January 2016 Water Supply Briefing

Jan 7, 2016

Greg Smith – Sr. Hydrologist

Colorado Basin River Forecast Center
National Weather Service
NOAA

Please mute your phone until ready to ask questions

CBRFC Forecast Areas

Today's Presentation

Review of the fall 2015 precipitation

Current conditions impacting forecasts
snowpack, soil moisture, El Niño event

2016 water supply forecasts overview

How good are the January forecasts ?

Short term weather outlook

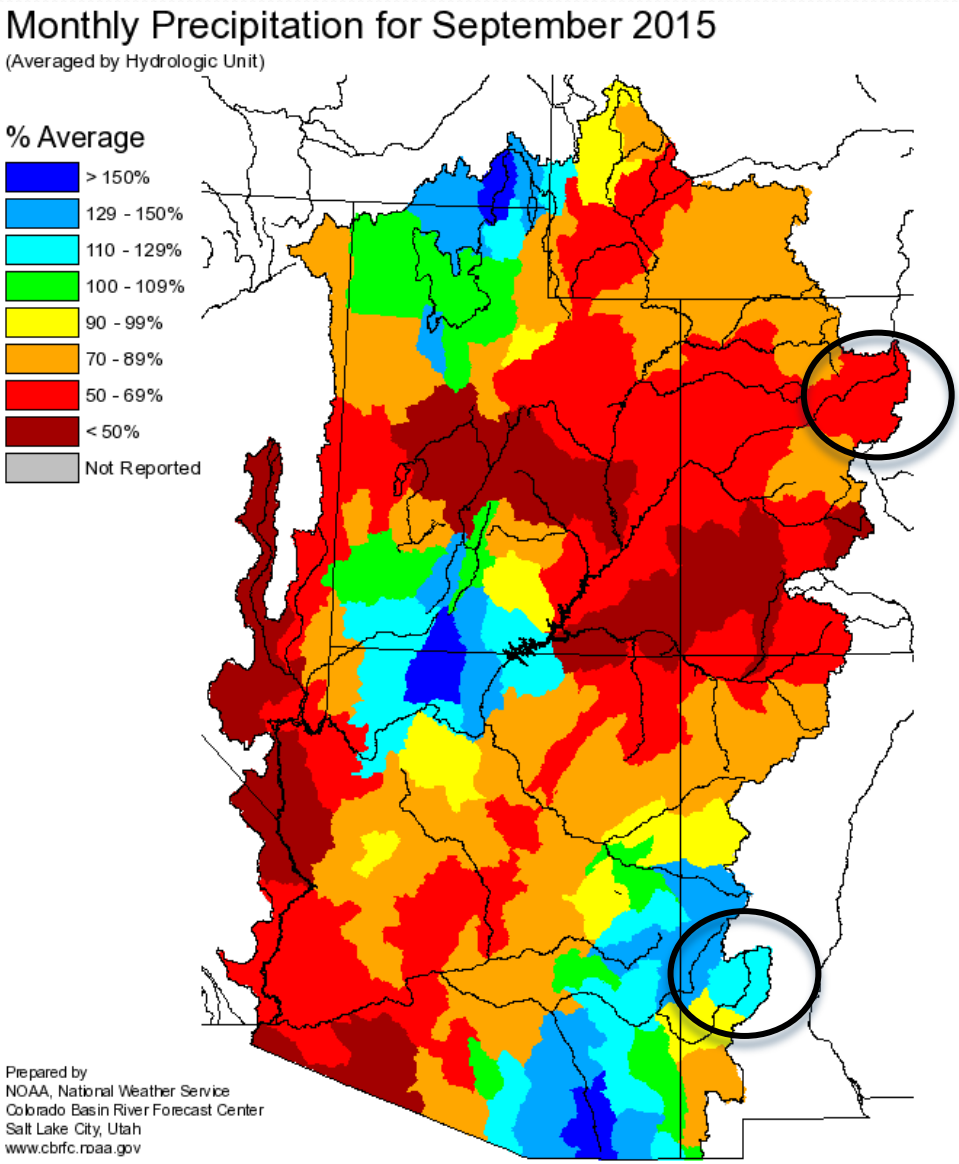
2016 water supply briefing schedule

Contacts & Questions

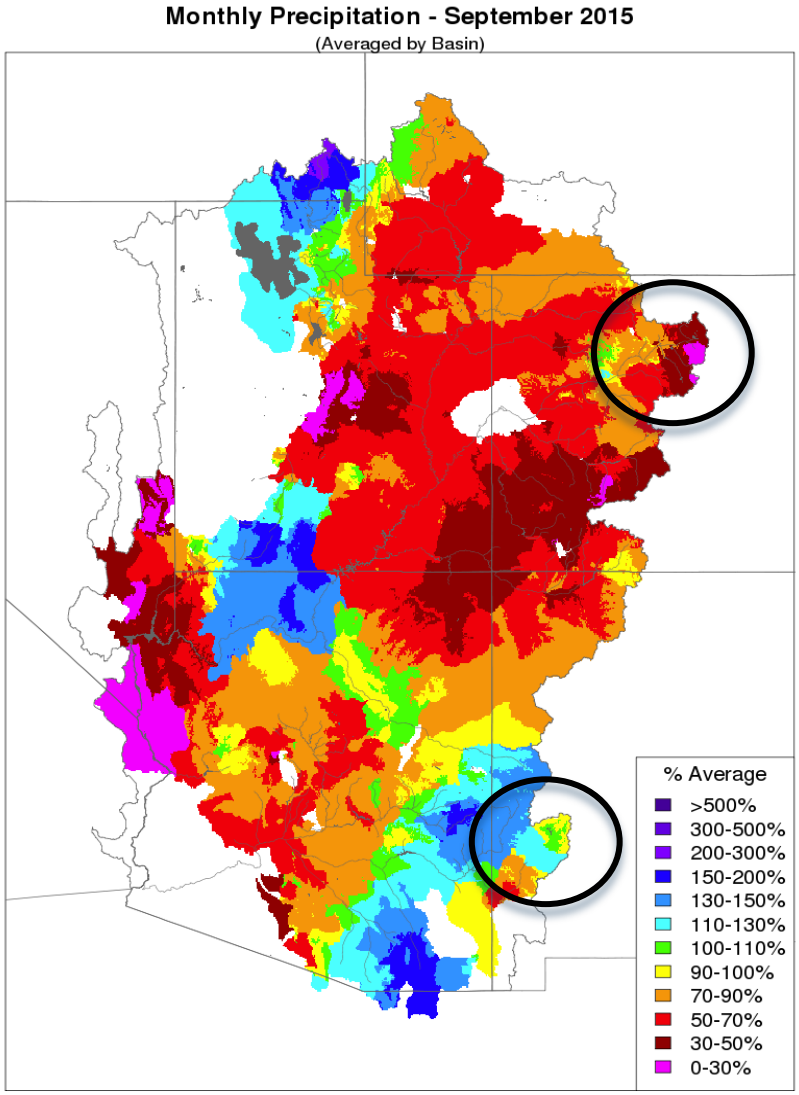
*** Please mute your phone until ready to ask questions ***

New Precipitation Display

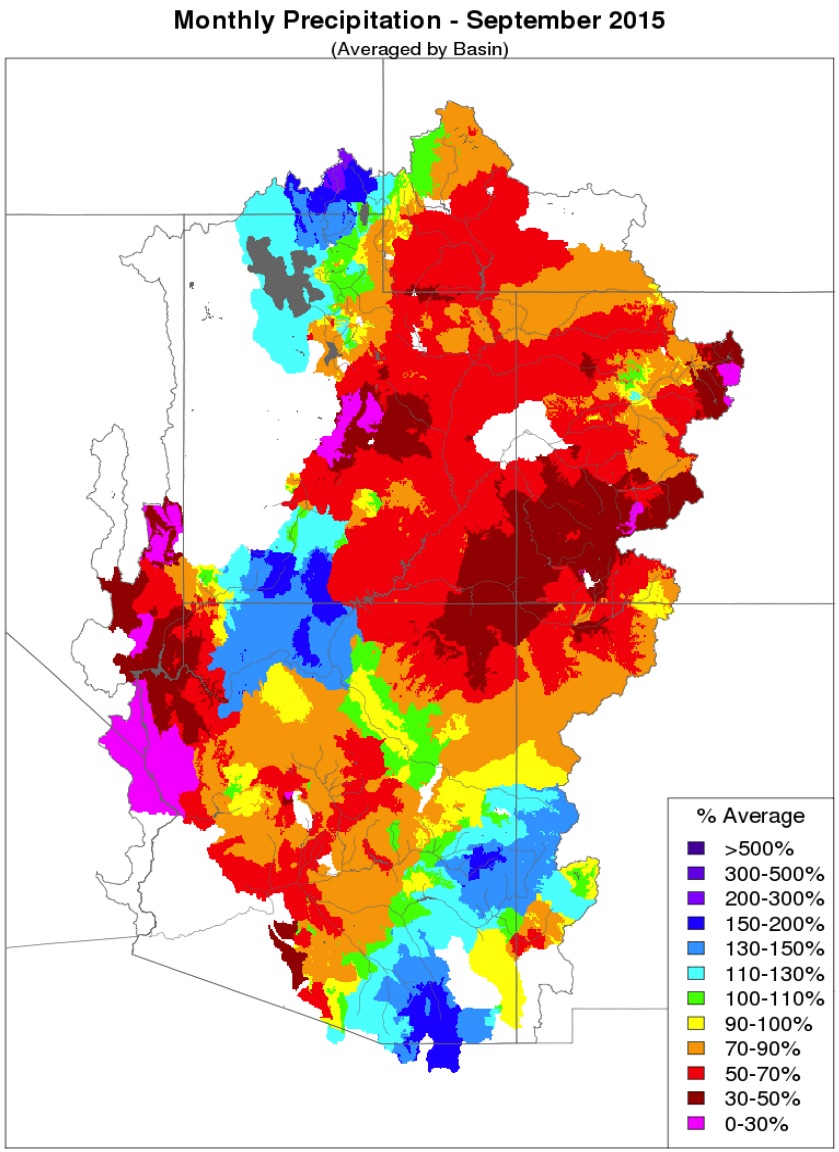
LEGACY
(averaged by usgs huc)

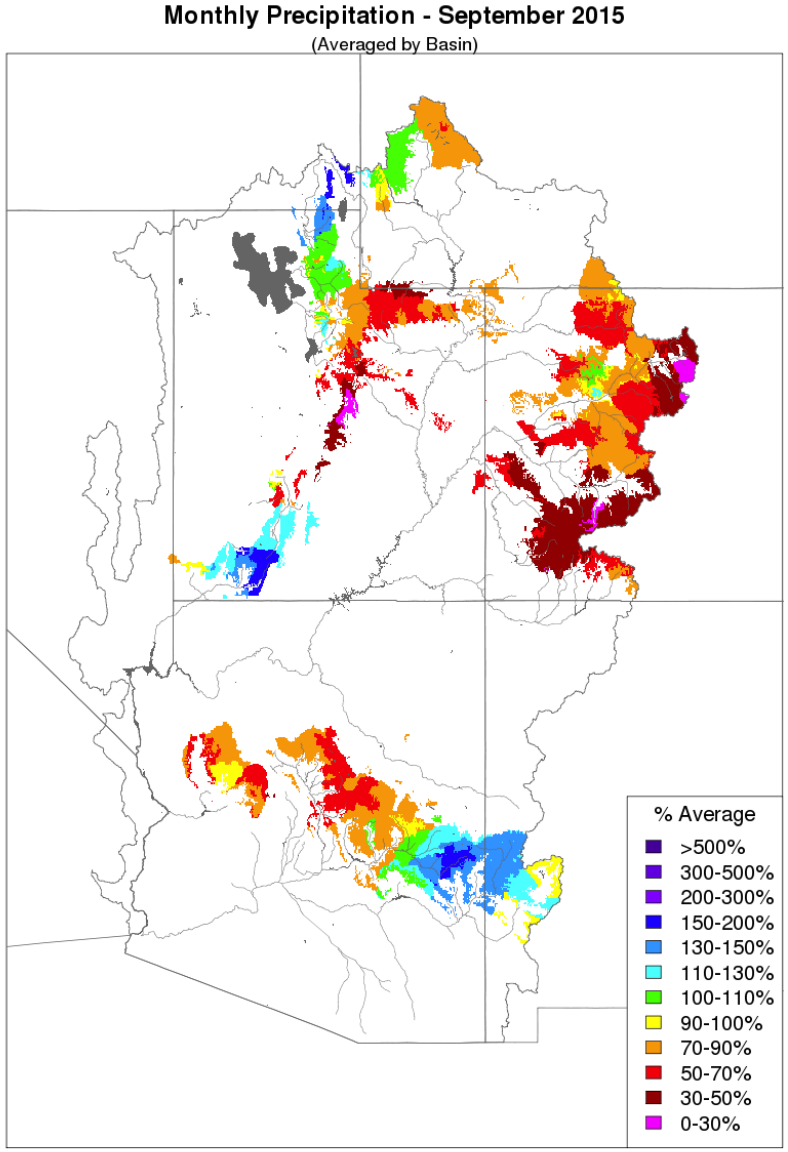


NEW
(averaged by cbrfc model basin)



New Precipitation Display – Trimmed to runoff producing areas

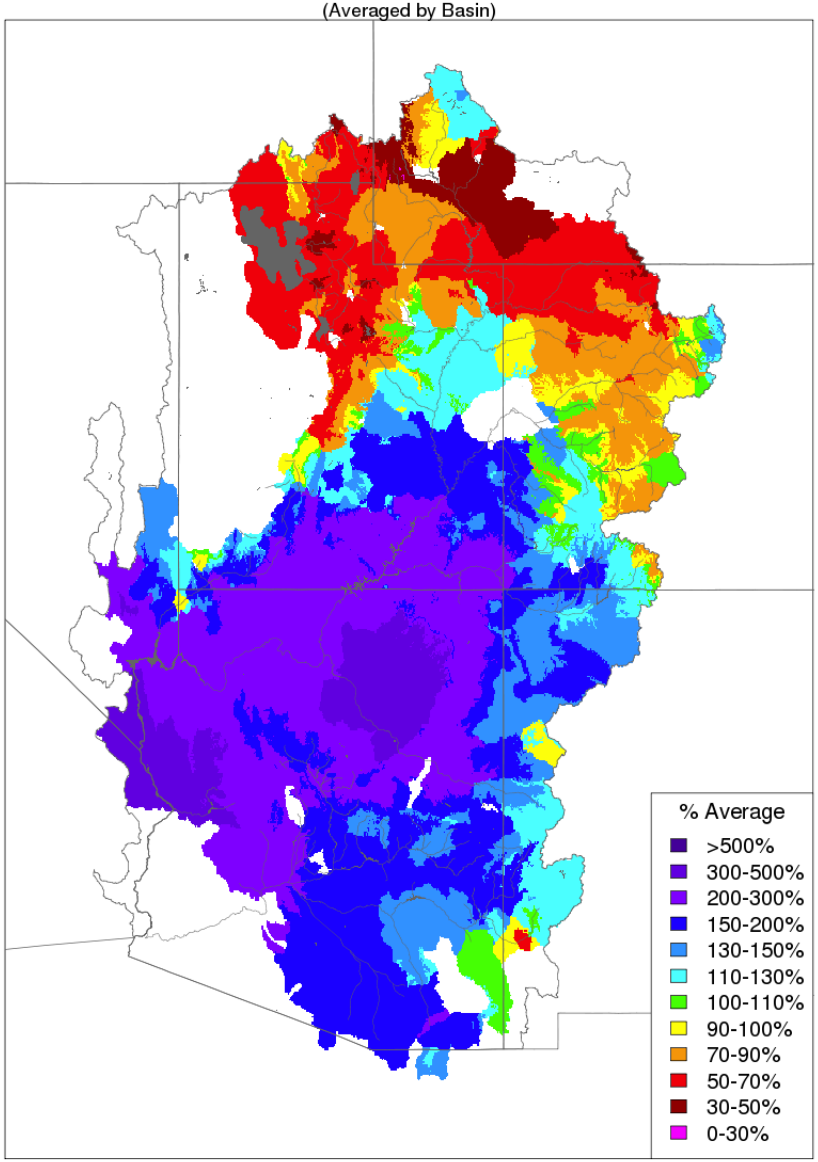




October Precipitation & Temperature

Monthly Precipitation - October 2015

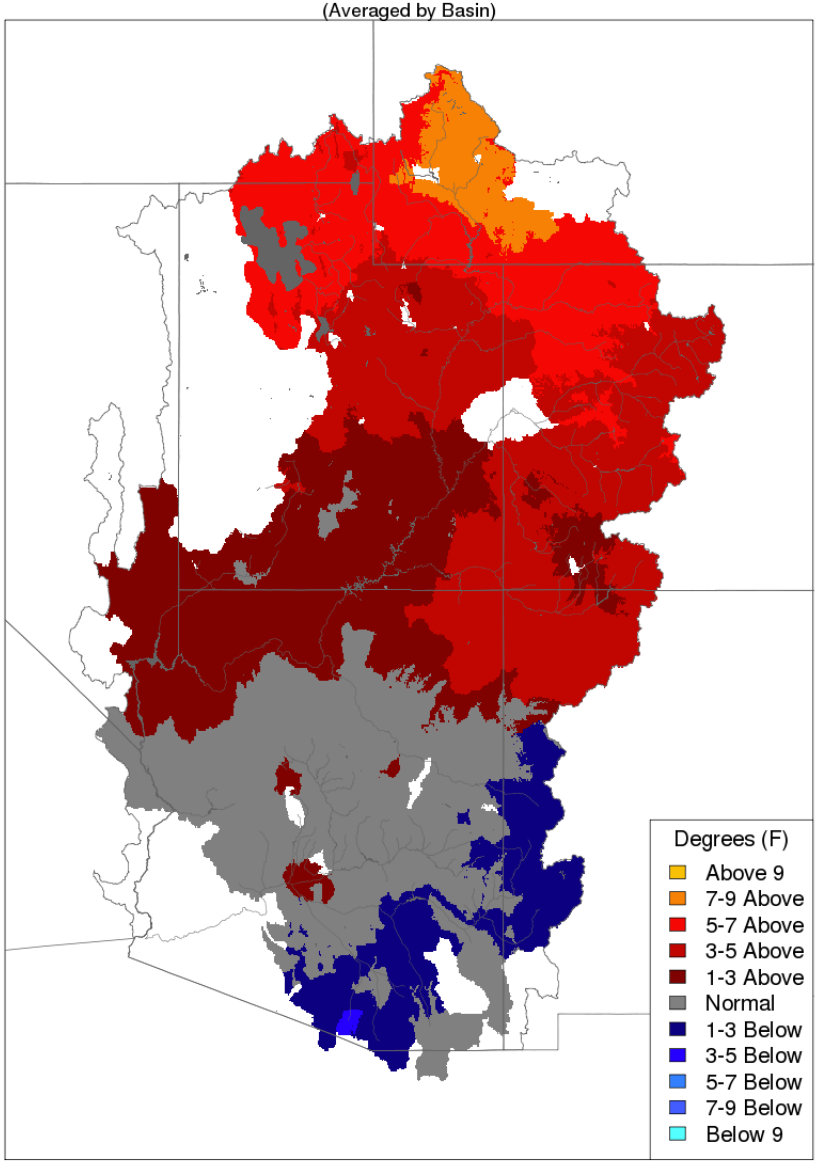
(Averaged by Basin)



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

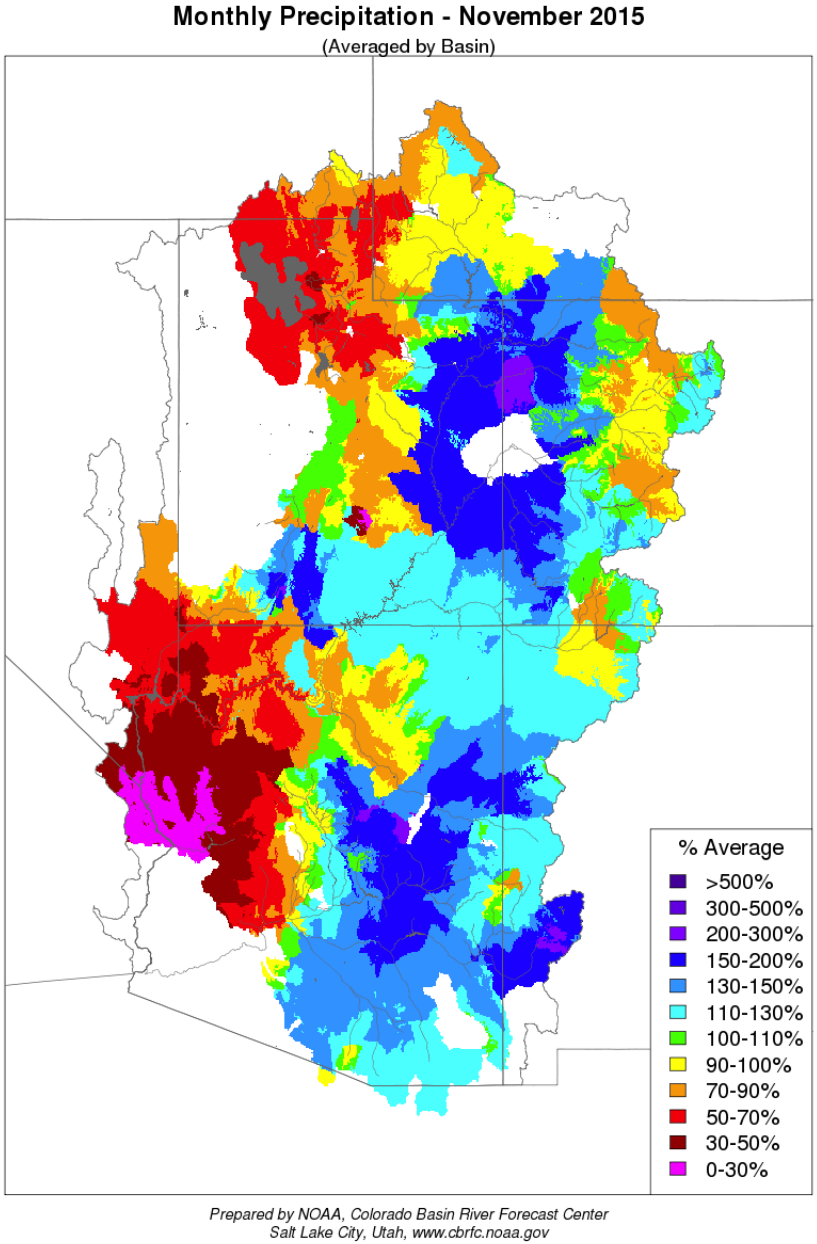
Max Temp - Monthly Deviation - October 2015

(Averaged by Basin)



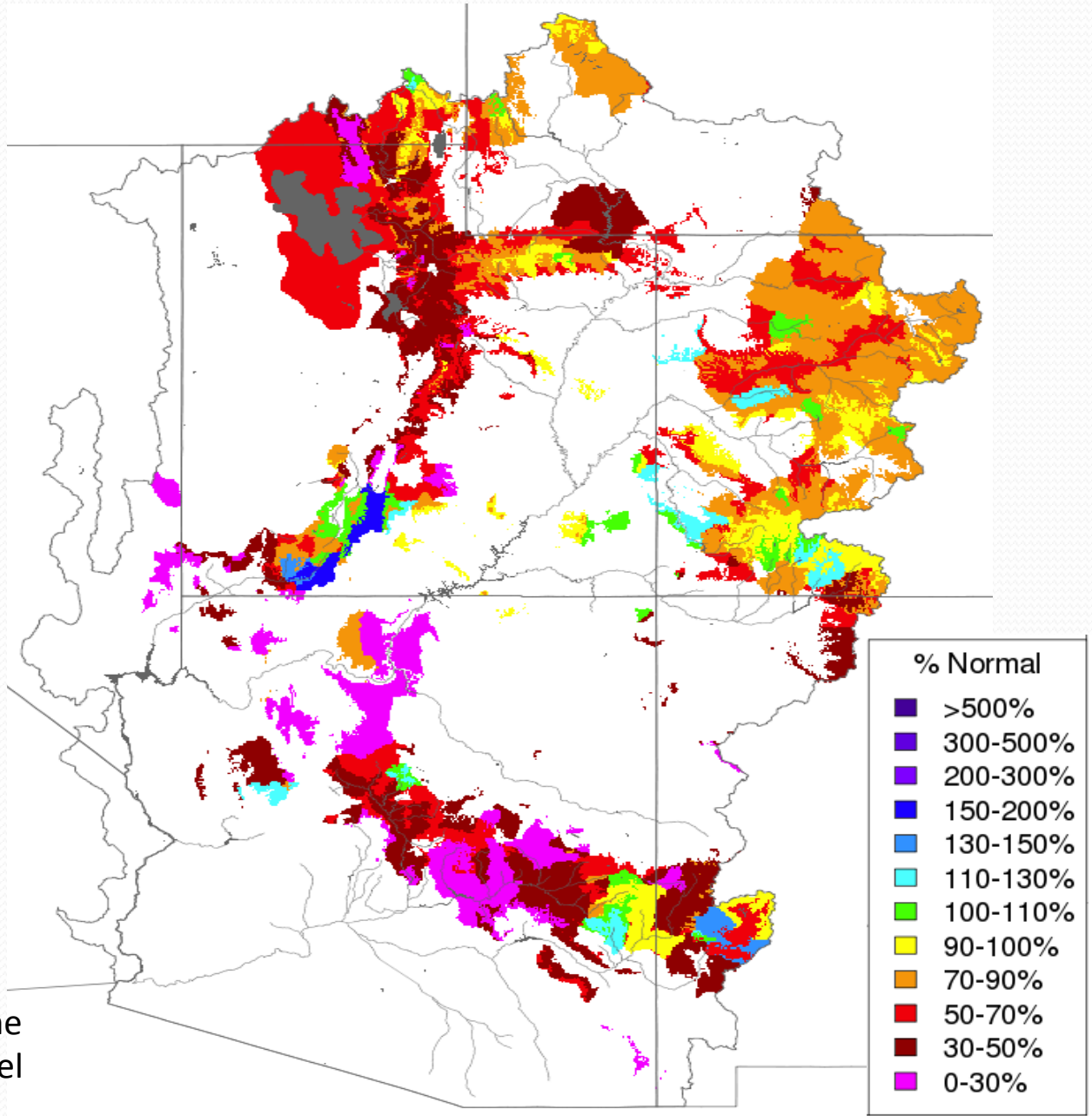
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

November Precipitation



Soil Moisture

November 15, 2015

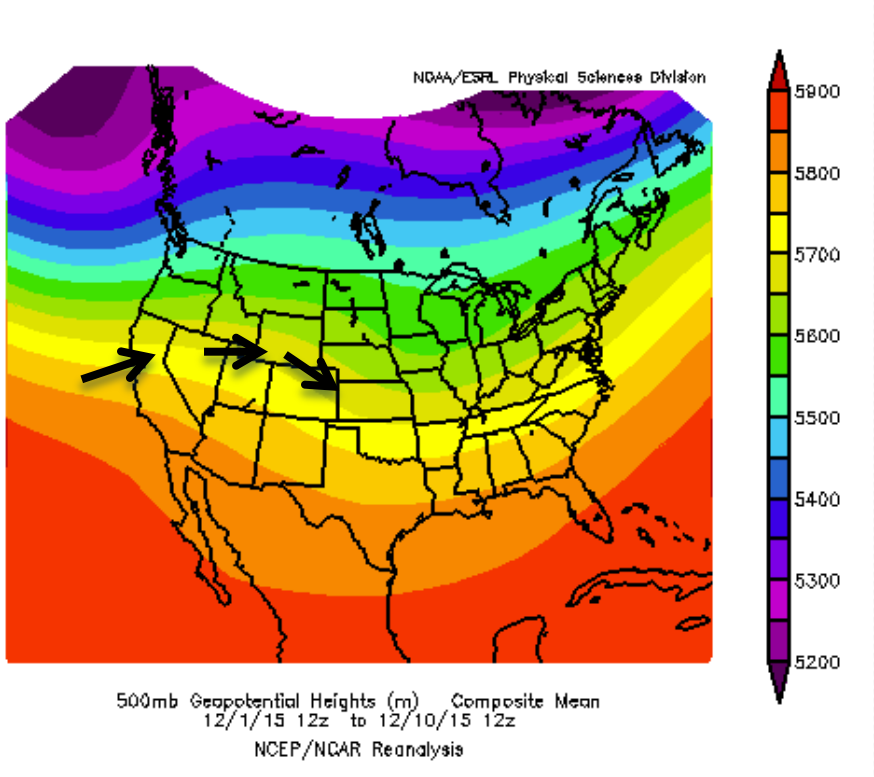


Soil Moisture representation from the CBRFC hydrologic model

2015 December Weather

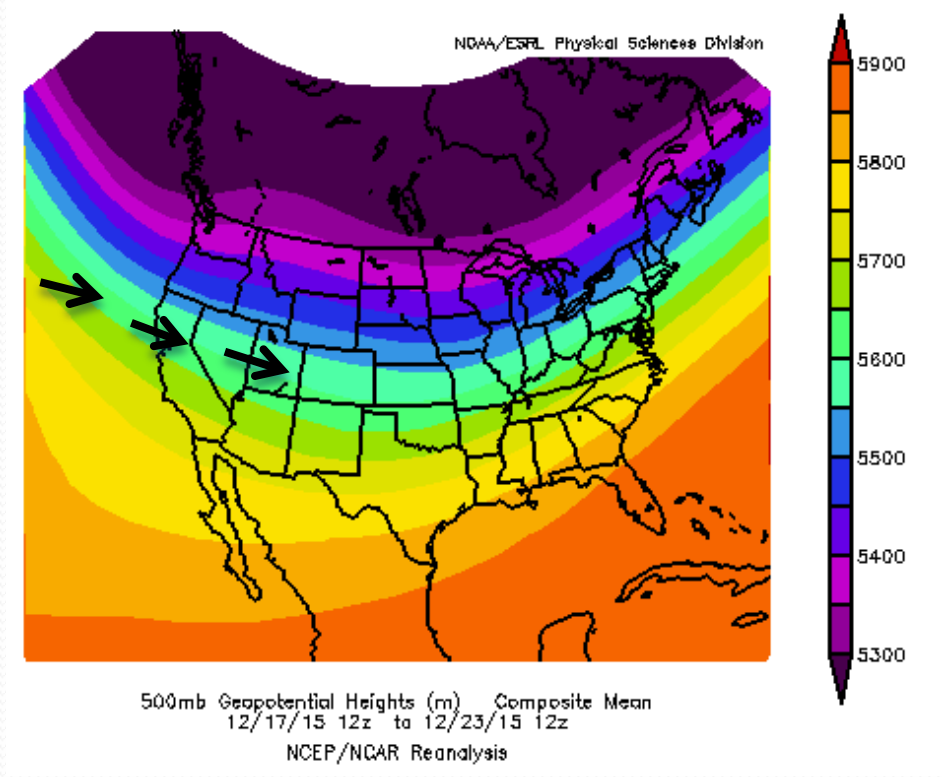
Upper Atmosphere Pattern

December 1-10 2015



Early December temperatures +20 above normal

December 17-23 2015

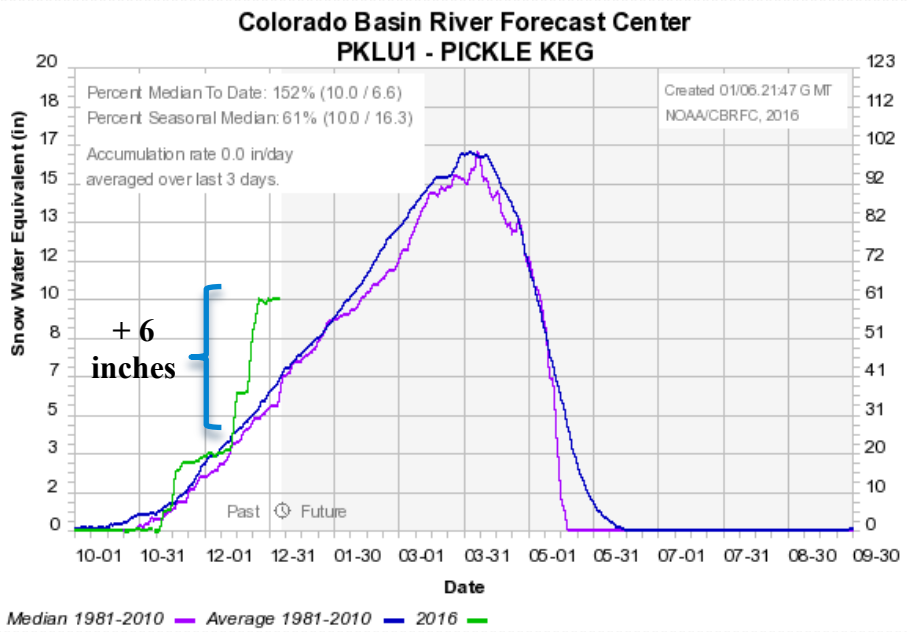


Strong moisture influx into the region second half of December

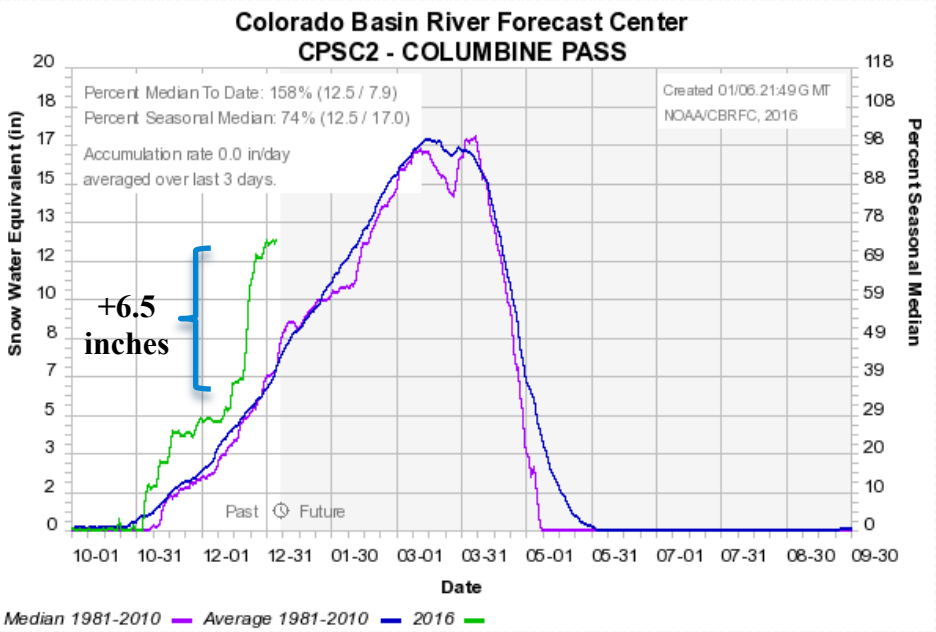
December Precipitation

SNOTEL Sites – SWE increase Dec 14-Dec 26

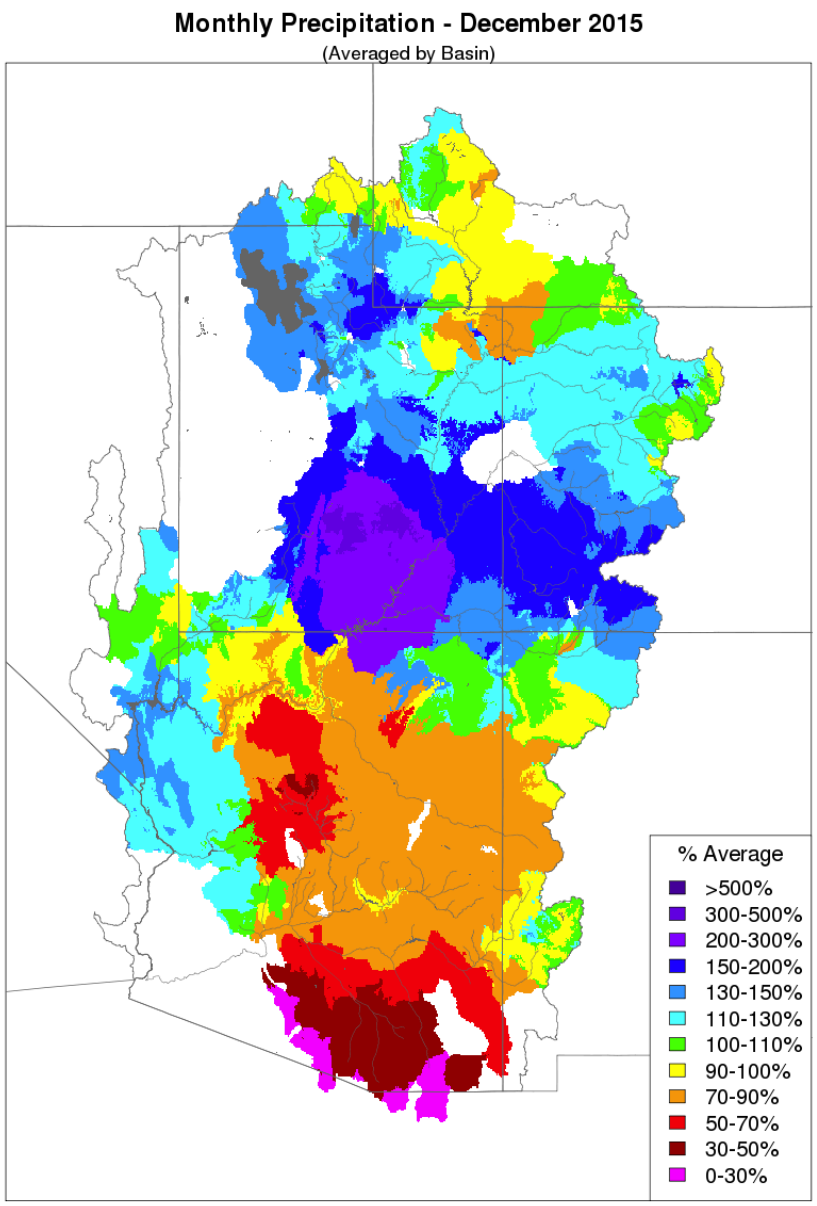
South Central Utah

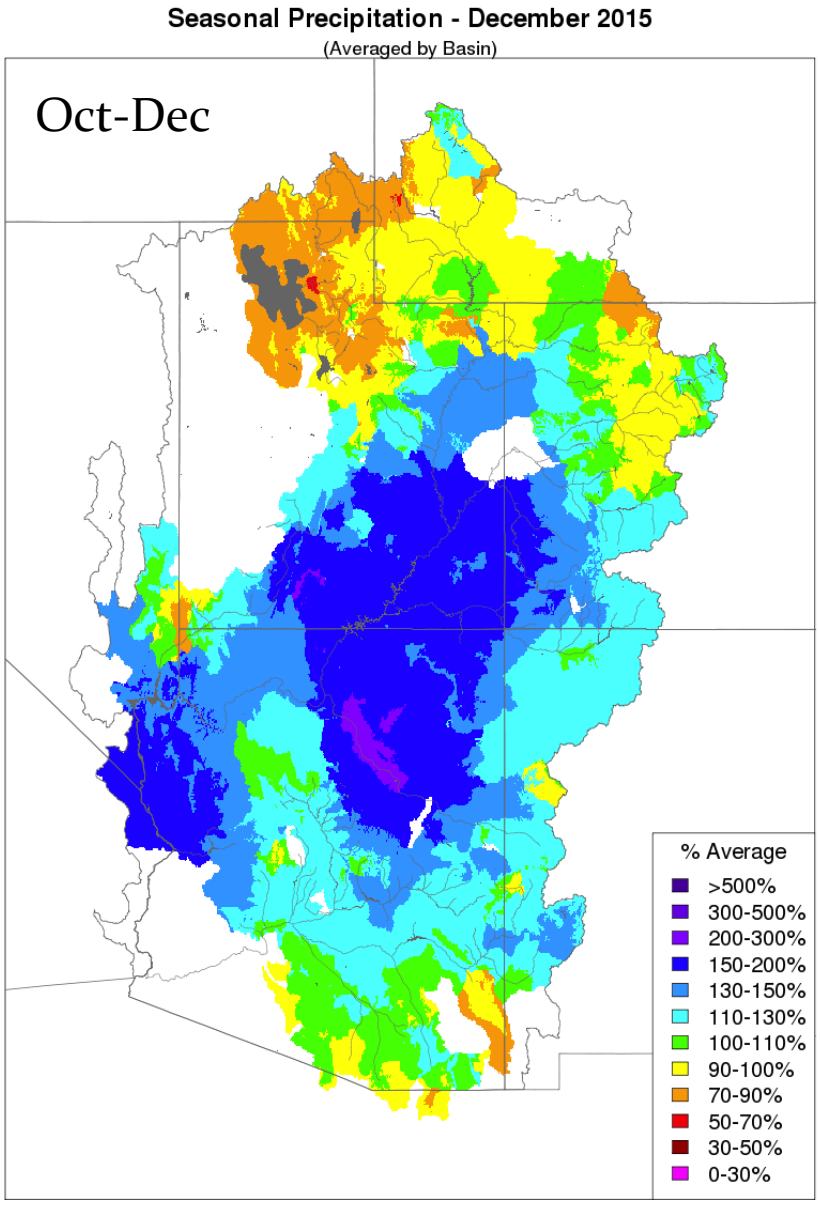


Southwest Colorado



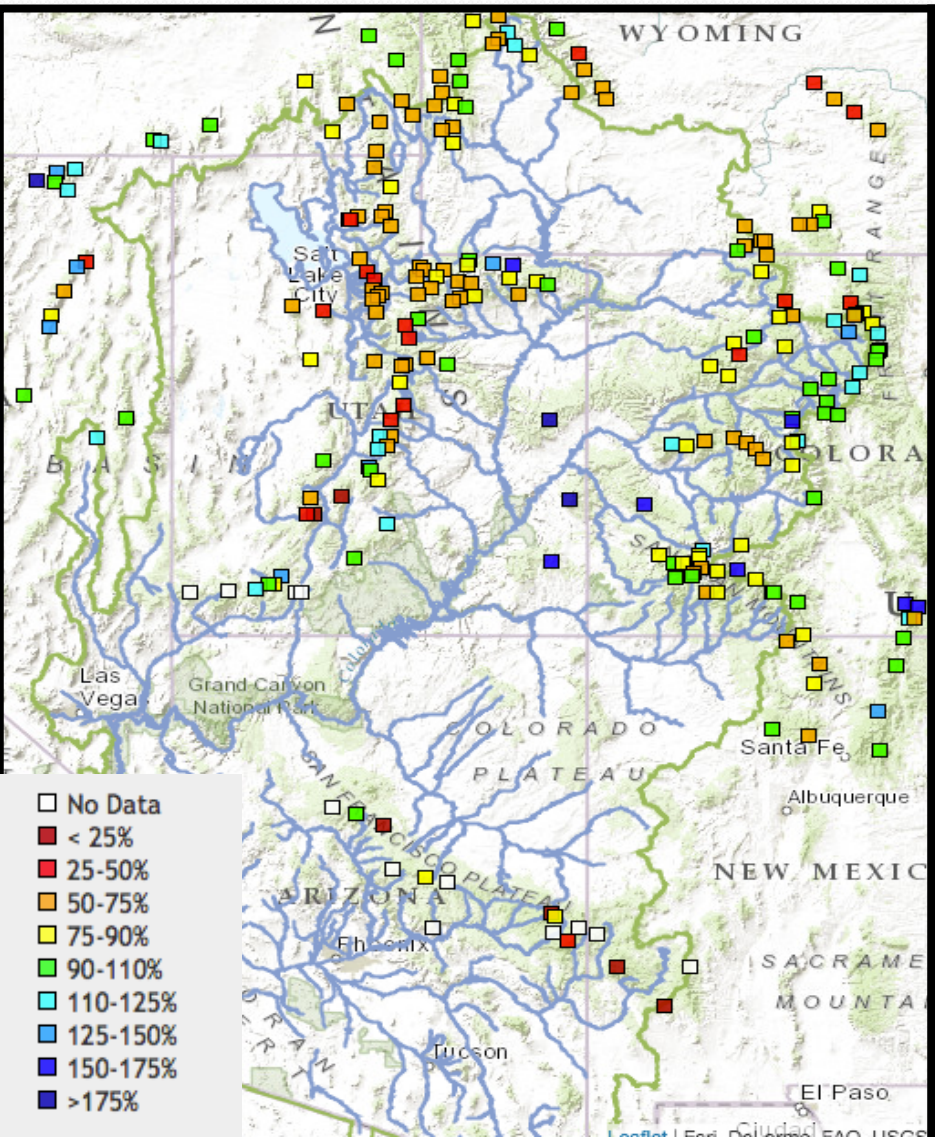
December Precipitation



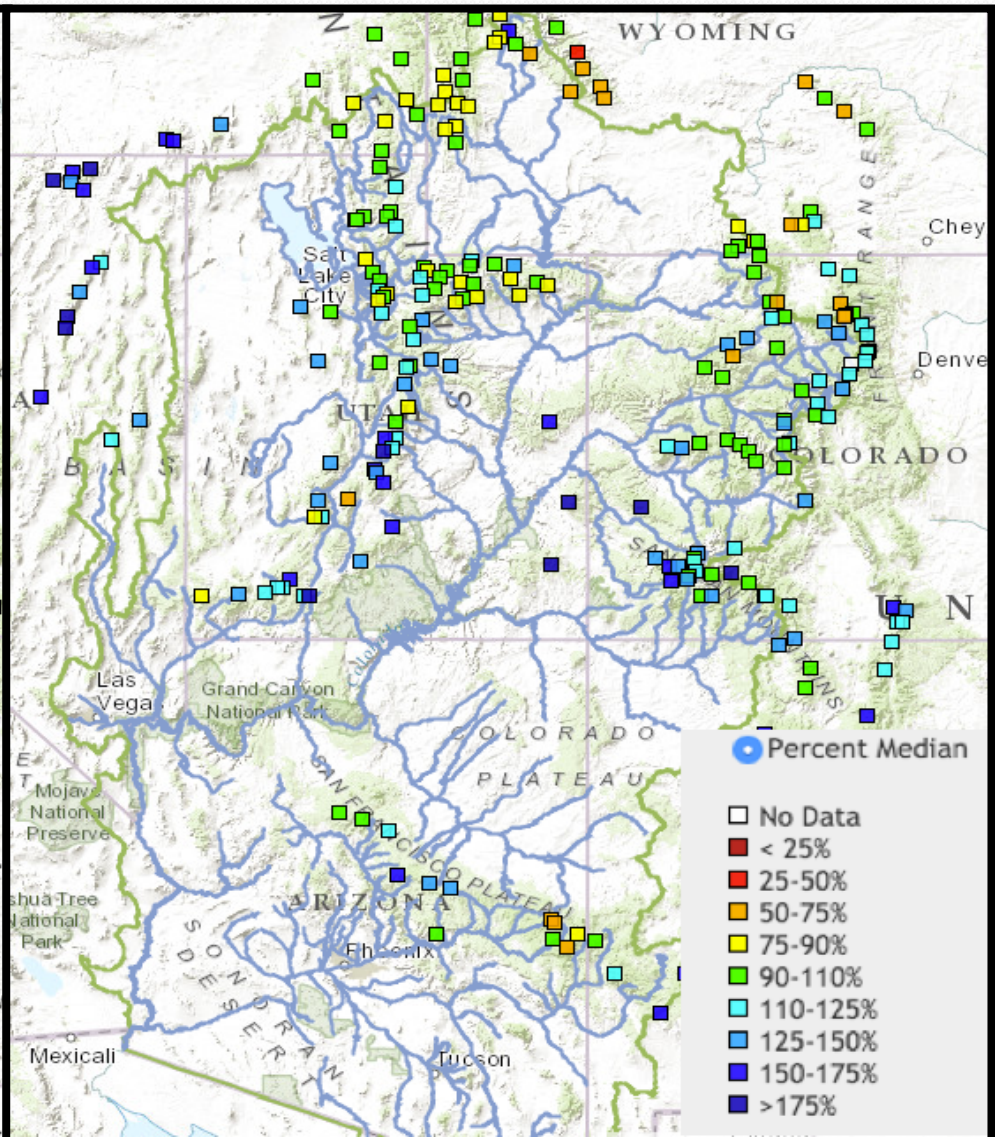


Snow – SNOTEL Network

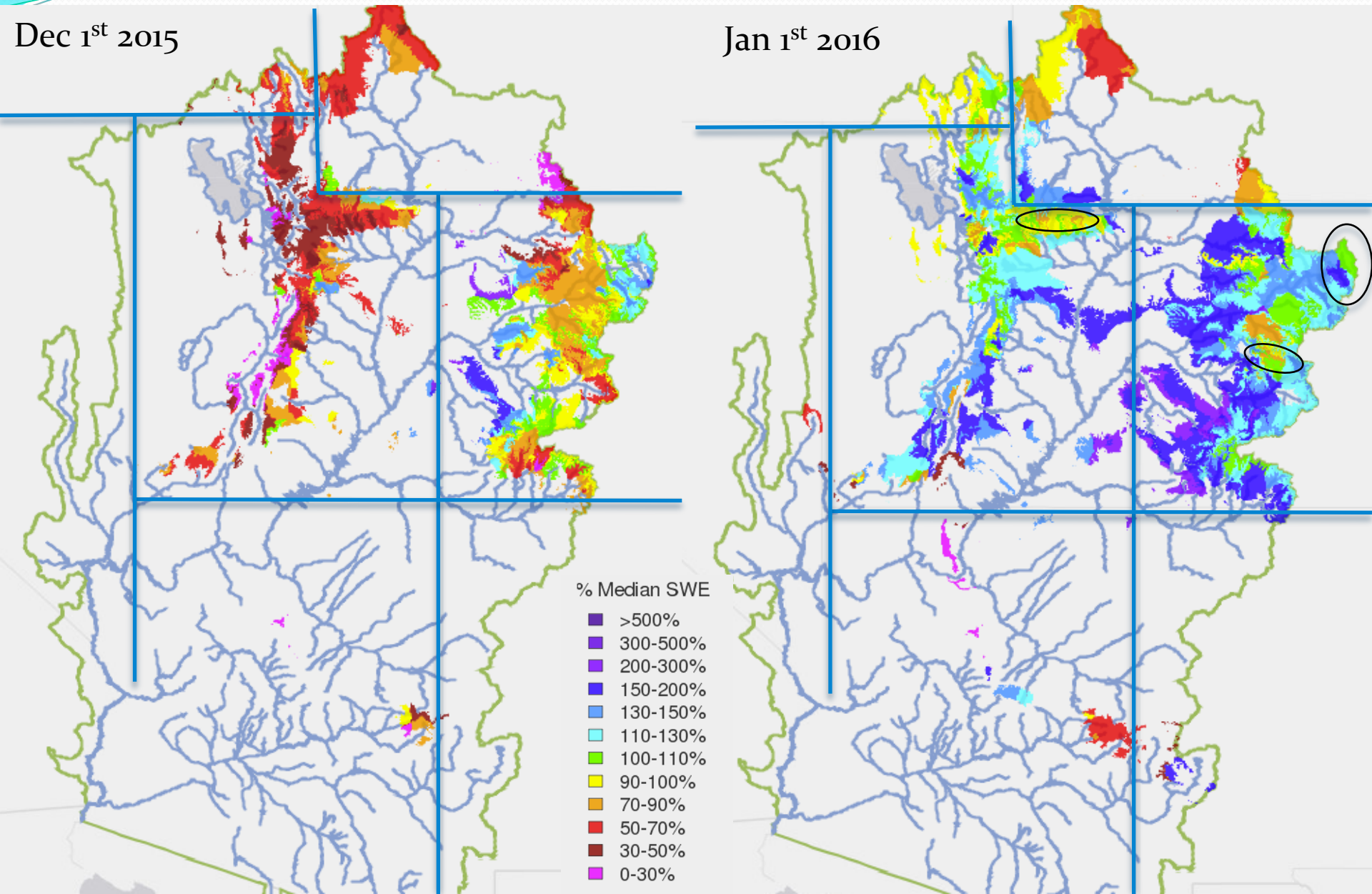
Snow: Early December 2015



Snow: Early January 2016

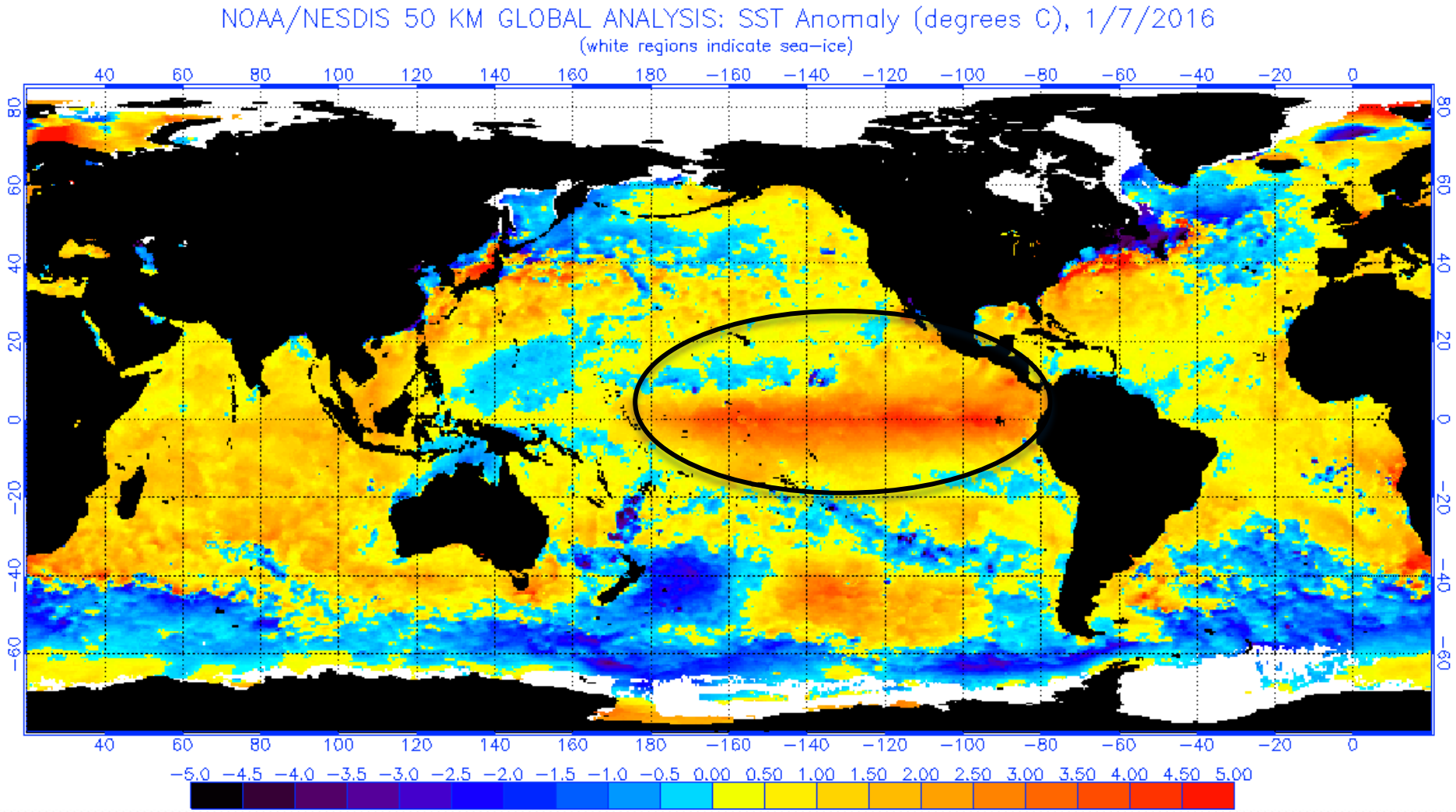


Snow – CBRFC Hydrologic Model



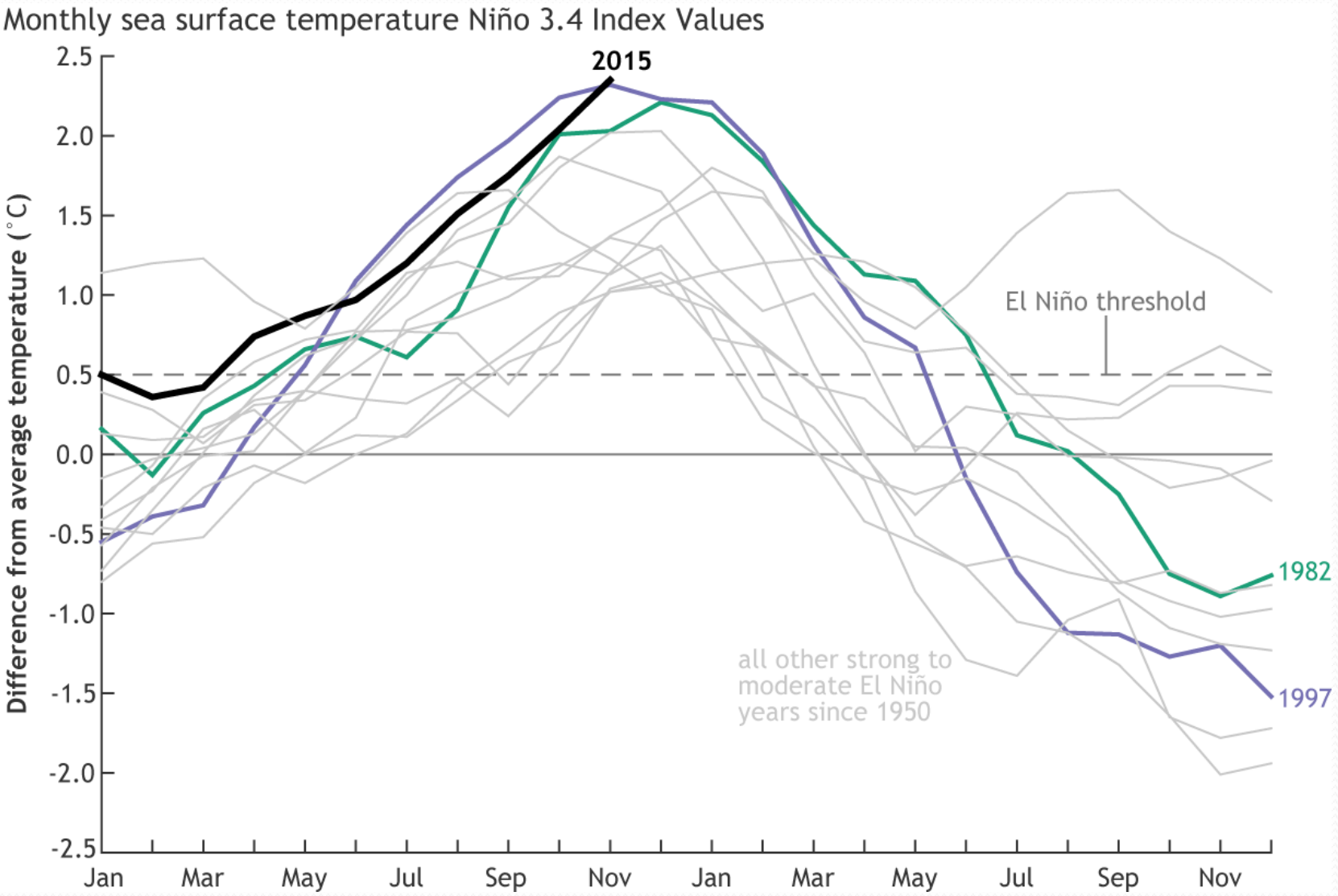
El Niño Event

- Characterized by unusually warm temperatures in the equatorial Pacific Ocean
- Recent Sea Surface Temperatures (SST) anomalies > 2 degrees c.
- Expected to remain strong through winter 2015-2016, ENSO neutral by early summer



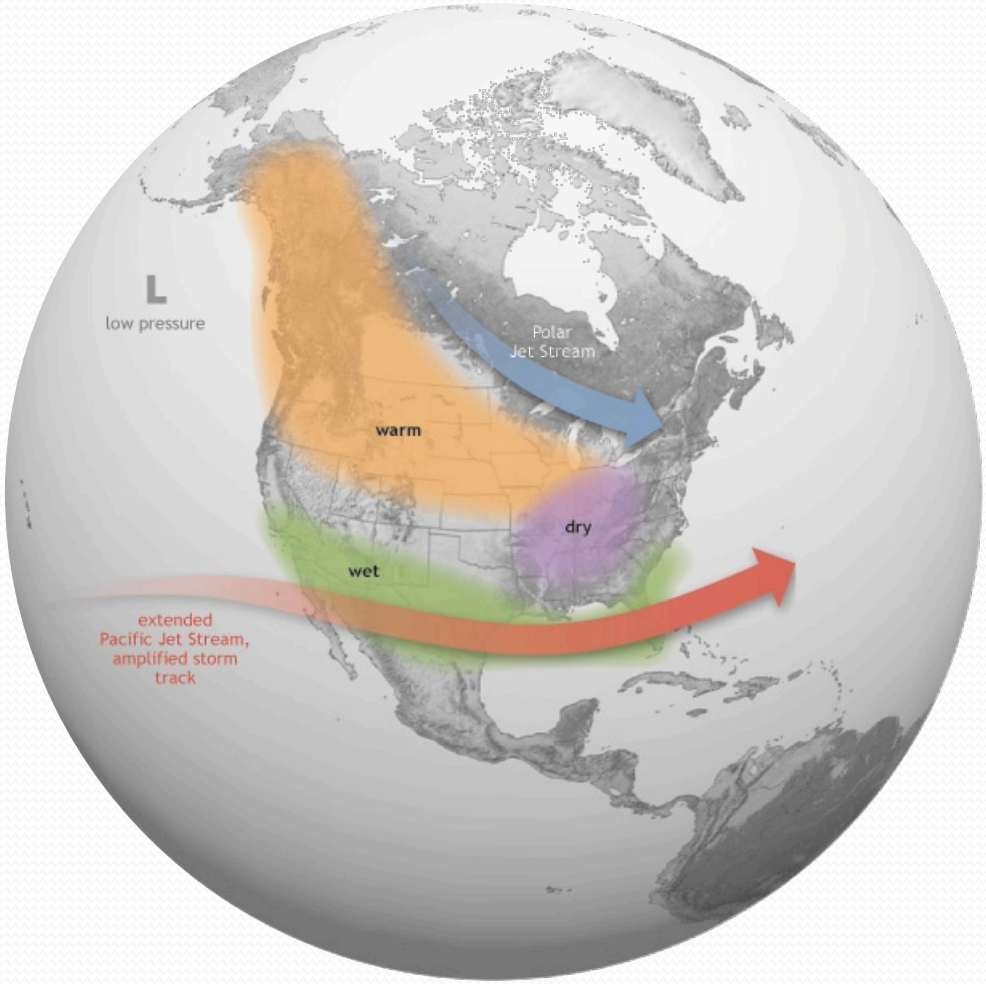
El Niño Event

2015/2016 El Niño is among the 3 strongest on record dating back to 1950



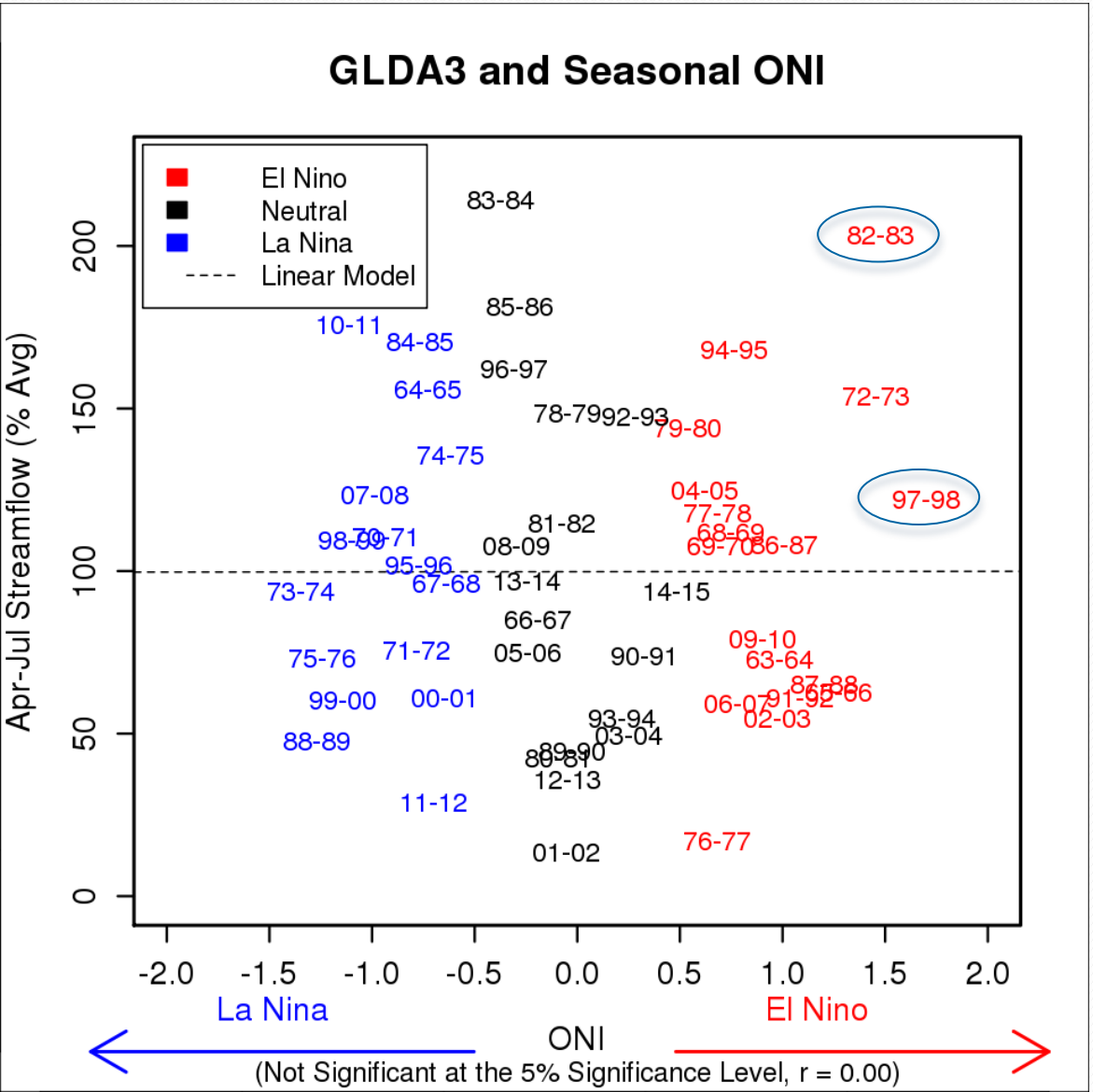
El Niño Event – Typical Impacts

- Enhanced southern jet stream / increased precipitation southern tier of the U.S.
- Warmer / drier conditions more common over the northern tier of the U.S.
- Primary impact period follows the peak - Impacts typically the Dec – March period.



El Niño Event

Historical Events – And Lake Powell April-July Inflow Volumes



Strong Events:

1957-1958* (pre-Powell)

1965-1966 (below avg)

1972-1973 (above avg)

1982-1983 (above avg)

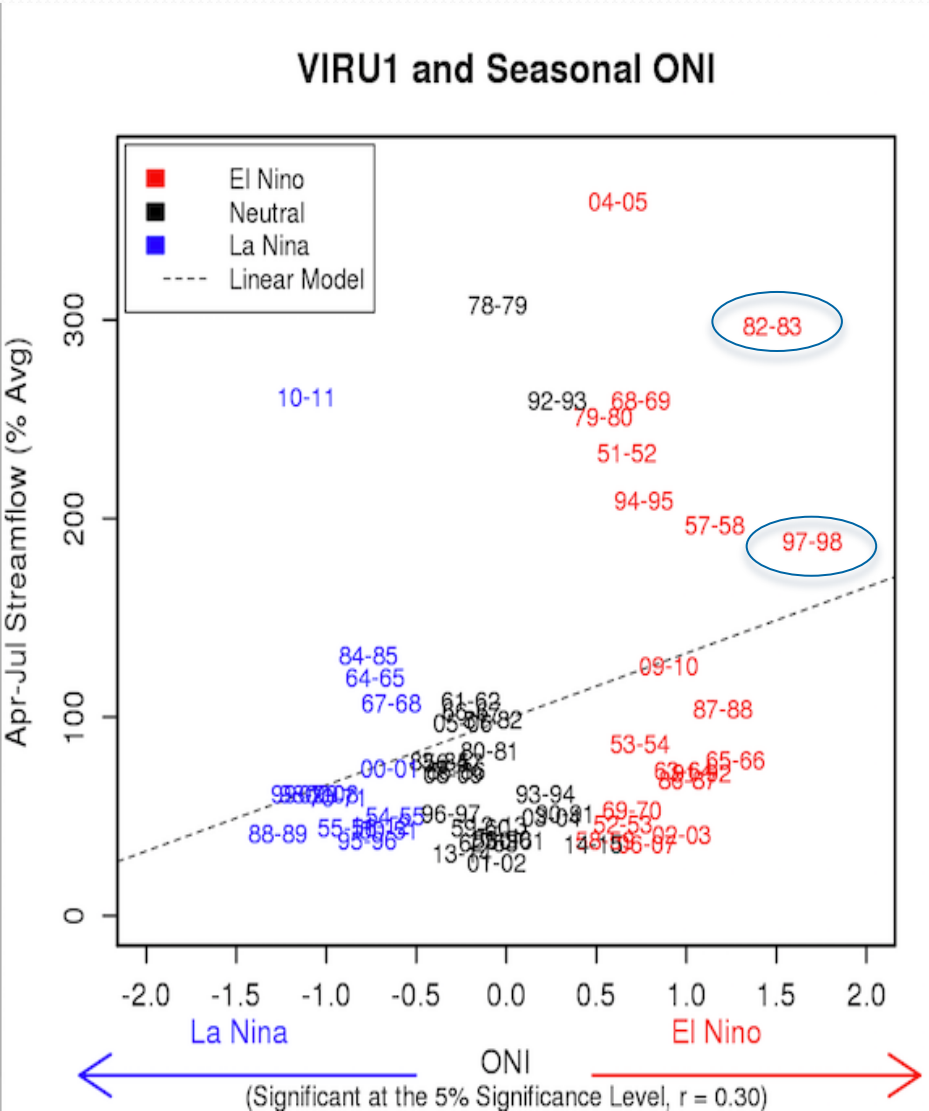
1991-1992 (below avg)

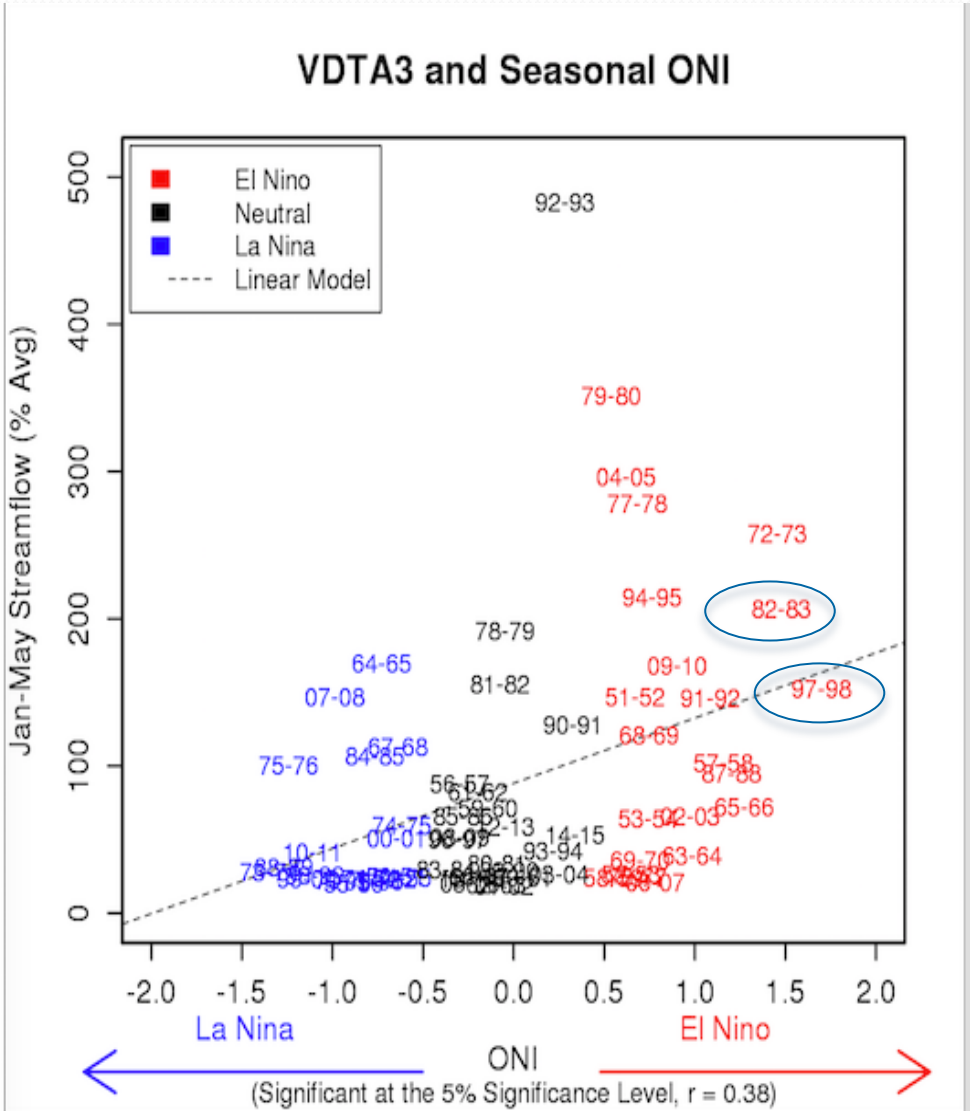
1997-1998 (near avg)

*Based on Reclamation Natural Flow, this was an above average year

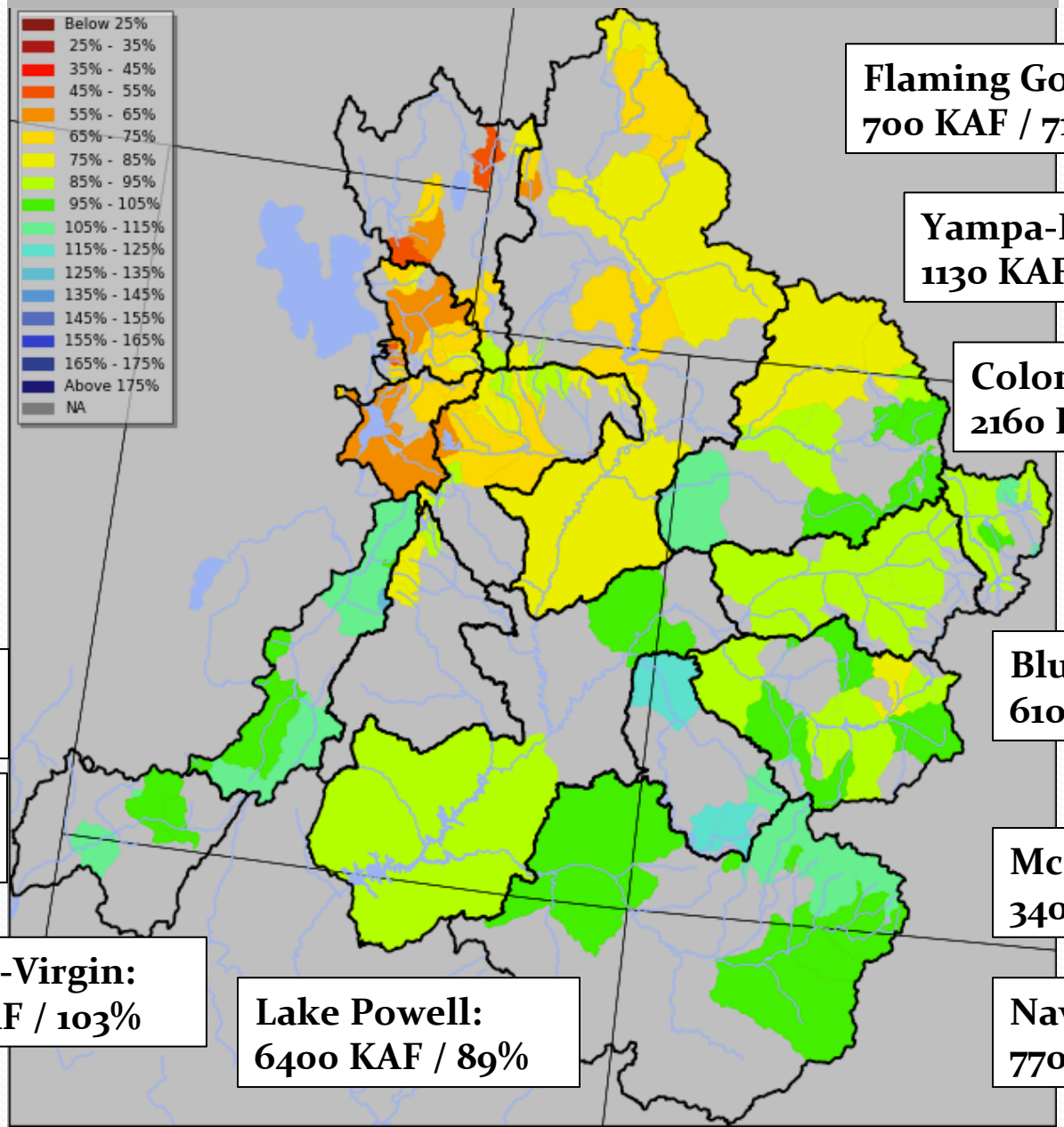
El Niño Event

Historical Events – And Lower Colorado Basin Streamflow Volumes





April-July forecast streamflow volumes (% of 1981-2010 average)



Flaming Gorge:
700 KAF / 71%

Yampa-Deerlodge:
1130 KAF / 91%

Colorado-Cameo:
2160 KAF / 92%

Blue Mesa:
610 KAF / 90%

McPhee Res:
340 KAF / 115%

Navajo Res:
770 KAF / 105%

Lake Powell:
6400 KAF / 89%

Virgin-Virgin:
60 KAF / 103%

Sevier-Hatch:
52 KAF / 144%

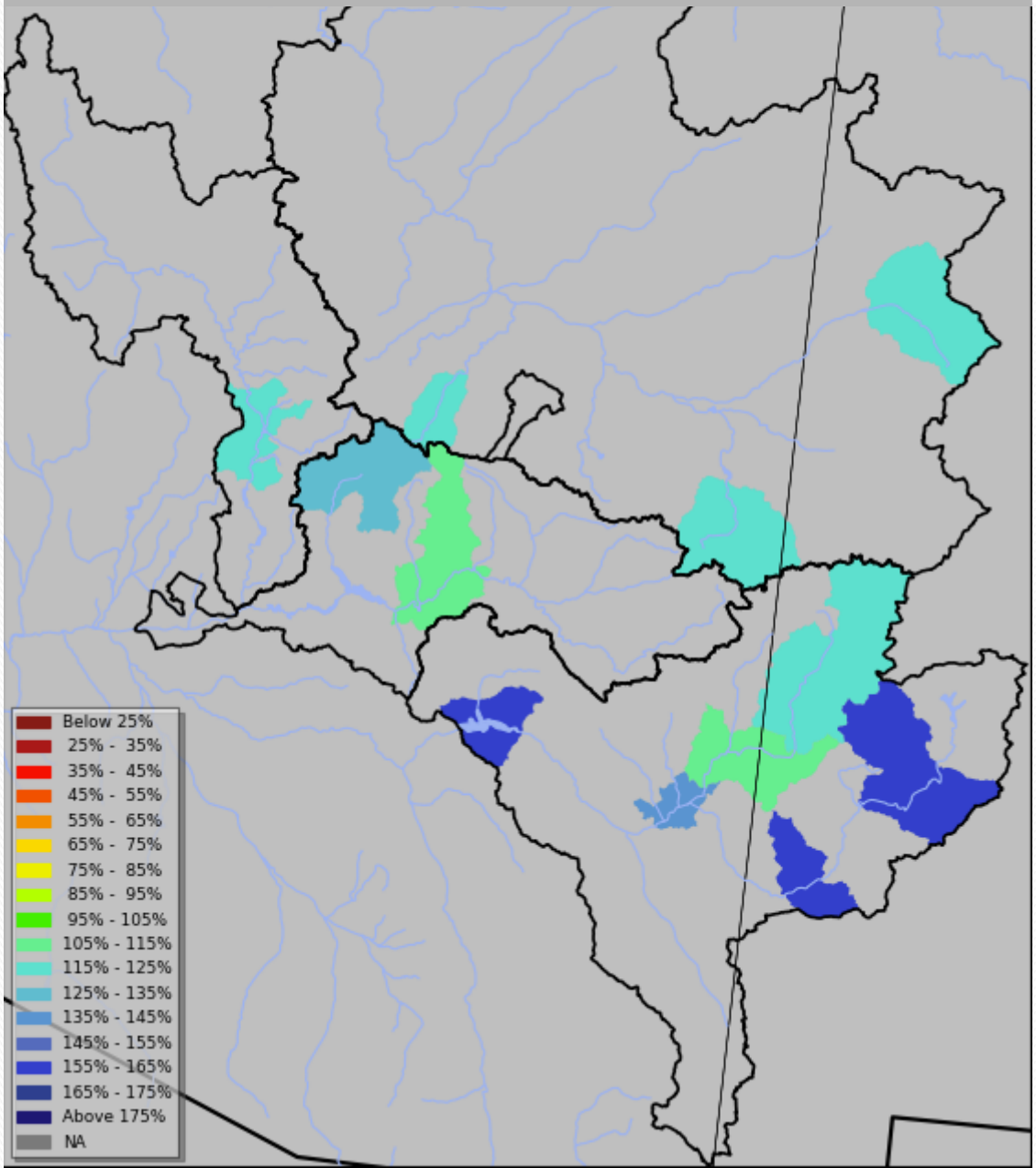
Provo-Woodland:
74 KAF / 74%

Big Cott - SLC:
26 KAF / 72%

Weber-Oakley:
97 KAF / 82%

Bear-UT/WY Stateline:
97 KAF / 87%

Jan-May forecast streamflow volumes (% of 1981-2010 median)



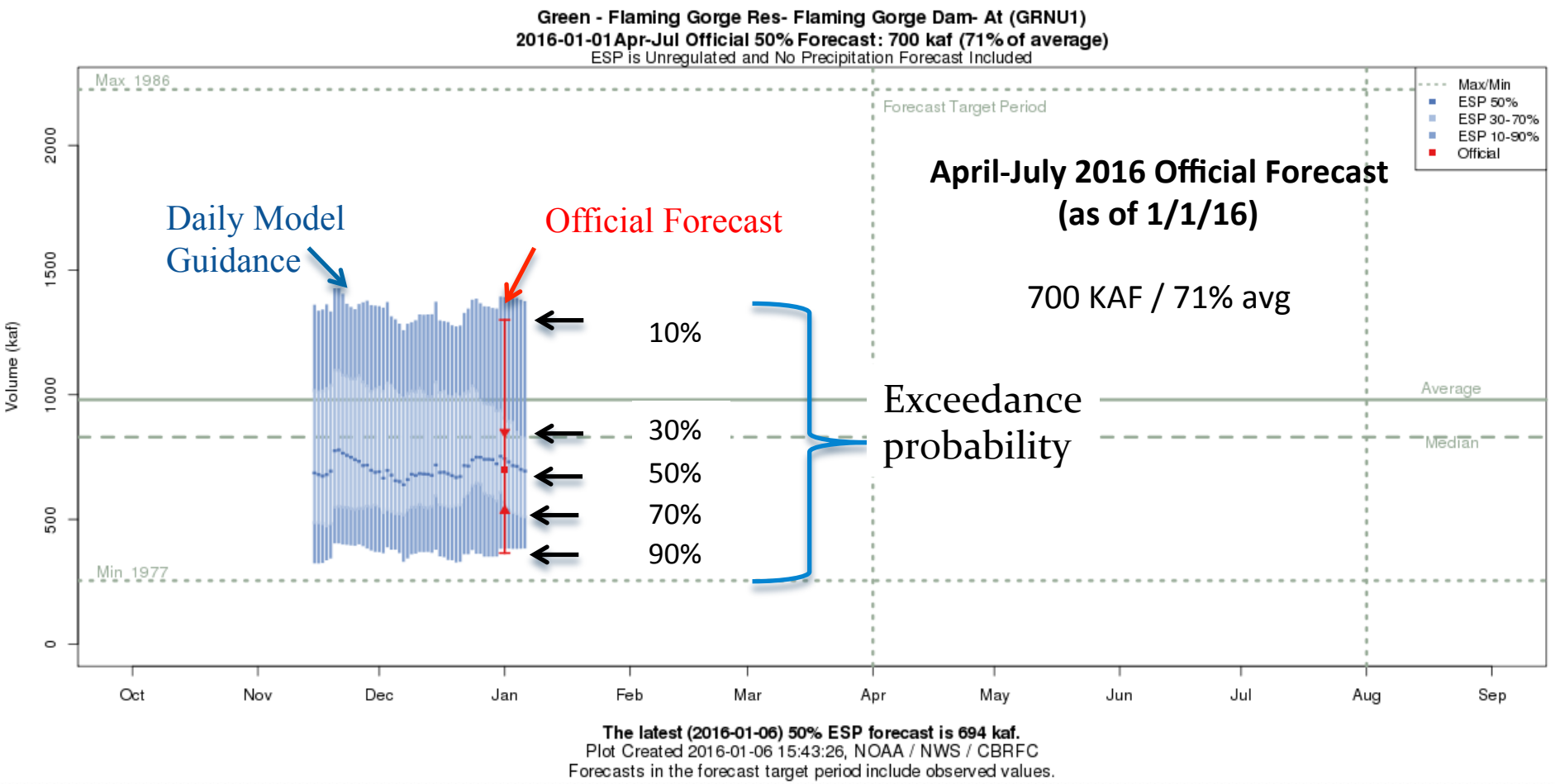
Little Colorado-Lyman:
8.5 KAF / 120%

Verde-Horseshoe:
195 KAF / 124%

Salt - Roosevelt:
336 KAF / 108%

Gila-Gila:
90 KAF / 161%

Forecast Evolution Plot – Flaming Gorge



Water Supply Information / Daily Guidance: www.cbrfc.noaa.gov

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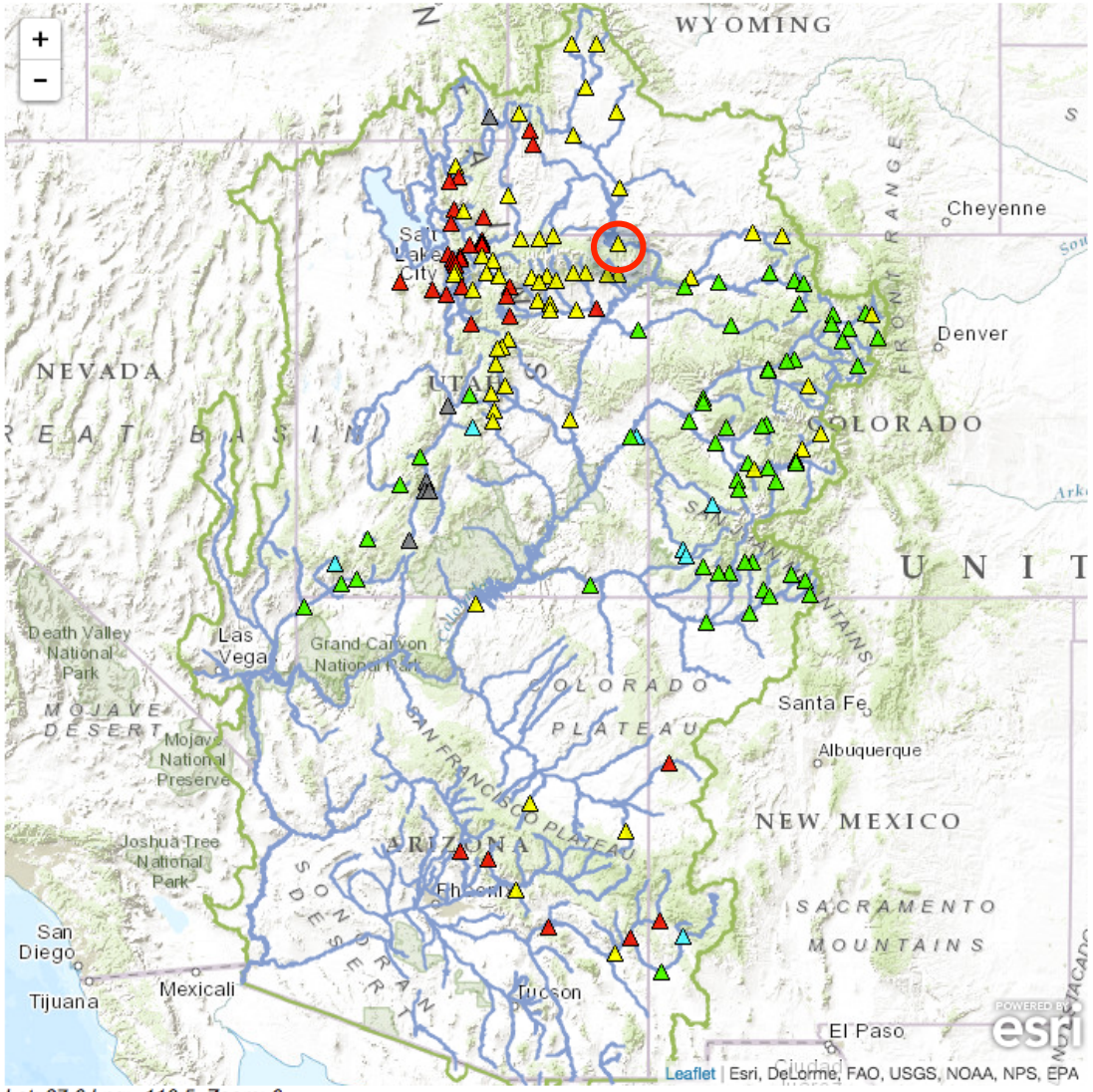
News CBRFC Water Supply Webinar - January 7th 1 pm MST - Register here: Read More...

Conditions Map

Help



Lat: 37.6 Lng: -110.5, Zoom: 6

- River Conditions
- Snow Conditions
- Water Supply Forecasts

Official Forecast Date: 2016-1-1 Help
ESP Run Date: 2016-01-06

Show Hide Other Types

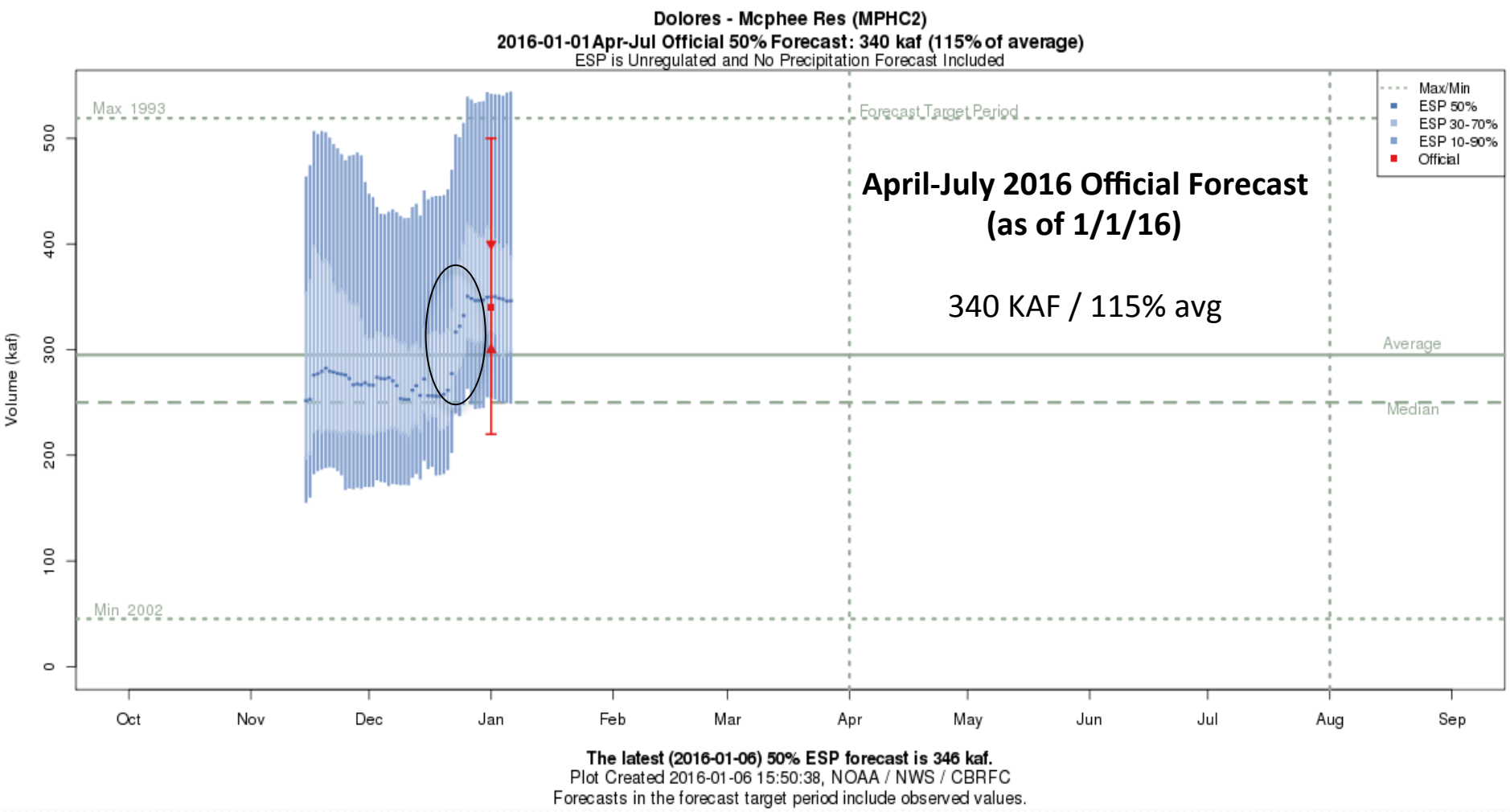
- Official Percent Average
- Official Percent Median
- ESP Percent Average
- ESP Percent Median

- < 70%
- 70-90%
- 90-110%
- 110-130%
- >130%
- Regulated
- No Forecast

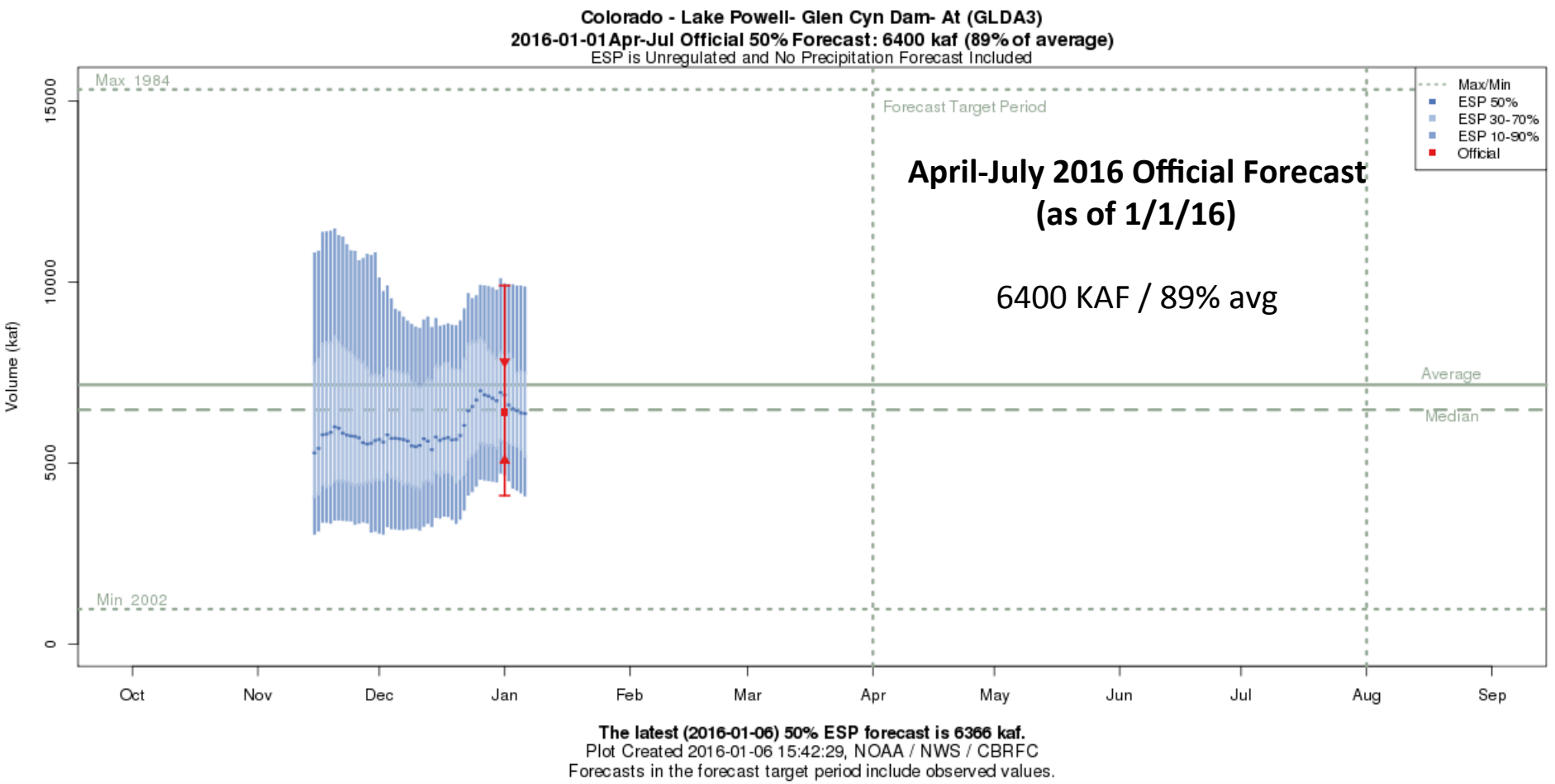
Offices
- CBRFC
- WGRFC
- ABRFC

- Peak Flood Probablity
- Reservoir Conditions
- Weather Conditions
- Seasonal Weather
- Soil Moisture
- Map Options
- Search Points

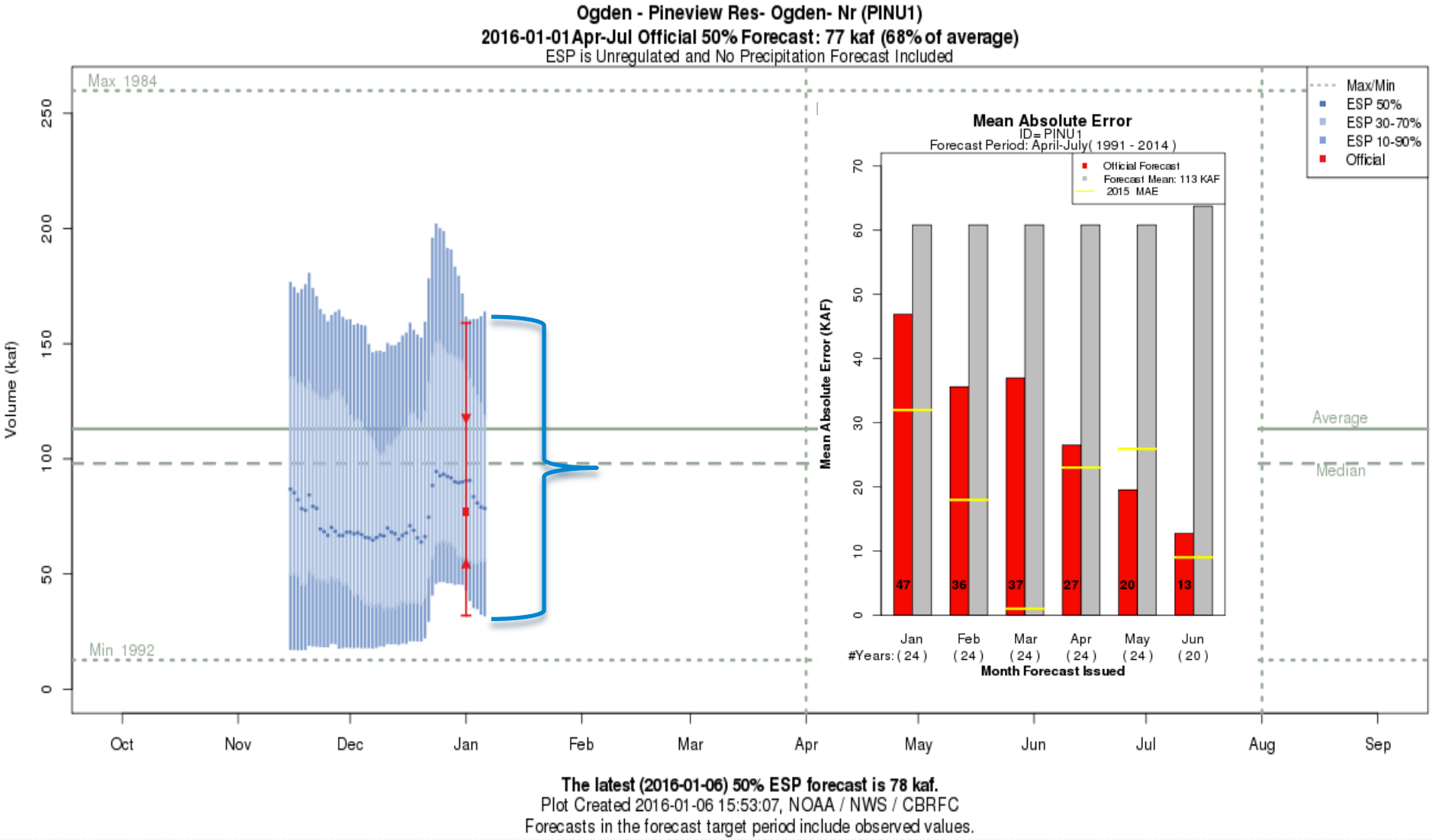
Forecast Evolution Plot – McPhee Reservoir Inflow



Forecast Evolution Plot – Lake Powell



Forecast Evolution Plot – Ogden River, Pineview Inflow

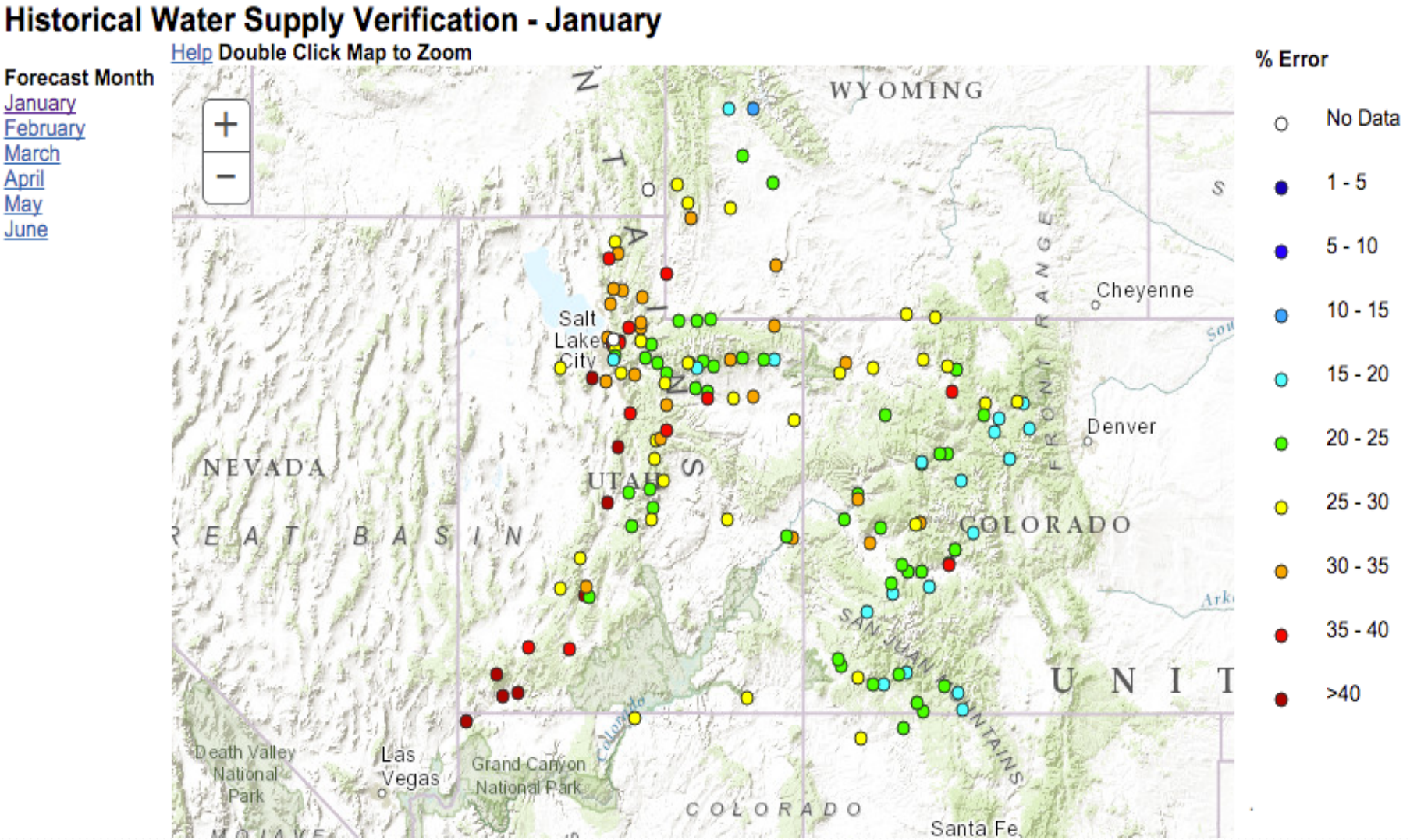


10% forecast is 159 KAF / 141 % of average
30% forecast is 118 KAF / 104% of average
50% forecast is 77 KAF / 68% of average

January Mean Absolute Forecast Error: 47 KAF

How well does the model forecast in January ?

- Better at higher elevations – headwater locations.
- Better where snow melt is the primary source of runoff.
- Better at locations where stream diversions are few or diversions well documented.



Forecast Impacts Summary

Favorable snowpack many areas
- San Juan, Dolores, South Central Utah (Green & Colorado tributaries)
- Sevier, Virgin

Snow had a late start at higher elevations
- Trails lower elevations as a % of normal (median)

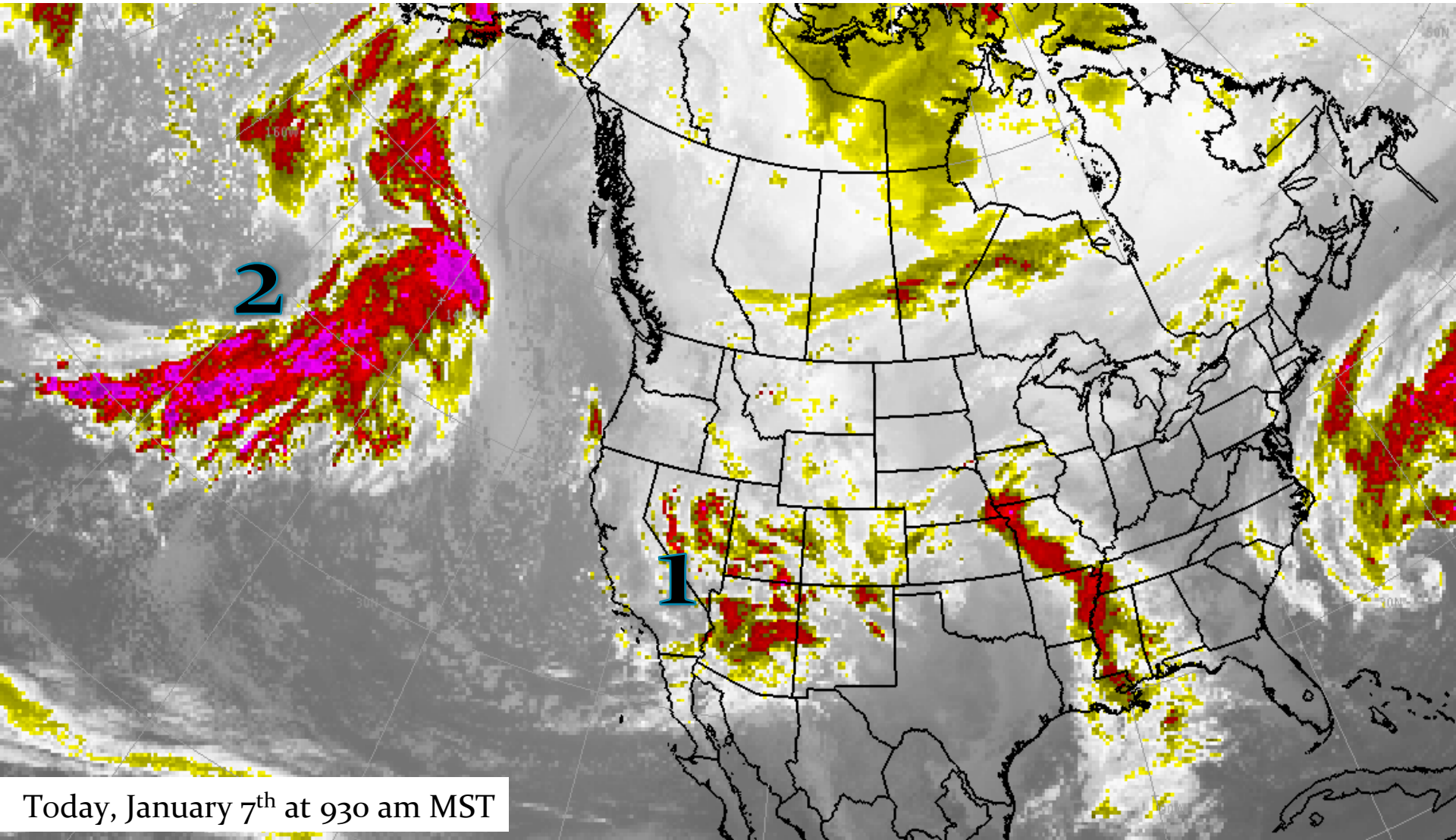
Below normal (average) soil moisture is widespread
- Very low Great Basin
- Some exceptions most notably the San Juan / Dolores

Strong El Niño event is expected to impact runoff Lower Colorado Basin

Upcoming Weather

1 – current storm system centered over southern Nevada. Heaviest precipitation over the southern half of the forecast area with lighter amounts north though Saturday.

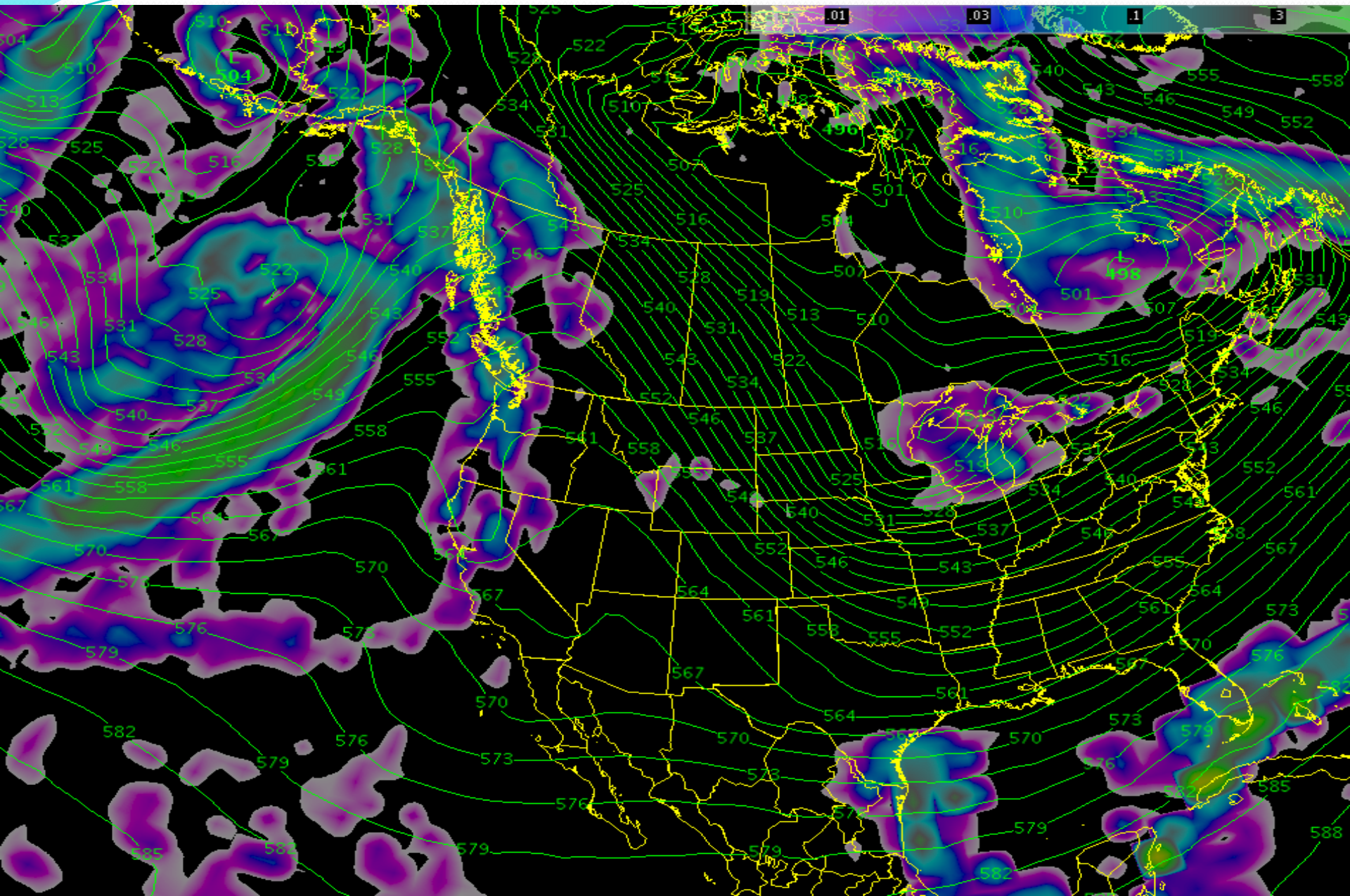
2 – Storm system will weaken and split as it moves through Sunday. Precipitation amounts likely to be light with most energy to the south.



Today, January 7th at 930 am MST

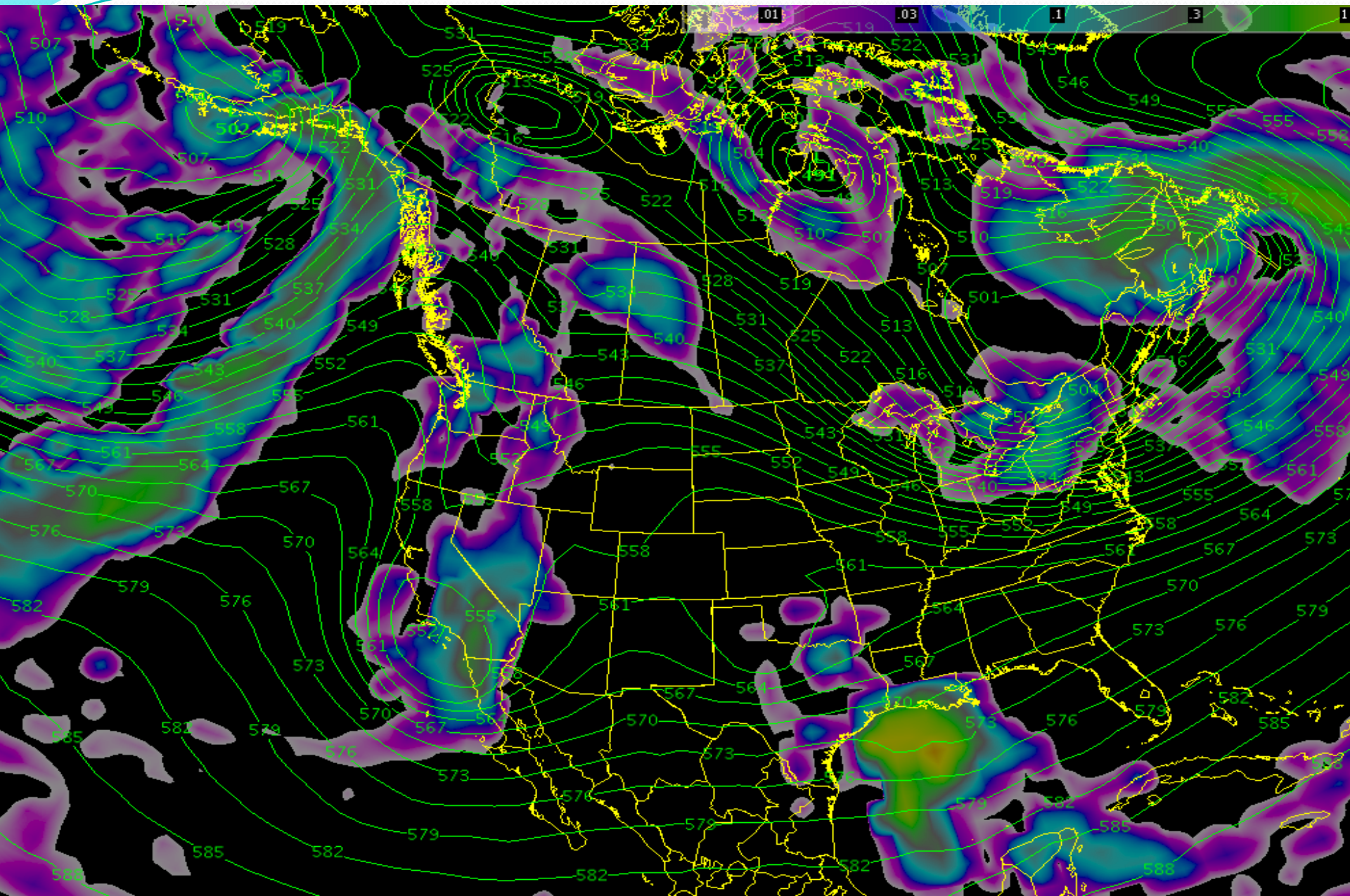
Upcoming Weather

Tuesday January 12th



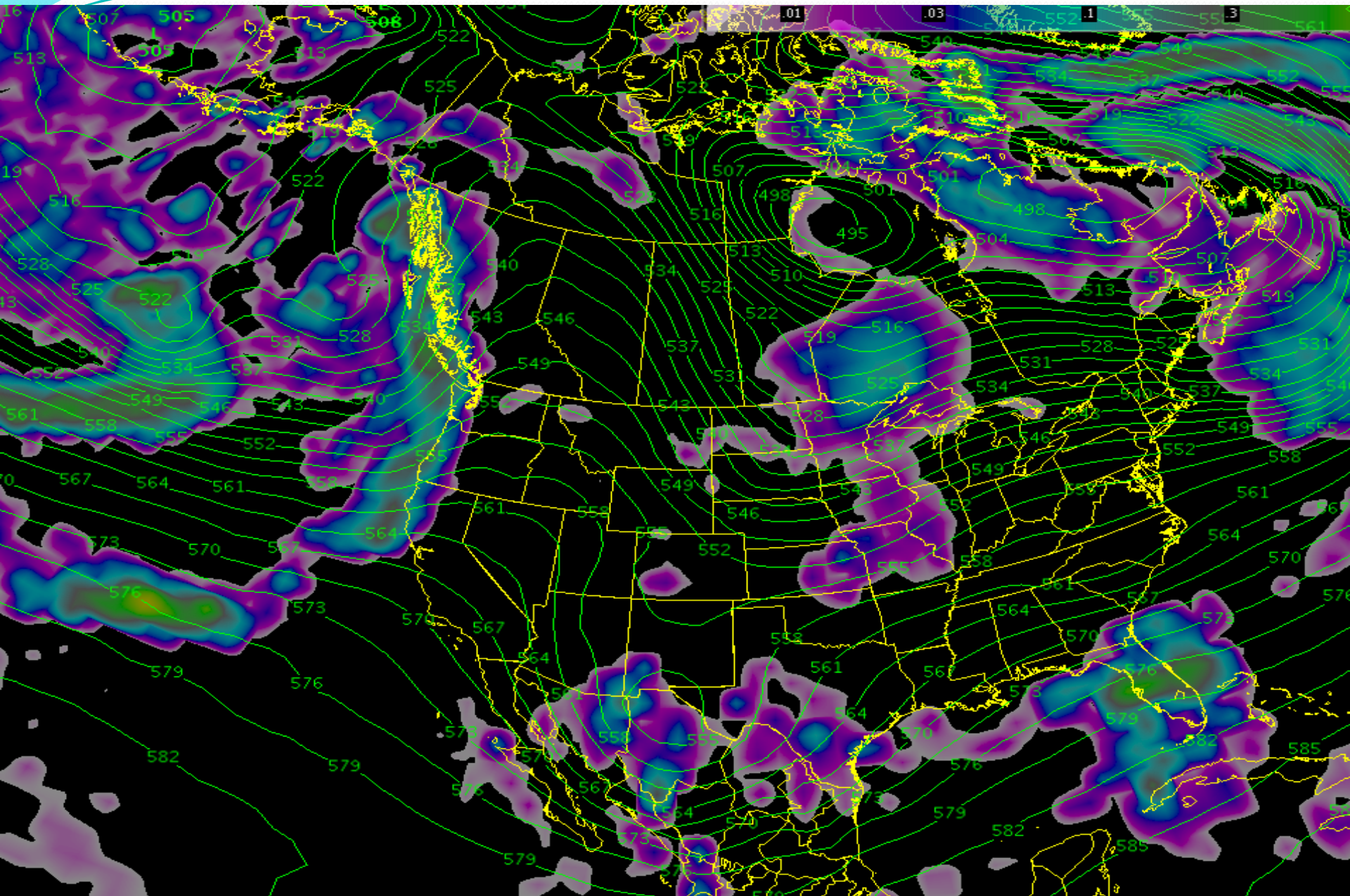
Upcoming Weather

Thursday January 14th



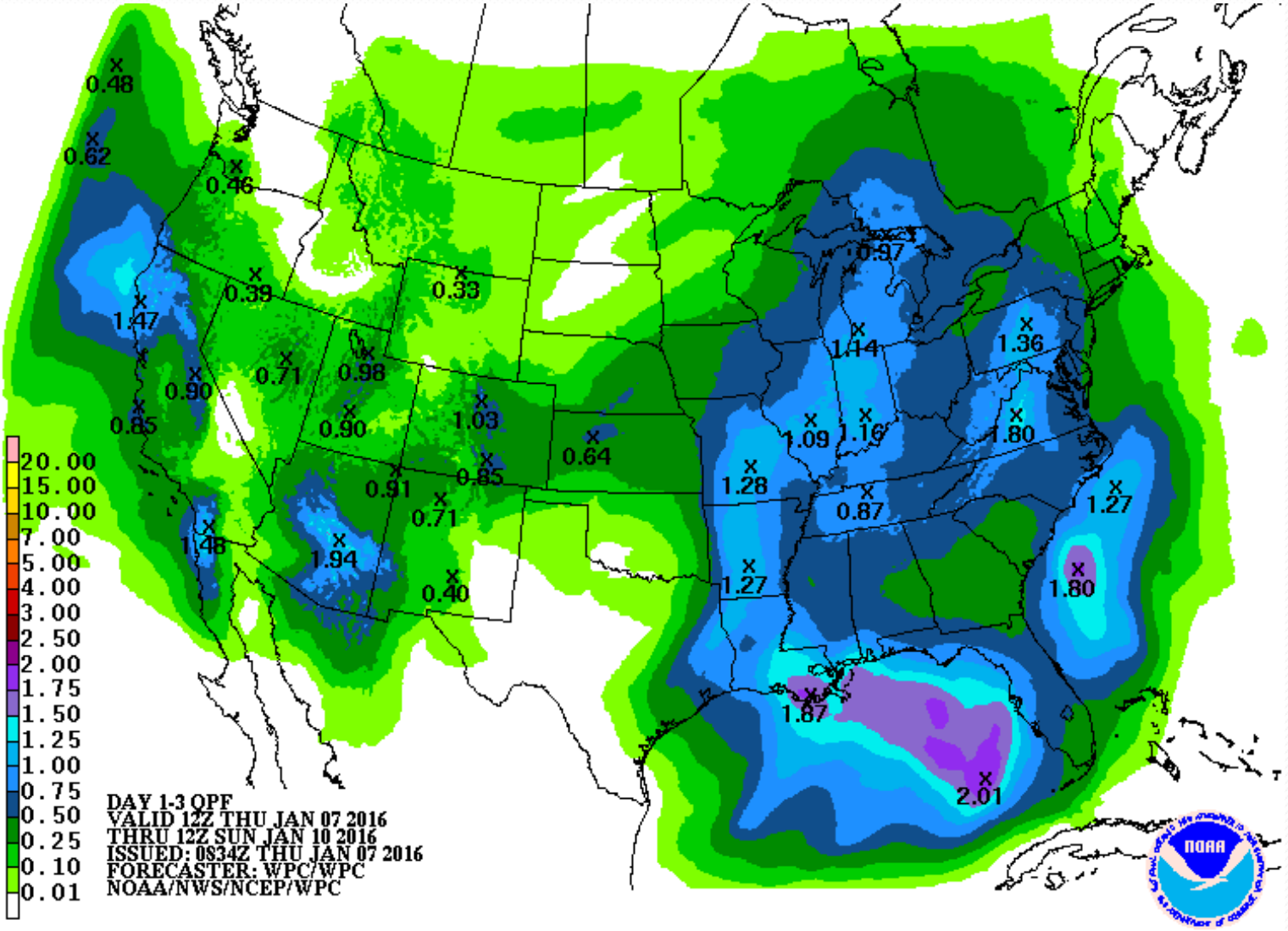
Upcoming Weather

Saturday January 16th



Upcoming Weather

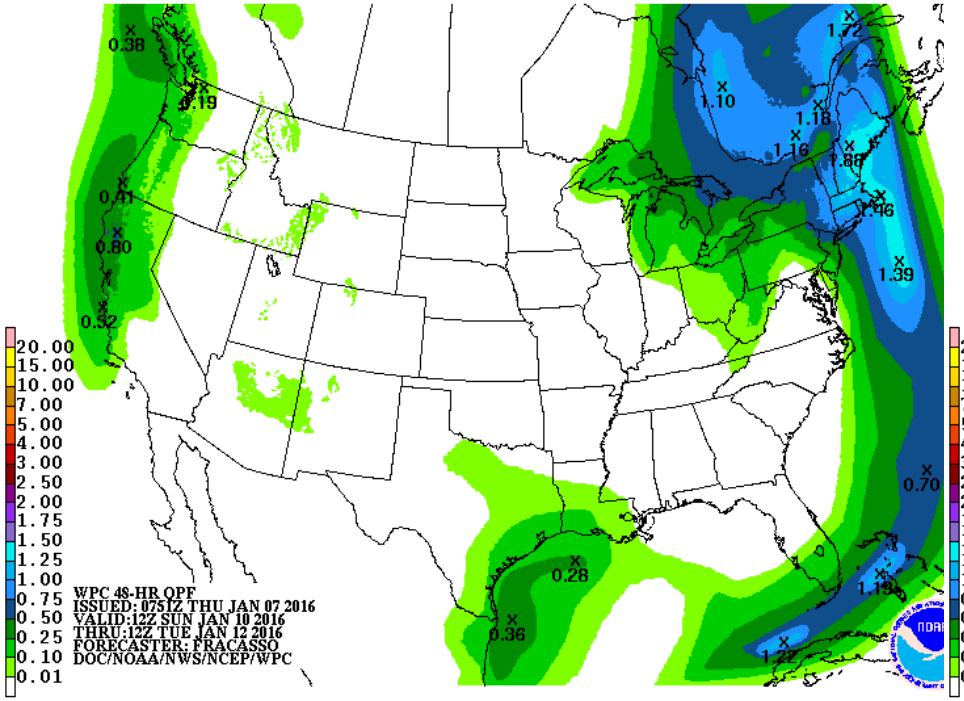
NWS Weather Prediction Center - Precipitation Forecast
January 7th–January 10th



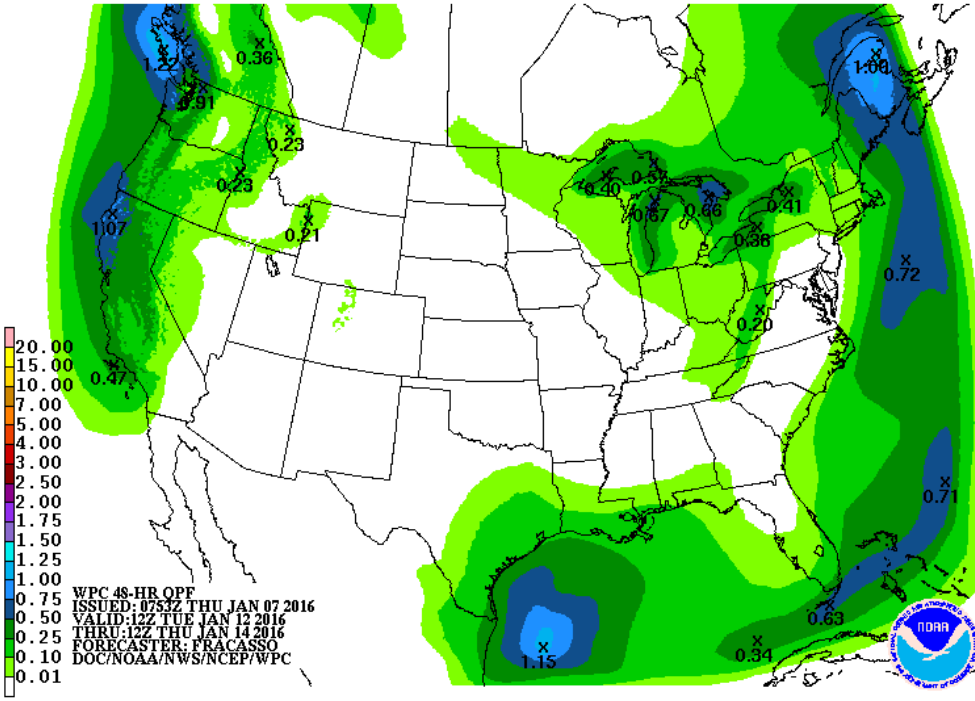
Upcoming Weather

NWS Weather Prediction Center - Precipitation Forecast

January 10th – 12th

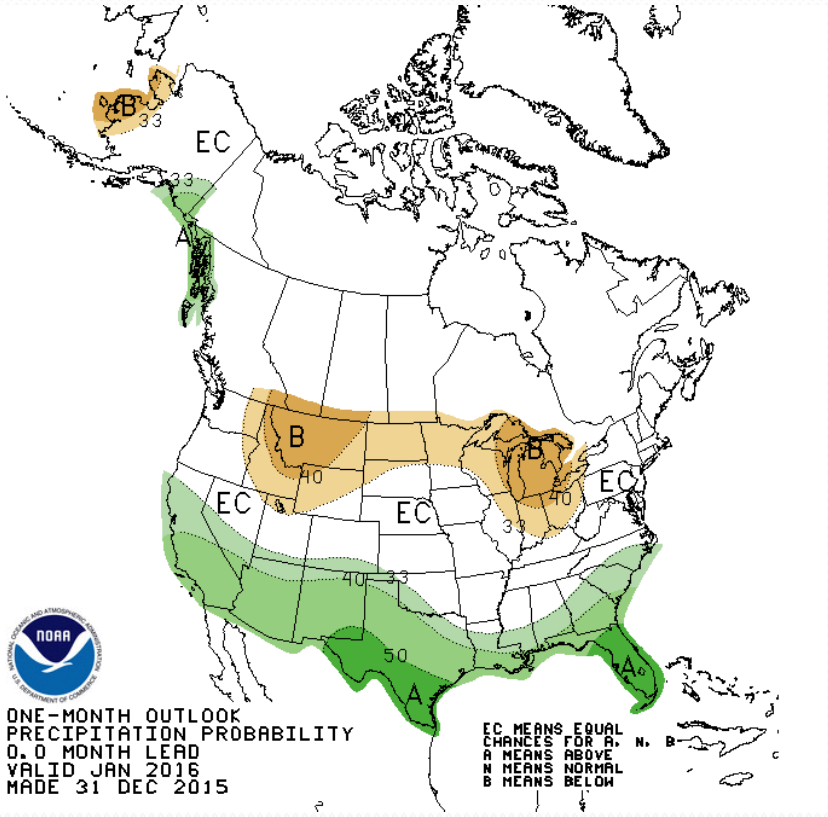


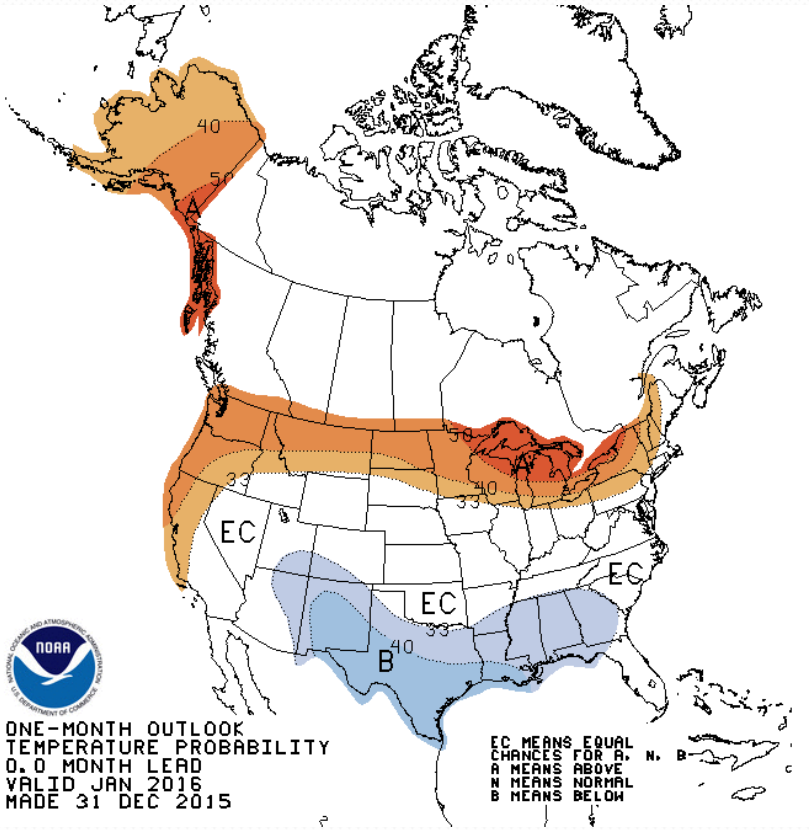
January 12th – 14th



Long Term Outlook

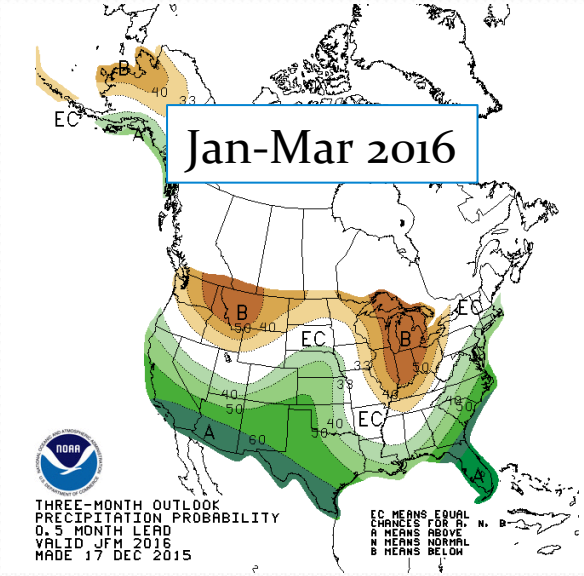
Climate Prediction Center 30 day outlook for January 2016

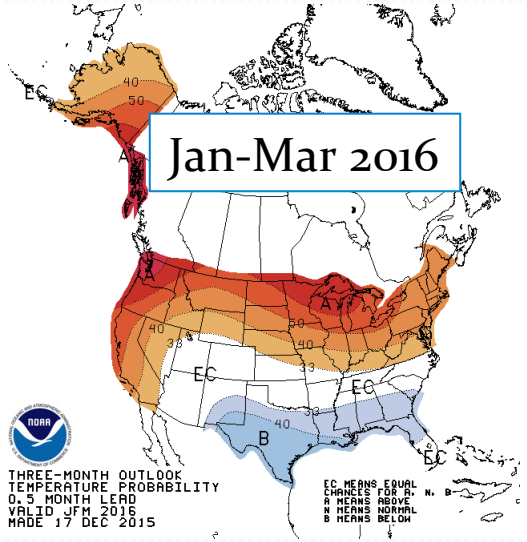


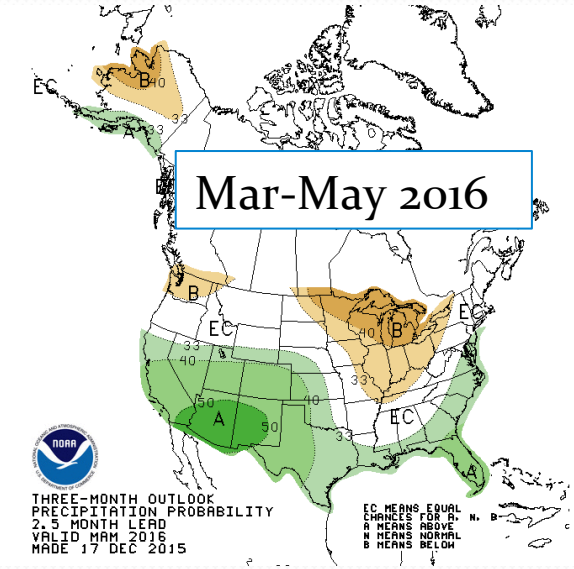


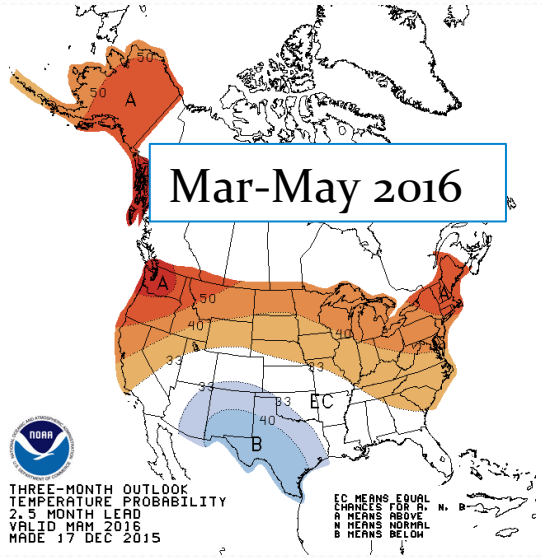
Long Term Outlook

Climate Prediction Center – 3 month outlooks



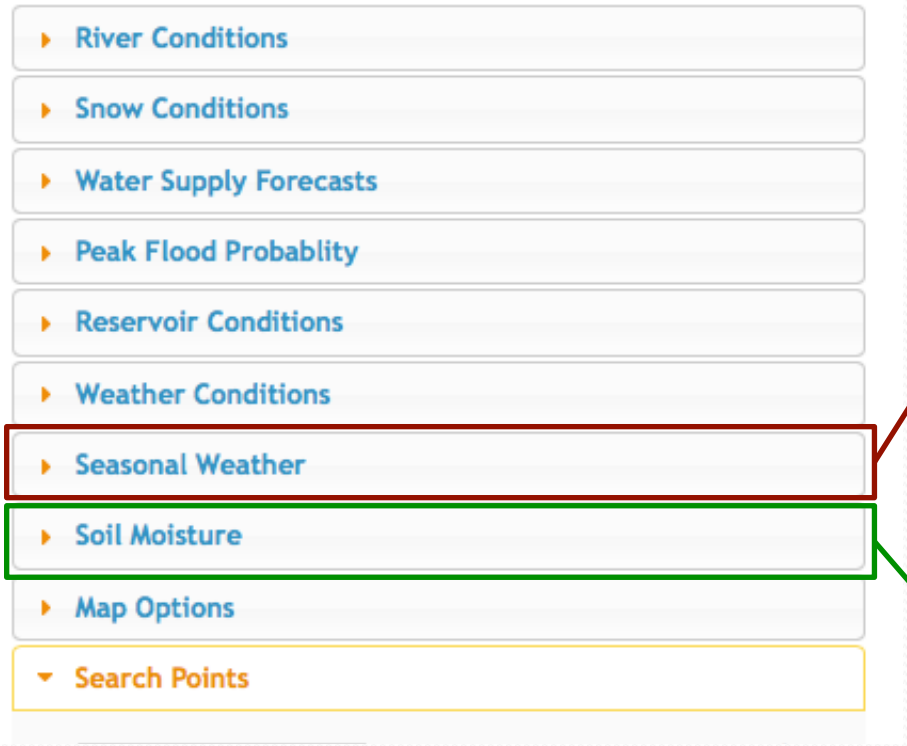






CBRFC WEB PAGE

NEW MAP OVERLAYS



- Seasonal Precipitation (Water Year)
- Monthly Precipitation
- Month To Date
- Full and trimmed versions

- Fall Model Soil Moisture
- Current Model Soil Moisture
- Current Model 'Inches to Saturation'
- Full and trimmed versions

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2016 water supply briefings

- Tentative dates for 2016 monthly water supply briefings
  - Thursday Feb 4th @ 1 pm MT
  - Friday Mar 4th @ 1 pm MT
  - Thursday Apr 7th @ 11 am MT
  - Friday May 6th @ 1 pm MT
- Additional briefings and a peak flow briefing will be scheduled as needed.
- Date/Times are subject to change. All registration information will soon be posted to the CBRFC web page.

CBRFC Contacts

Please contact us with any questions

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