

Today's Presentation

February weather

Soil moisture

Current snowpack conditions

2017 Water supply forecasts overview

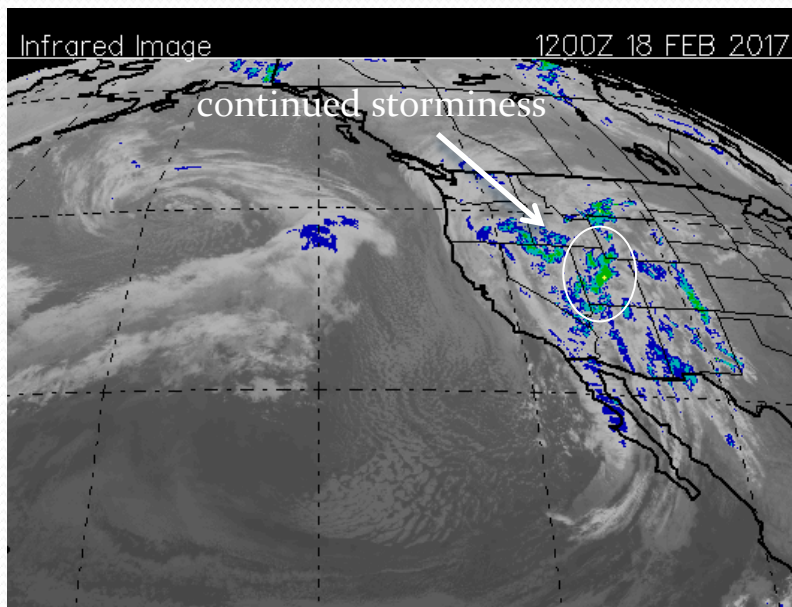
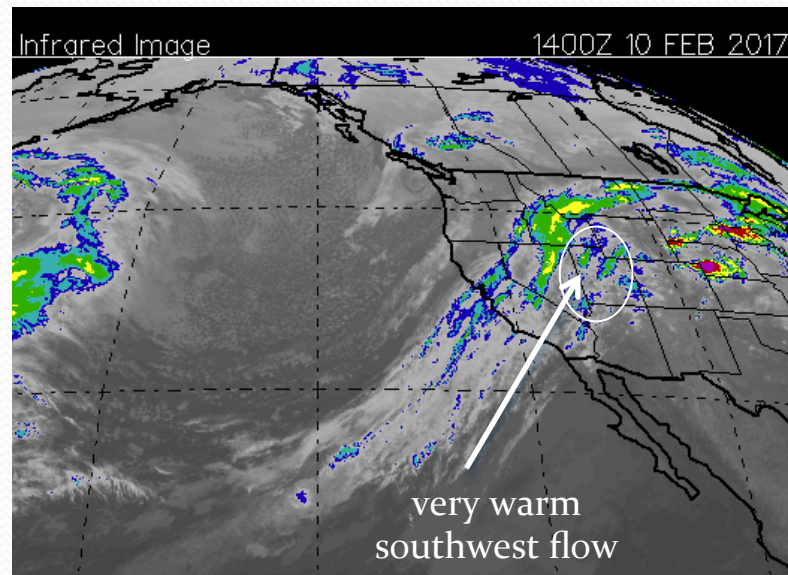
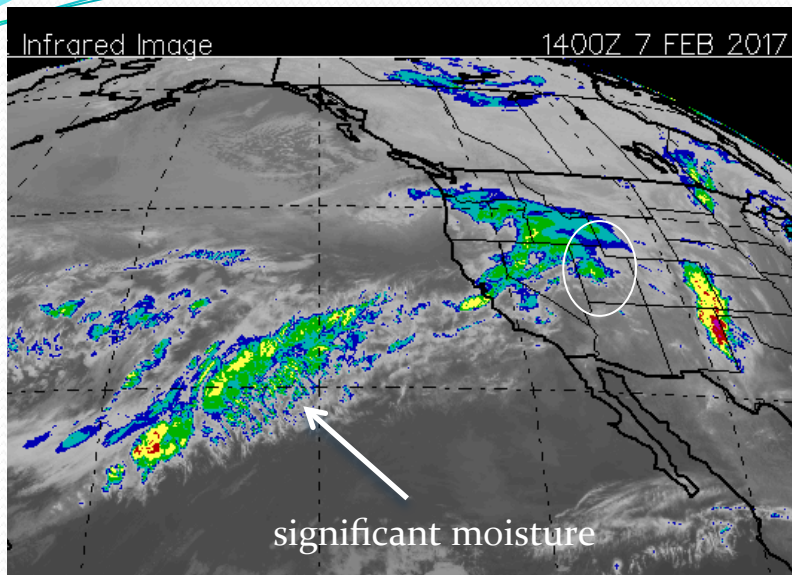
March forecast error – Better than February?

Upcoming weather – Potential impacts to water supply forecasts

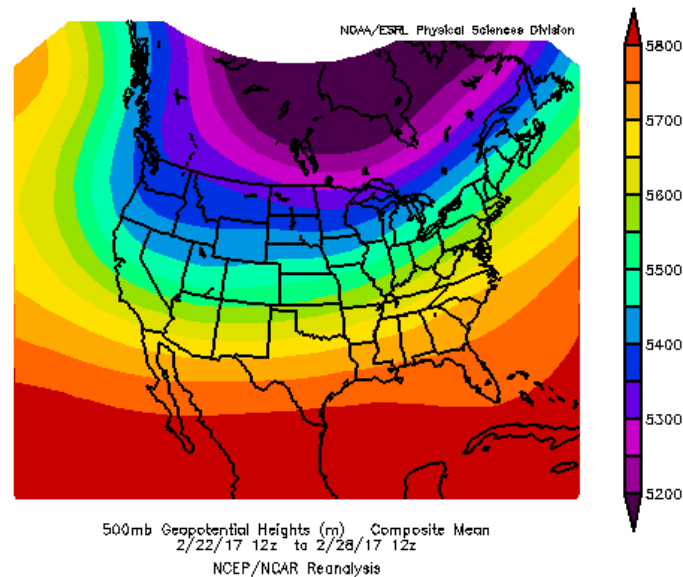
Contacts & Questions

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

February Weather

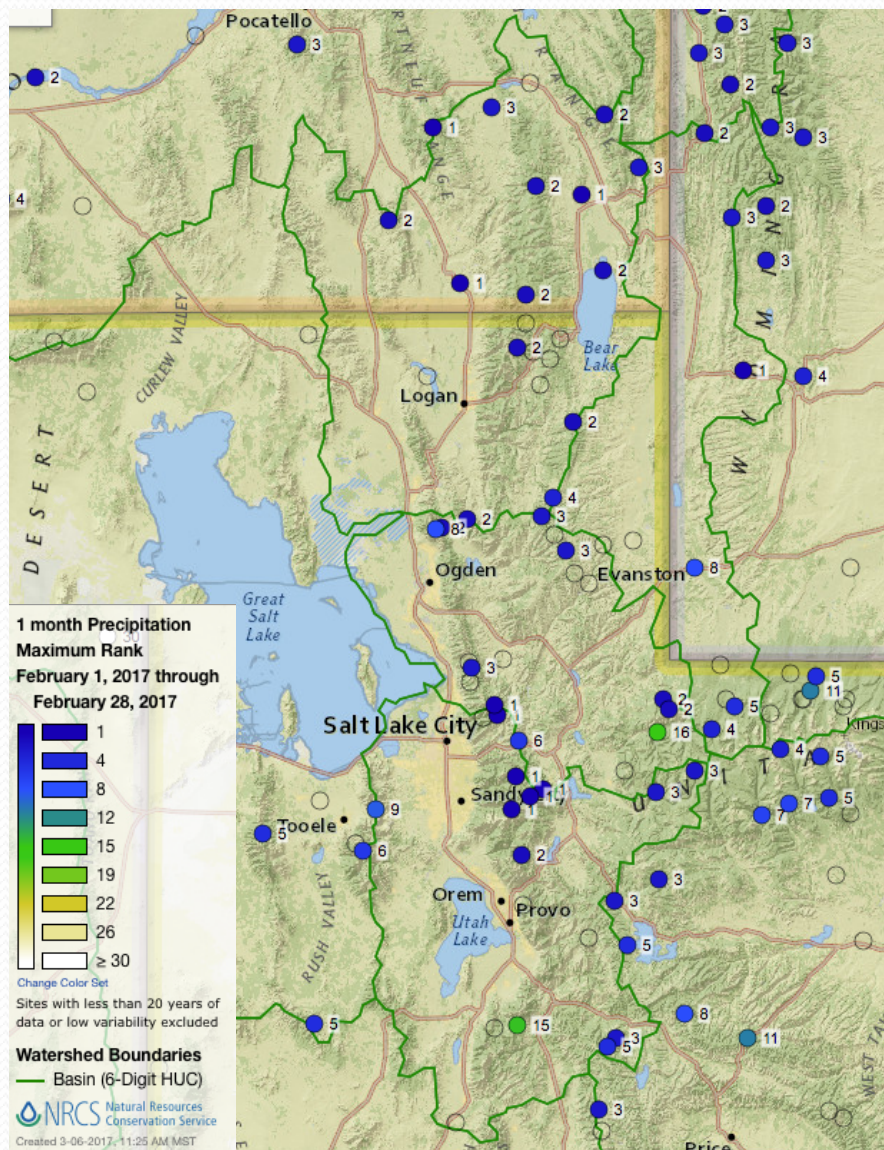


colder systems last week of month



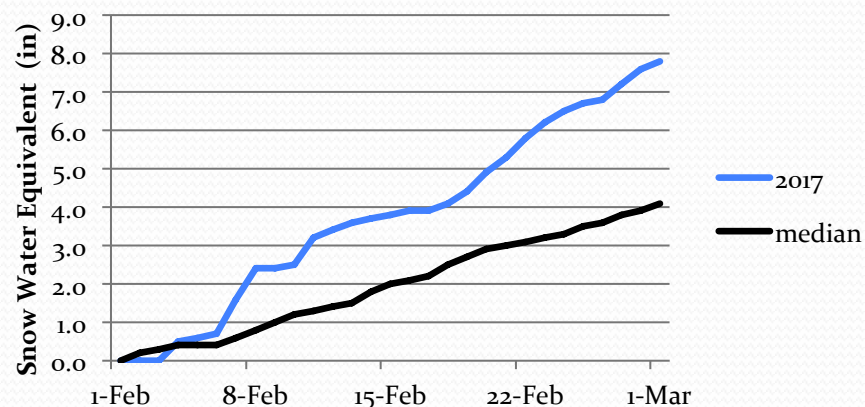
February Weather

SNOTEL precipitation rankings February 2017



Many SNOTEL locations had record or near record precipitation for the month of February (35-39 years of record most sites).

Bear River SNOTEL Group Snow Water Equivalent (12 sites)

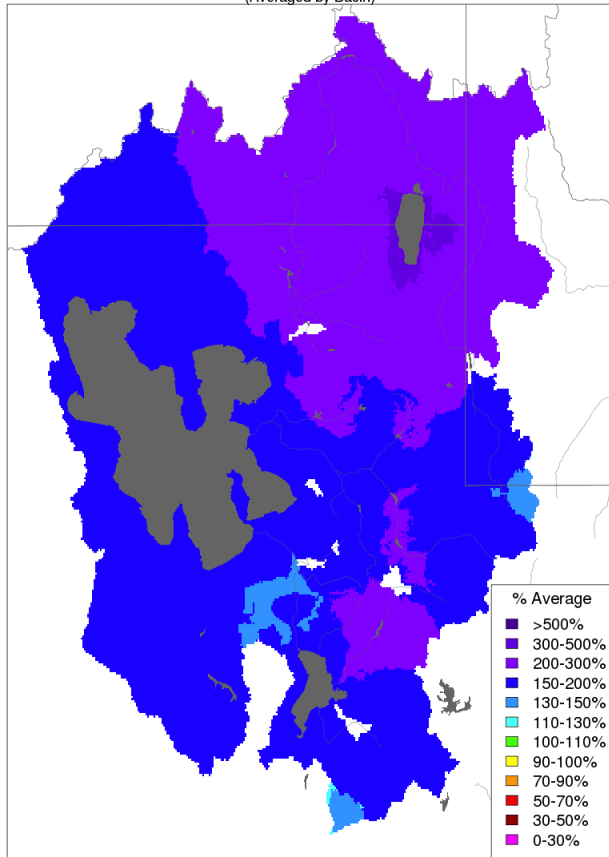


Most of these sites also have record precipitation for the water year to date (October-February). Those that aren't record are in the top 2-3.

February Weather

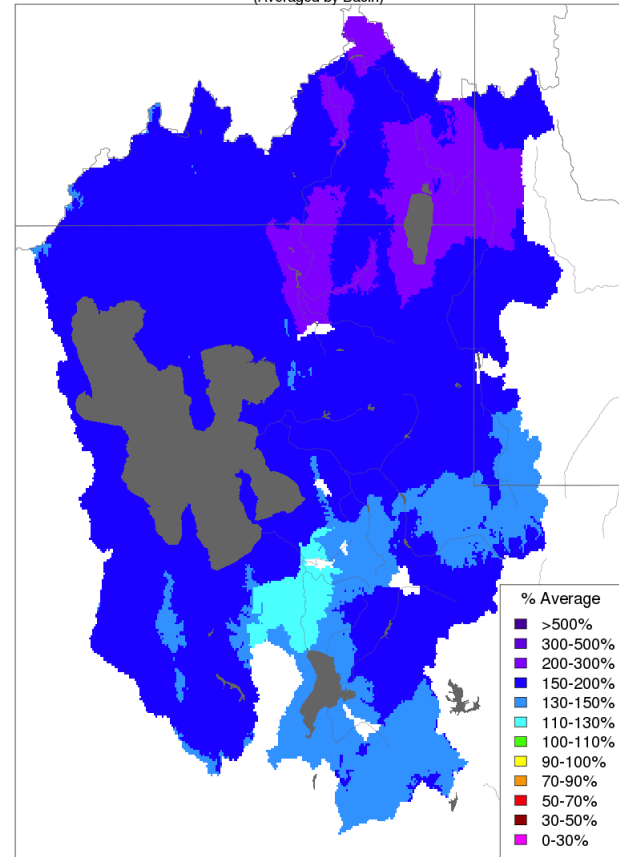
Precipitation

Monthly Precipitation - February 2017
(Averaged by Basin)



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

Water Year Precipitation, October 2016 - February 2017
(Averaged by Basin)



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

February Precipitation:

Bear:	230%
Weber:	190%
Six Creeks:	180%
Provo/UT Lake:	185%

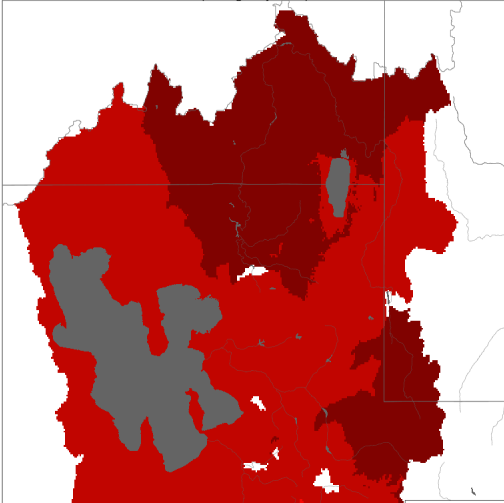
Seasonal Precipitation:

Bear:	180%
Weber:	155%
Six Creeks:	140%
Provo/UT Lake:	160%

February Weather

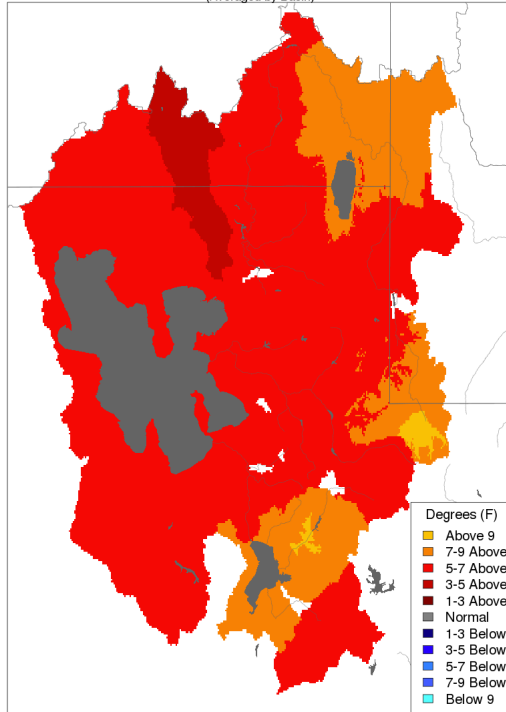
Temperature

Max Temp - Monthly Deviation - February 2017
(Averaged by Basin)



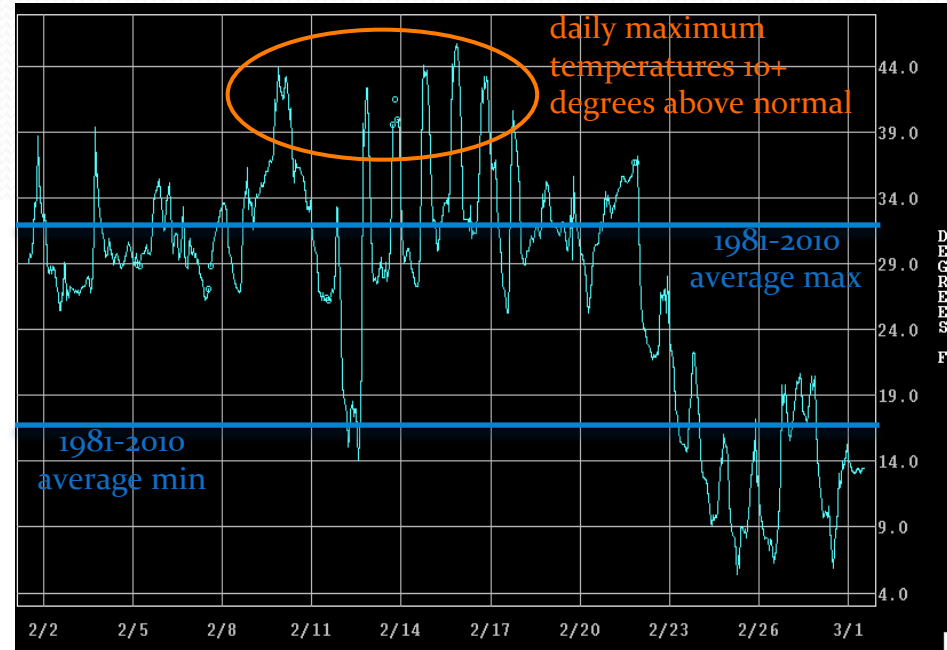
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Min Temp - Monthly Deviation - February 2017
(Averaged by Basin)



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

Tony Grove Lake SNOTEL Instantaneous Temperature

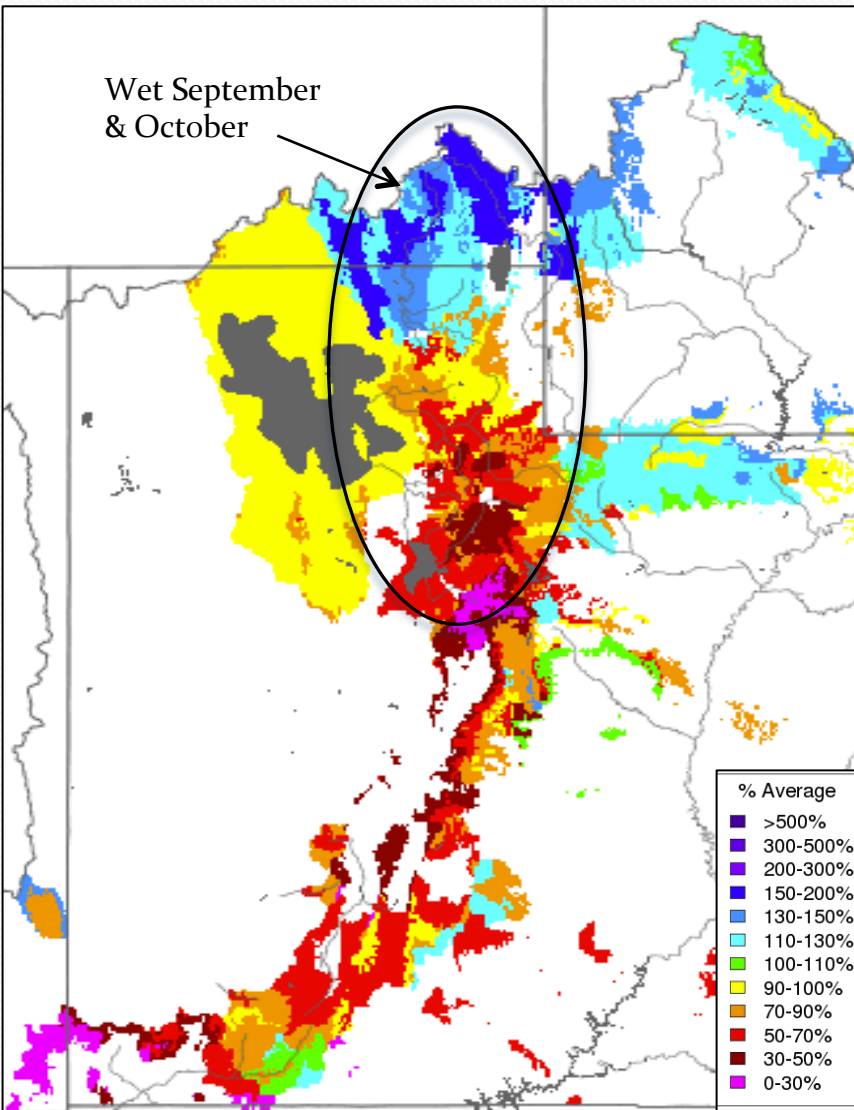


Soil Moisture Impacts

Model Soil Moisture entering Winter

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

Wet September
& October



Water Supply Impacts:

- Early season forecasts higher/lower by 3-10% of average
- Significant snowpack, like this year, lessens the impacts of dry soils on spring runoff
- Significant snowpack + wet soils could see more enhanced spring runoff

****This is a representation of above / below average soil moisture conditions prior to snowmelt**

Soil Moisture Impacts

Current Model Soil Saturation

EXPLANATION

Model representation of where areas are becoming saturated.

Primary use (dark green):

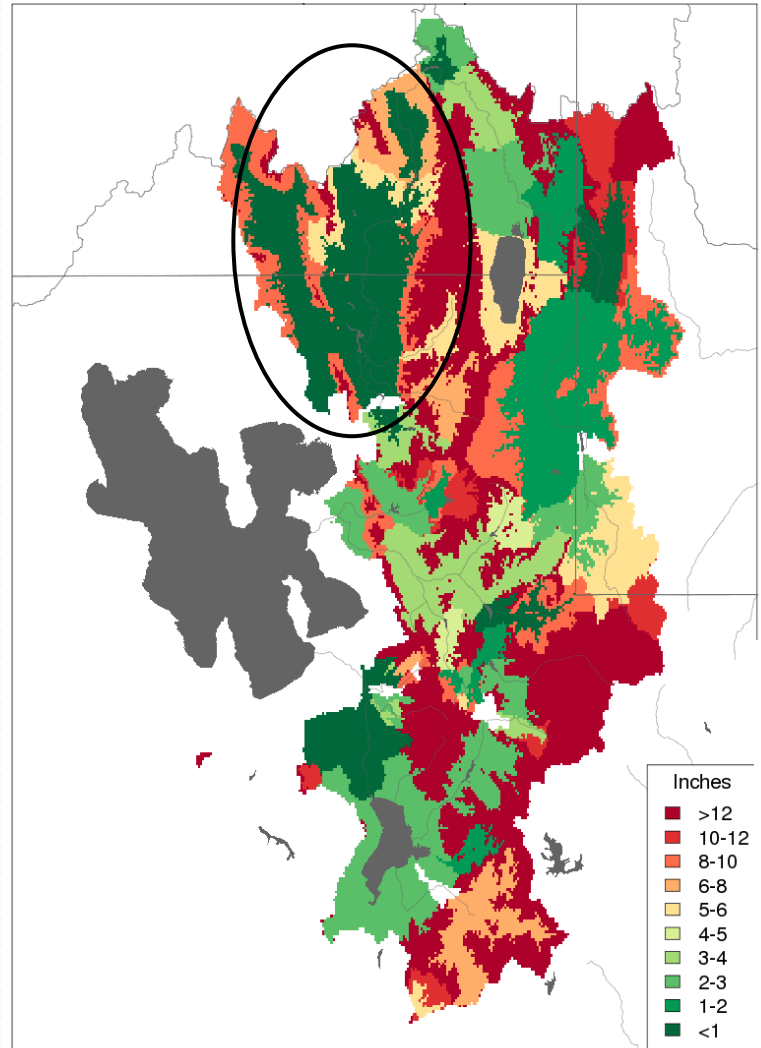
- Indicates where efficient runoff is likely in the near future due to snowmelt and/or rainfall (dark green areas).

Large deficits (red/orange):

- Areas under snowpack where significant melt has not begun. Red is normal this time of year.

****Not a representation of above / below average soil moisture conditions**

Model Soil Moisture – Inches to Saturation
March 5, 2017

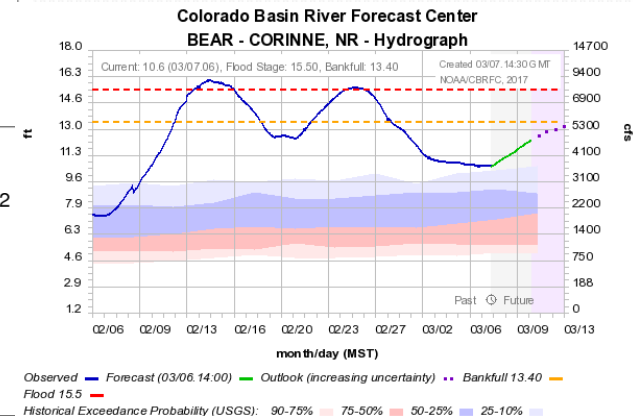


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

CURRENT CONDITIONS

Lower elevations of the Bear River Basin in northern Utah and southern Idaho are saturated according to the model.

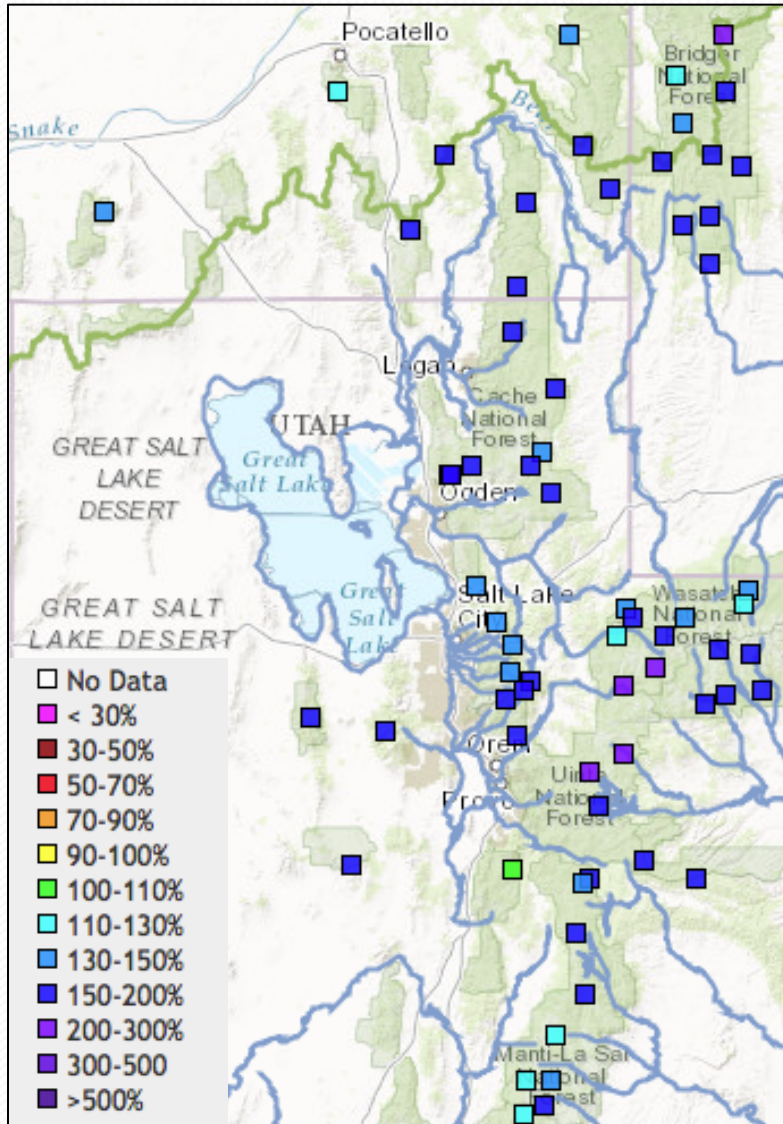
- This is supported by NRCS soil moisture sensors.
- This area has already experienced some flooding issues and will continue to experience very efficient runoff through the spring.



Snow Conditions

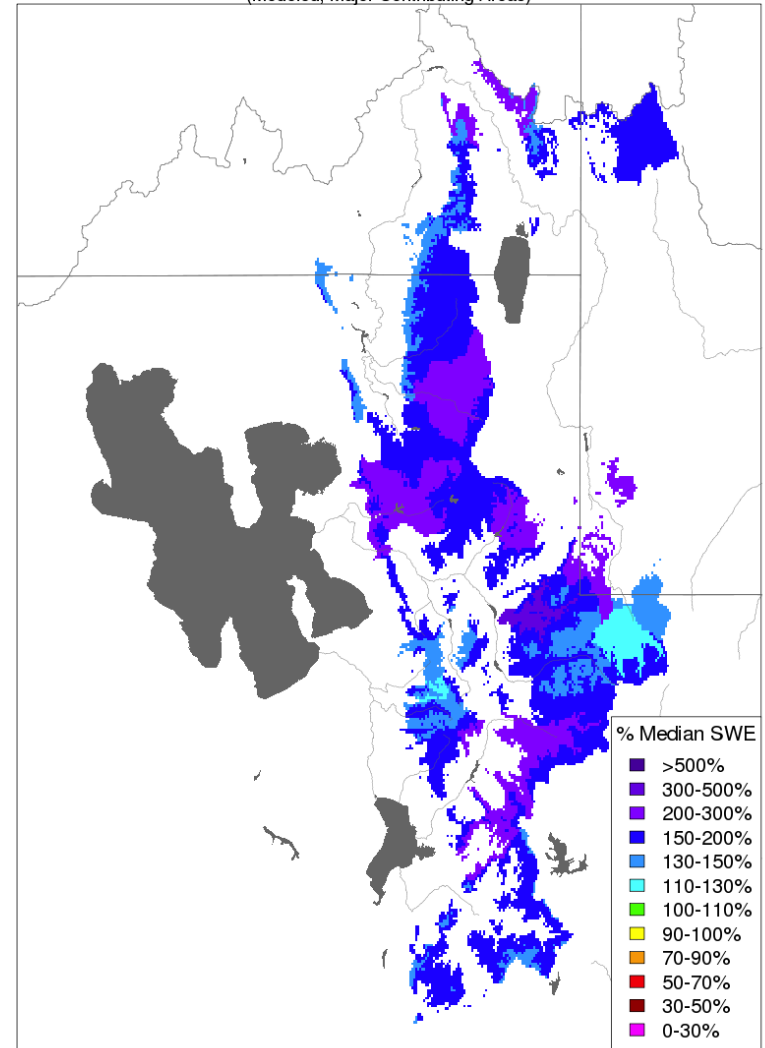
Snow Water Equivalent % Median

SNOTEL
March 5, 2017



CBRFC Model

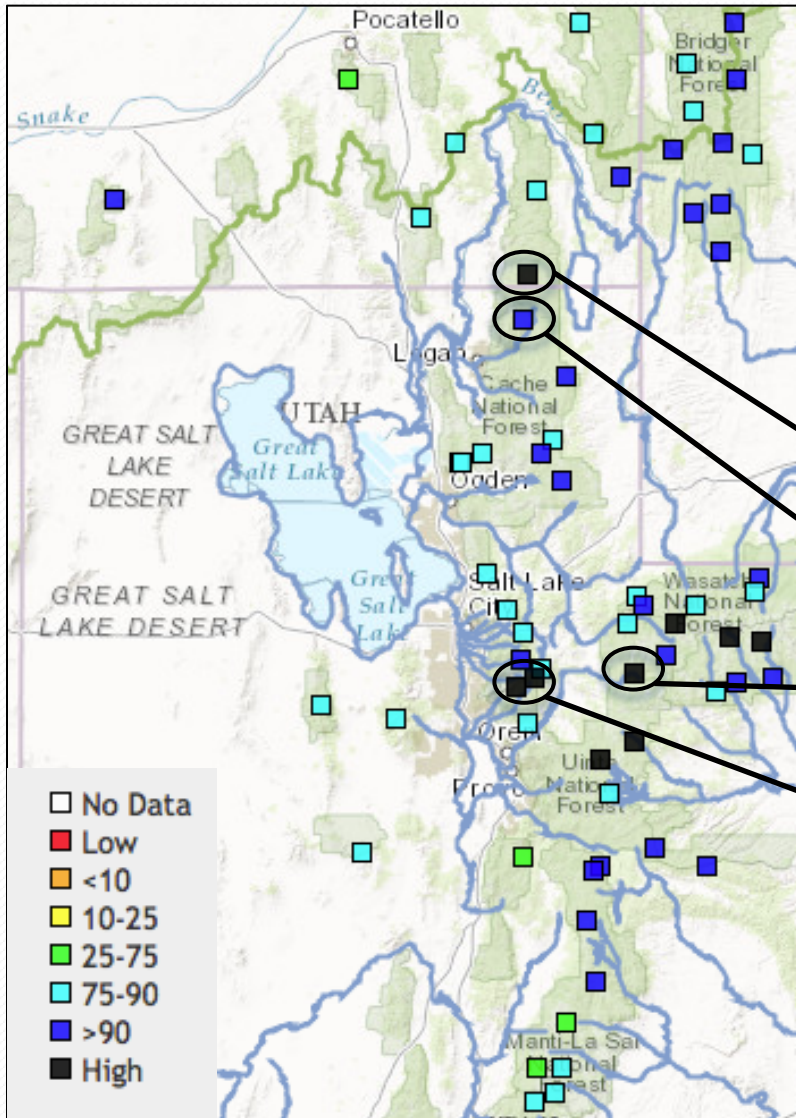
Snow Conditions - March 05 2017
(Modeled, Major Contributing Areas)



Snow Conditions

Snow Water Equivalent Percentile Ranking

SNOTEL
March 5, 2017

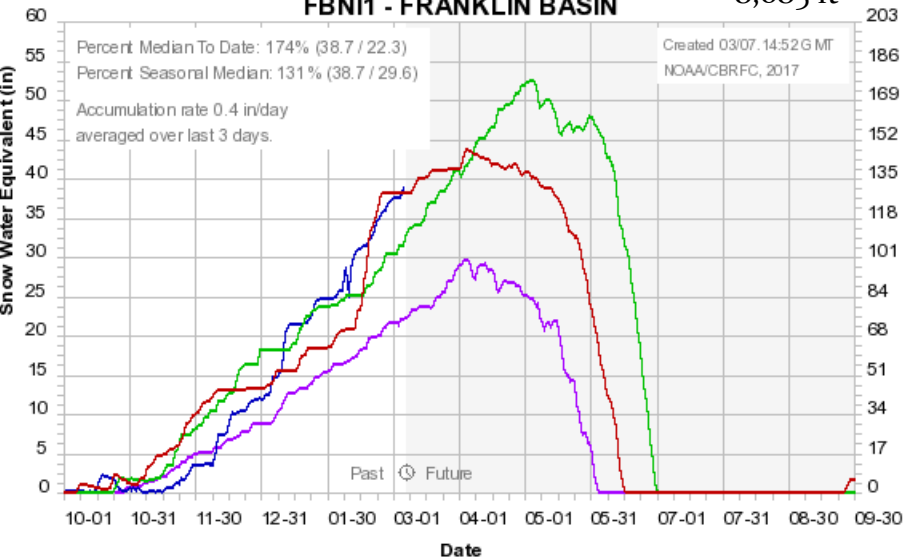


Ranking based on where current observation falls in the historical record:

- Black squares indicate record SWE for this time of year.
- Dark blue squares indicate SWE in top 2-3.
- Aqua squares are generally ranked 4th on record.

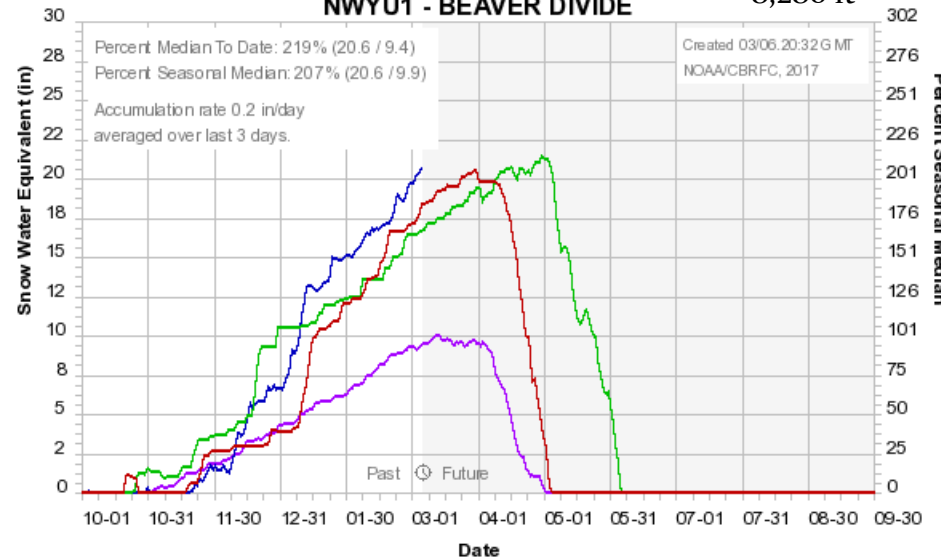
Most SNOTEL sites have historical records of 34-39 years, but some are shorter.

**Colorado Basin River Forecast Center
FBN11 - FRANKLIN BASIN** 8,085 ft



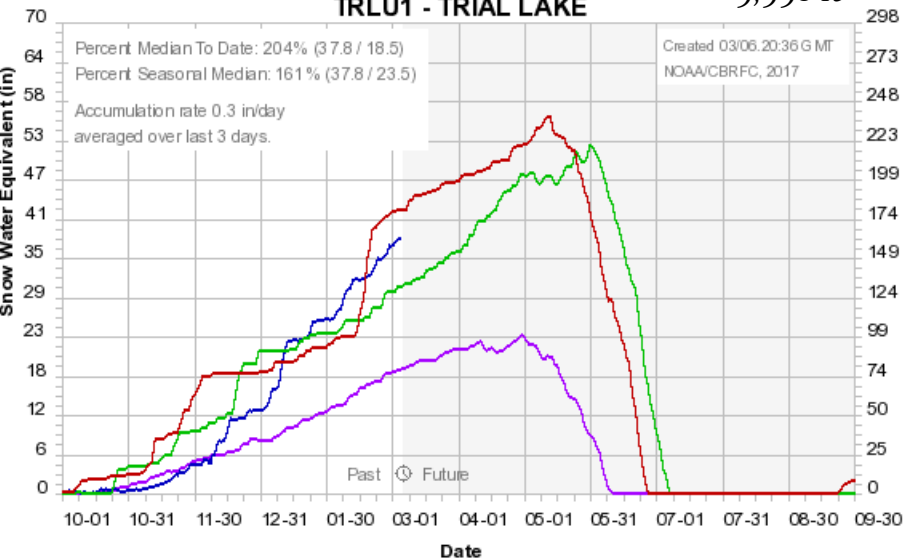
Median 1981-2010 — 2017 — 2011 — 1986 —

**Colorado Basin River Forecast Center
NWyU1 - BEAVER DIVIDE** 8,280 ft



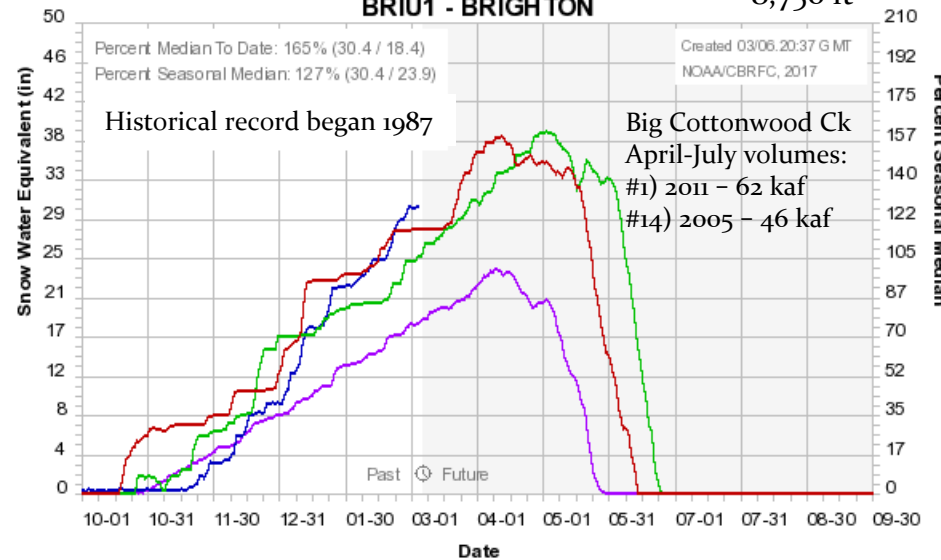
Median 1981-2010 — 2017 — 2011 — 1980 —

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



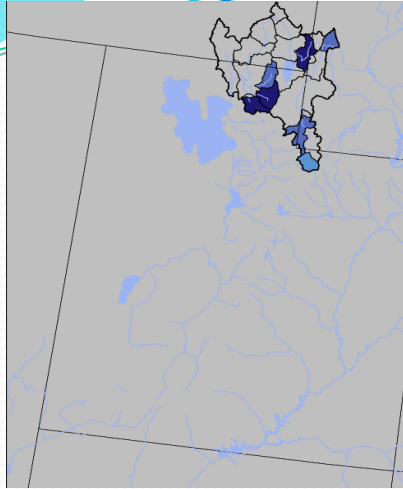
Median 1981-2010 — 2017 — 2011 — 1986 —

**Colorado Basin River Forecast Center
BRIU1 - BRIGHTON** 8,750 ft

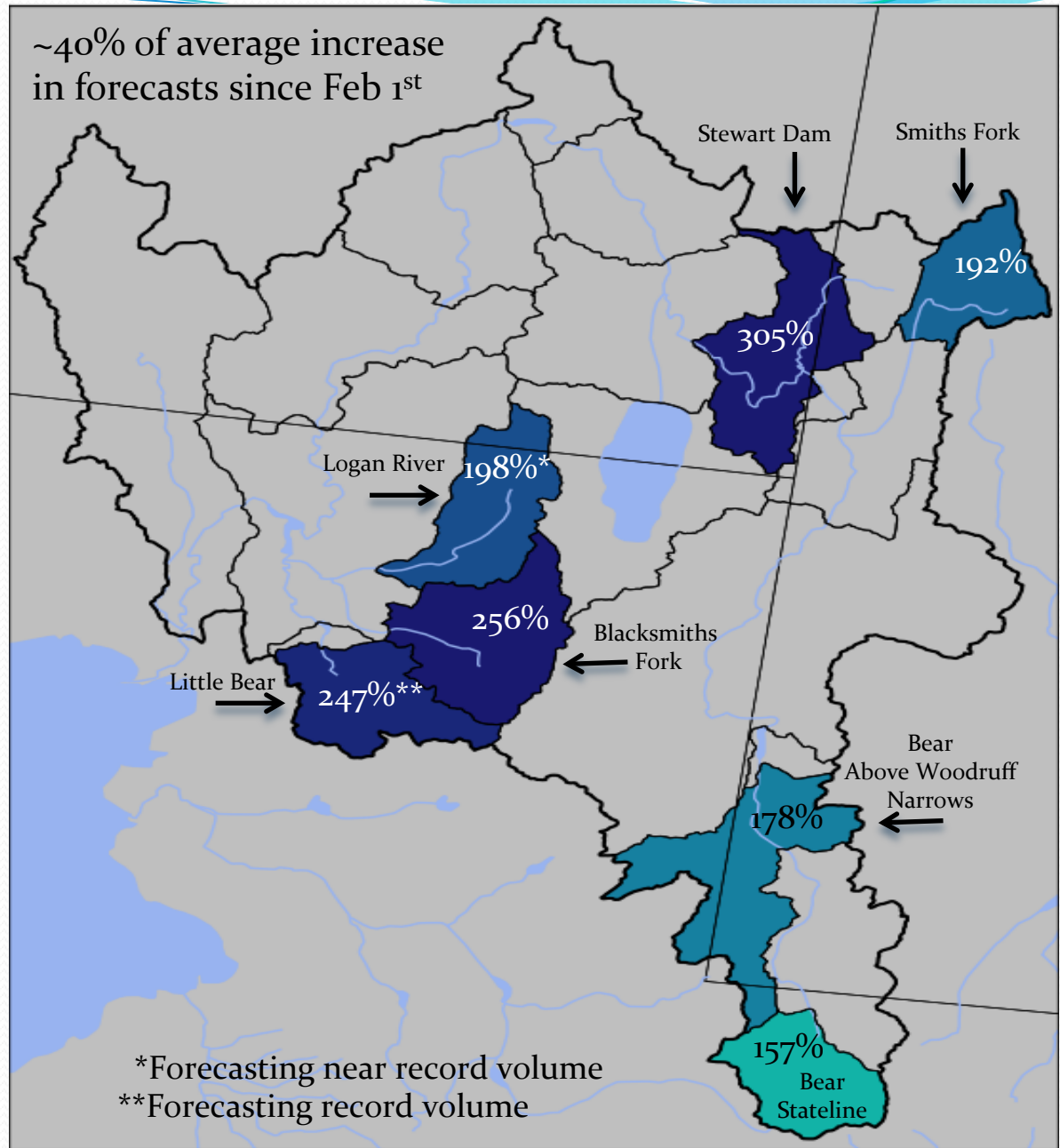
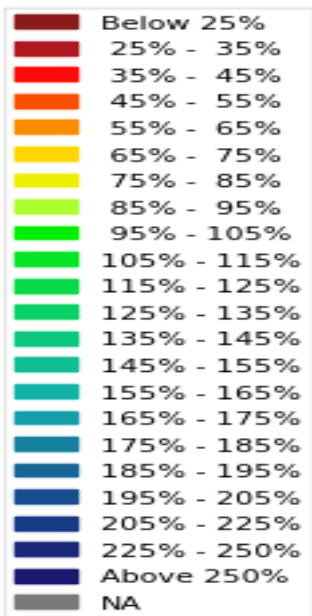


Median 1981-2010 — 2017 — 2011 — 2005 —

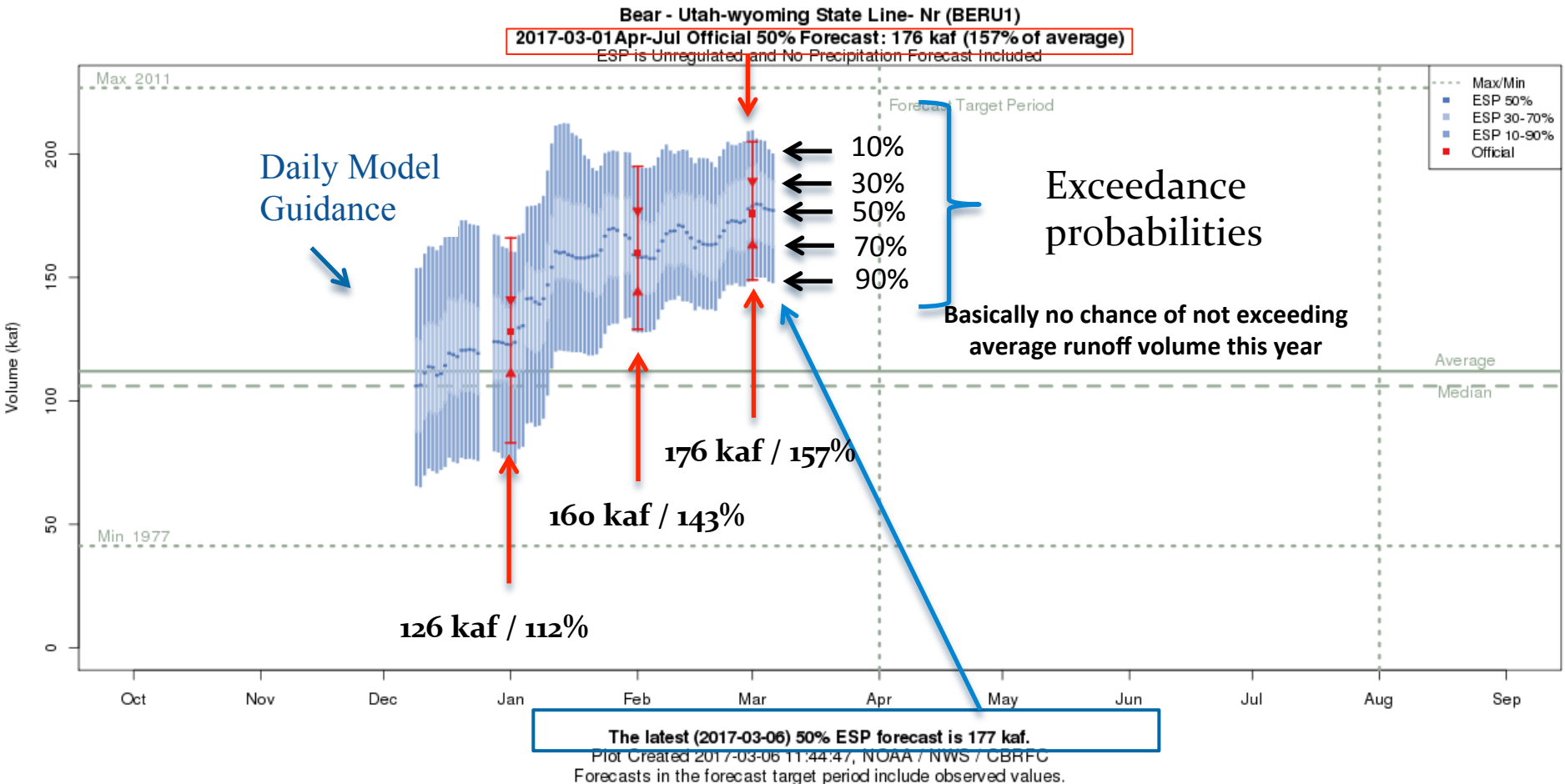
March 1st Water Supply Forecasts – Bear River Basin



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

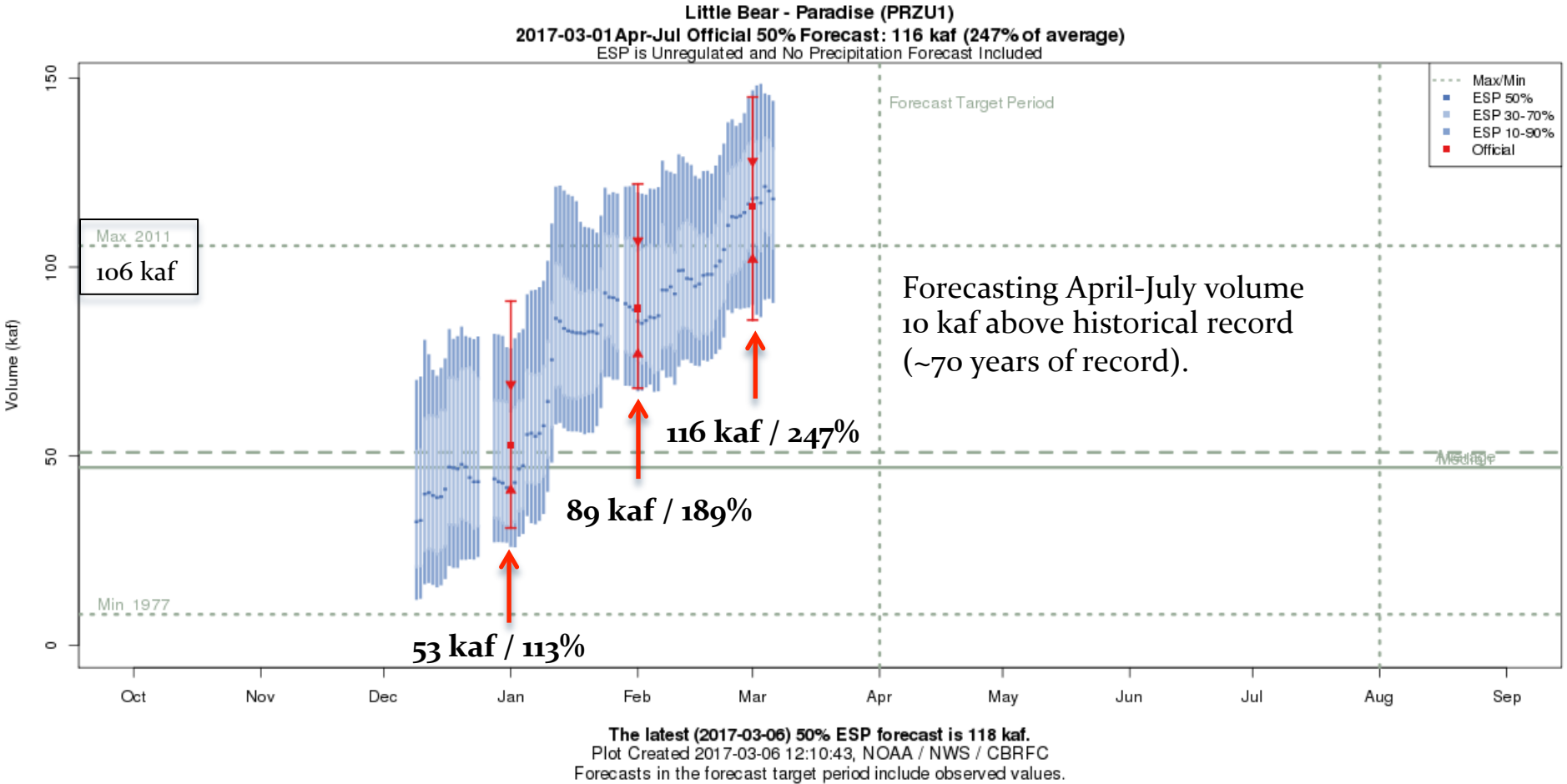


Forecast Evolution Plot – Bear River @ Utah/Wyoming Stateline

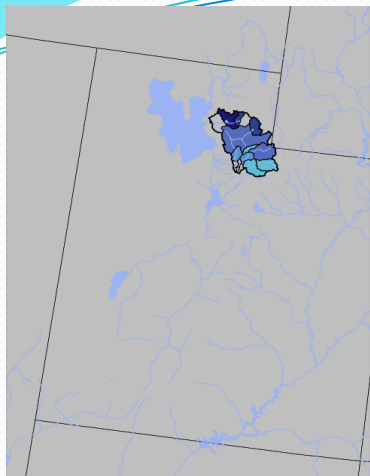


Plots are available at: <https://www.cbrfc.noaa.gov>
Select WATER SUPPLY from the top menu
Click on desired location for pop-up, click again for full screen

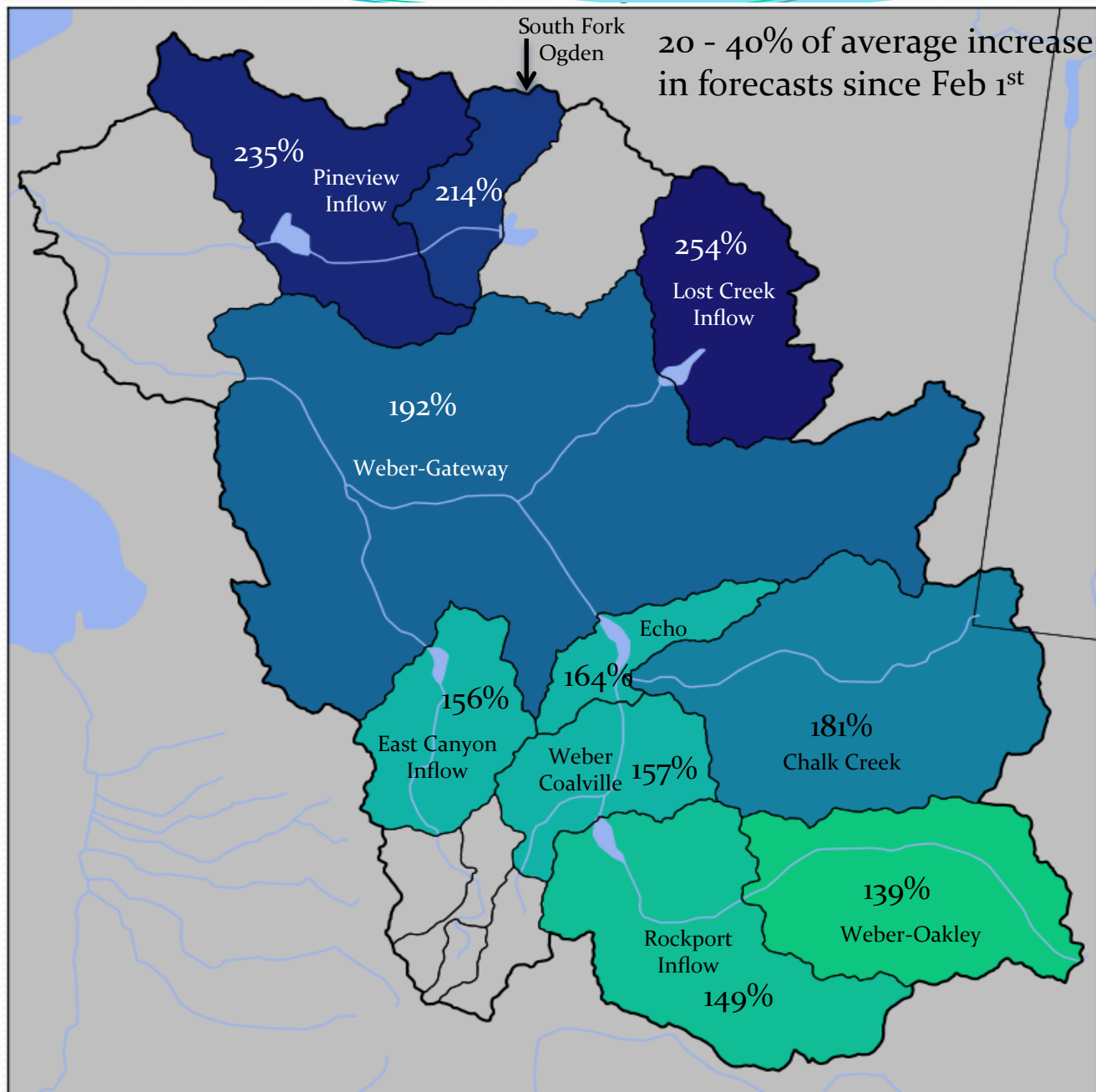
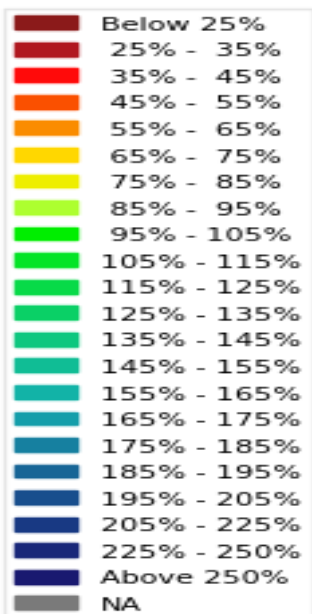
Forecast Evolution Plot – Little Bear at Paradise



March 1st Water Supply Forecasts – Weber River Basin

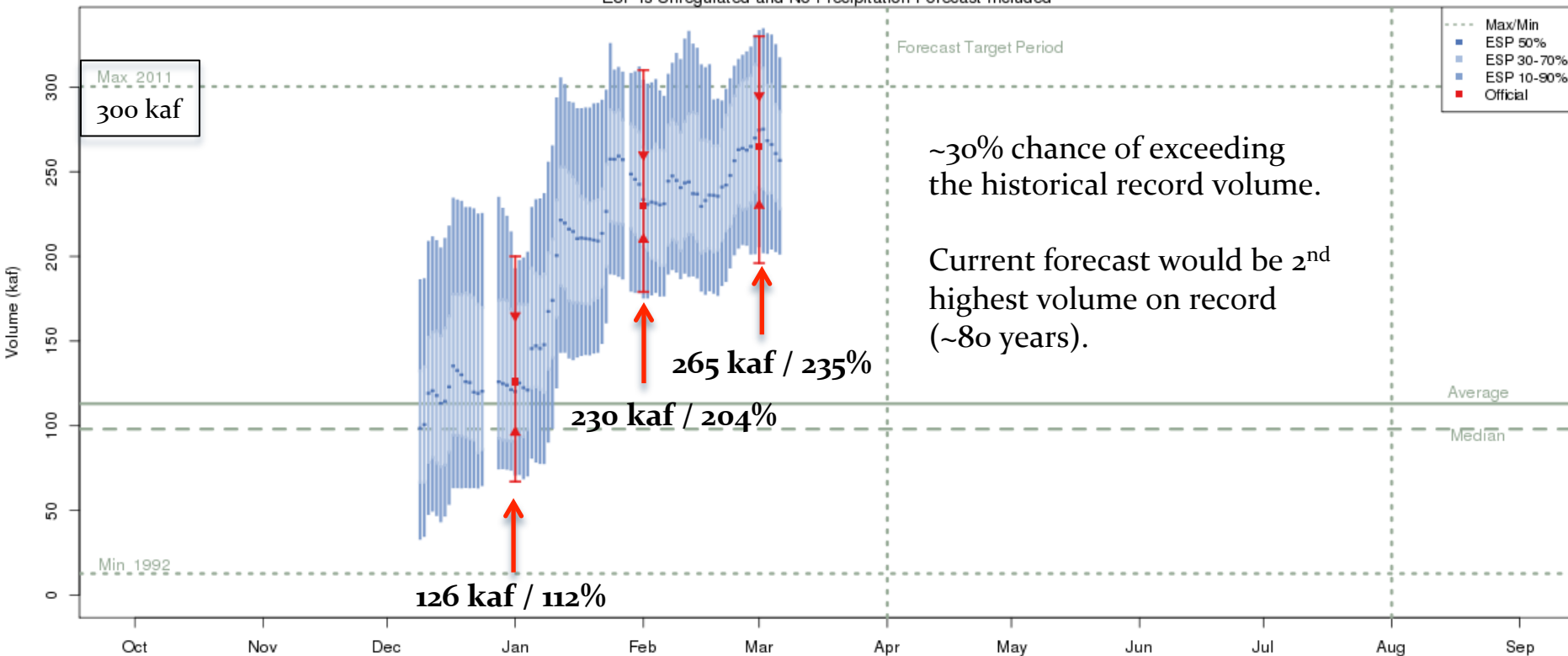


April-July Forecast
Streamflow Volumes
(% of 1981-2010 average)



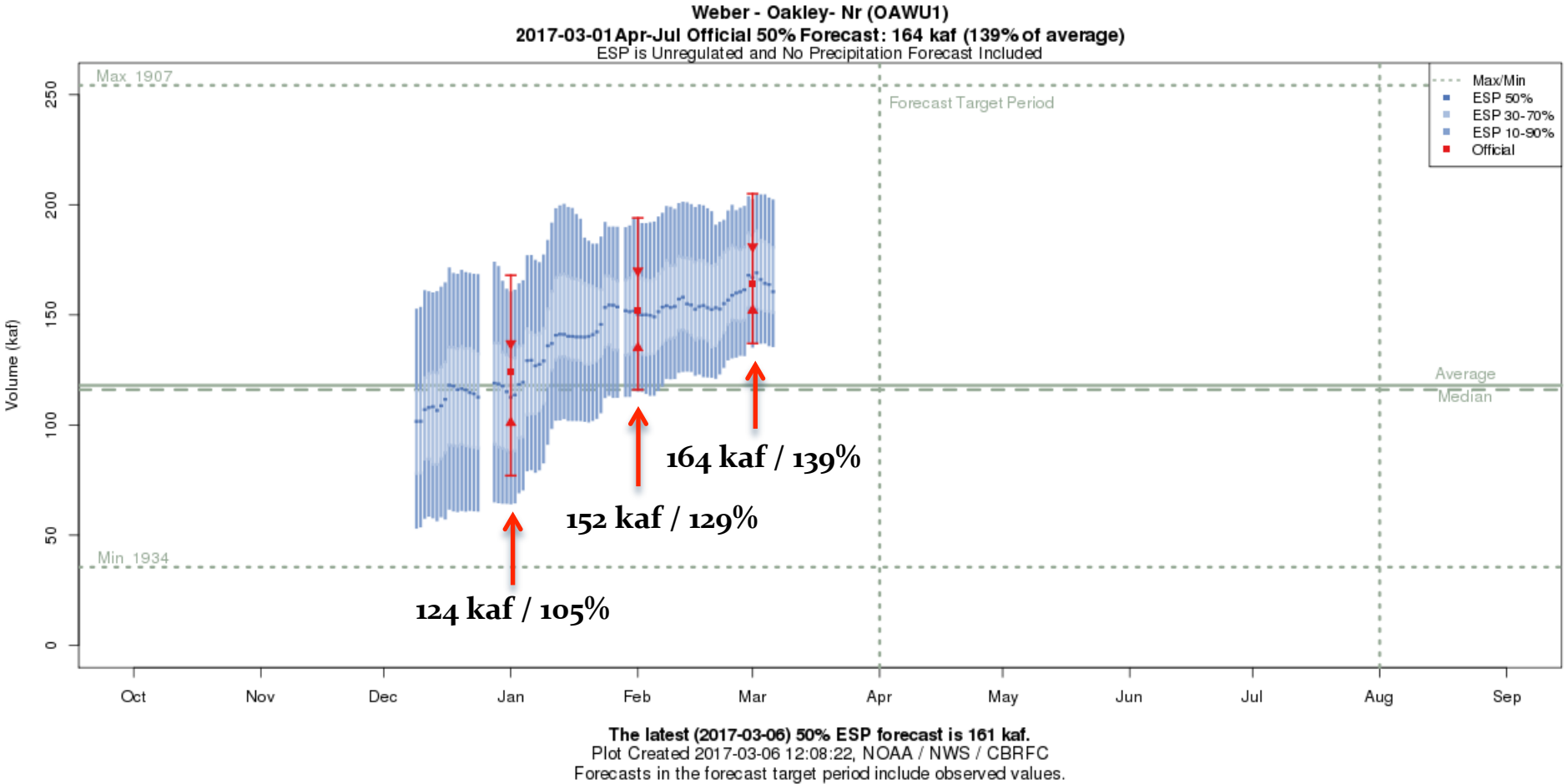
Forecast Evolution Plot – Ogden near Pineview Reservoir

Ogden - Pineview Res- Ogden- Nr (PINU1)
 2017-03-01 Apr-Jul Official 50% Forecast: 265 kaf (235% of average)
 ESP is Unregulated and No Precipitation Forecast Included

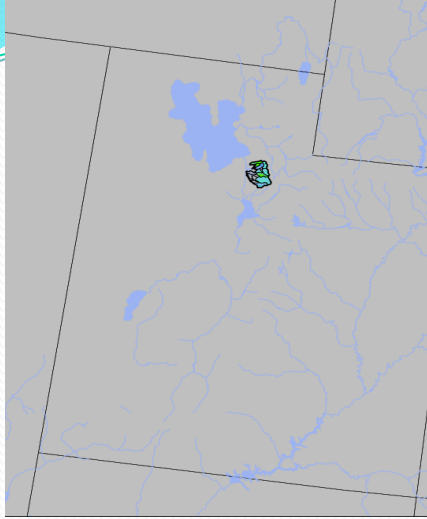


The latest (2017-03-06) 50% ESP forecast is 257 kaf.
 Plot Created 2017-03-06 12:09:27, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.

Forecast Evolution Plot – Weber River near Oakley

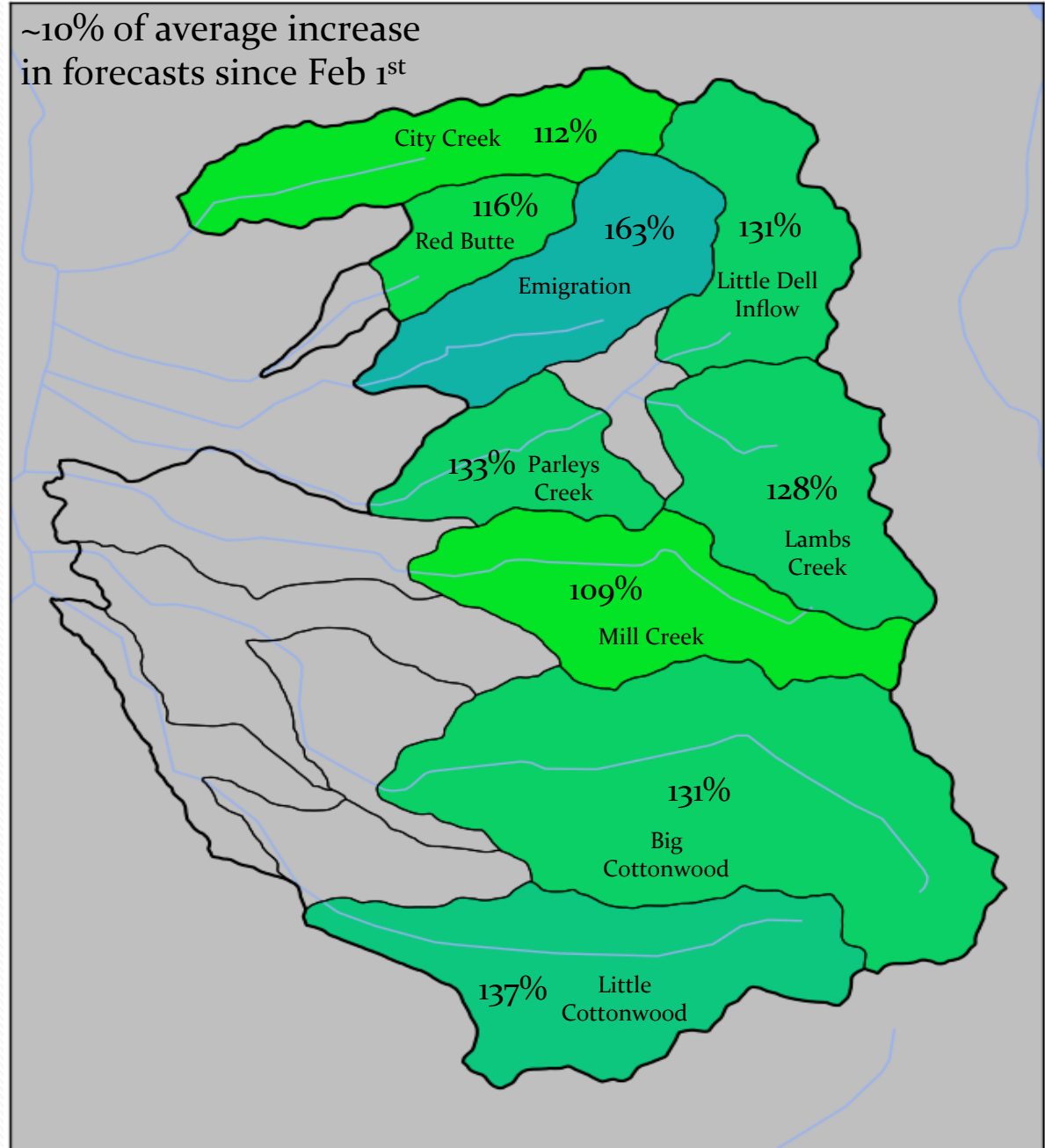
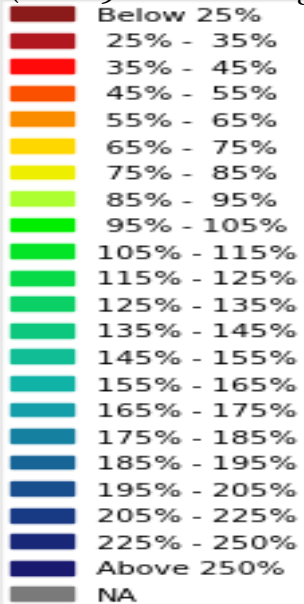


March 1st Water Supply Forecasts – Six Creeks



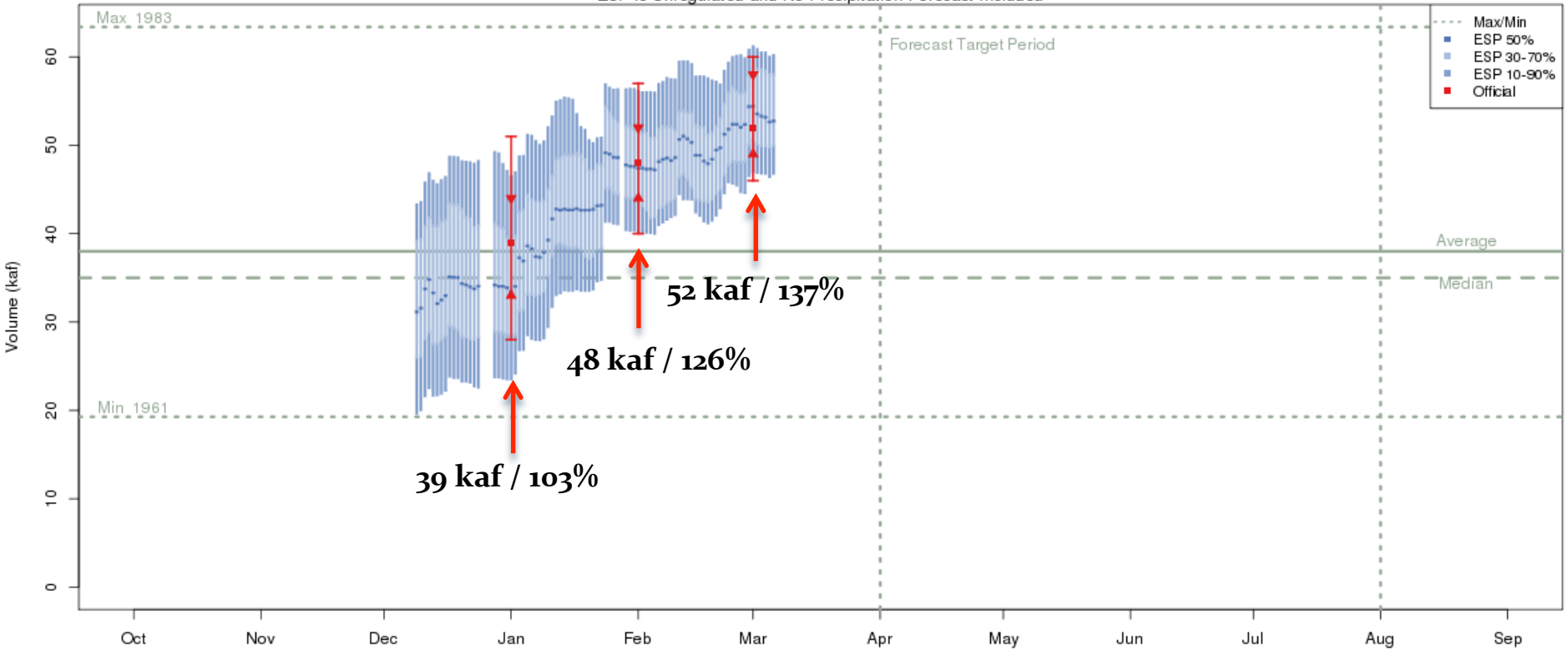
~10% of average increase
in forecasts since Feb 1st

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



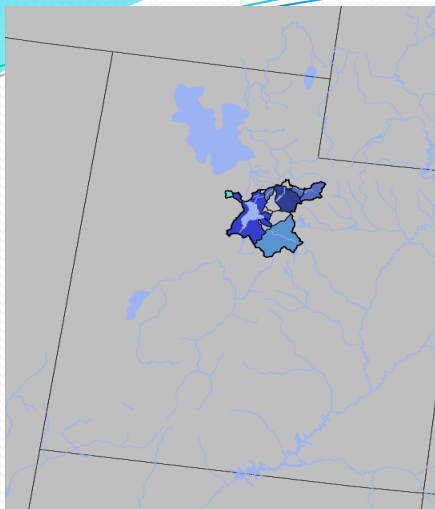
Forecast Evolution Plot – Little Cottonwood Creek

Little Cottonwood Ck - Salt Lake City- Nr (LCTU1)
2017-03-01 Apr-Jul Official 50% Forecast: 52 kaf (137% of average)
ESP is Unregulated and No Precipitation Forecast Included



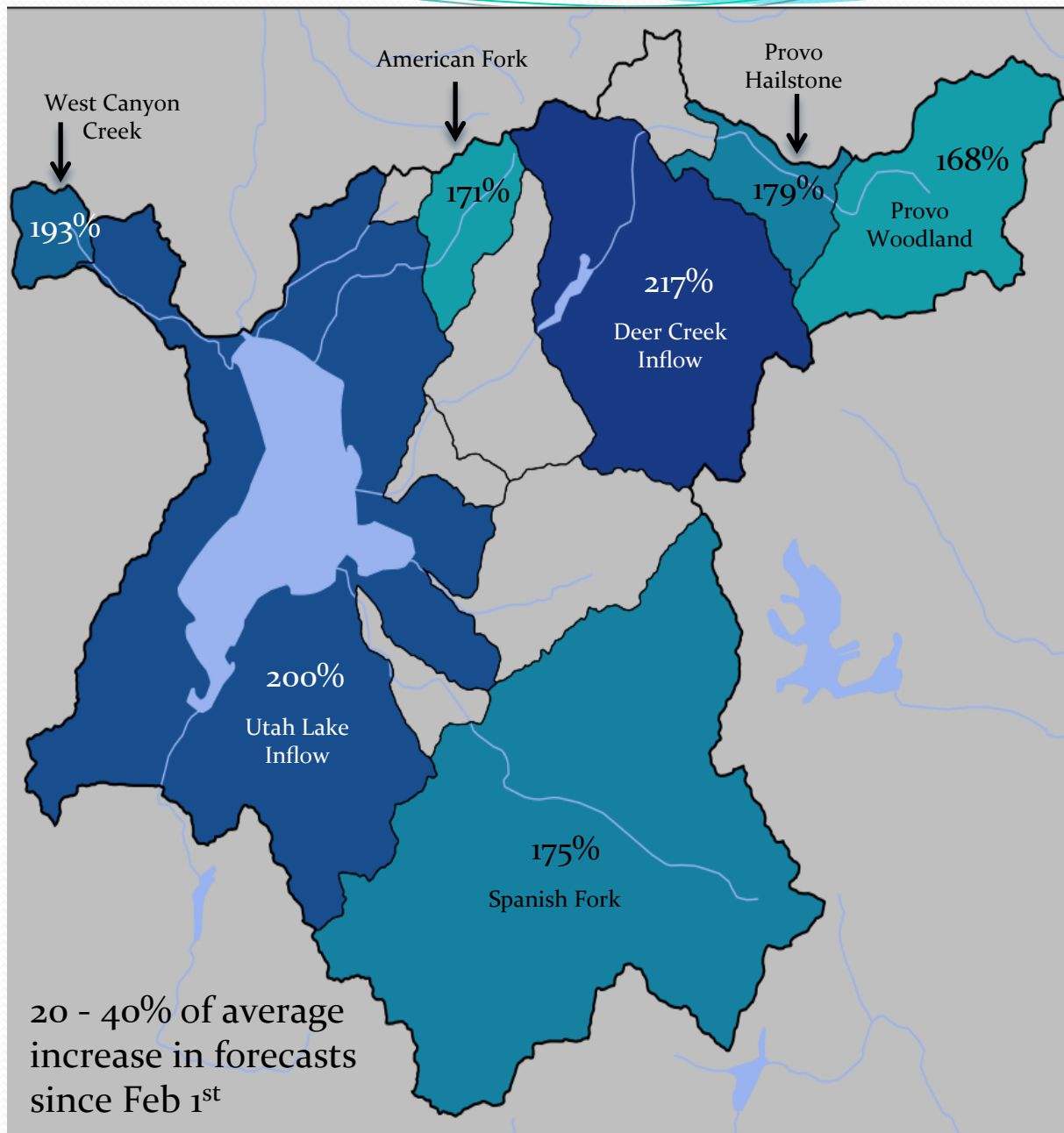
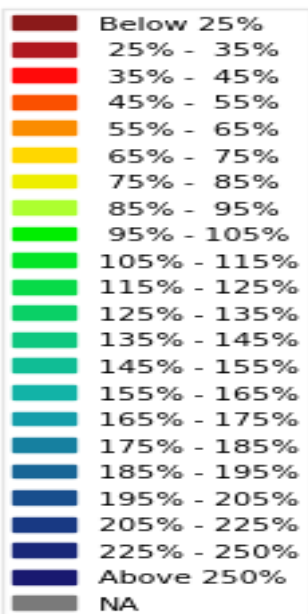
The latest (2017-03-06) 50% ESP forecast is 53 kaf.
Plot Created 2017-03-06 12:03:17, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

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

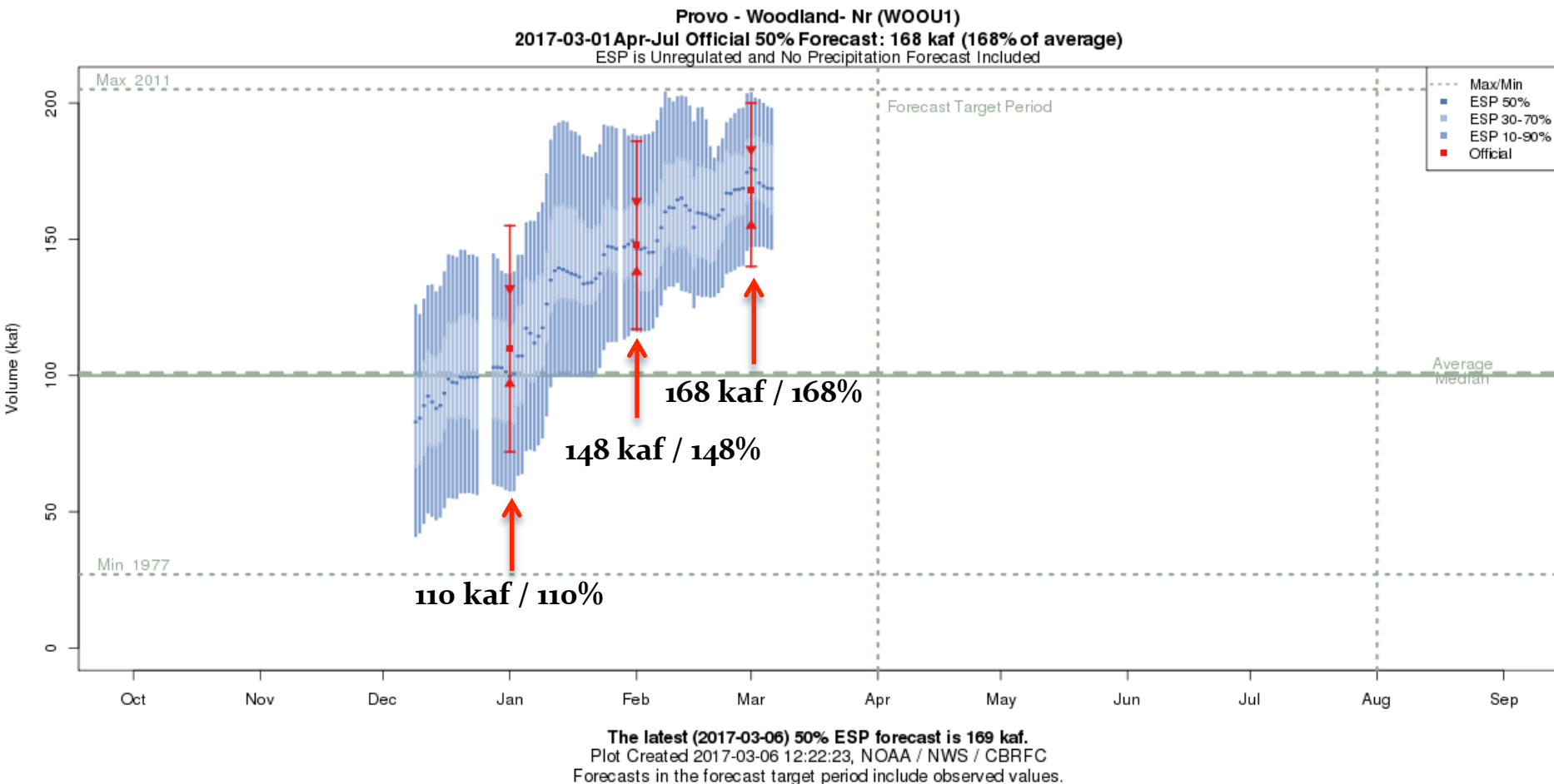


April-July
Forecast

Streamflow Volumes
(% of 1981-2010 average)



Forecast Evolution Plot – Provo River near Woodland



Forecast Validation: How good are forecasts in March?

Historical Model Error 1981-2010

Generally not as big of an improvement from February to March as there is January to February
- March can be a pivotal month

Forecasts are better than just going with average

Error tends to decrease each month into the spring, especially from this point forward

Where We Do Better:

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

Where We Do Worse:

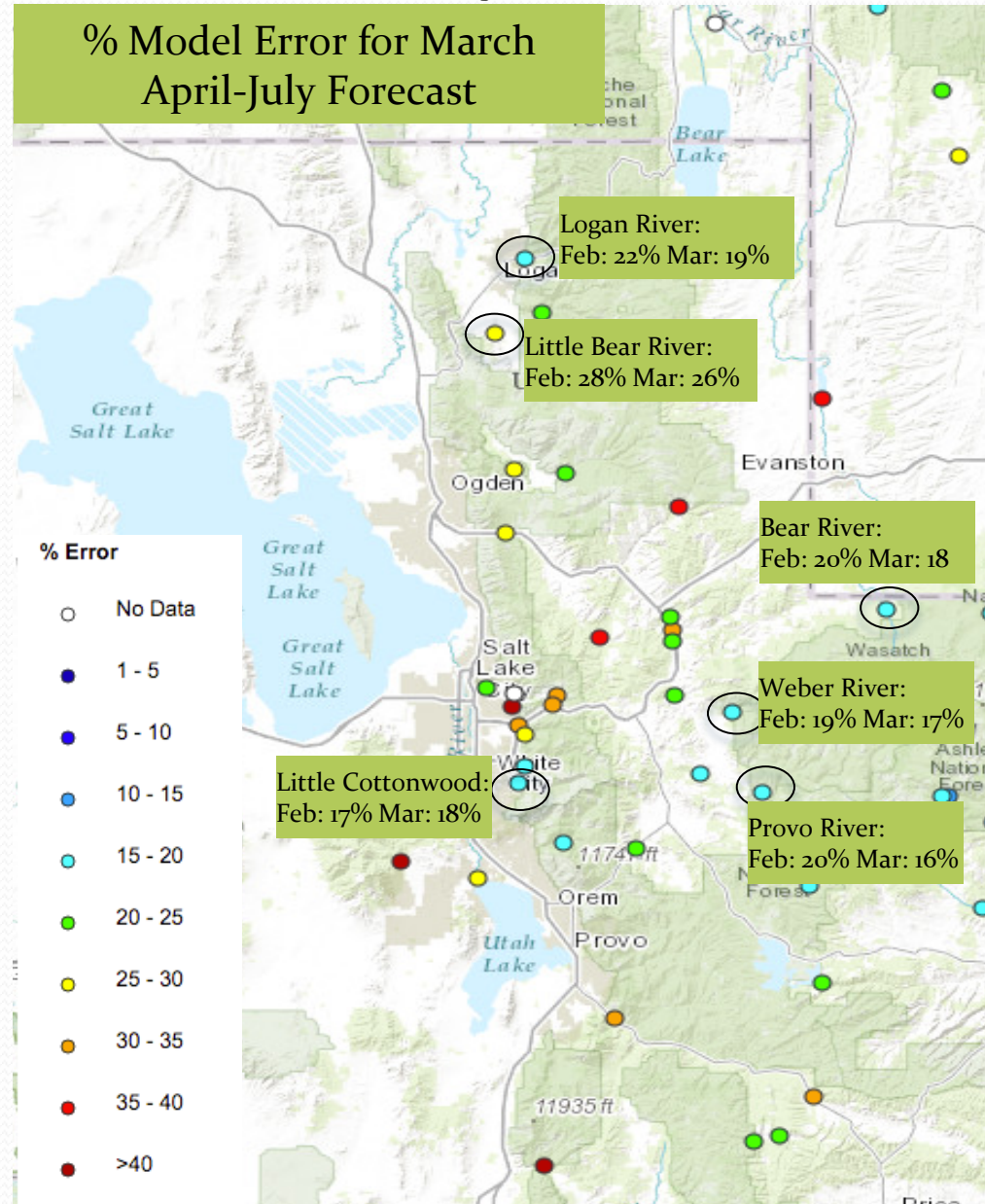
- Lower elevations (rain or early melt)
- Downstream of diversions / irrigation
- Little is known about diversions / demands

Map is available at:

<https://www.cbrfc.noaa.gov/arc/verif/verif.php>

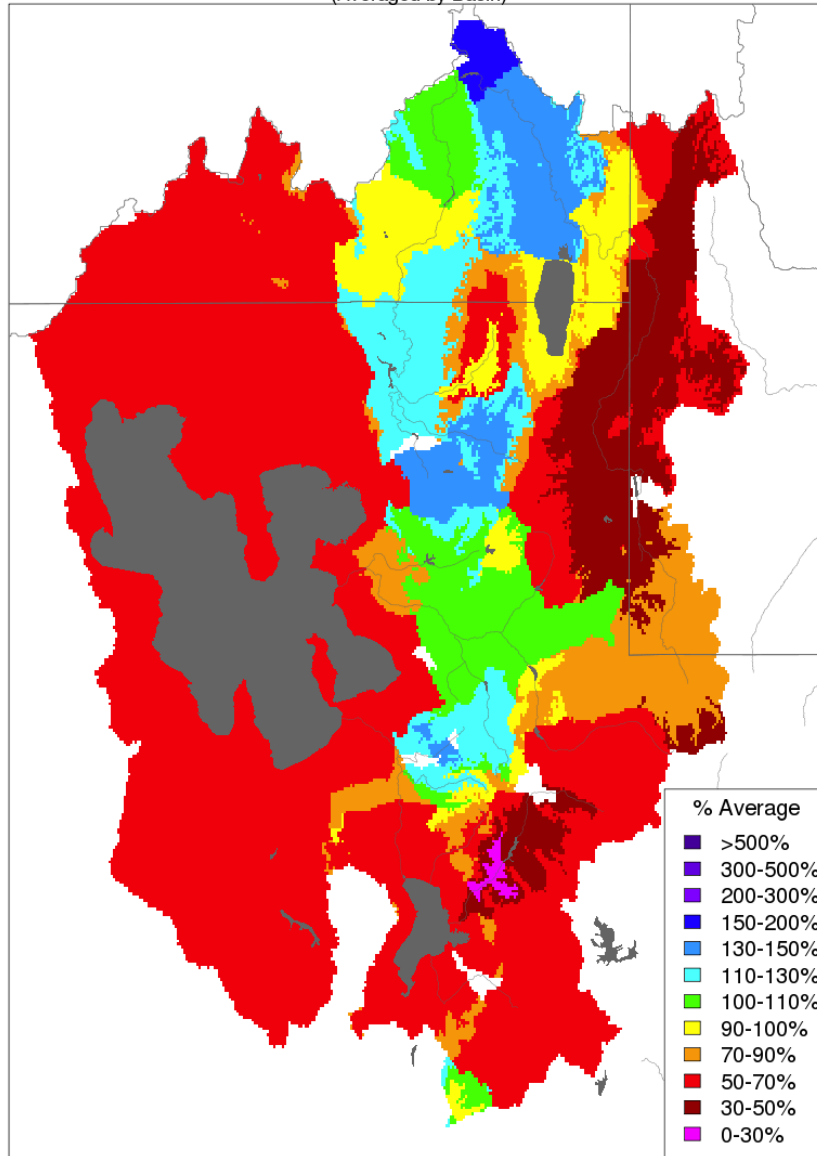
From Water Supply drop down menu
→ select Historical Verification Map

Historical Water Supply Verification - March



March Weather: Precipitation so far....

Month to Date Precipitation - March 07 2017
(Averaged by Basin)

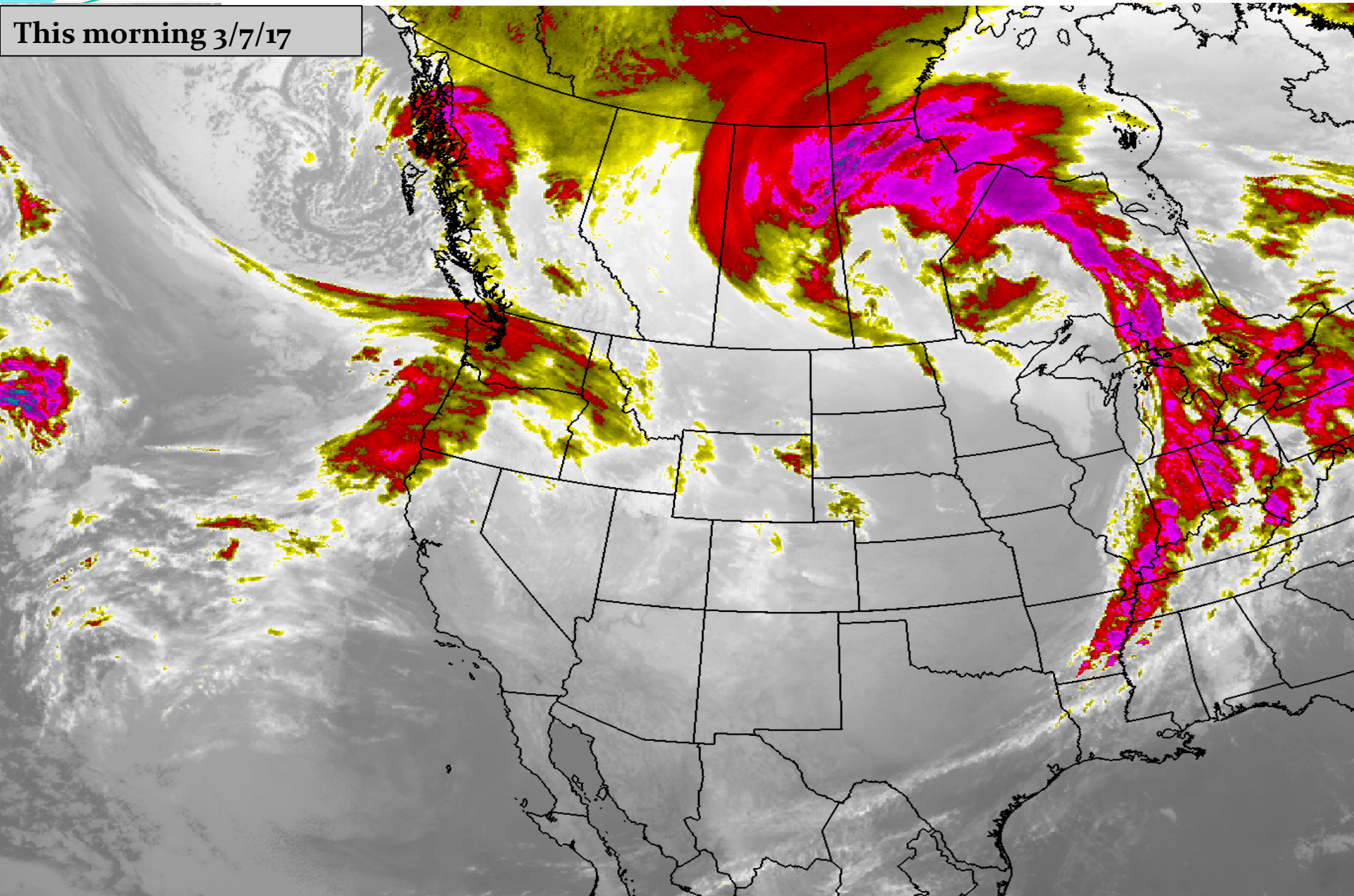


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbafc.noaa.gov

Upcoming Weather and Impacts to Water Supply Forecasts

Westerly flow over the area with storm track to the north

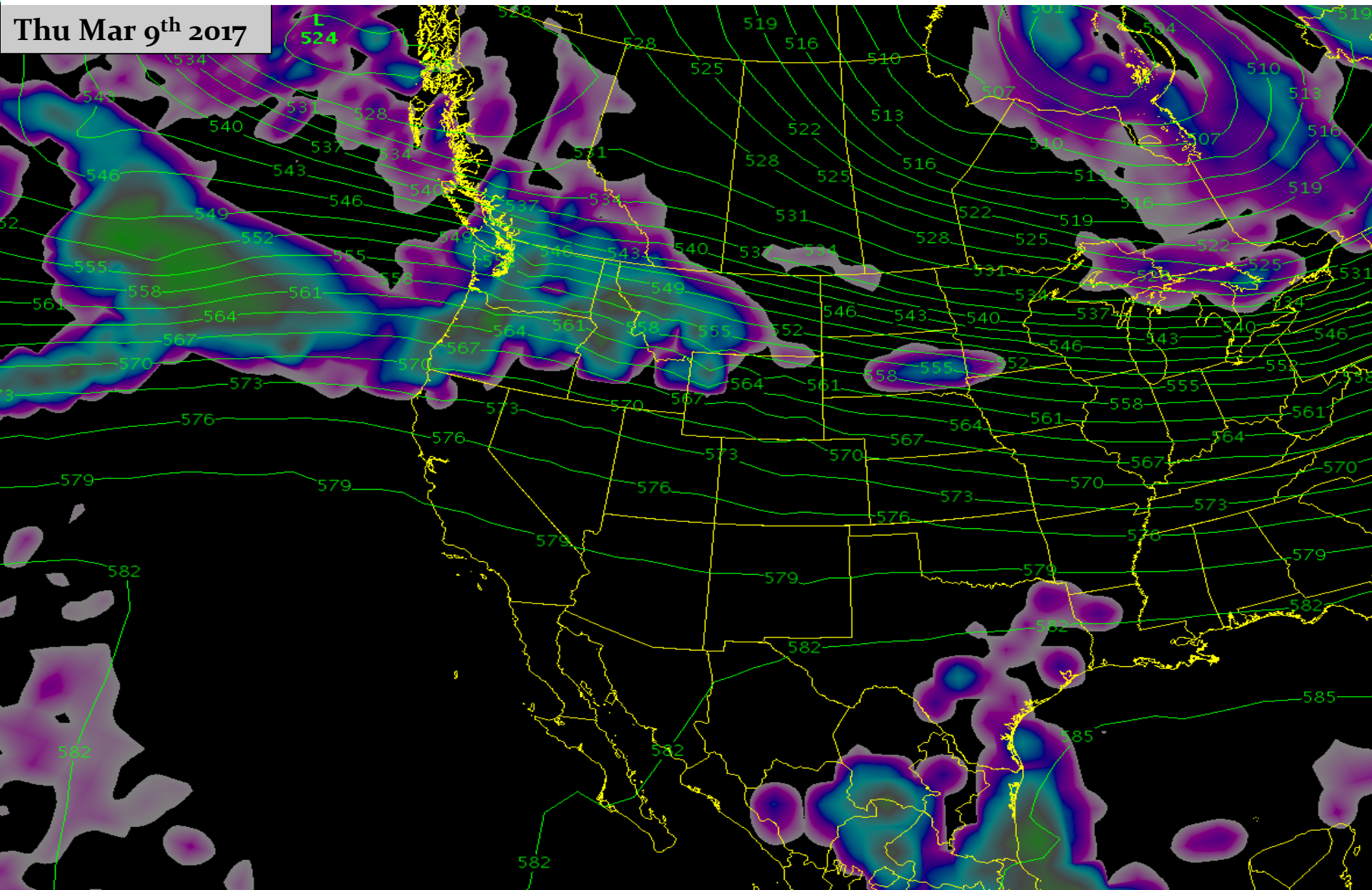
This morning 3/7/17



Upcoming Weather and Impacts to Water Supply Forecasts

Westerly flow continues over the area with storm systems displaced north. Increasingly mild air mass with temperatures 5-15 degrees above average for this time of year

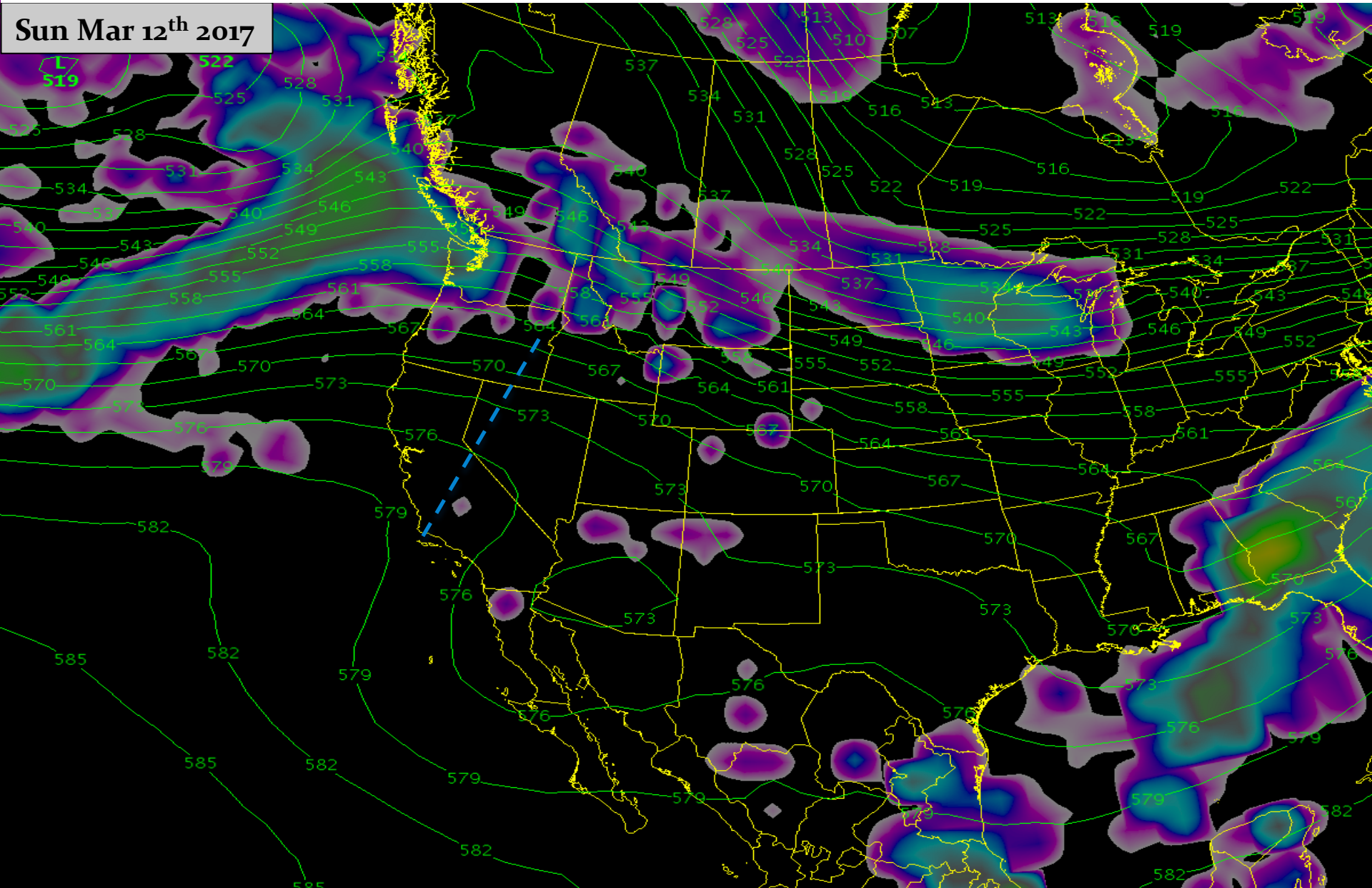
Thu Mar 9th 2017



Upcoming Weather and Impacts to Water Supply Forecasts

This model suggests the storm track remains to the north of the area. Other solutions have the high pressure ridge farther west. That scenario would allow our northern areas to become more susceptible to storm activity.

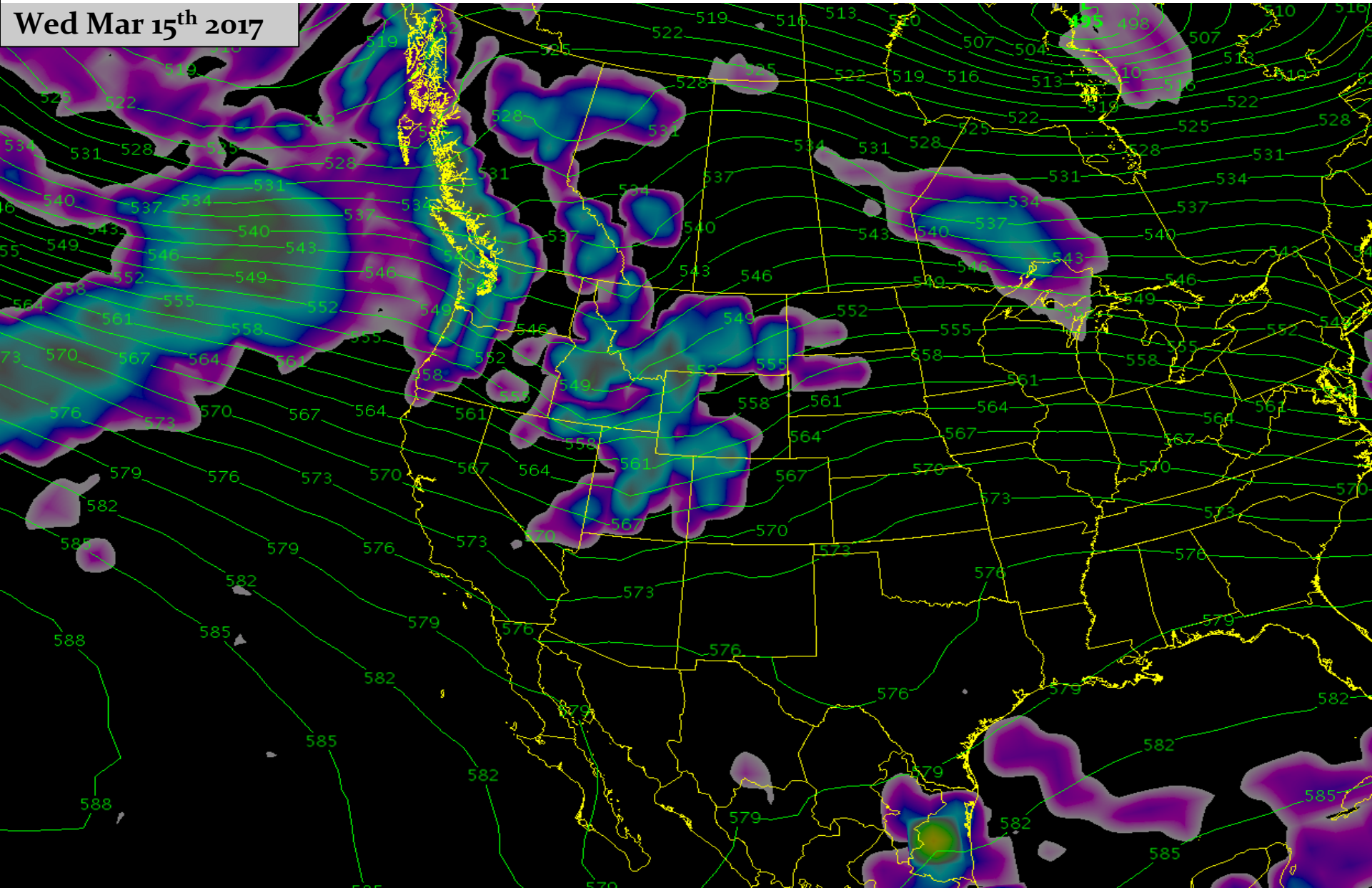
Sun Mar 12th 2017



Upcoming Weather and Impacts to Water Supply Forecasts

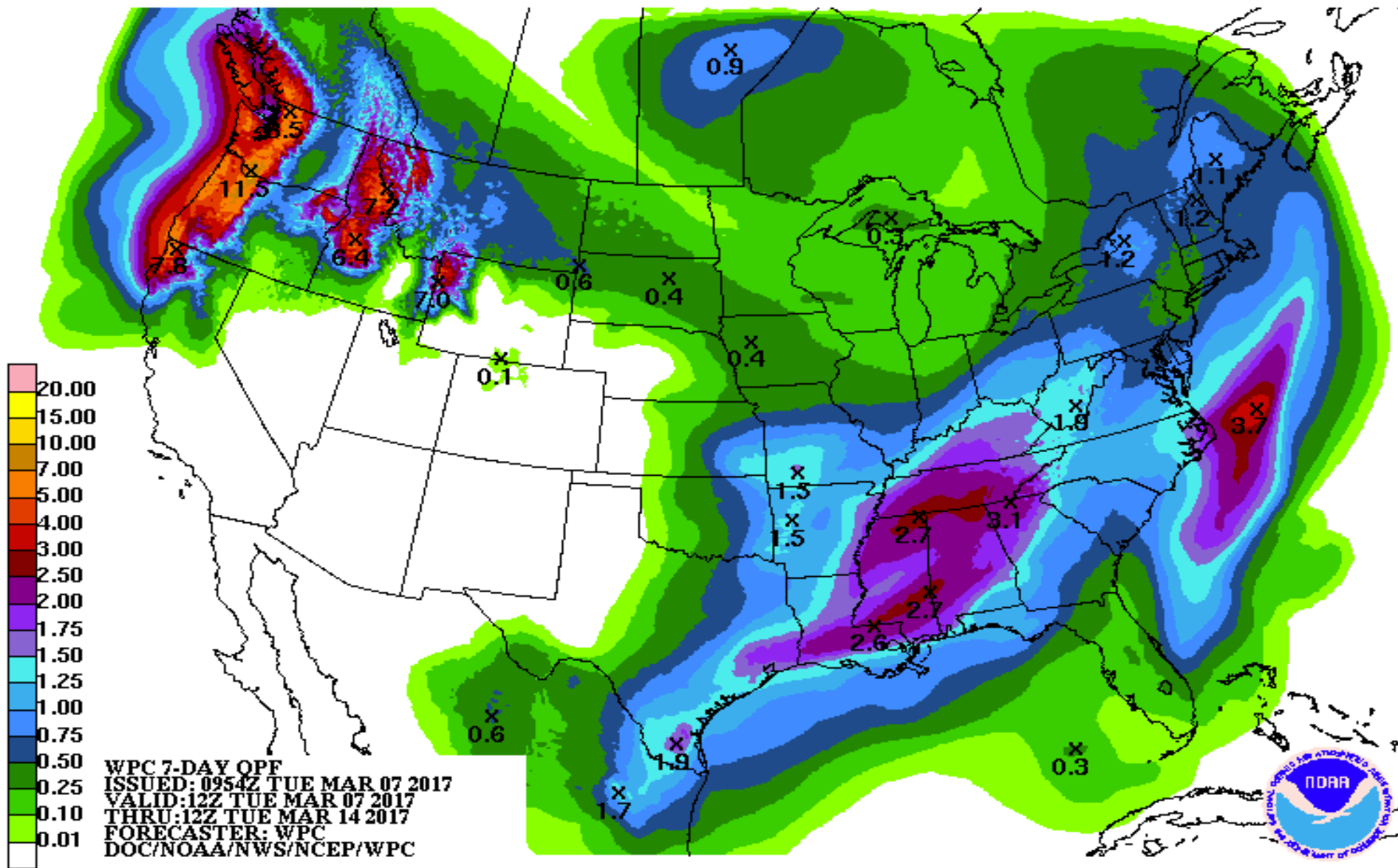
The next legitimate threat for any significant precipitation looks to be the middle of next week. Models differ on the intensity of the storm system but it does appear more active. However southern areas remain on the dry side.

Wed Mar 15th 2017



Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecast: 7 day total (Mar 7th-Mar 14th)



Key Points

Another much above average month of precipitation on top of very wet December and January has many SNOTEL sites with seasonal precipitation to date and current snow water equivalent values near or above historical records.

Significant runoff is anticipated, especially in the Bear and Weber river basins.

We could still be impacted by abnormally dry spring weather, but many areas would likely still see above average runoff volumes. March and April weather are critical.

CBRFC deterministic model is indicating some increases in stream flows by next week due to low elevation snow melt.

With the potential for high water expected this year, CBRFC daily streamflow forecasts would benefit greatly from increased communication with reservoir operators.

- We can use future reservoir release schedules (as well as diversion information)

2017 water supply briefing schedule

- 2017 monthly water supply briefings for the Great Basin
 - Thursday Apr 6th @ 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:
 - Friday Mar 10th @ 10:00 am MT
 - 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)

Brenda Alcorn – Colorado River, Lake Powell Focal Point

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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

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