

January 2017 Great Basin Water Supply Briefing

Jan 9, 2017

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Colorado Basin River Forecast Center
National Weather Service
NOAA

Please mute your phone
until ready to ask questions



Today's Presentation

Fall weather impacts to water supply forecasts

December – January weather / critical pattern change

Current snowpack situation

2017 water supply forecasts overview and current trends

January forecast – How good are they?

Upcoming weather – potential impacts to water supply forecasts

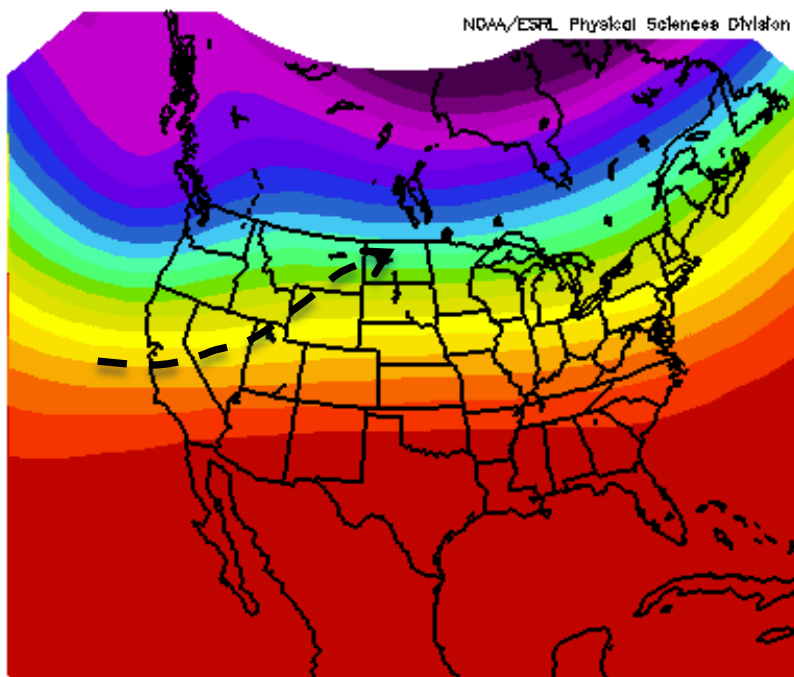
Contacts & Questions

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

Fall Weather Impacts

Started the 2017 water year very dry most areas

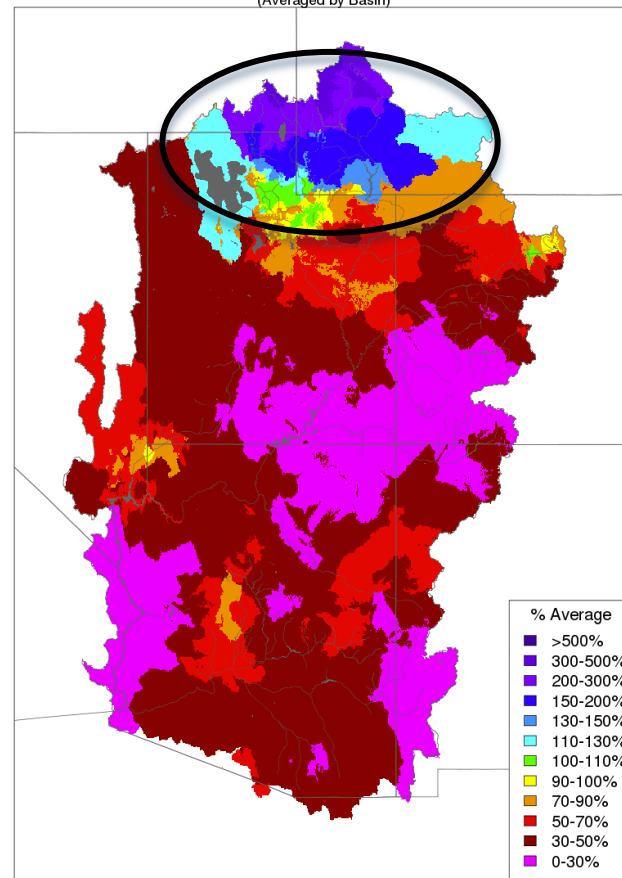
October Atmospheric Pattern



500mb Geopotential Heights (m) Composite Mean
10/1/18 12z to 10/31/18 12z
NCEP/NCAR Reanalysis

Storm track caught the northern part of the Green River and Great Basins

Monthly Precipitation - October 2016
(Averaged by Basin)



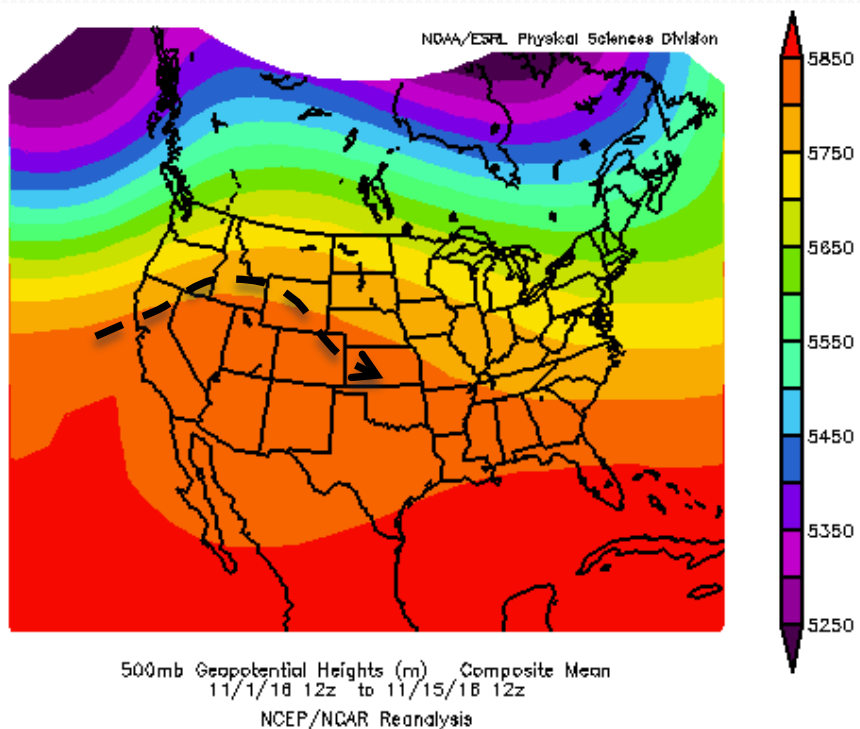
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Near or Above Average Precipitation

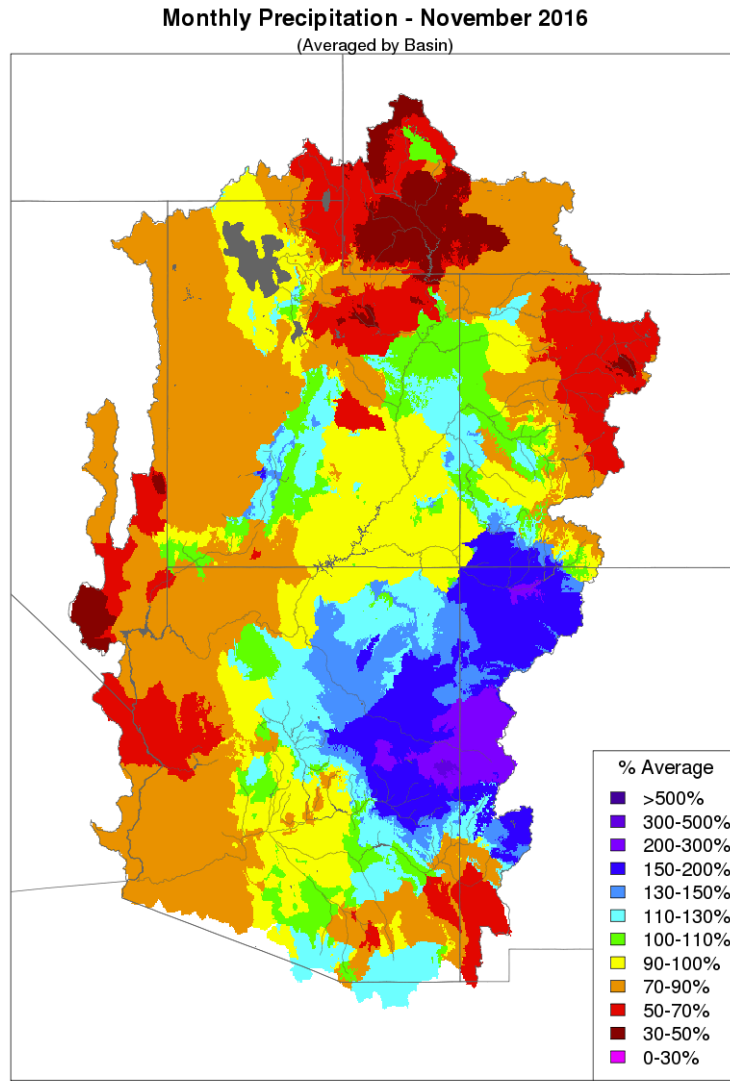
- Green River Basin above Flaming Gorge
- Northern Great Basin
- Parts of Duchesne River Basin

Fall Weather Impacts

November - Where precipitation did fall - It was rain



First 20 days of November:
Dry with temperatures as much as
20 degrees above normal

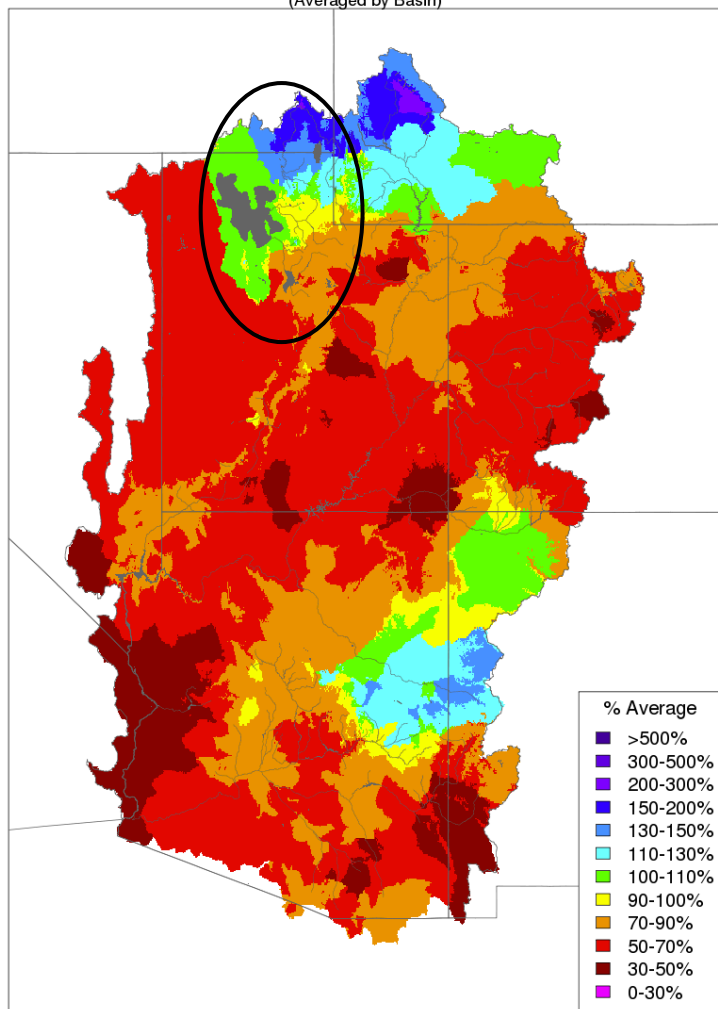


Fall Weather Impacts

Impacts to Soil Moisture entering Winter

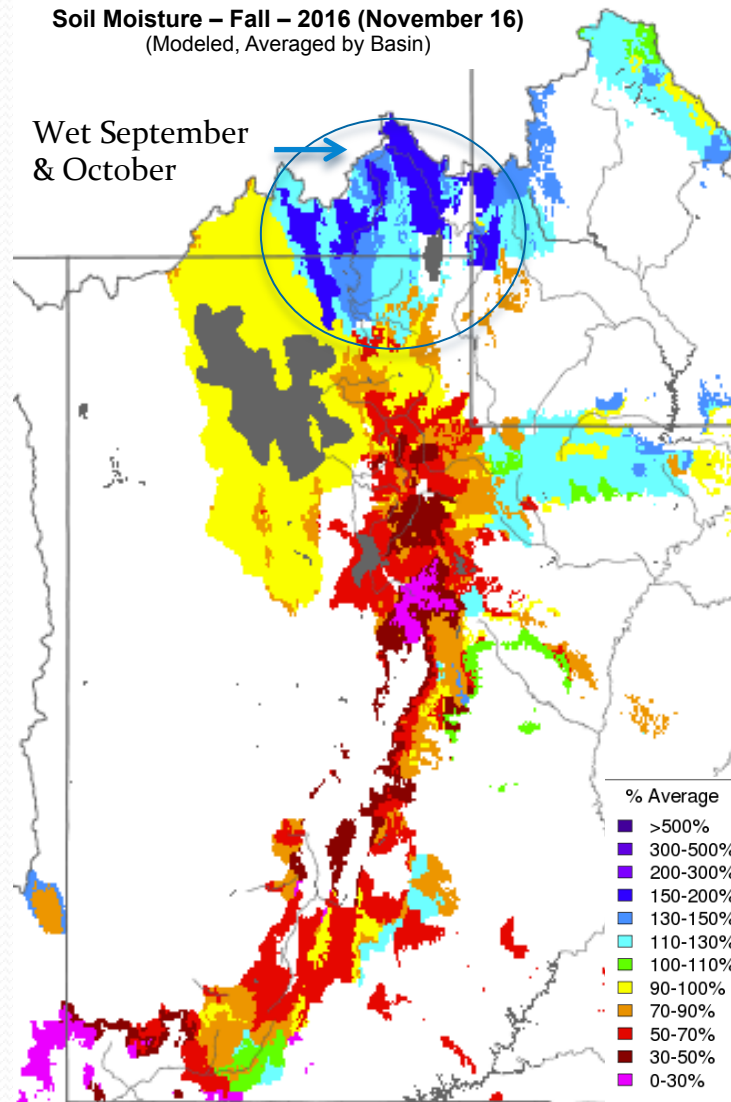
Water Supply Forecast Impacts: Forecasts higher/lower by 3-10% of average

Water Year Precipitation, October 2016 - November 2016
(Averaged by Basin)



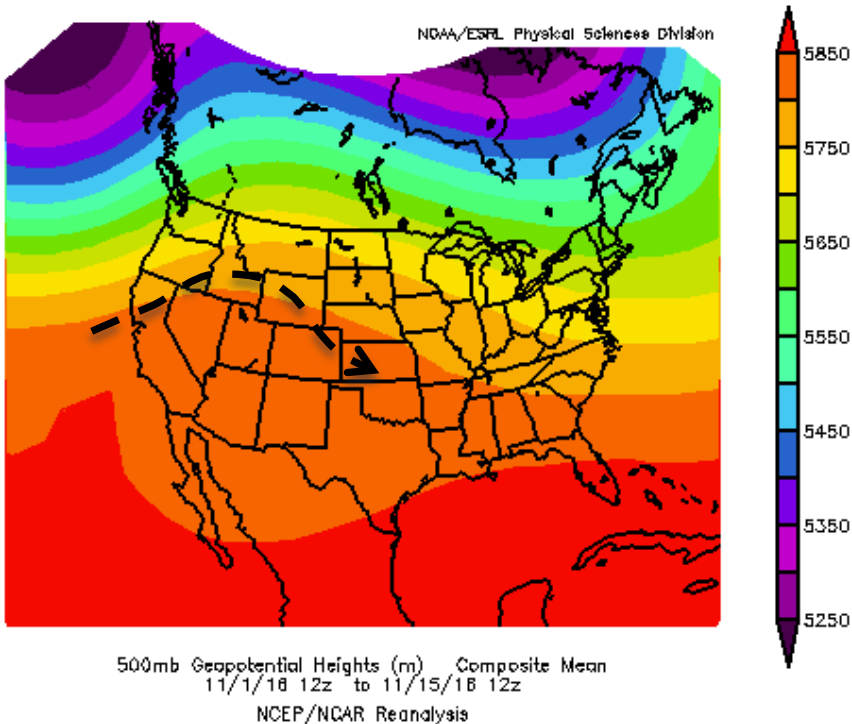
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Soil Moisture – Fall – 2016 (November 16)
(Modeled, Averaged by Basin)



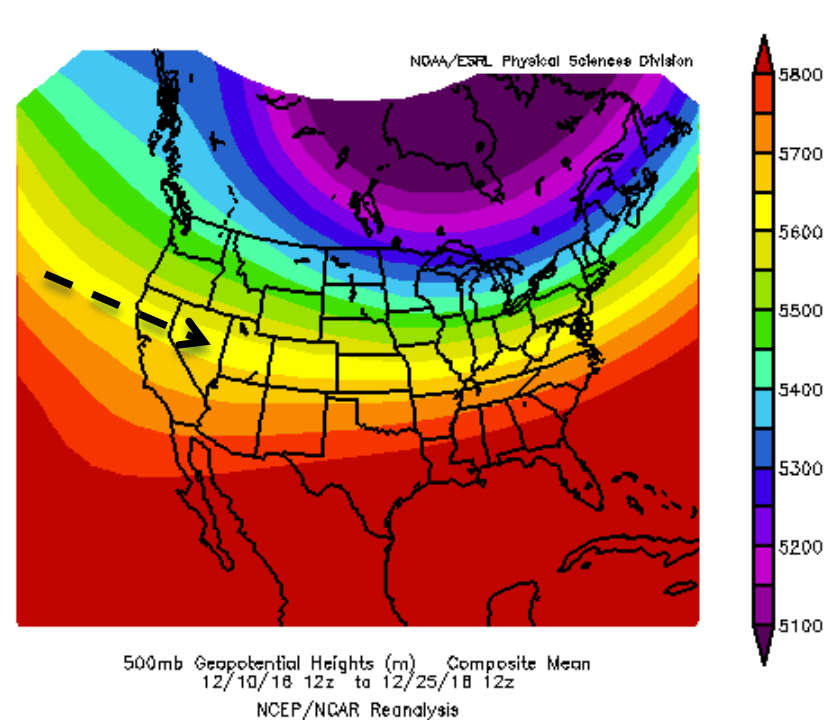
December Weather

A Transition...from Dry/Warm to Cooler / Wet



Early November Atmospheric Pattern:

Extended period with very warm and dry conditions in the runoff producing areas.



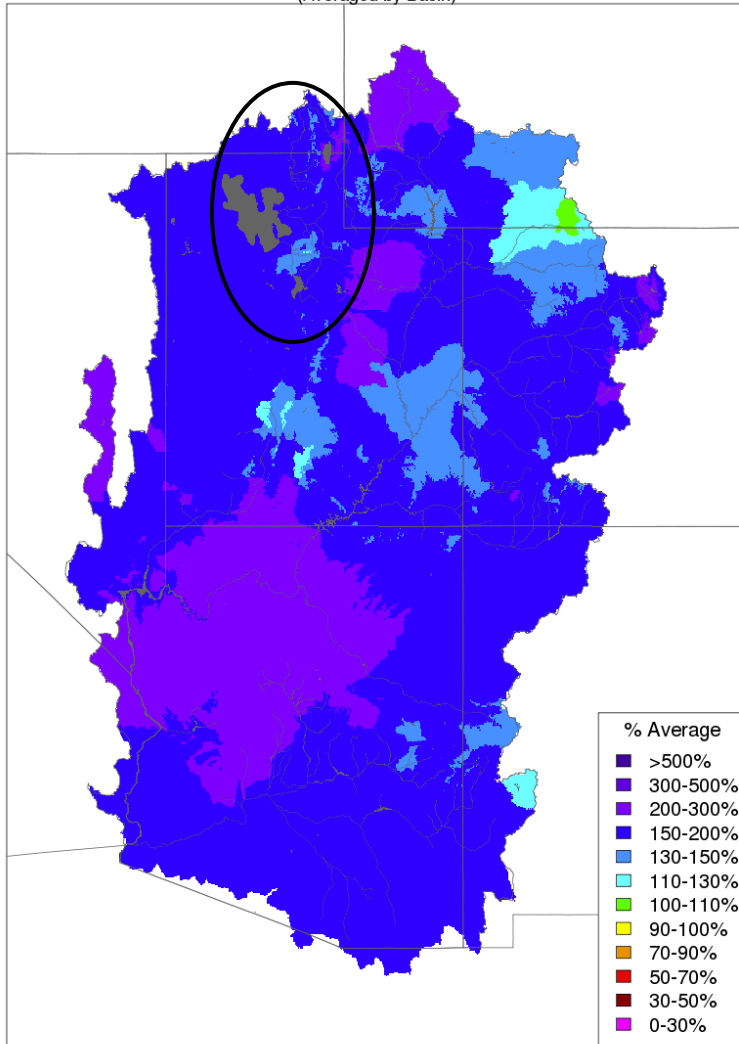
December Atmospheric Pattern:

Onslaught! Strong onshore flow transported significant moisture into the western U.S.

December Weather: Monthly and Seasonal precipitation

Very beneficial Month !

Monthly Precipitation - December 2016
(Averaged by Basin)



Wet December

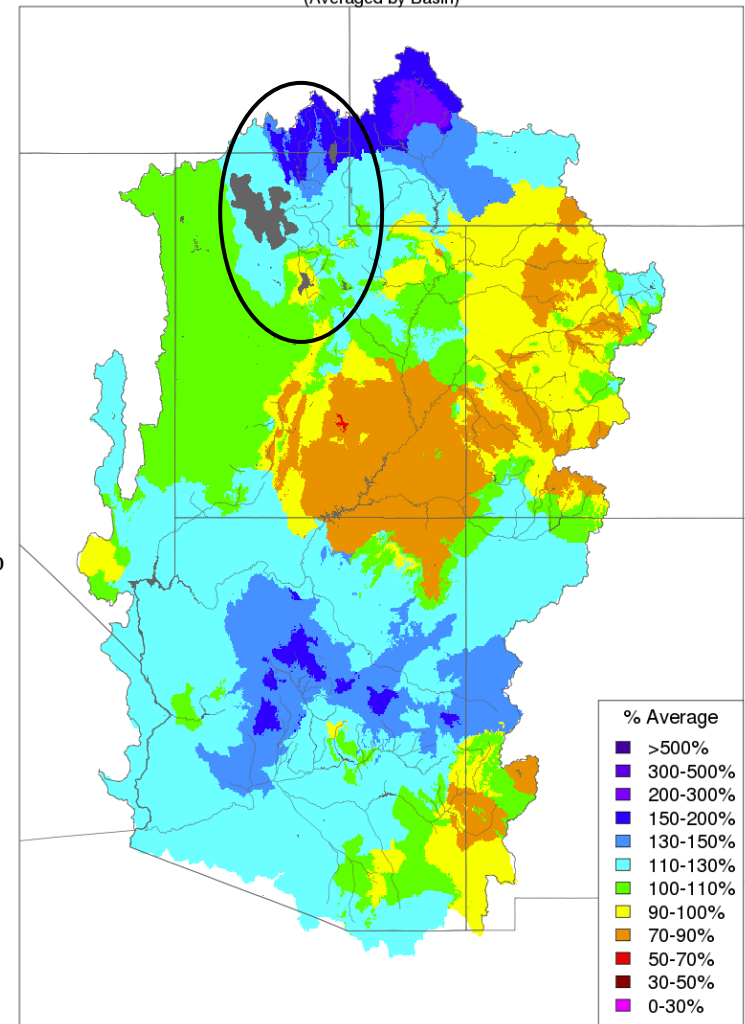
Bear 160%

Weber 160%

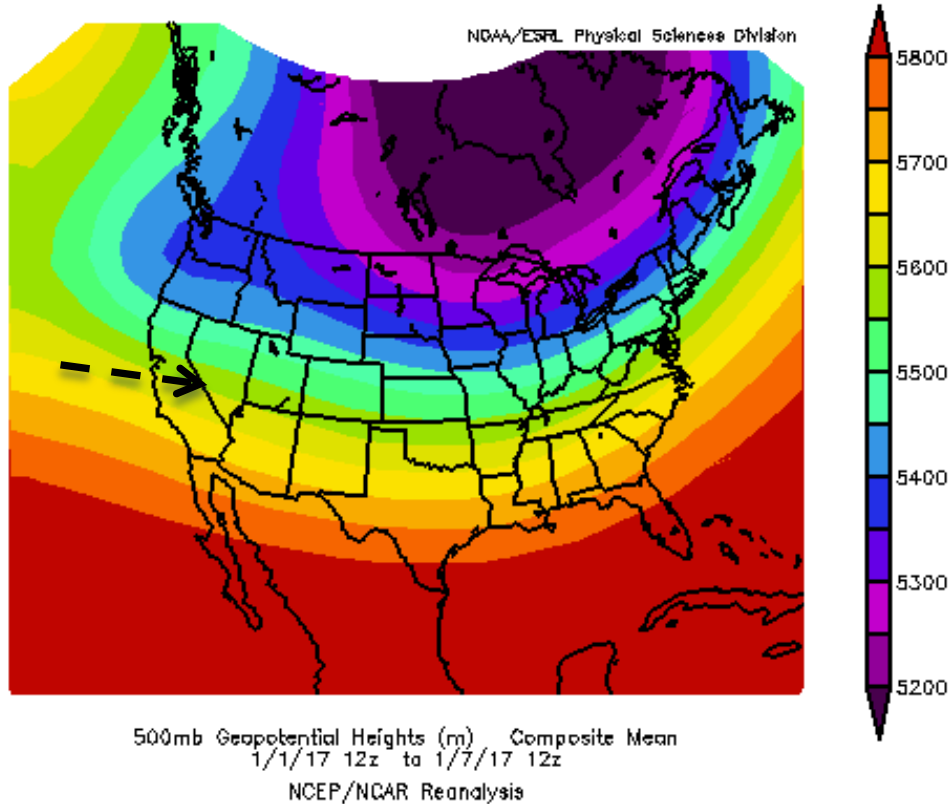
Six Creeks 135%

Provo/UT Lake 170%

Water Year Precipitation, October 2016 - December 2016
(Averaged by Basin)



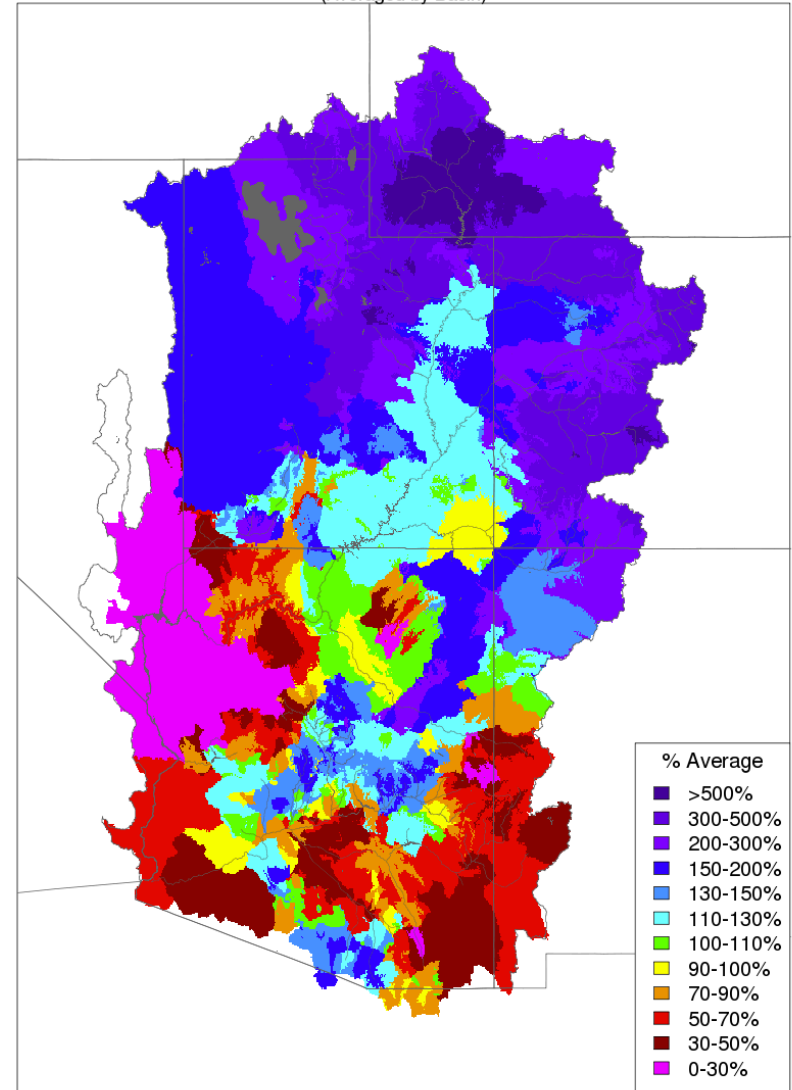
Early January Weather: Continued active and wet



January Atmospheric Pattern:

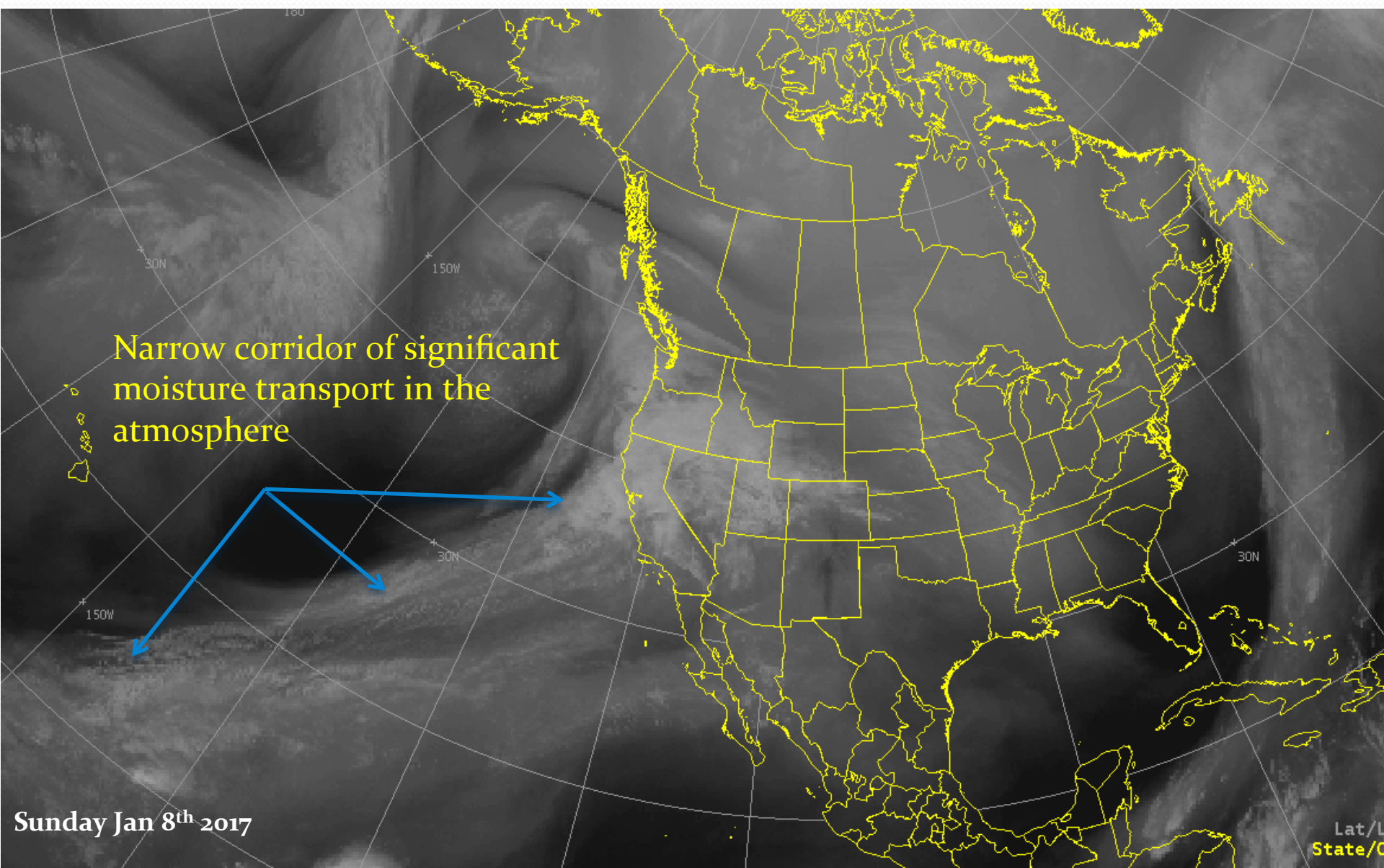
Onslaught continues. Very moist air masses continue to impact the western U.S.

Month to Date Precipitation - January 09 2017
(Averaged by Basin)

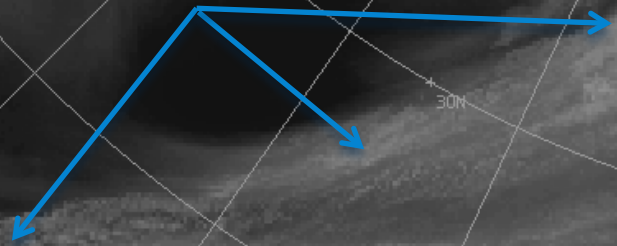


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbafc.noaa.gov

The weather term of the season: "Atmospheric River"



Narrow corridor of significant moisture transport in the atmosphere



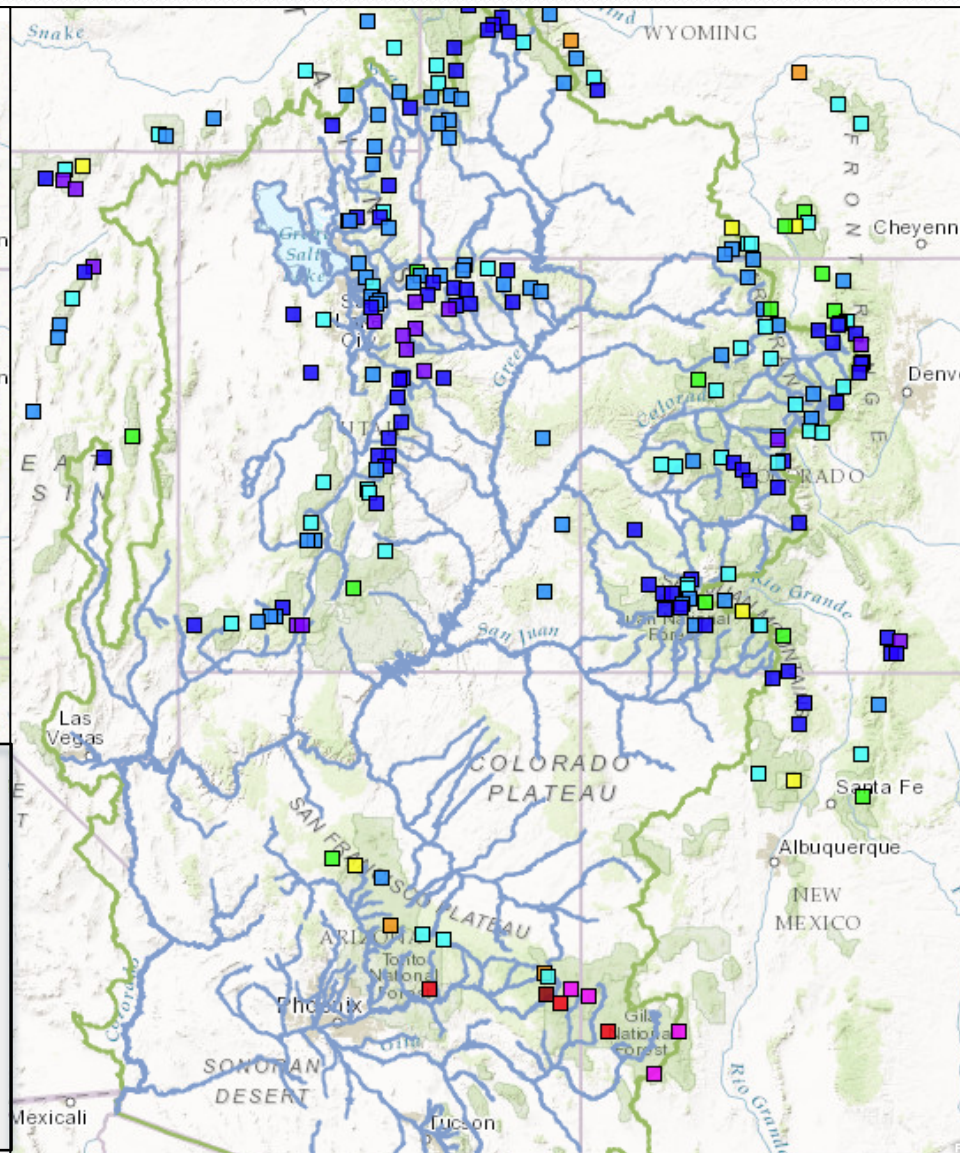
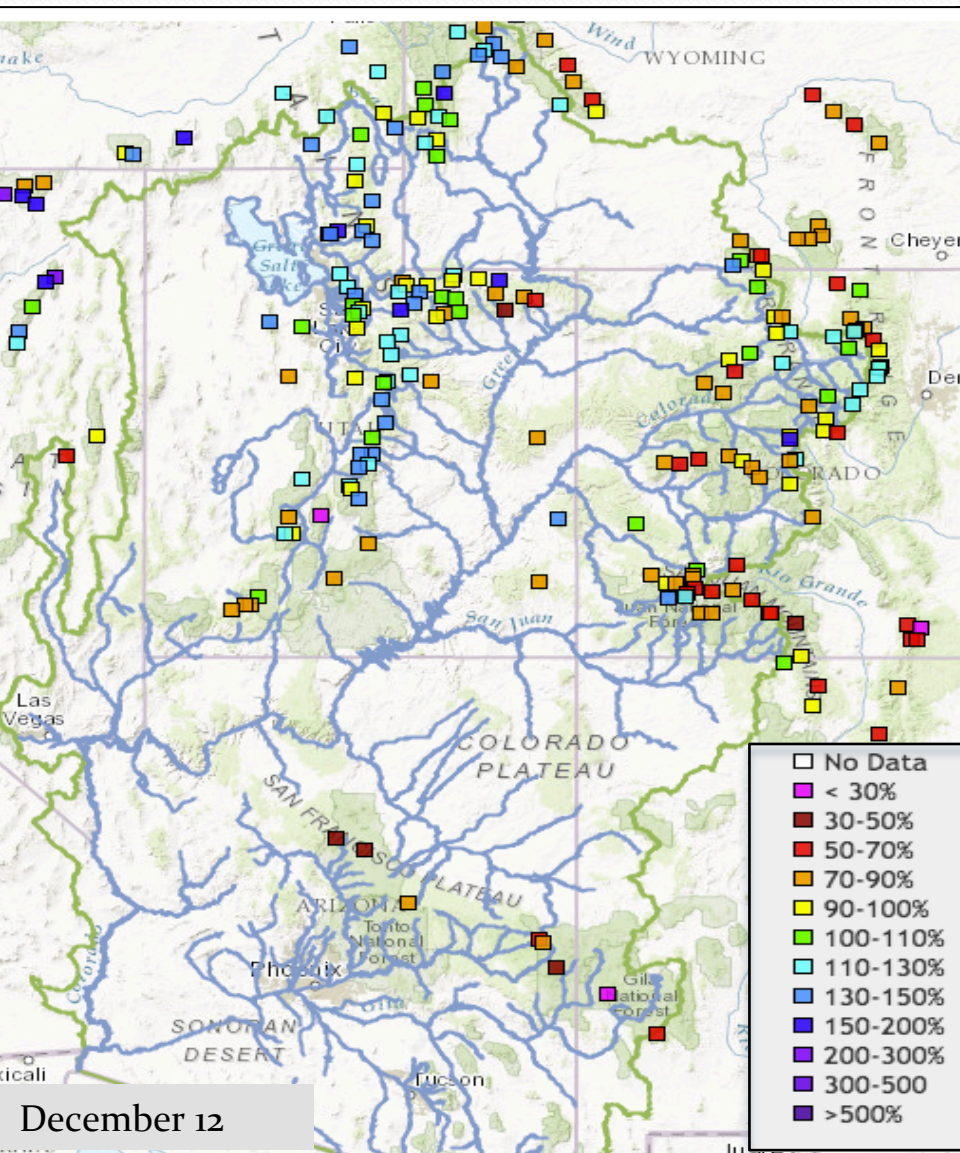
Sunday Jan 8th 2017

Lat/L
State/C

December Weather: Impact to the snowpack

December 12 2016

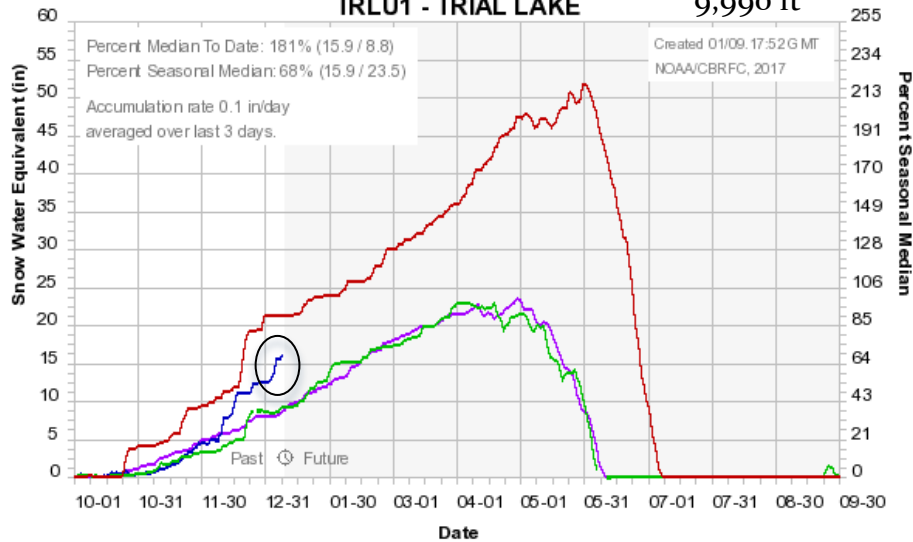
January 9 2017



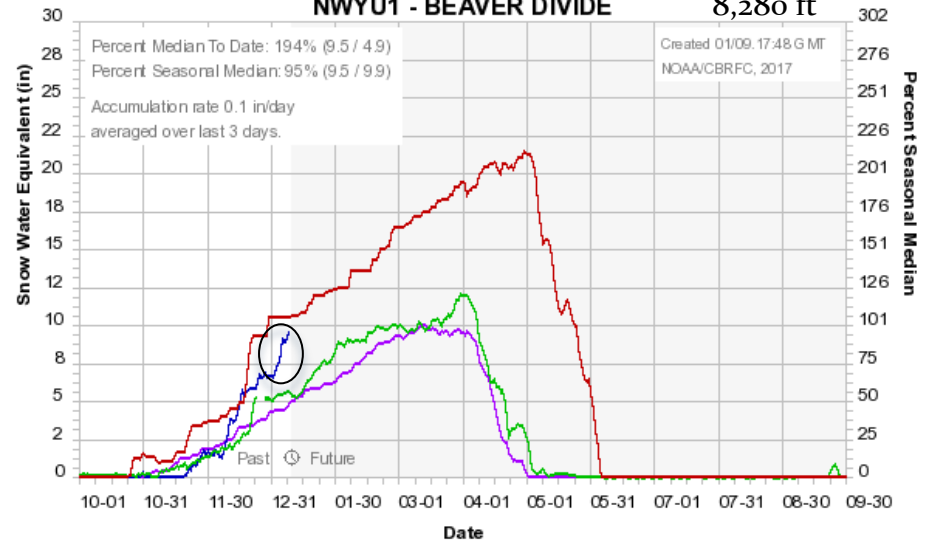
December 12

January Weather: Impact to the snowpack

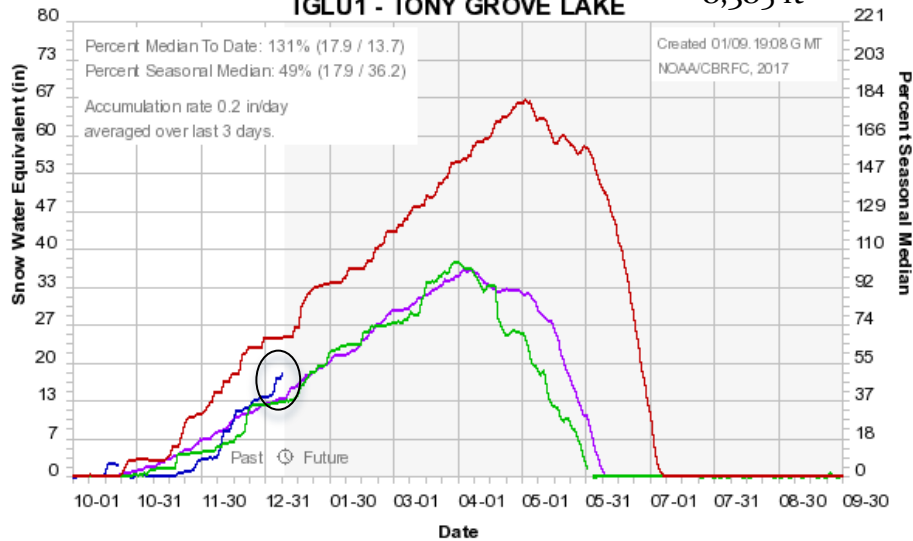
Colorado Basin River Forecast Center
TRLU1 - TRIAL LAKE 9,990 ft



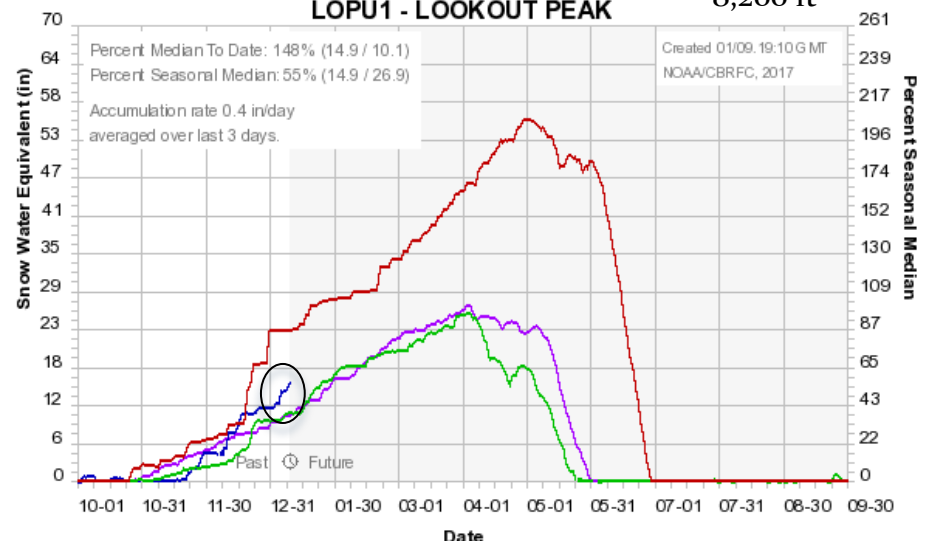
Colorado Basin River Forecast Center
NWYU1 - BEAVER DIVIDE 8,280 ft



Colorado Basin River Forecast Center
TGLU1 - TONY GROVE LAKE 8,385 ft



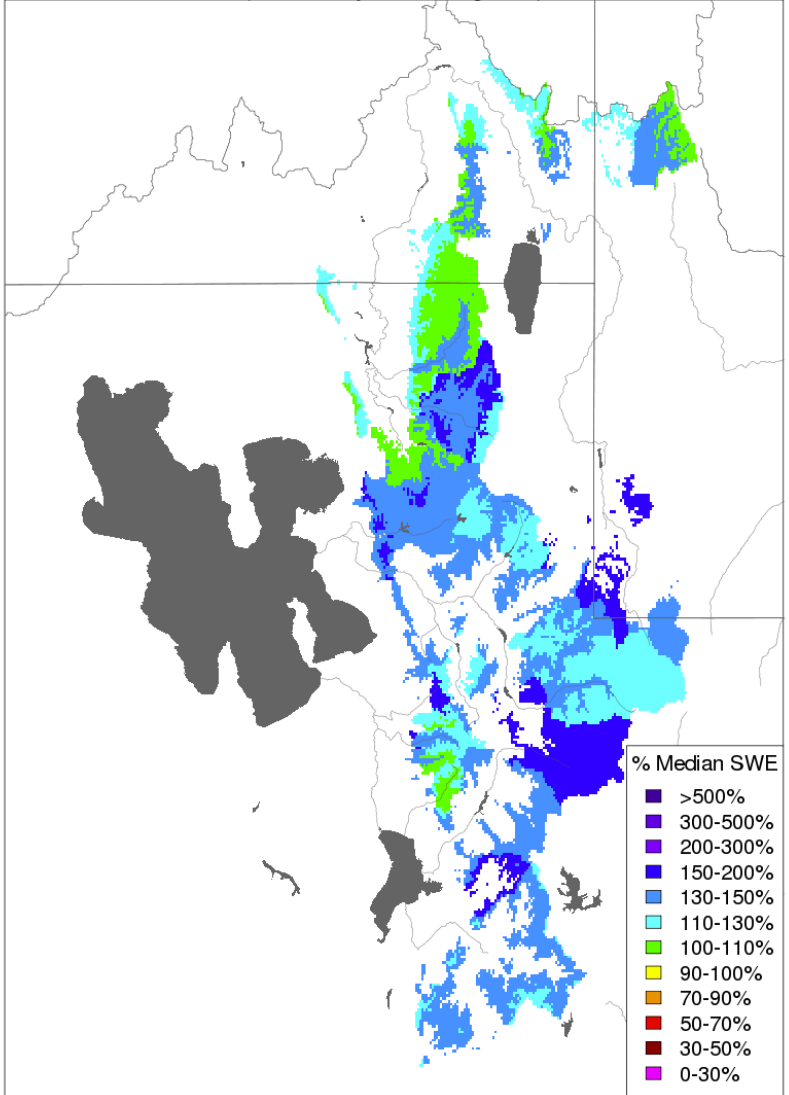
Colorado Basin River Forecast Center
LOPU1 - LOOKOUT PEAK 8,200 ft



Current Snowpack: Evolving Snowpack with additional storms

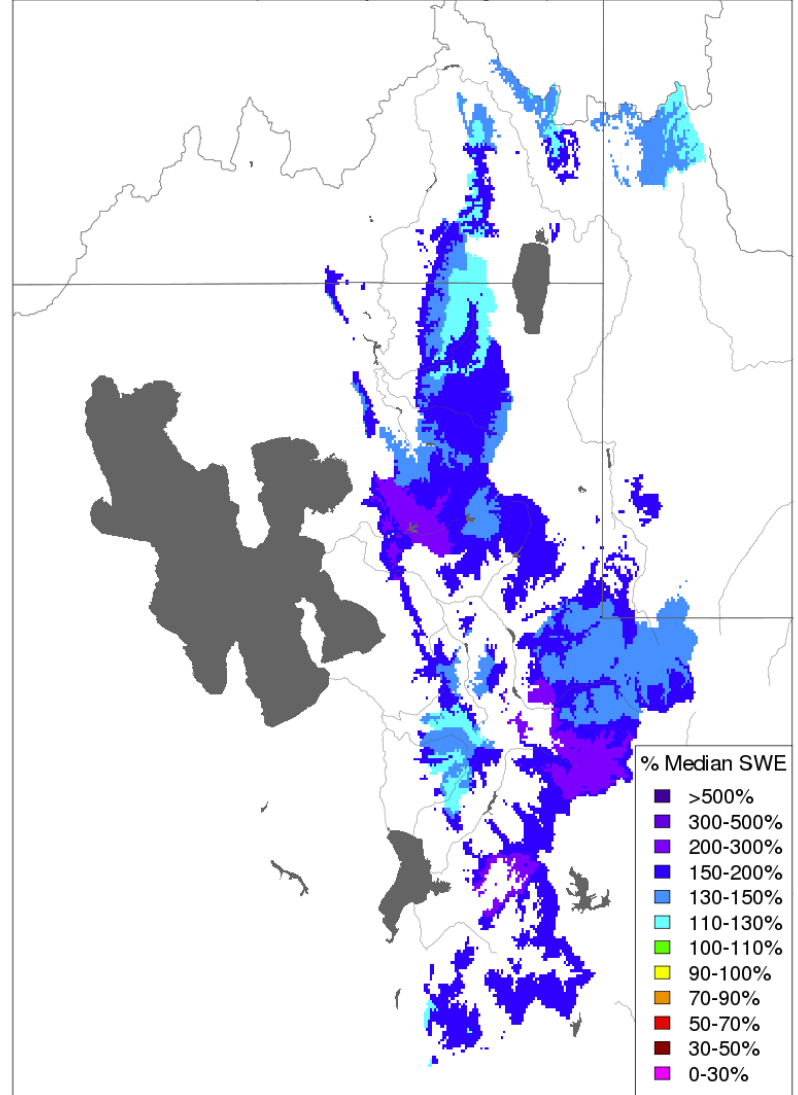
snowpack represented in CBRFC hydrologic model

Snow Conditions - January 03 2017
(Modeled, Major Contributing Areas)



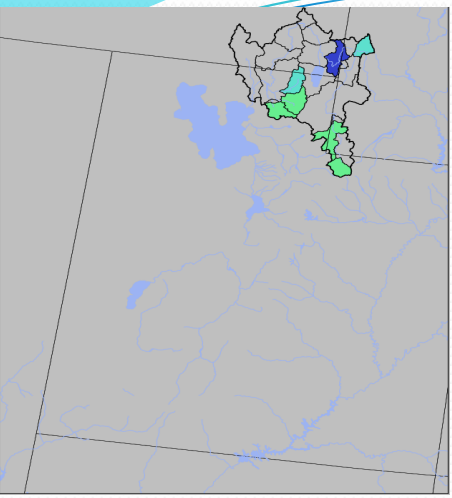
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Snow Conditions - January 05 2017
(Modeled, Major Contributing Areas)

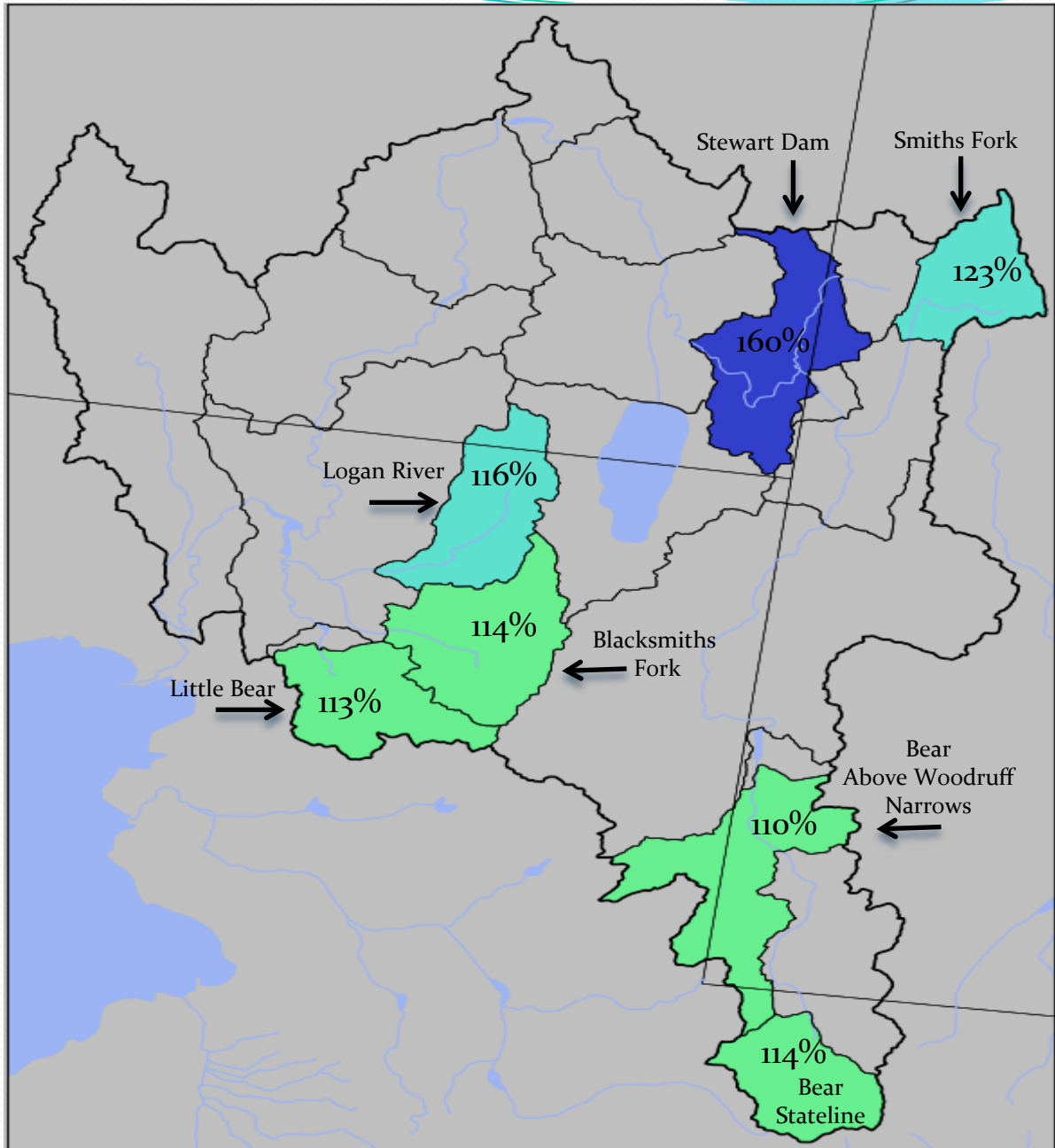
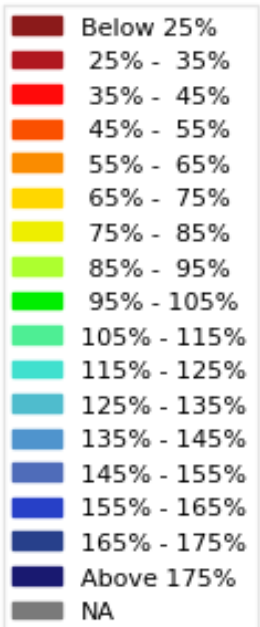


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

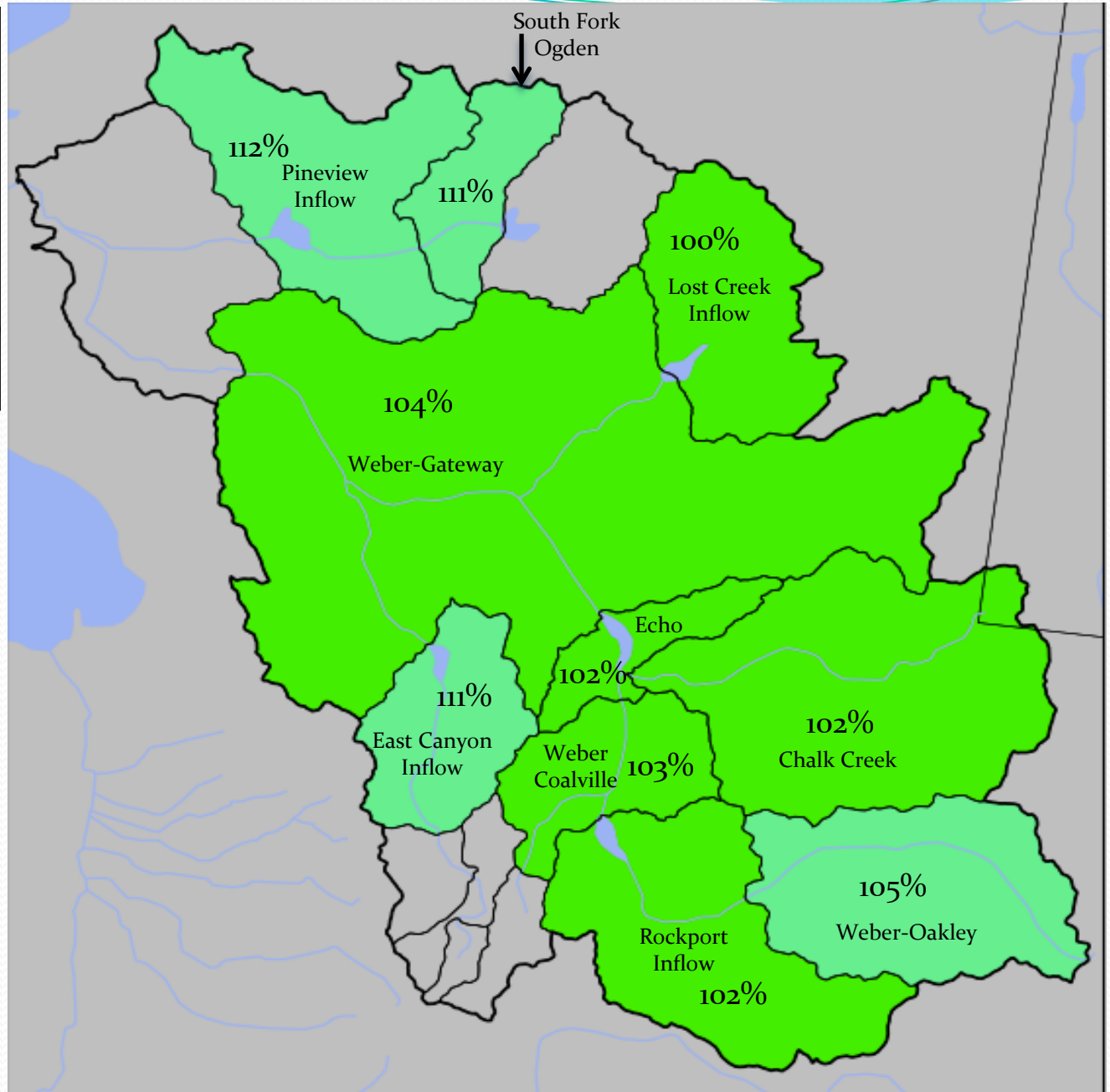
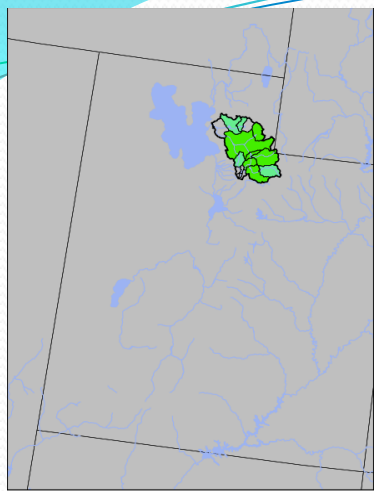
January 1st Water Supply Forecasts – Bear River Basin



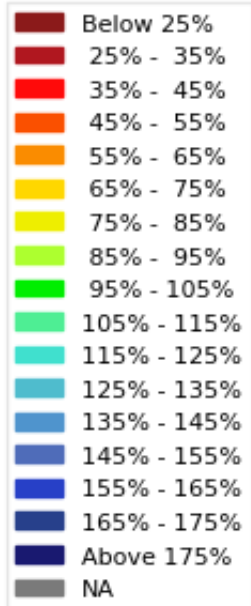
April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



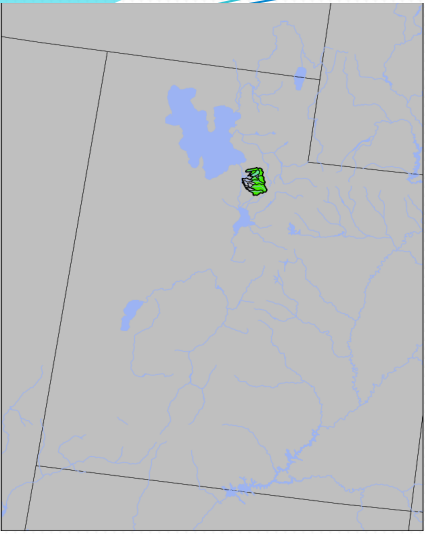
January 1st Water Supply Forecasts – Weber River Basin



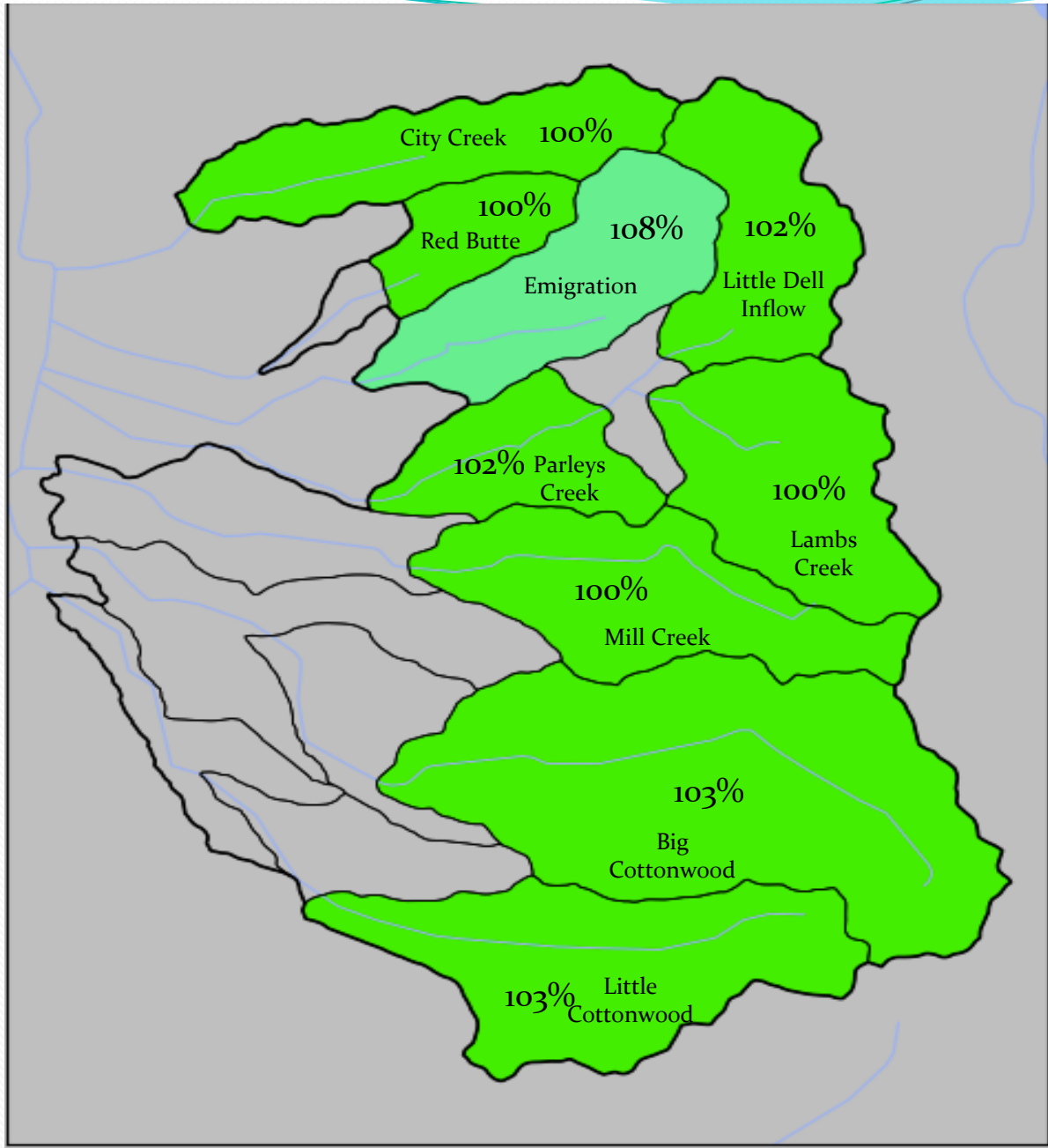
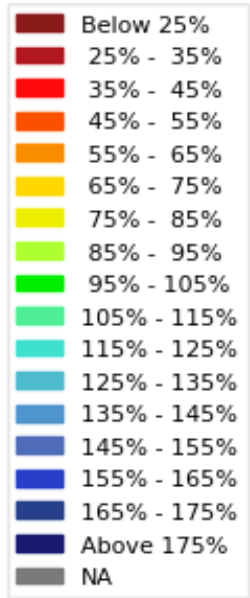
April-July Forecast
Streamflow Volumes
(% of 1981-2010 average)



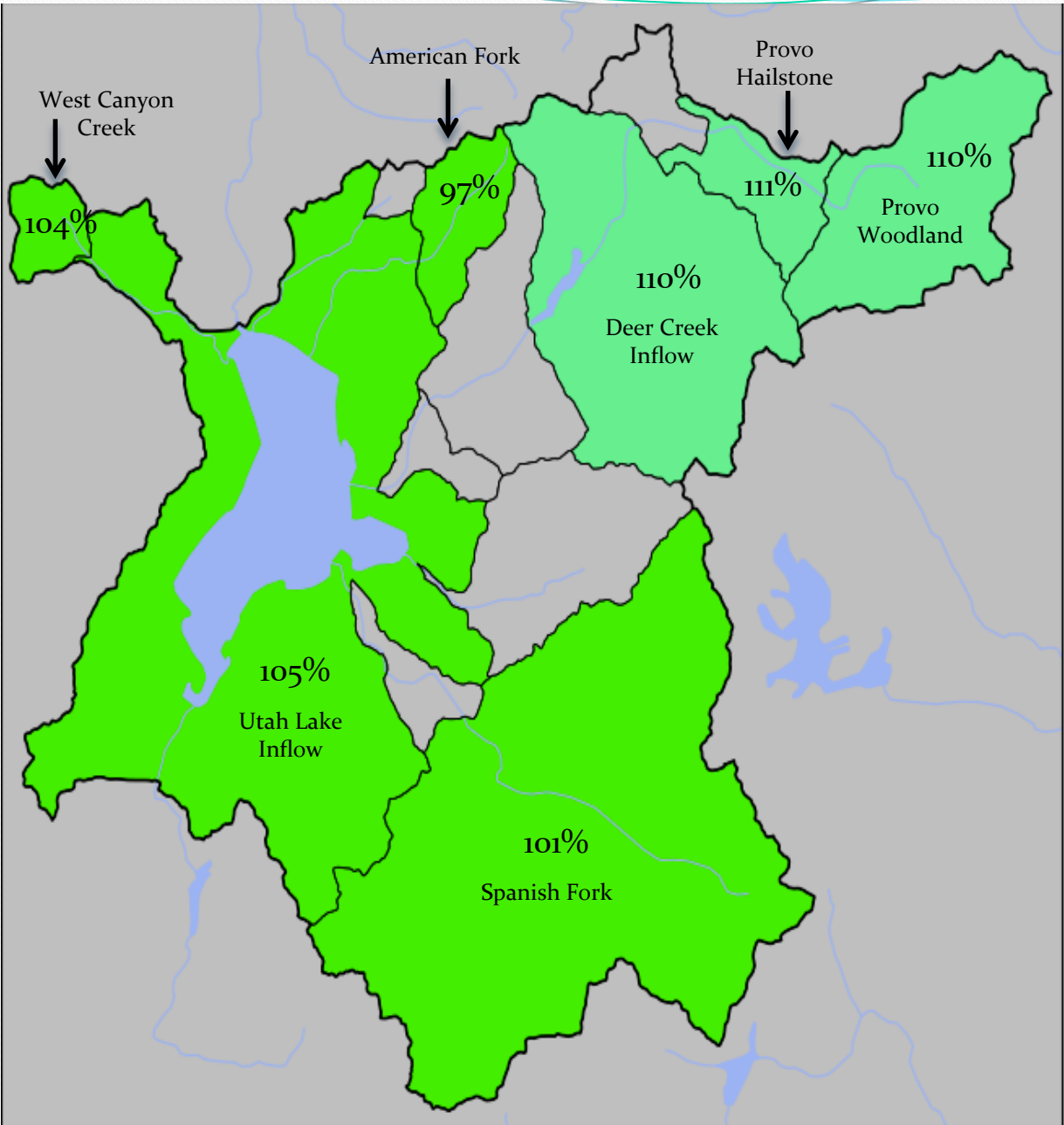
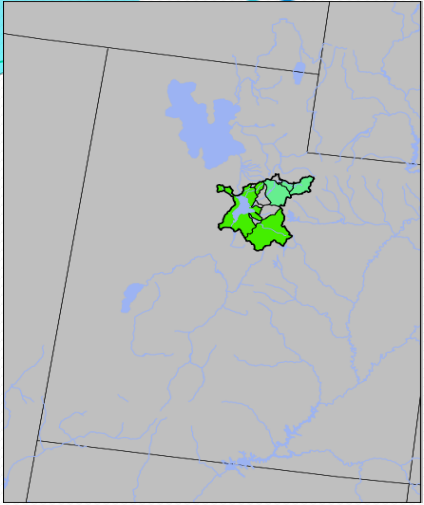
January 1st Water Supply Forecasts – Six Creeks



April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



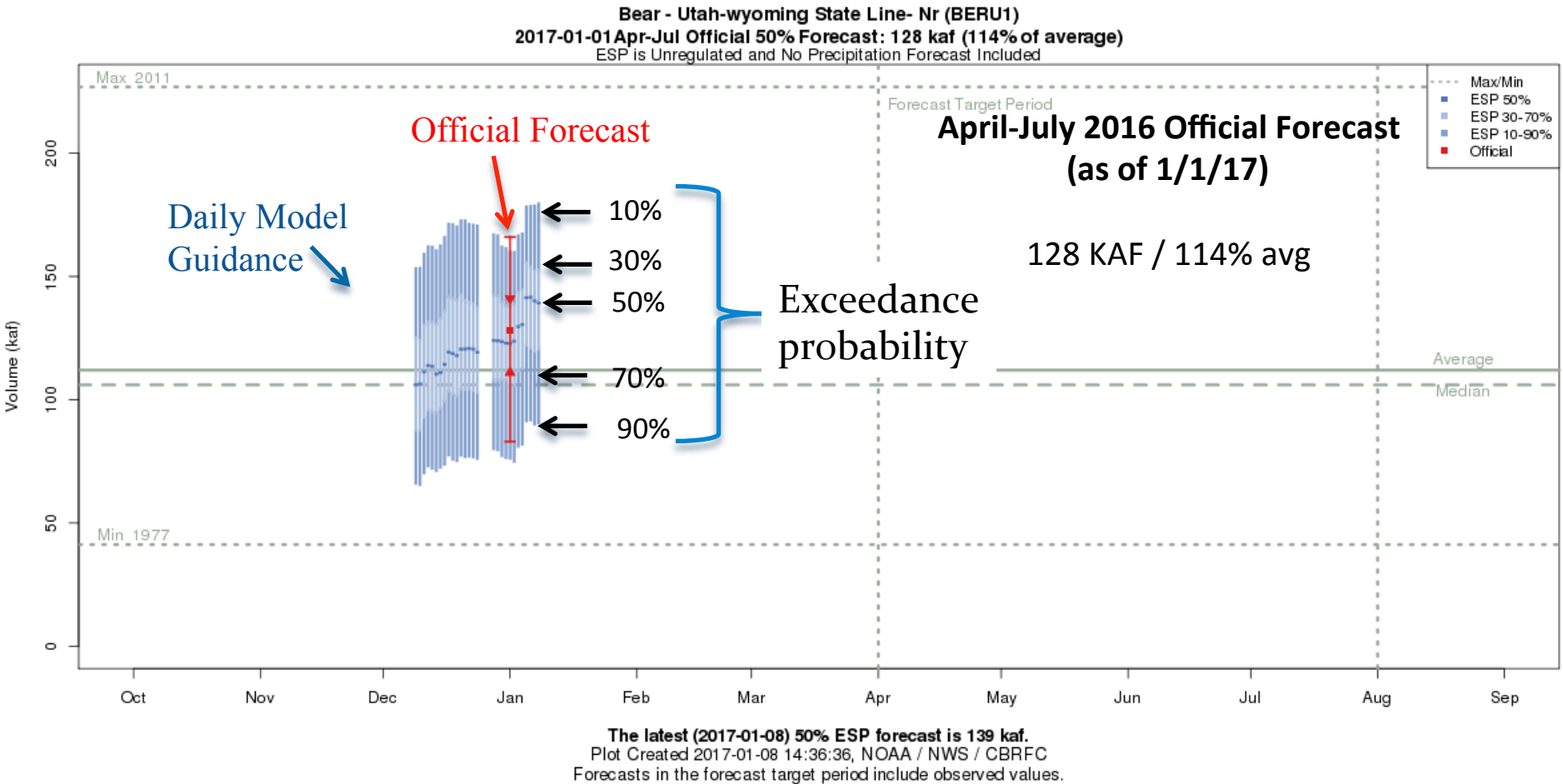
January 1st Water Supply Forecasts – Provo River / Utah Lake



April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)

Below 25%
25% - 35%
35% - 45%
45% - 55%
55% - 65%
65% - 75%
75% - 85%
85% - 95%
95% - 105%
105% - 115%
115% - 125%
125% - 135%
135% - 145%
145% - 155%
155% - 165%
165% - 175%
Above 175%
NA

Forecast Evolution Plot – Bear River @ Utah/Wyoming Stateline

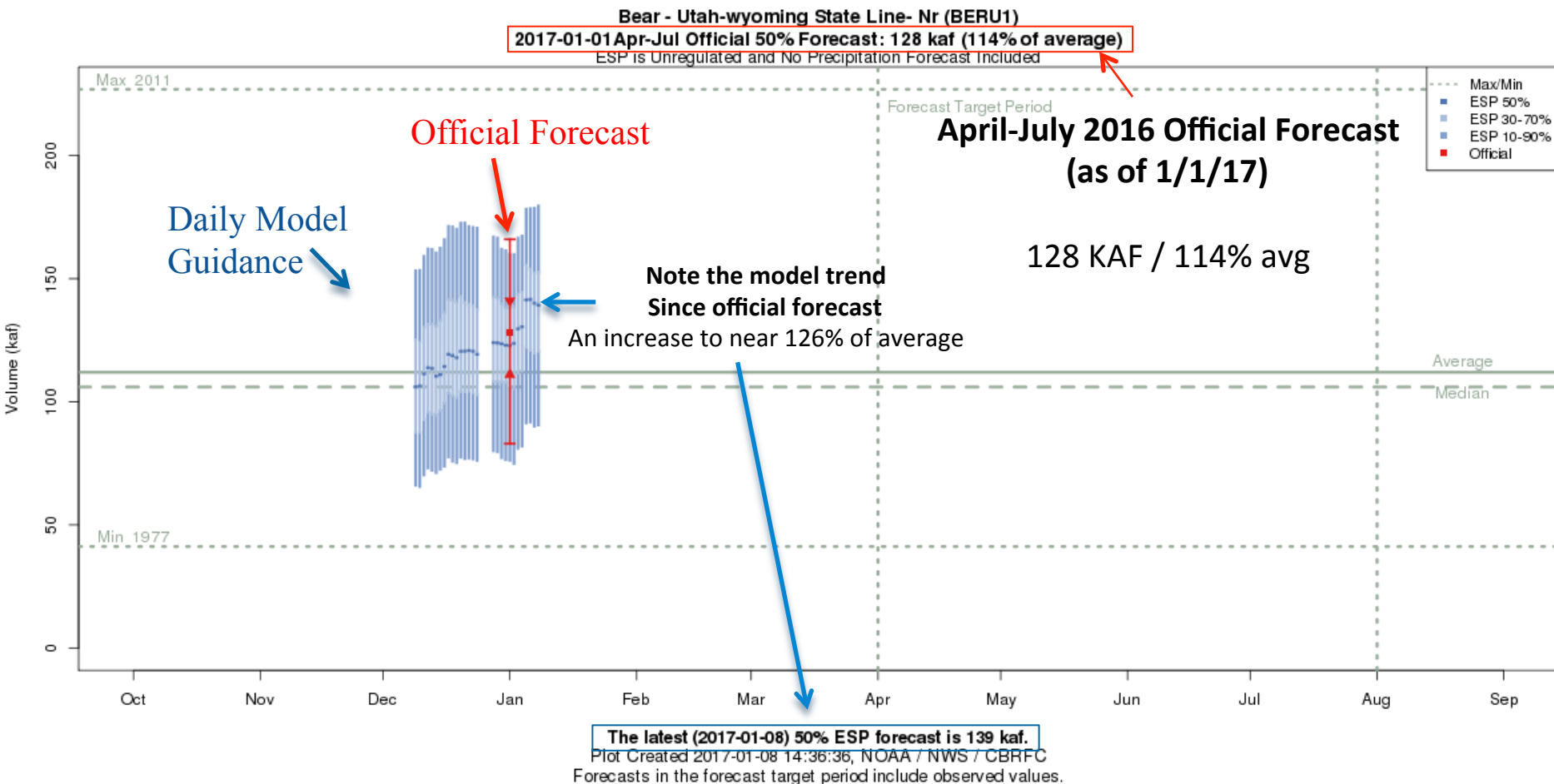


Plots are available at: <https://www.cbrfc.noaa.gov>

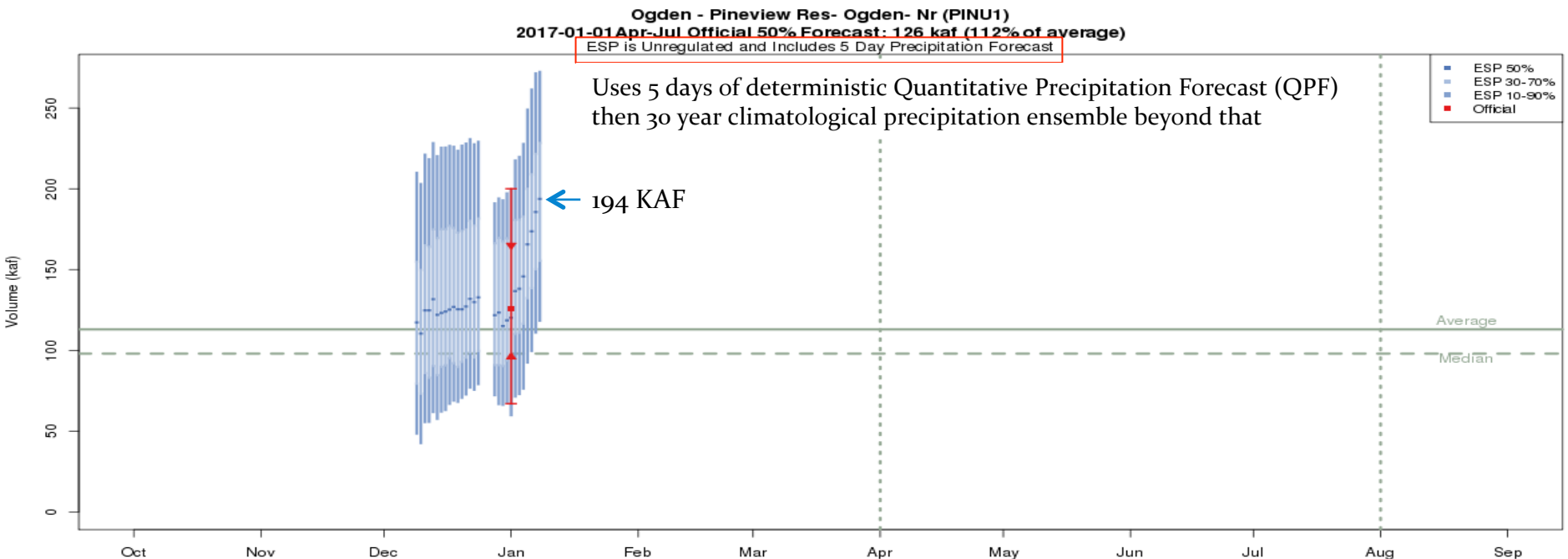
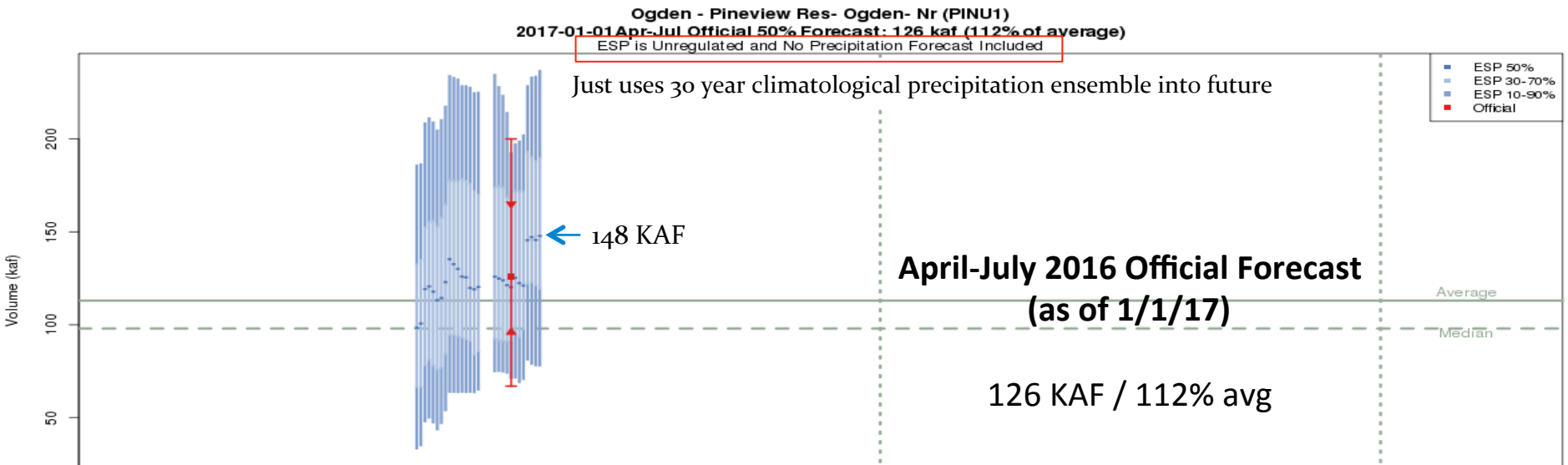
Select WATER SUPPLY from the top menu

Click on desired location for pop-up, click again for full screen

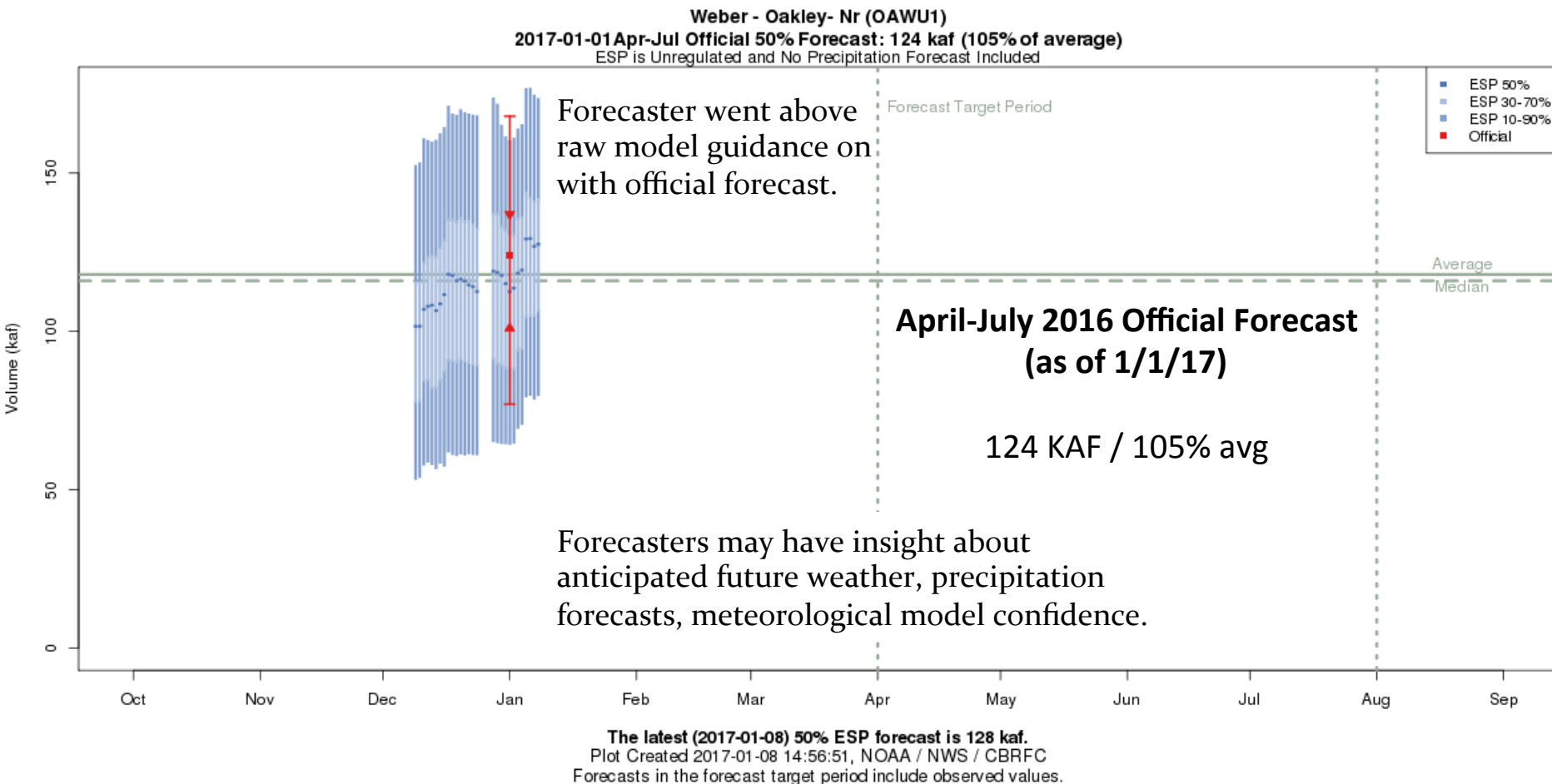
Forecast Evolution Plot – Bear River @ Utah/Wyoming Stateline



Forecast Evolution Plot – Ogden near Pineview Reservoir

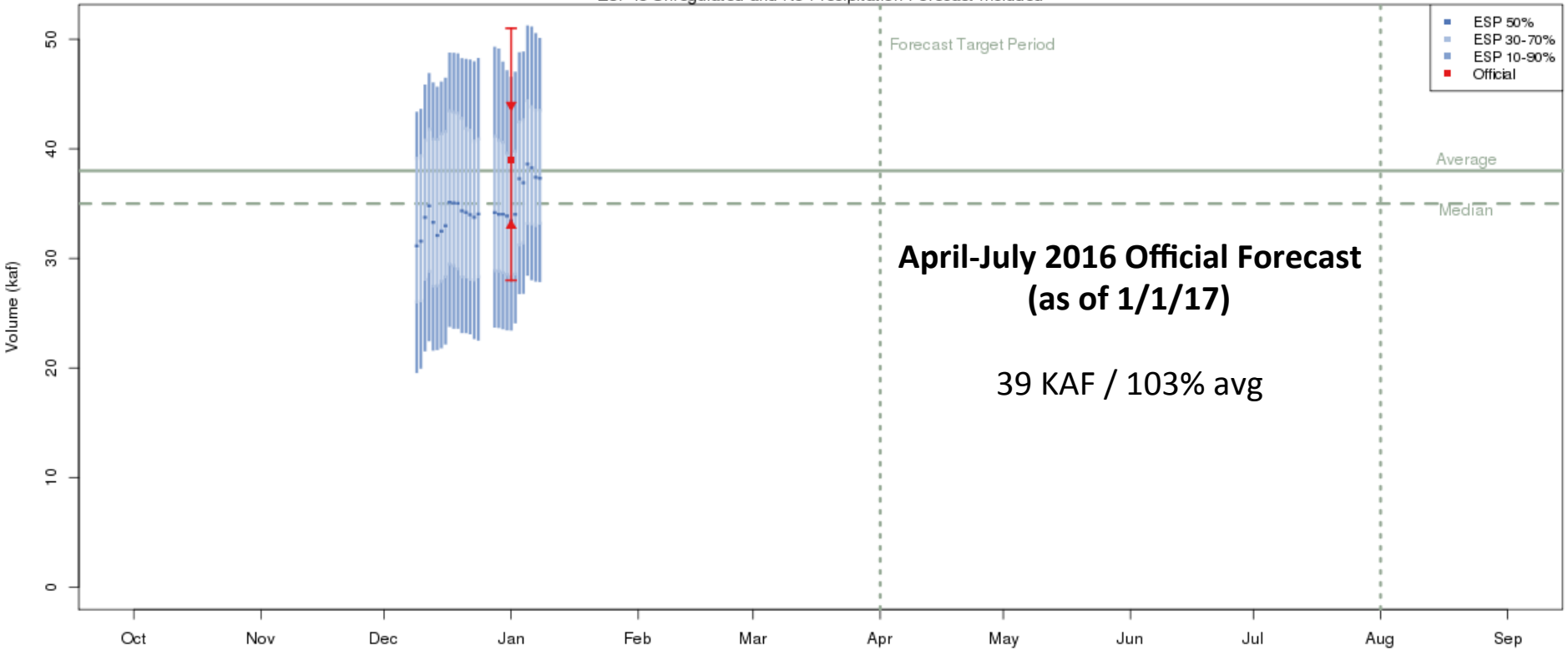


Forecast Evolution Plot – Weber River near Oakley



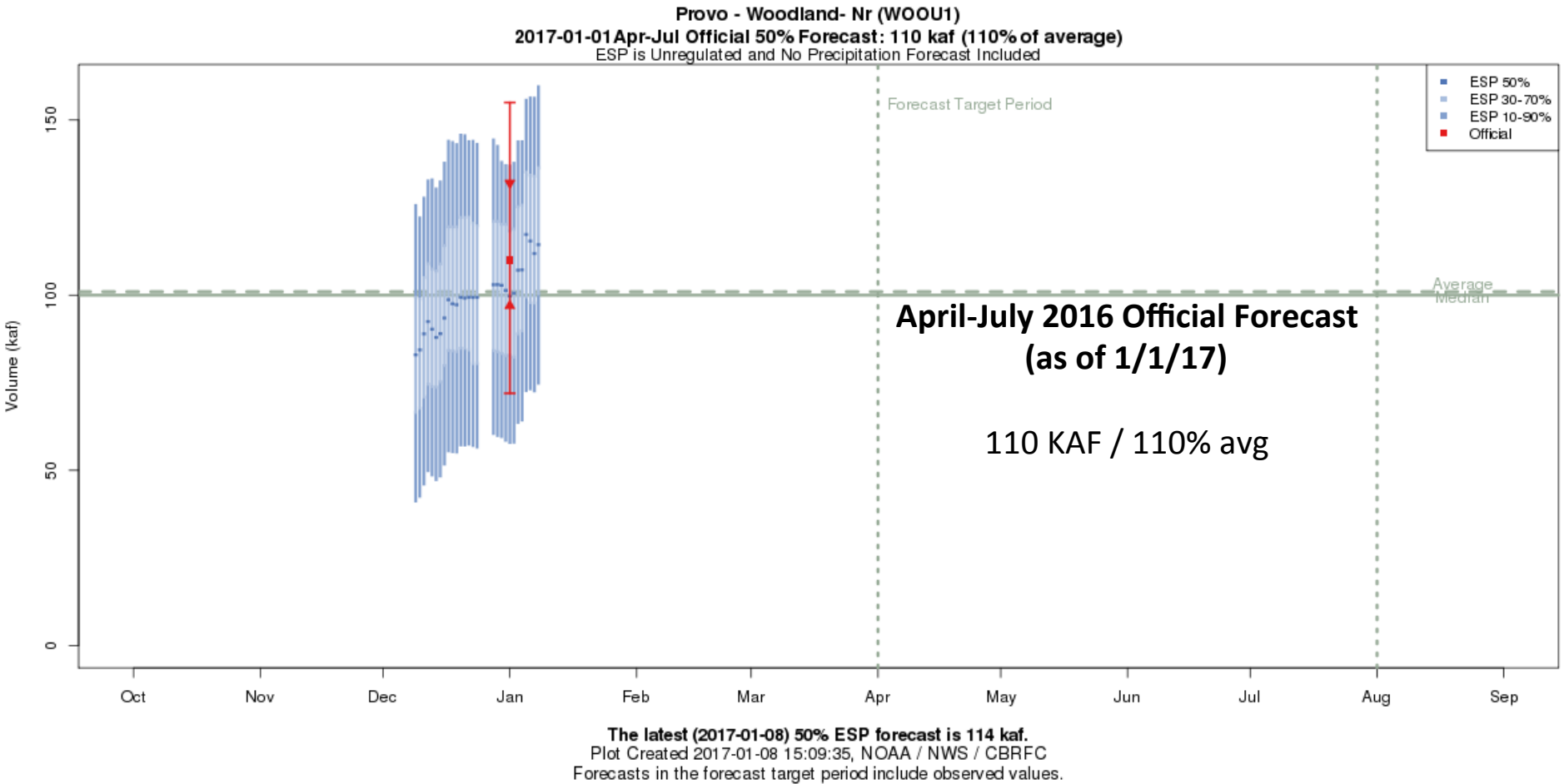
Forecast Evolution Plot – Little Cottonwood Creek

Little Cottonwood Ck - Salt Lake City- Nr (LCTU1)
2017-01-01 Apr-Jul Official 50% Forecast: 39 kaf (103% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2017-01-08) 50% ESP forecast is 37 kaf.
Plot Created 2017-01-08 14:52:35, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Forecast Evolution Plot – Provo River near Woodland



Forecast Validation: How good are forecasts in January ?

Historical Model Error 1981-2010

January has the highest model/forecast errors
significant snow accumulation period remains

Forecasts are better than just going with average

Error tends to decrease each month into the spring

Where We Do Better:

- Headwaters
- Primarily snow melt basins
- Known diversions / demands

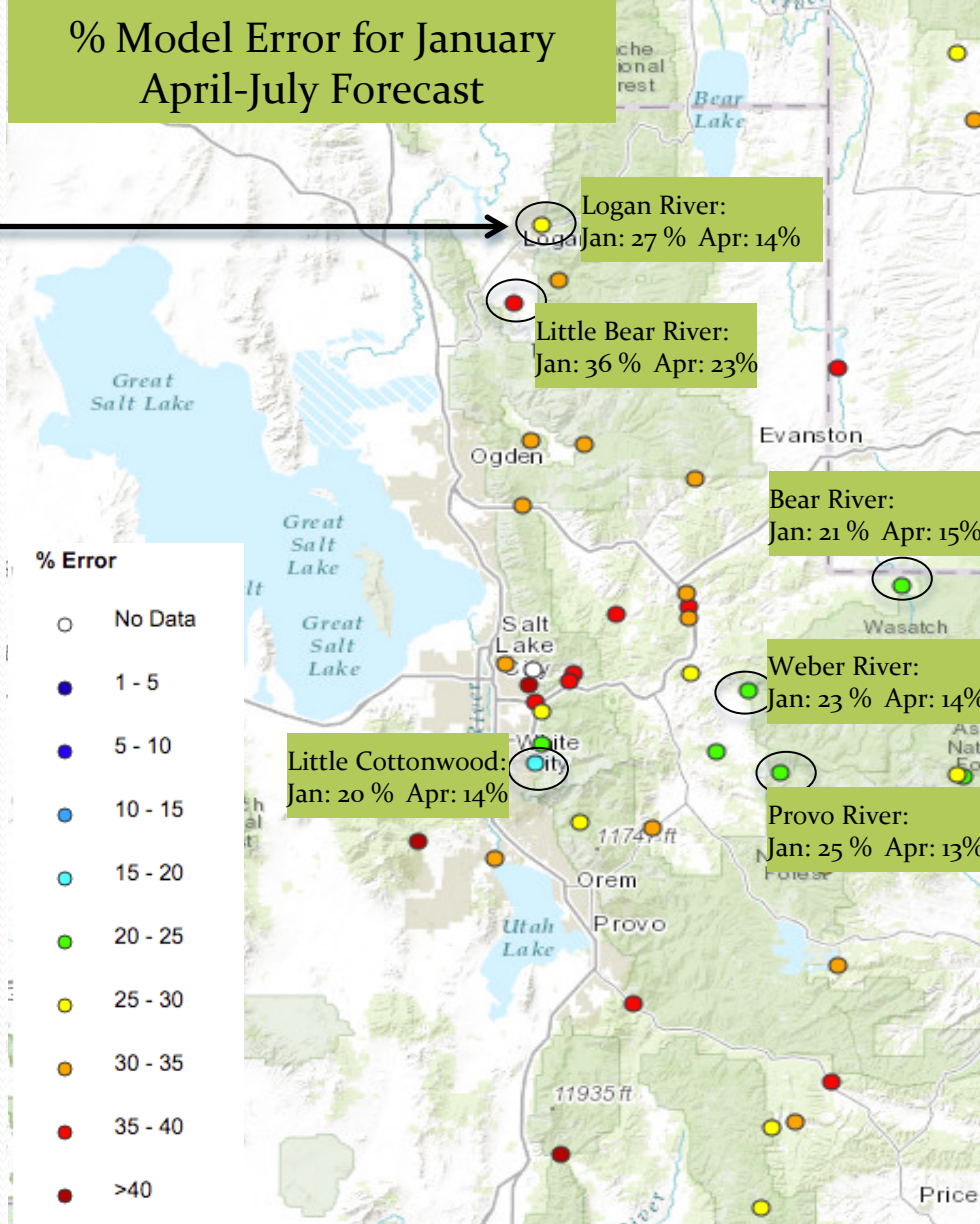
Where We Do Worse:

- Lower elevations (rain or early melt)
- Downstream of diversions / irrigation
- Little is known about diversions / demands

Map is available at:
<https://www.cbrfc.noaa.gov/arc/verif/verif.php>

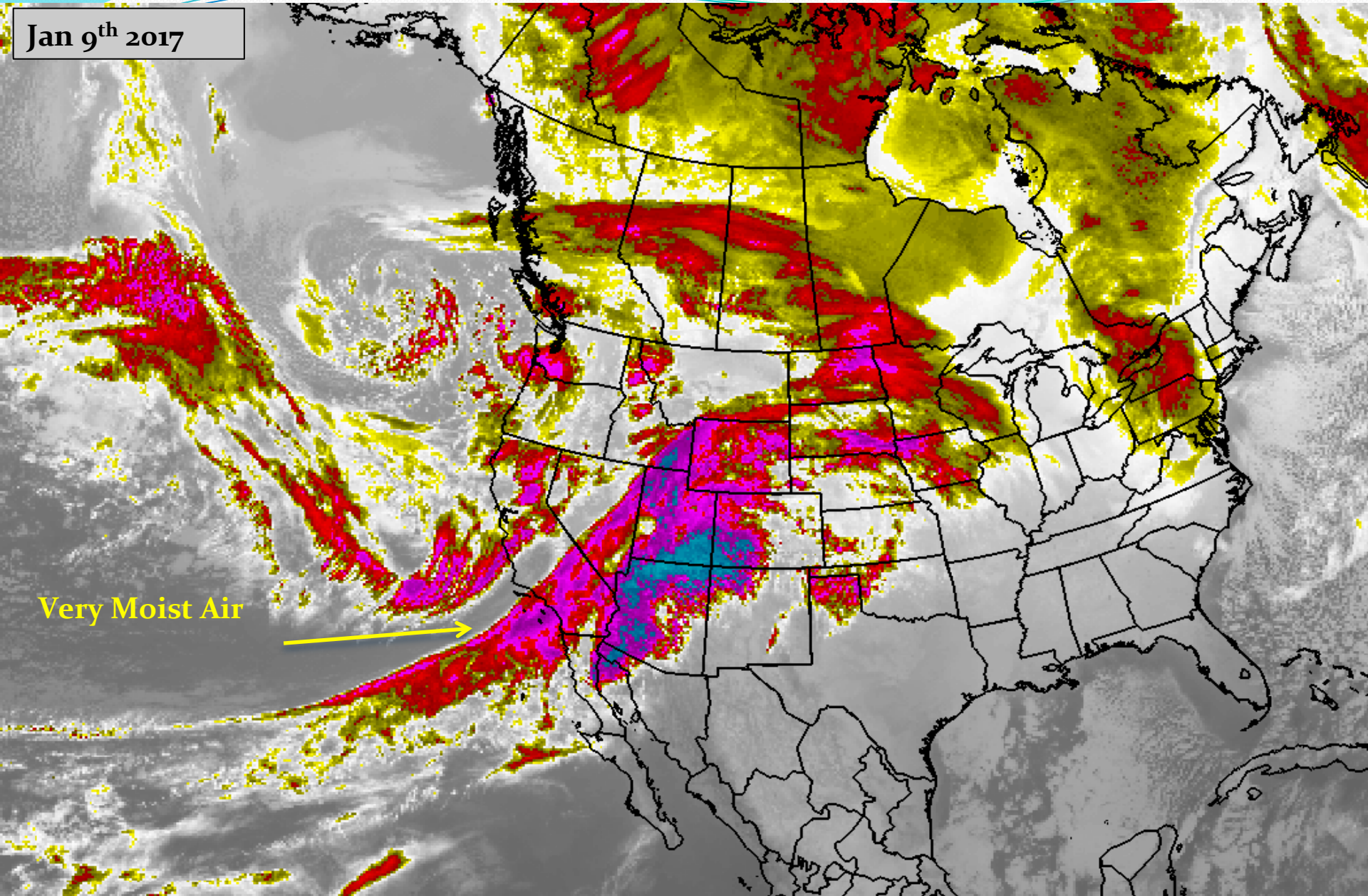
From Water Supply drop down menu
→ select Historical Verification Map

Historical Water Supply Verification - January



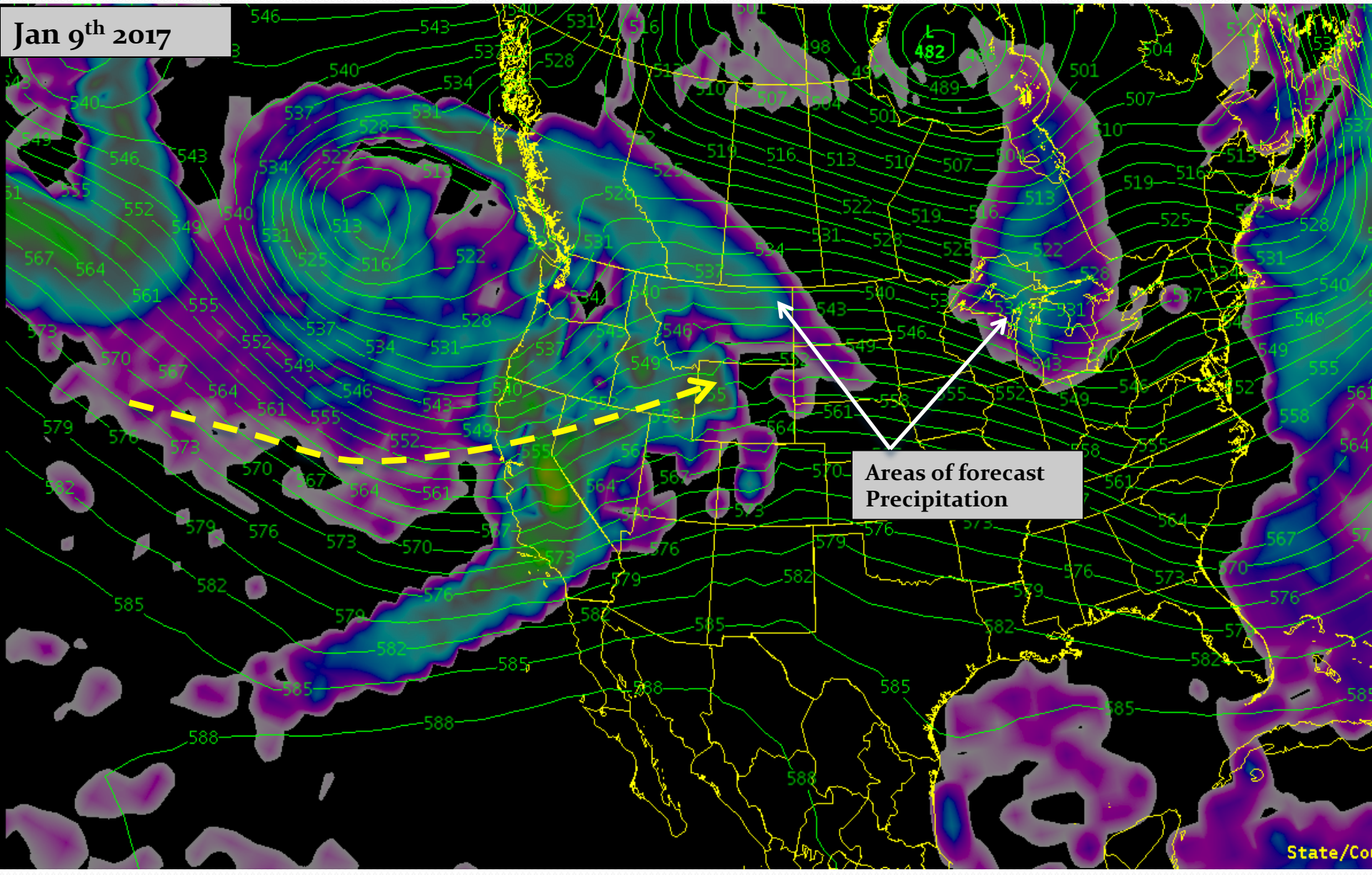
Upcoming Weather and Impacts to Water Supply Forecasts

Jan 9th 2017



Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model Guidance: Very moist air mass entering region



Jan 9th 2017

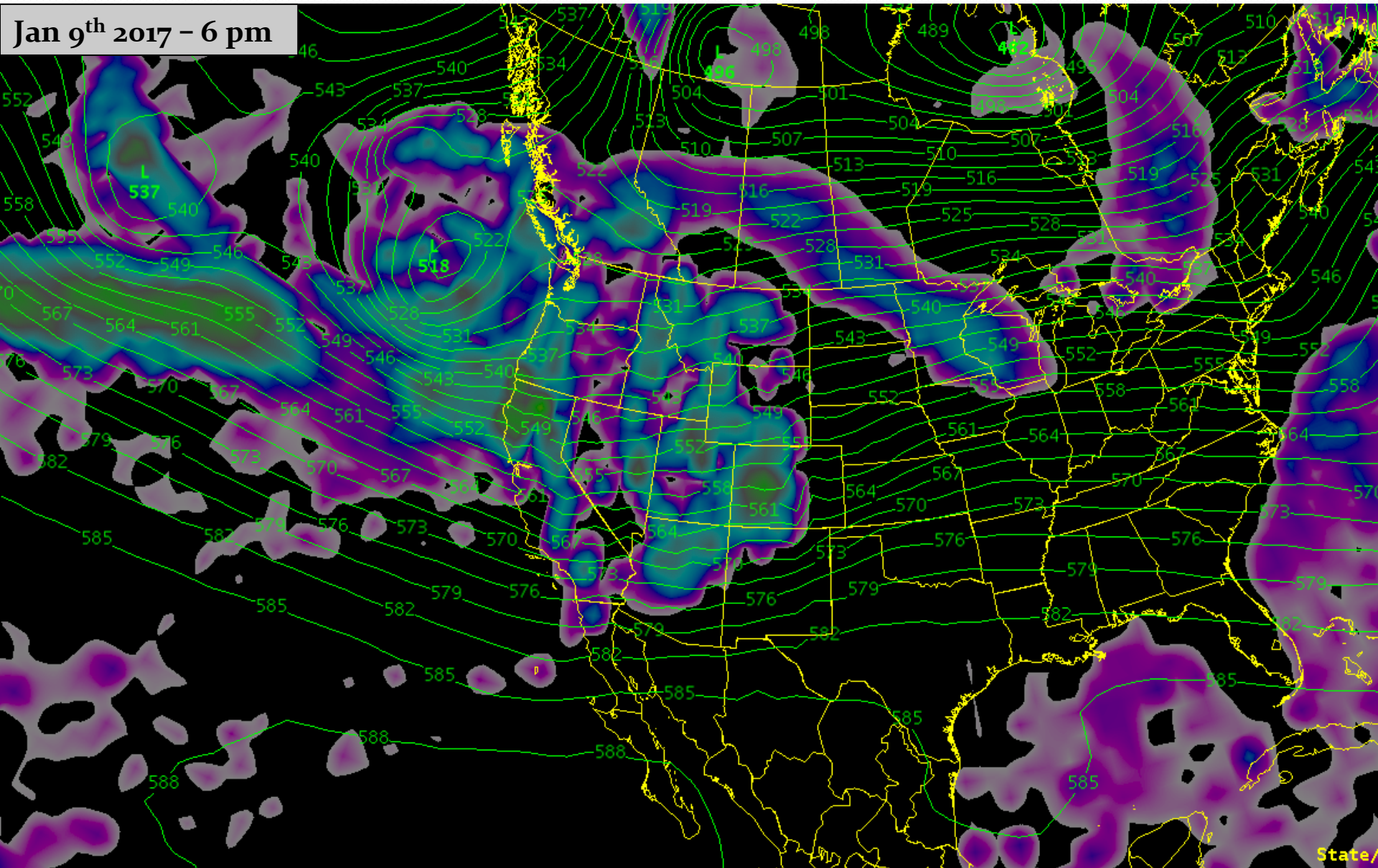
Areas of forecast
Precipitation

State/Co

Upcoming Weather and Impacts to Water Supply Forecasts

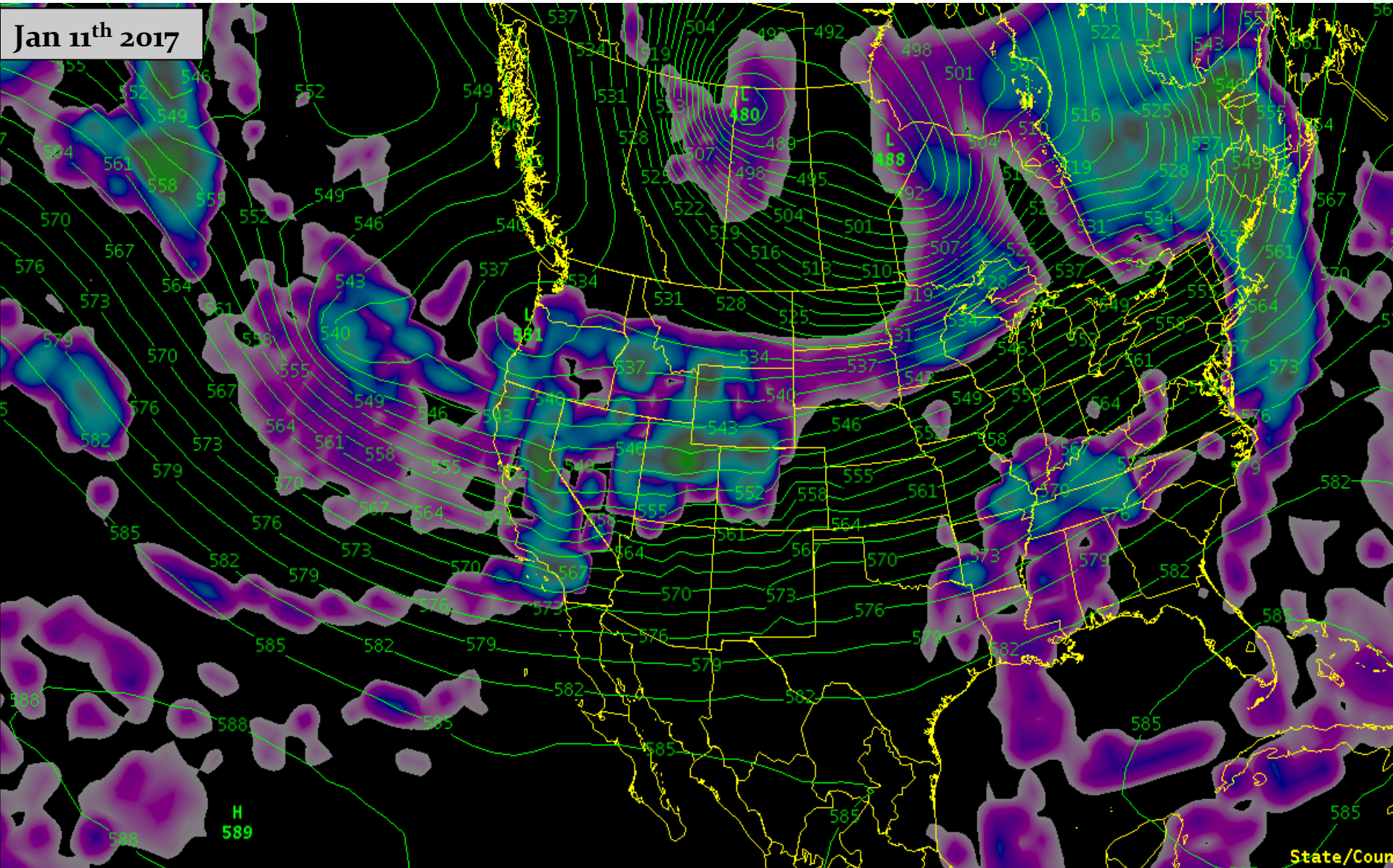
Meteorological Model Guidance: Moist air mass impacting northern Great Basin, northern Green River Basin.

Jan 9th 2017 - 6 pm



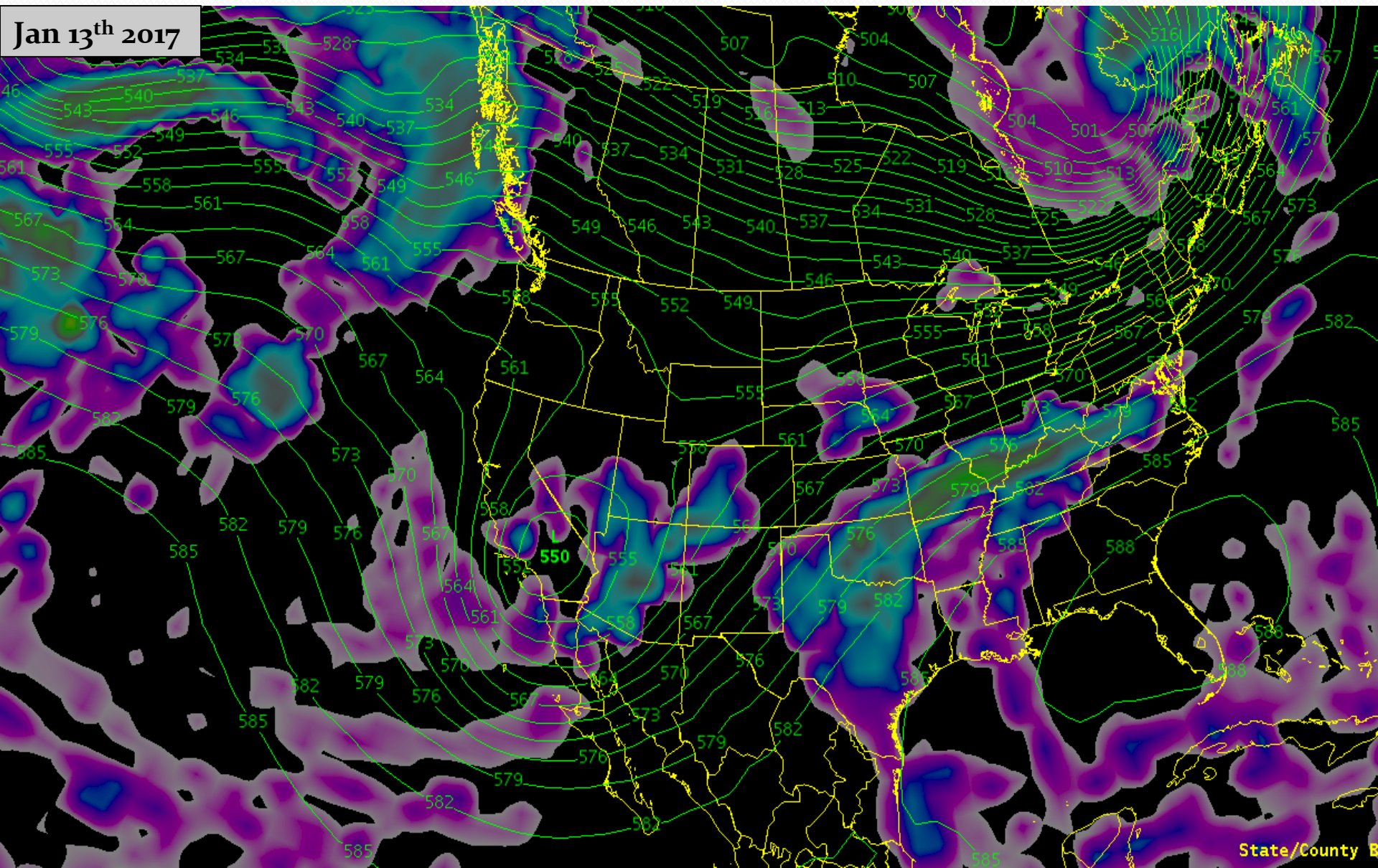
Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model Guidance: Colder air and additional precipitation northern half of forecast area



Upcoming Weather and Impacts to Water Supply Forecasts

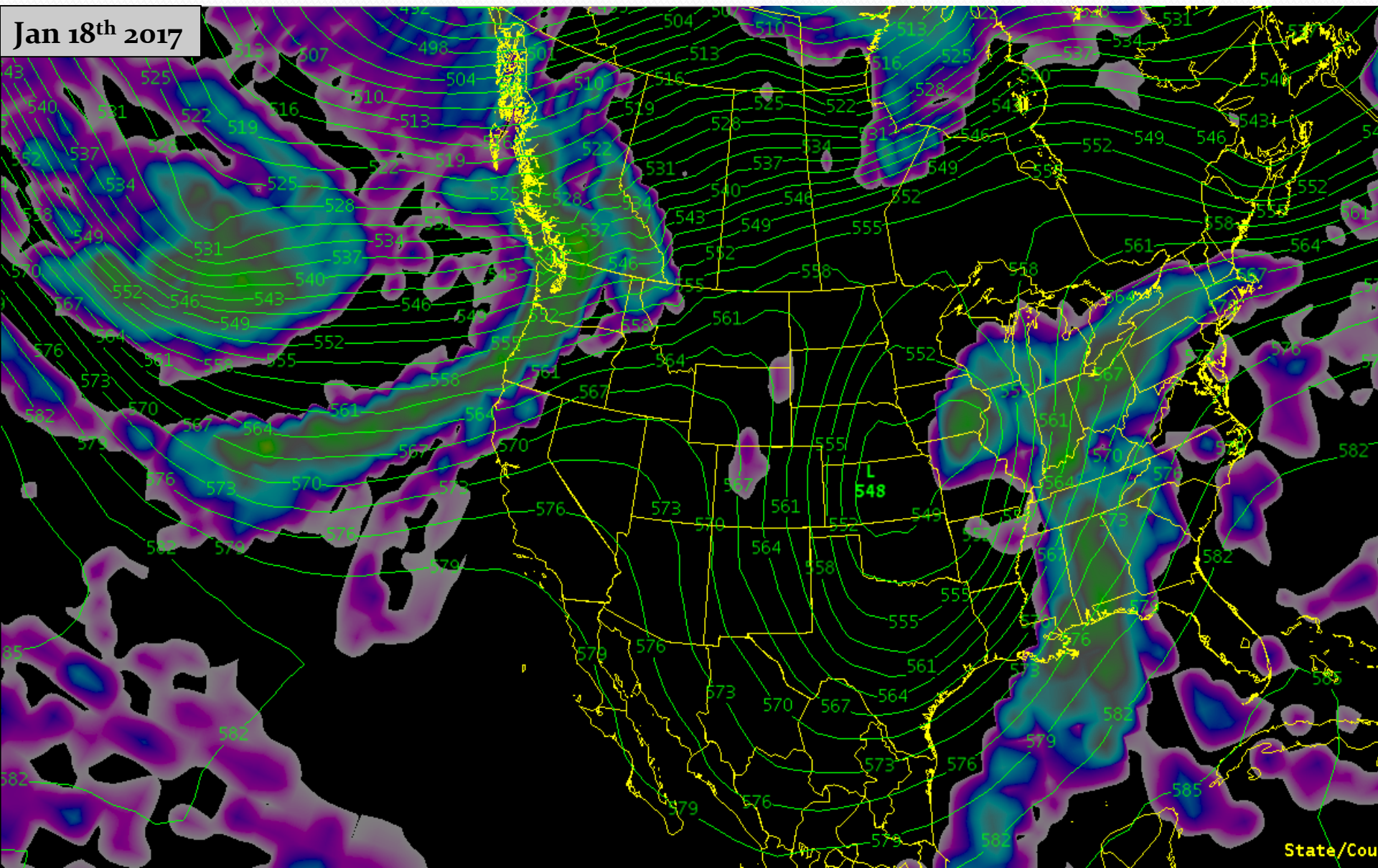
Meteorological Model Guidance: Precipitation over the Lower Colorado River Region and SW Colorado



Upcoming Weather and Impacts to Water Supply Forecasts

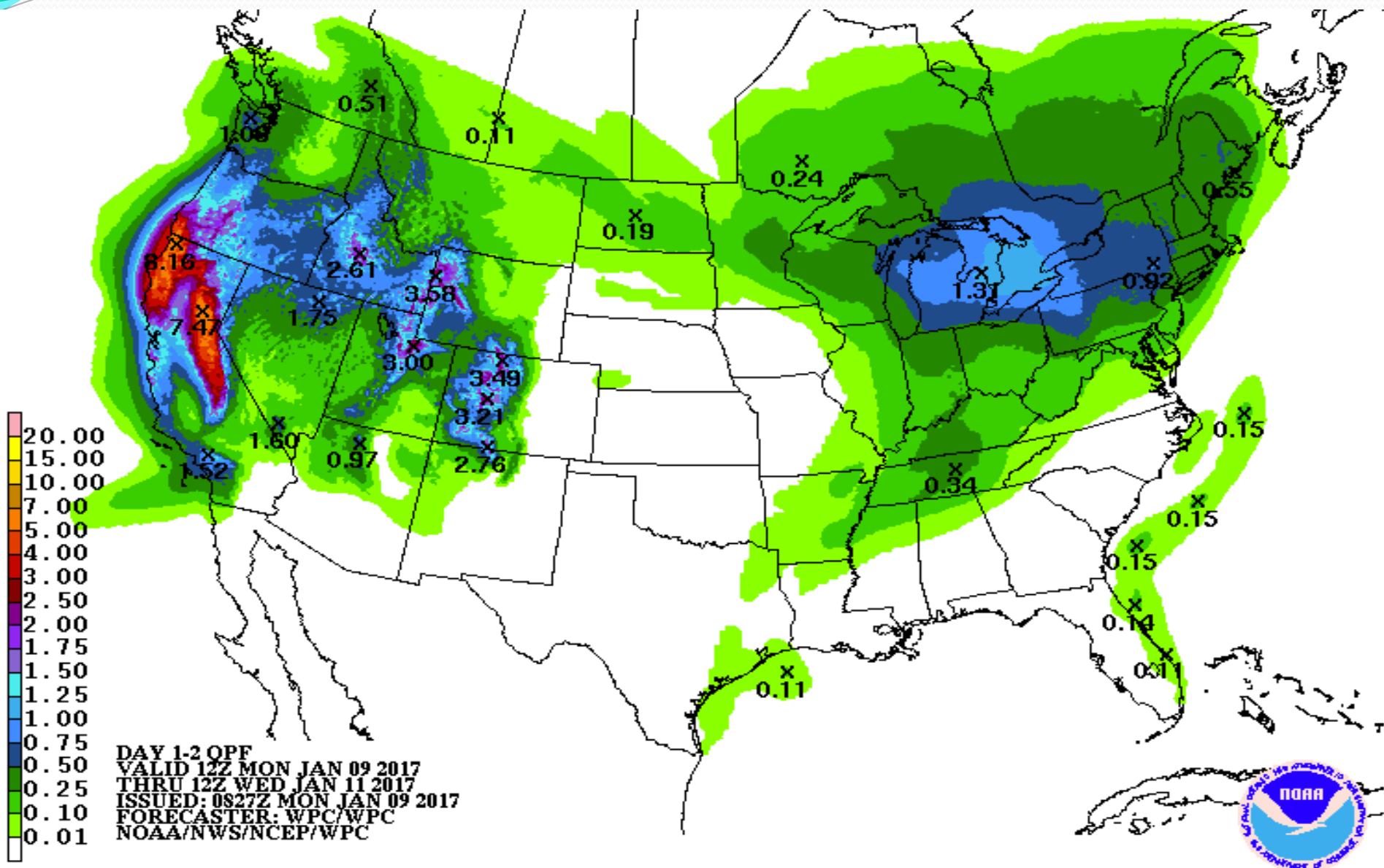
Meteorological Model Guidance: Dry period from the weekend into the middle of next week

Jan 18th 2017



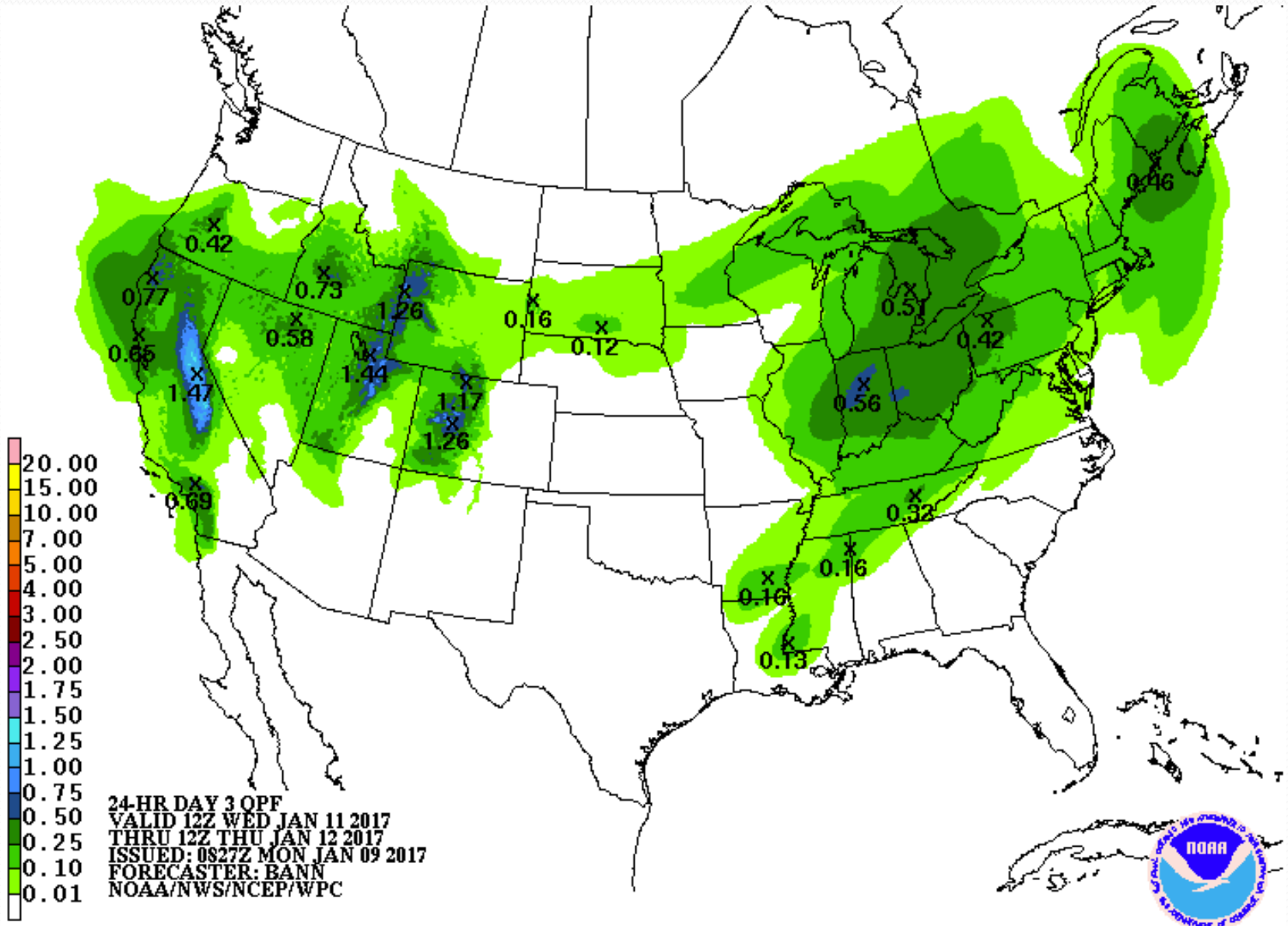
Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecasts the next 48 hours



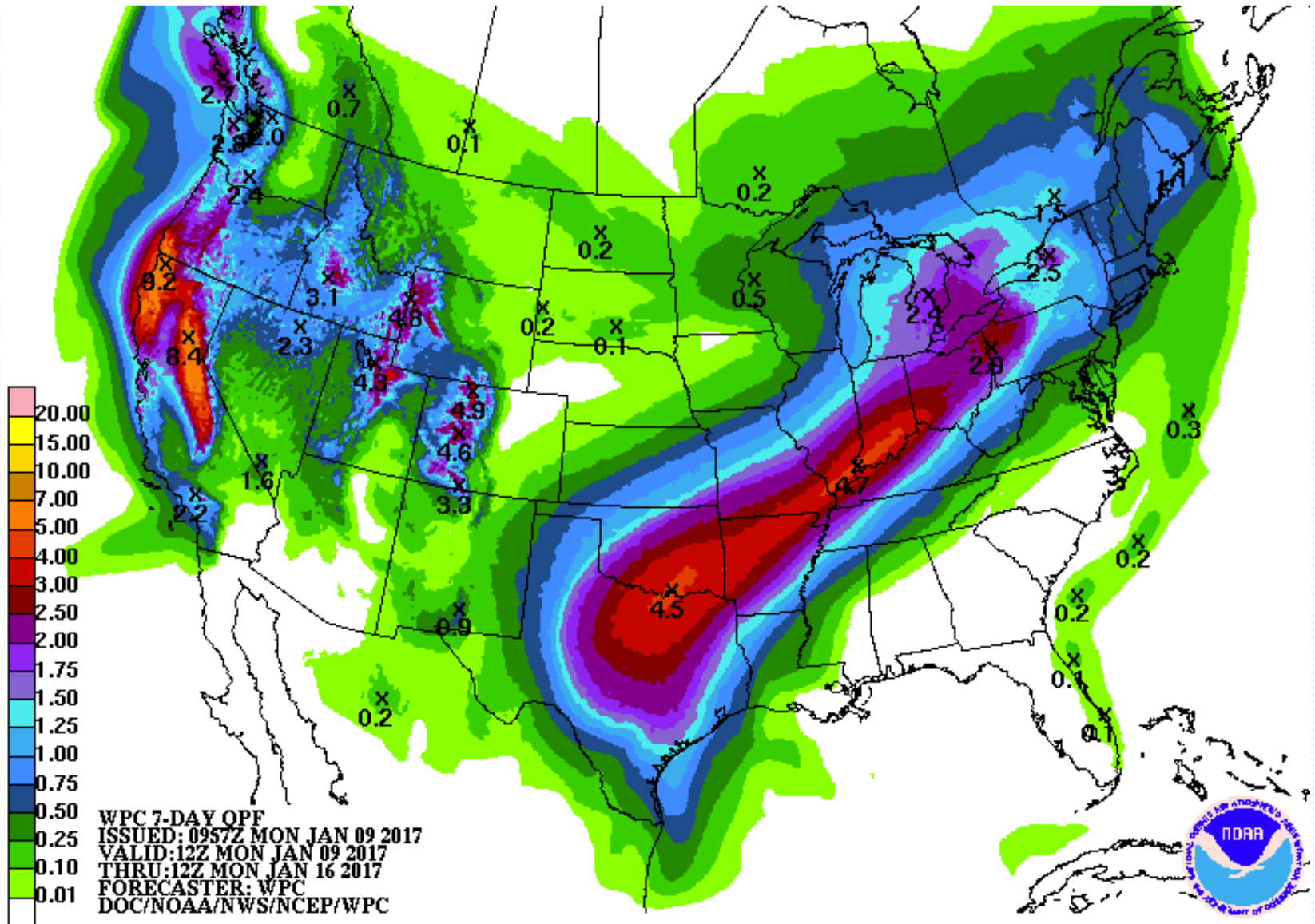
Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecasts the Wednesday-Thursday



Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecast: 7 day total (Jan 9th-Jan 16th)

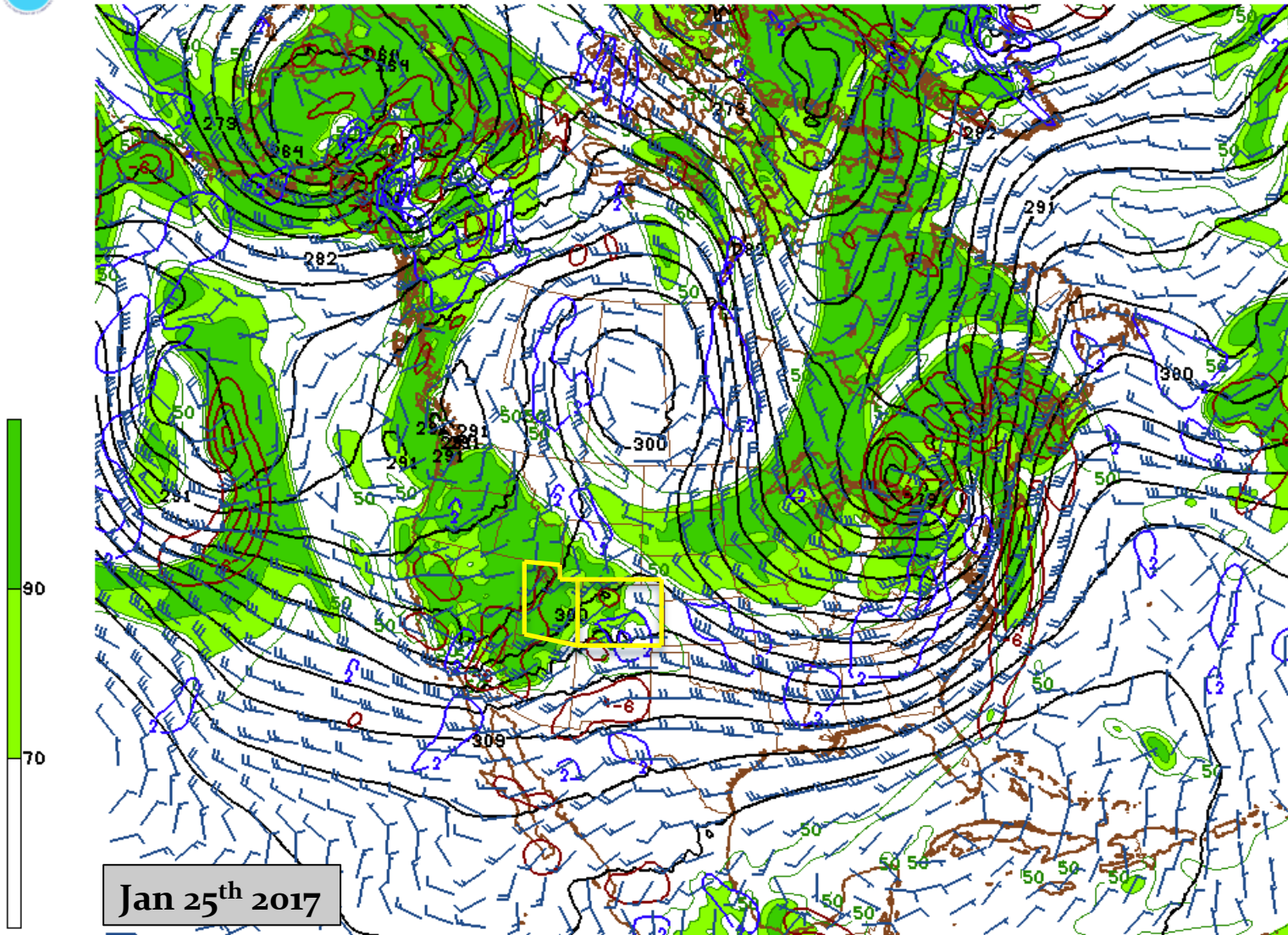


Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model : Active pattern continues toward the end of the month



01/09/17 06UTC 384HR FCST VALID MED 01/25/17 06UTC NCEP/NWS/NOAA



170125/0600V384 GFS 700MB HGT (DM) RH(X) WIND(KTS) AND OMEGA

Key Points

Off to a great start due to the active Dec-Jan weather pattern

Model guidance has trended forecasts above the Jan 1st official forecasts

There is still a large range of forecast probabilities. We could be impacted negatively if we were to turn dry like last year.

So far meteorological models suggest active weather will continue through the end of January.

Water Supply Forecasts are most likely to continue trending higher in the near term.

Long term our model uses average conditions.

2017 water supply briefing schedule

- 2017 monthly water supply briefings for the Great Basin
 - Tuesday Feb 7th @ 1:30 pm MT
 - Tuesday Mar 7th @ 1:30 pm MT
 - Thursday Apr 5th @ 1:30 pm MT
 - Friday May 5th @ 1:30 pm MT
 - Colorado River Basin webinars are same dates at 11 am MT
- Peak flow briefing early March. Additional briefings scheduled as needed.
- Date/Times are subject to change. All registration information has been posted to the CBRFC web page.

CBRFC Water Supply Contacts

Please contact us with any questions

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Basin Focal Points (Forecasters)

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Ashley Nielson – Green River Basin Focal Point

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Tracy Cox – Lower Colorado Basin, Virgin, Sevier Focal Point

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Brent Bernard – Great Basin Focal Point

brent.bernard@noaa.gov