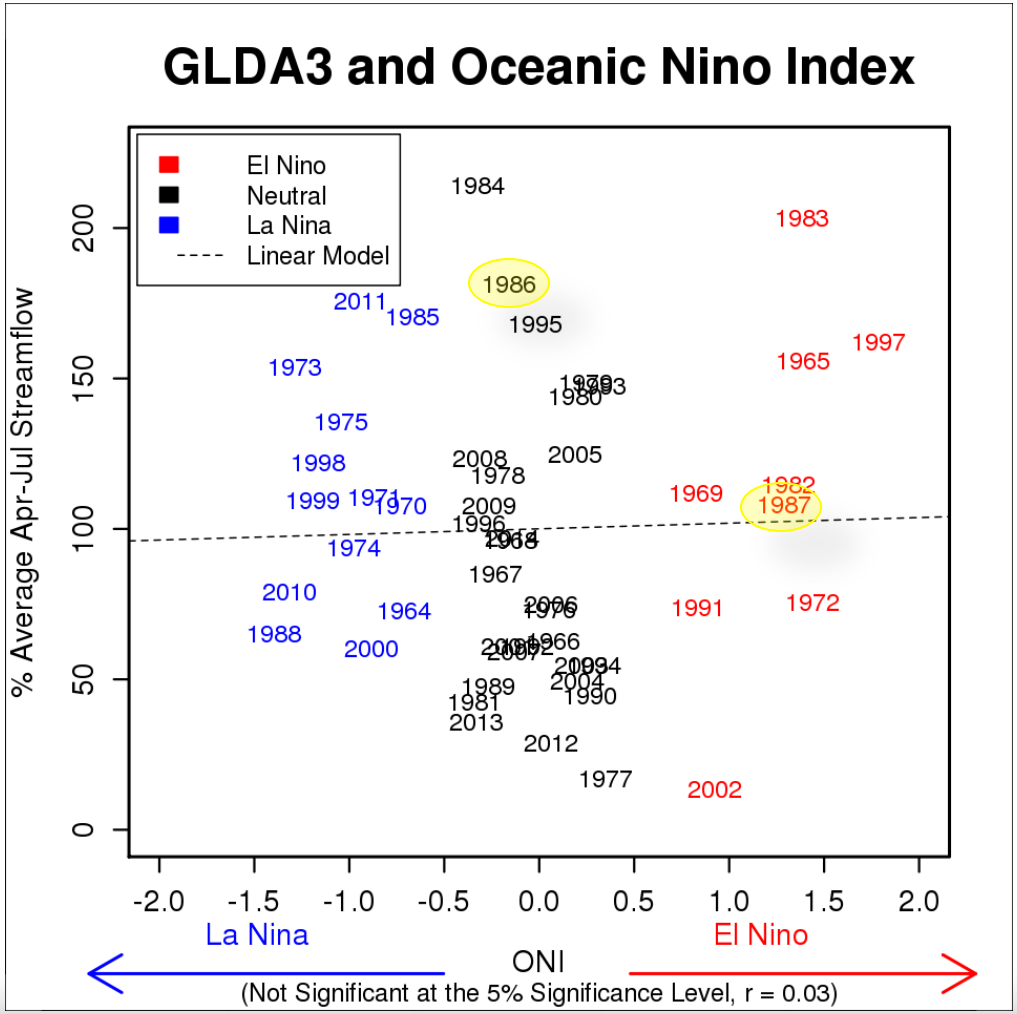
A Few Slides About ENSO

- 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



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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