

# CBRFC Forecast Areas

## Great Basin / Utah Water Supply Briefing

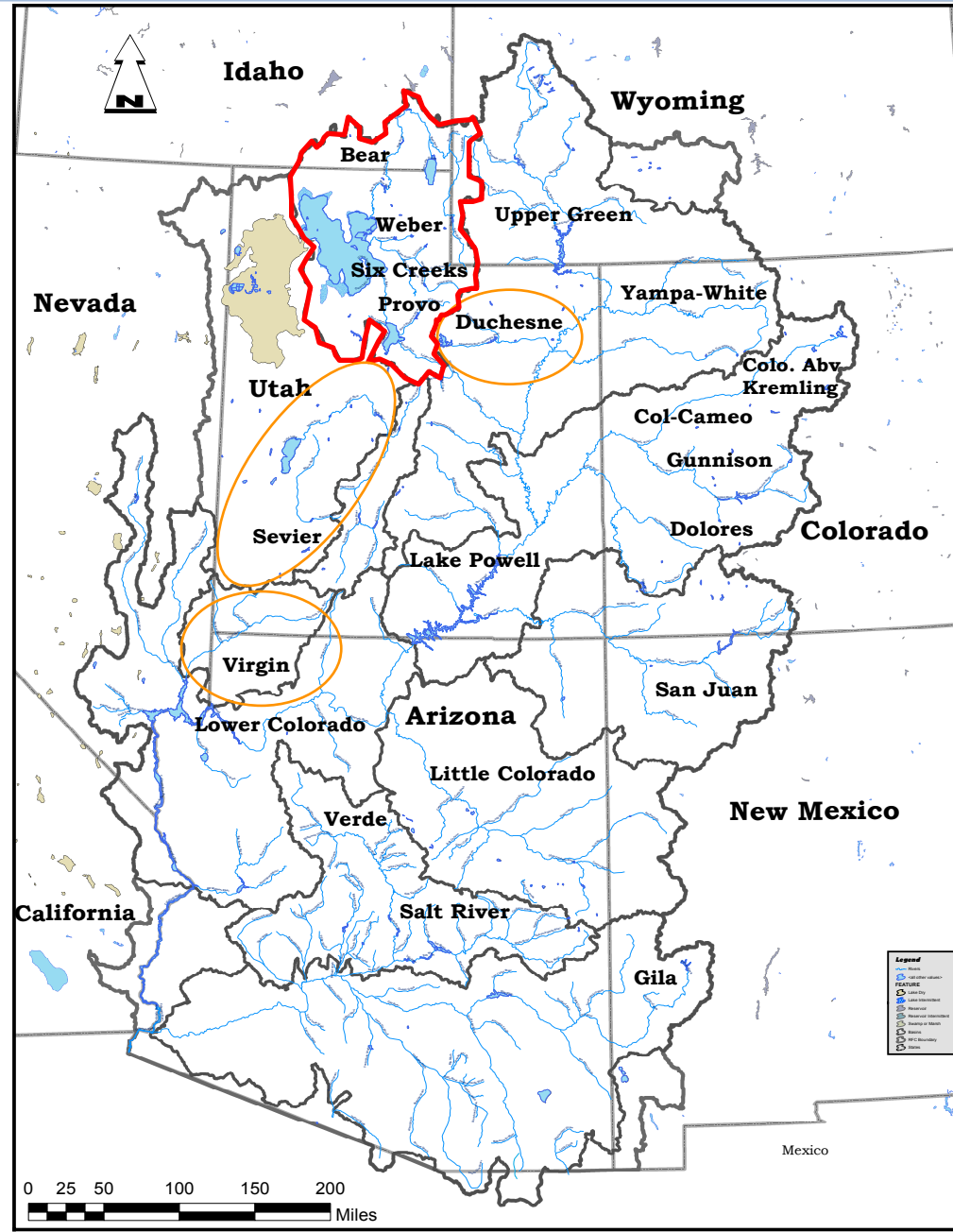
March 7, 2018

Brenda Alcorn - Sr. Hydrologist  
Colorado Basin River Forecast Center

Phone: 1-877-929-0660

Passcode: 1706374

Please mute your phone  
until ready to ask questions



# Today's Presentation

February weather – Pattern change, but still not great for northern Utah

Current snowpack conditions – Near record low snowpack in many areas

2018 water supply forecasts – March update

Select forecast site review – Evolution Plots

March forecast – Much improvement over February?

Upcoming weather – Storms on the horizon, but how strong and where?

Contacts & Questions

**Phone: 1-877-929-0660 Passcode: 1706374**

**\* Please mute your phone until the question period \***

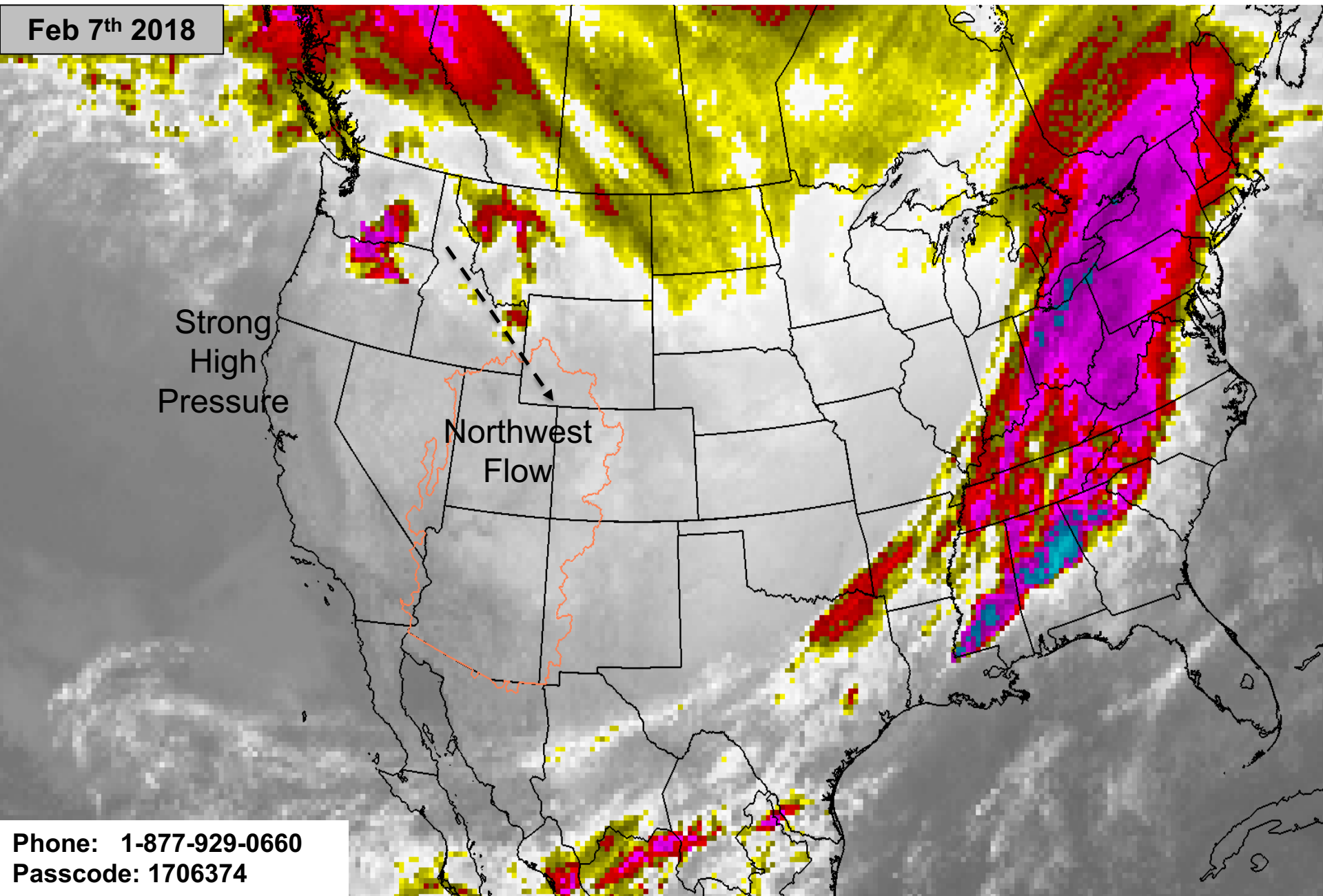
# February Weather: Started the month dominated by high pressure ridge

Feb 7<sup>th</sup> 2018

Strong  
High  
Pressure

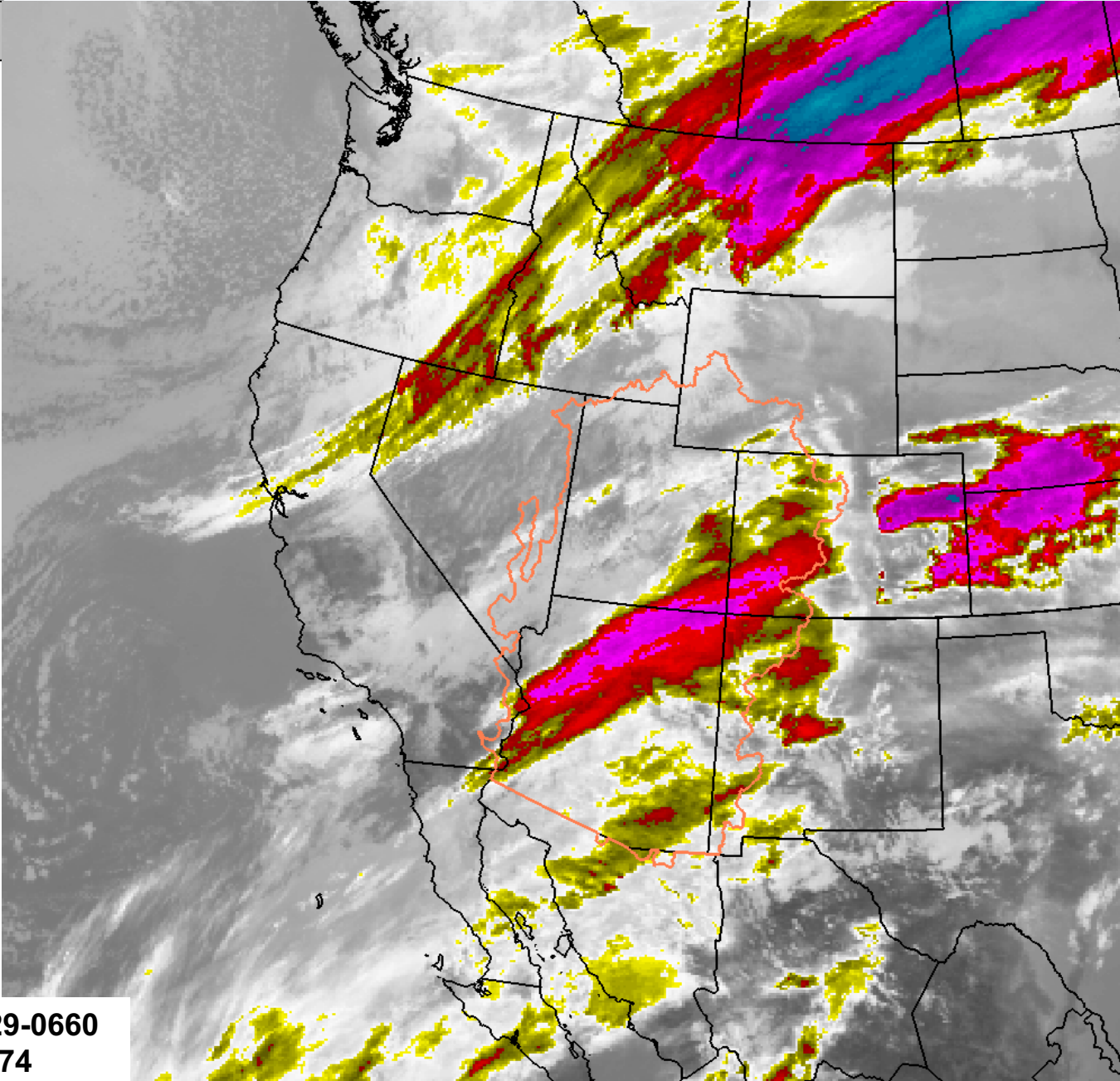
Northwest  
Flow

Phone: 1-877-929-0660  
Passcode: 1706374



February Weather: Mid month pattern change – more active pattern with storm systems impacting the area... northern Utah did not benefit until late in the month

**Feb 14<sup>th</sup> 2018**



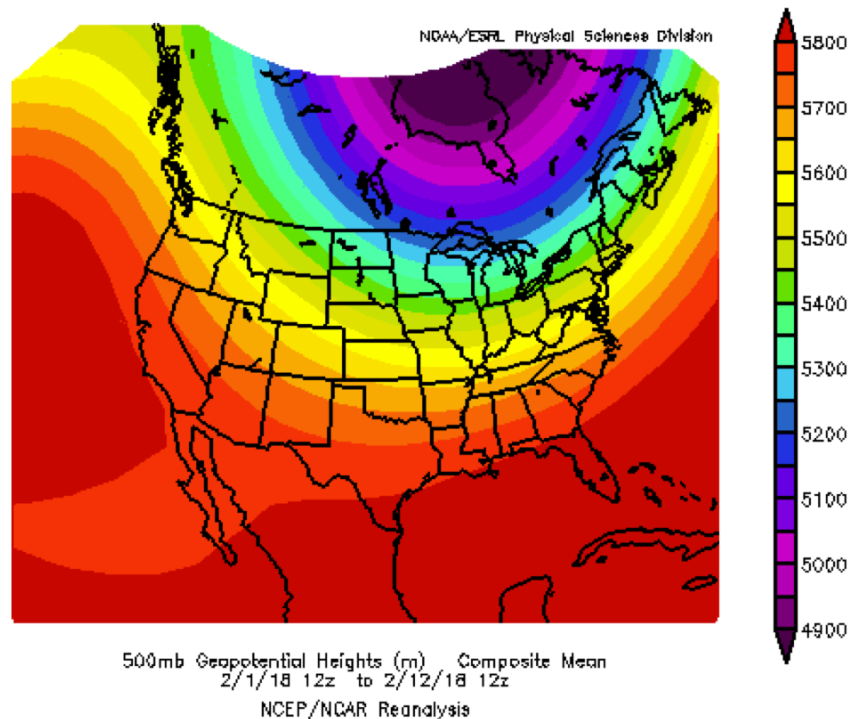
**Phone: 1-877-929-0660**  
**Passcode: 1706374**



# February weather pattern

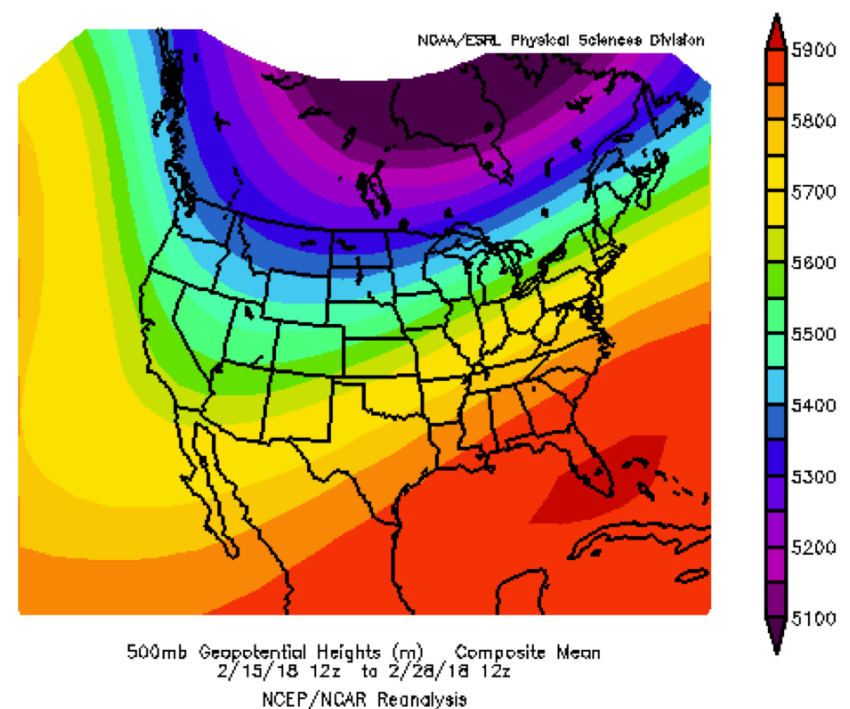
## Mean Atmospheric Pattern February 2018

### First half of February



High pressure ridge – mostly dry conditions

### Second half of February

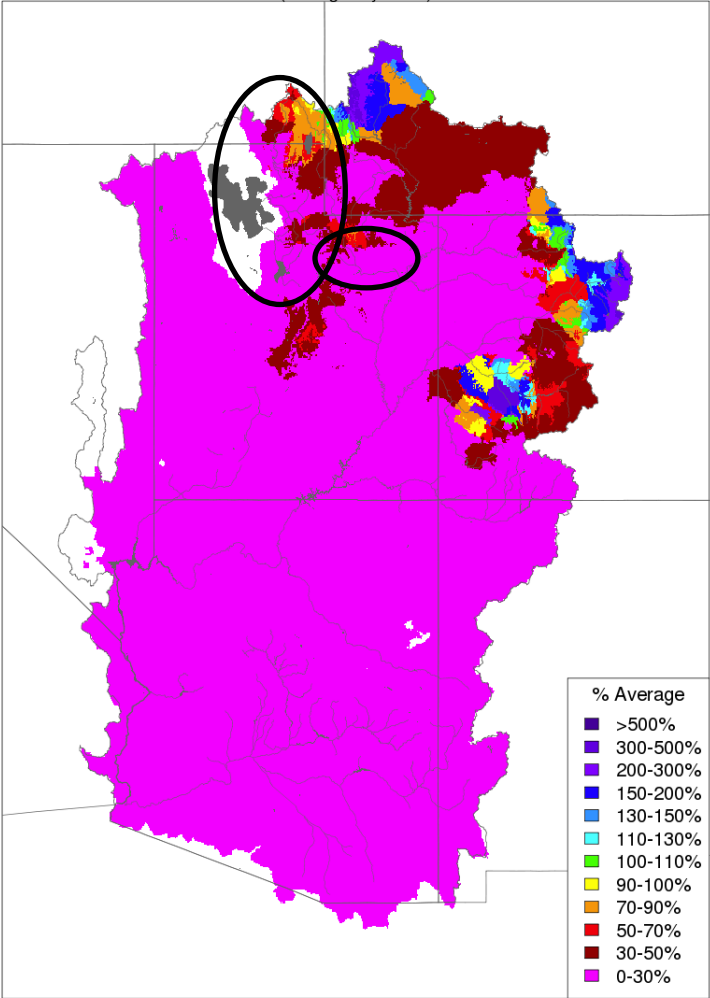


Increase in storm activity / precipitation

# February Precipitation – partial month % of average

Early February storm north of the Great Basin and Duchesne

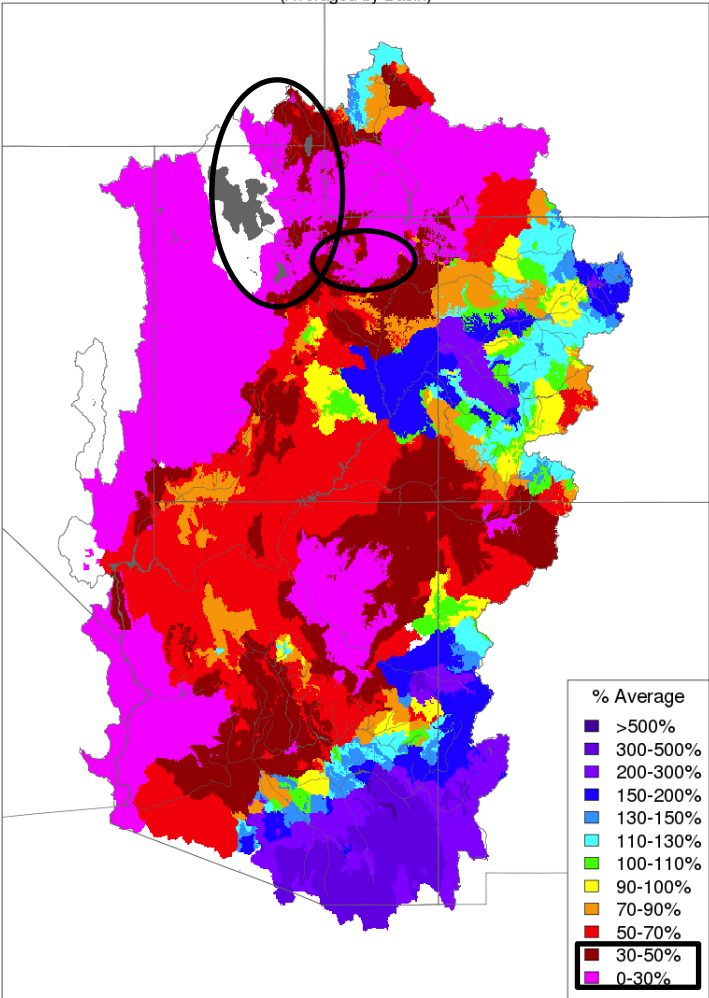
Month to Date Precipitation - February 06 2018  
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

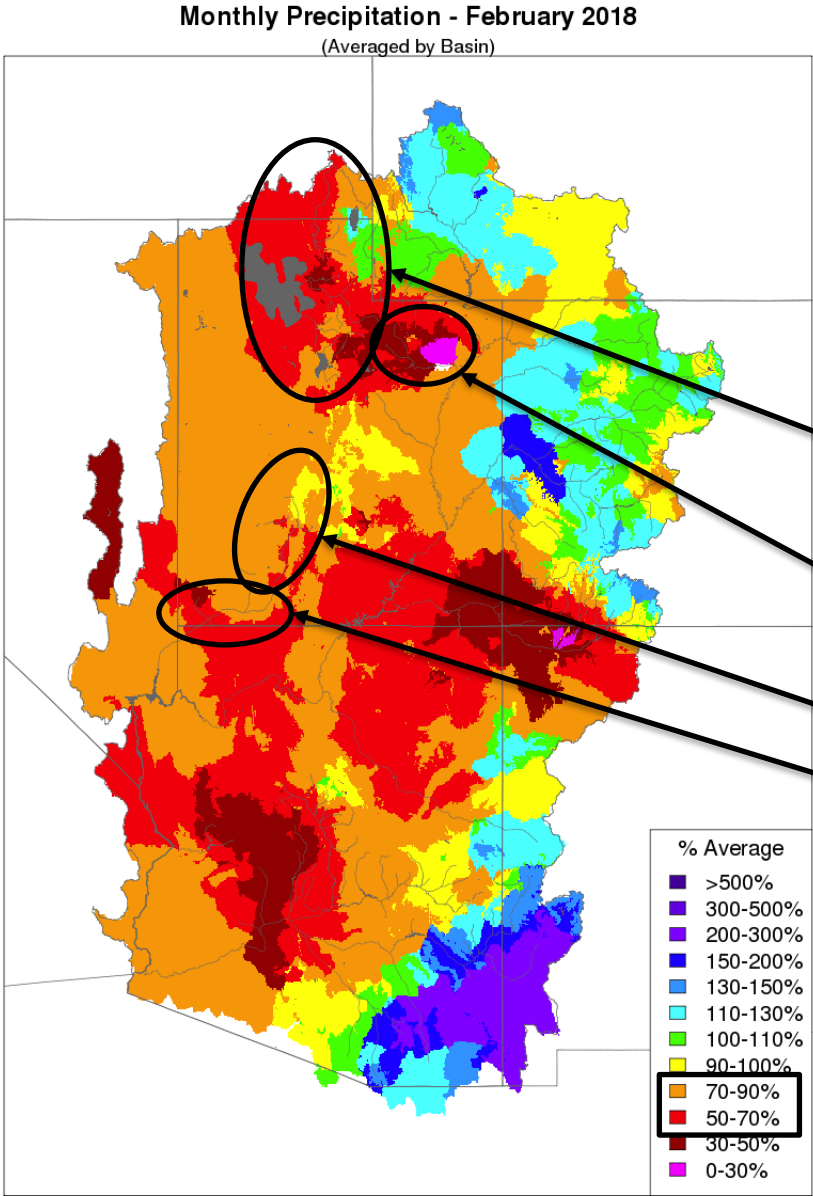
Mid February storm south of the Great Basin and Duchesne

Month to Date Precipitation - February 17 2018  
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

# February Precipitation – full month % of average



Late February storm impacted the Great Basin and parts of the Duchesne

## February Totals

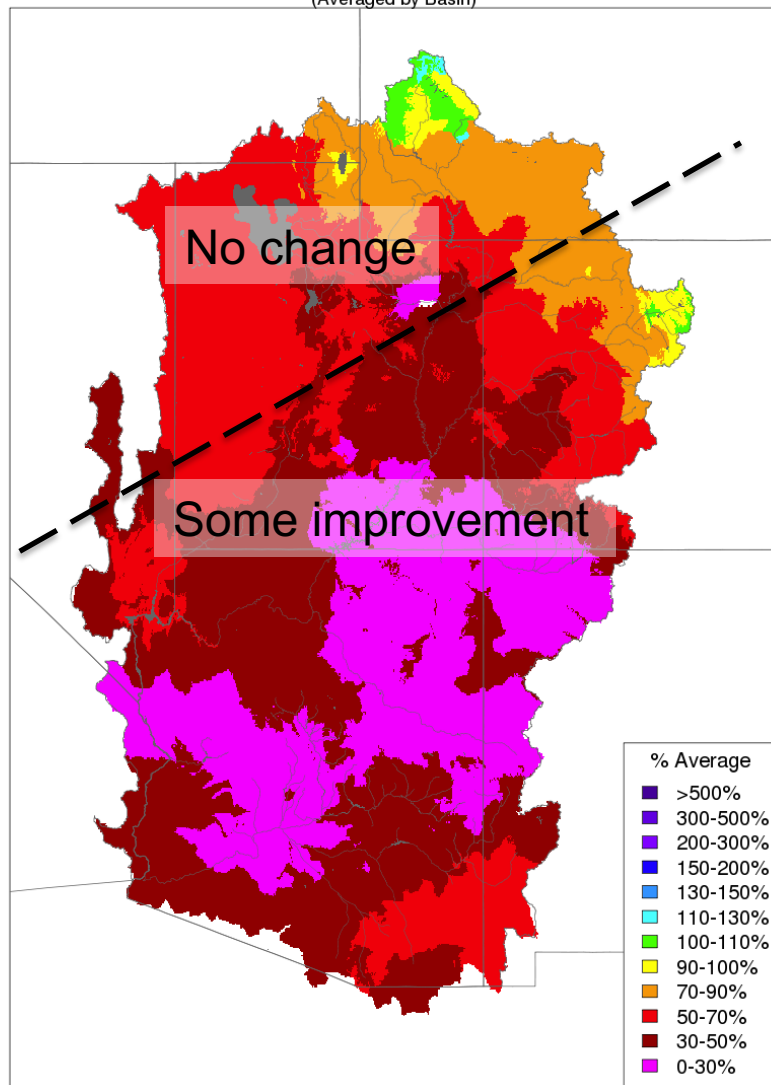
- Bear: 75%
- Weber: 60%
- Six Creeks: 80%
- Provo: 55%
- Duchesne: 50%
- Sevier: 80%
- Virgin: 75%

# Water Year Precipitation

## Entire CBRFC forecast area

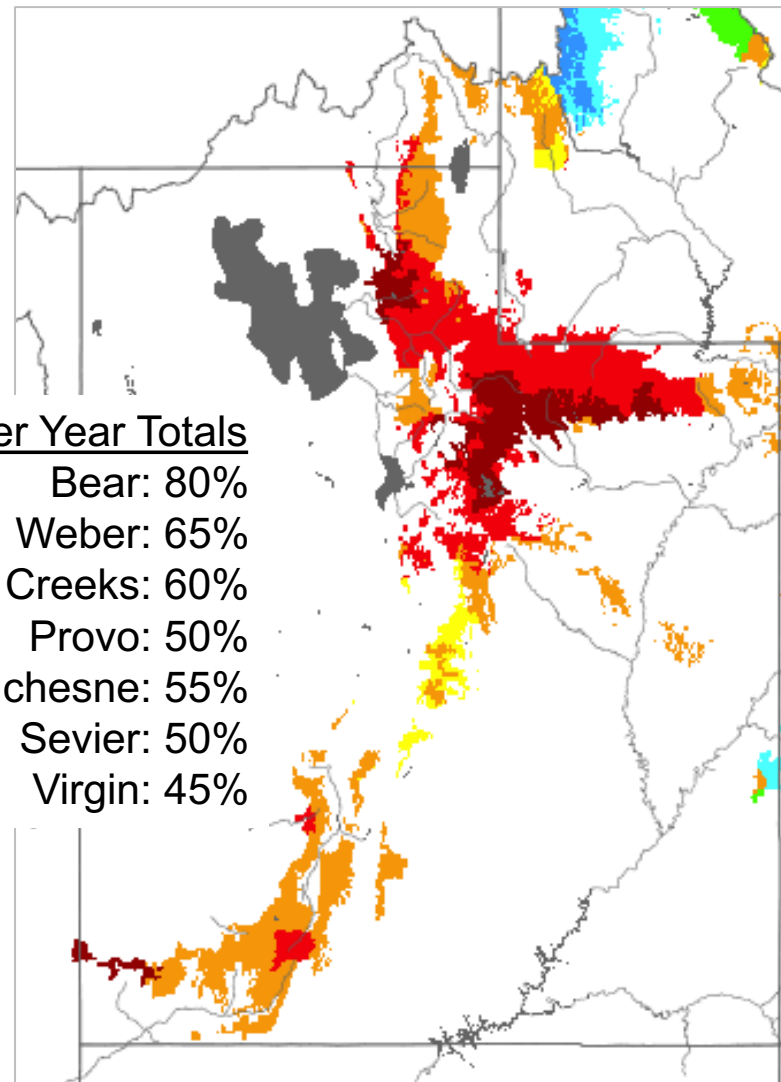
Water Year Precipitation, October 2017 - February 2018

(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

## Utah (primary contributing areas)



### Water Year Totals

Bear: 80%

Weber: 65%

Six Creeks: 60%

Provo: 50%

Duchesne: 55%

Sevier: 50%

Virgin: 45%

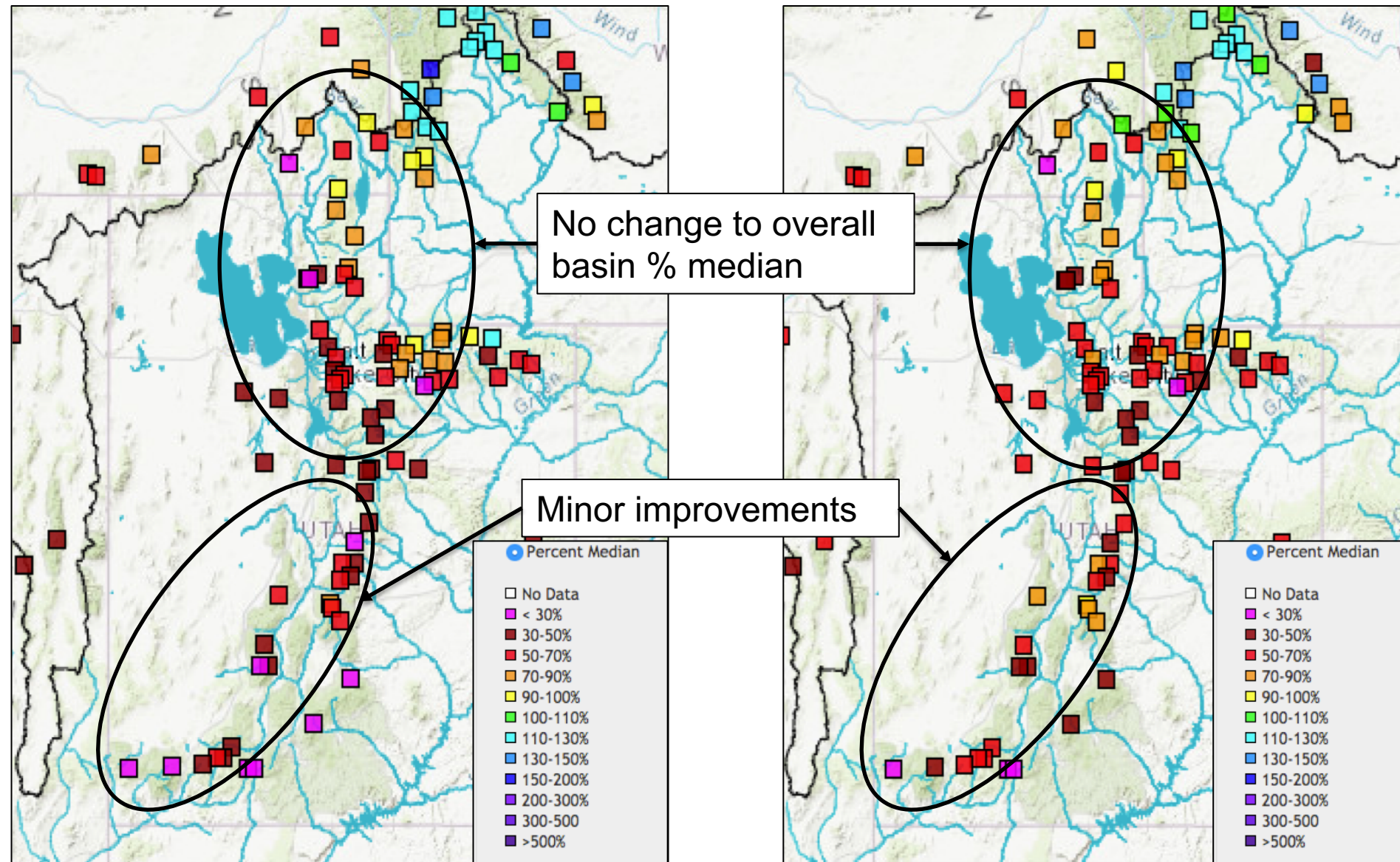


# Snow Conditions

## SNOTEL Snow Water Equivalent (% 1981-2010 median)

February 5, 2018

March 6, 2018





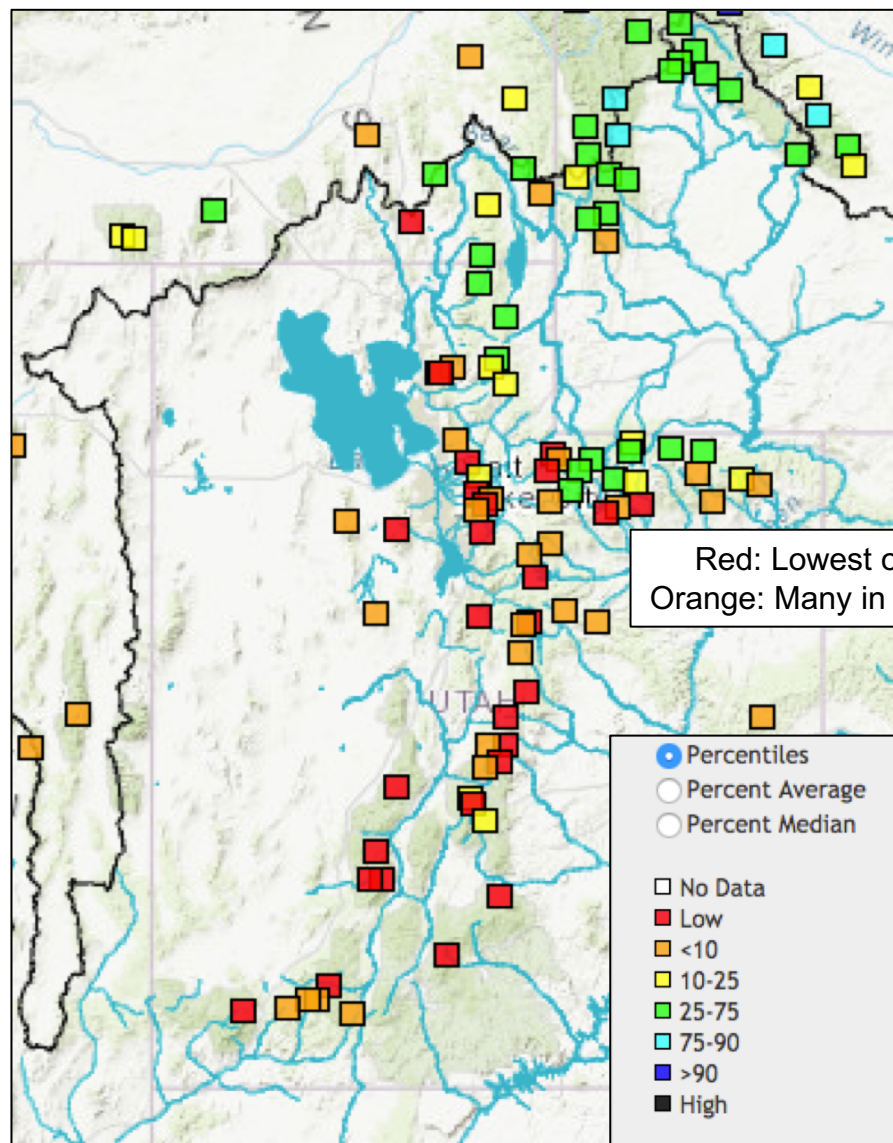
# Snow Conditions

## SNOTEL SWE Historical Rankings (period of record 30-40 years)

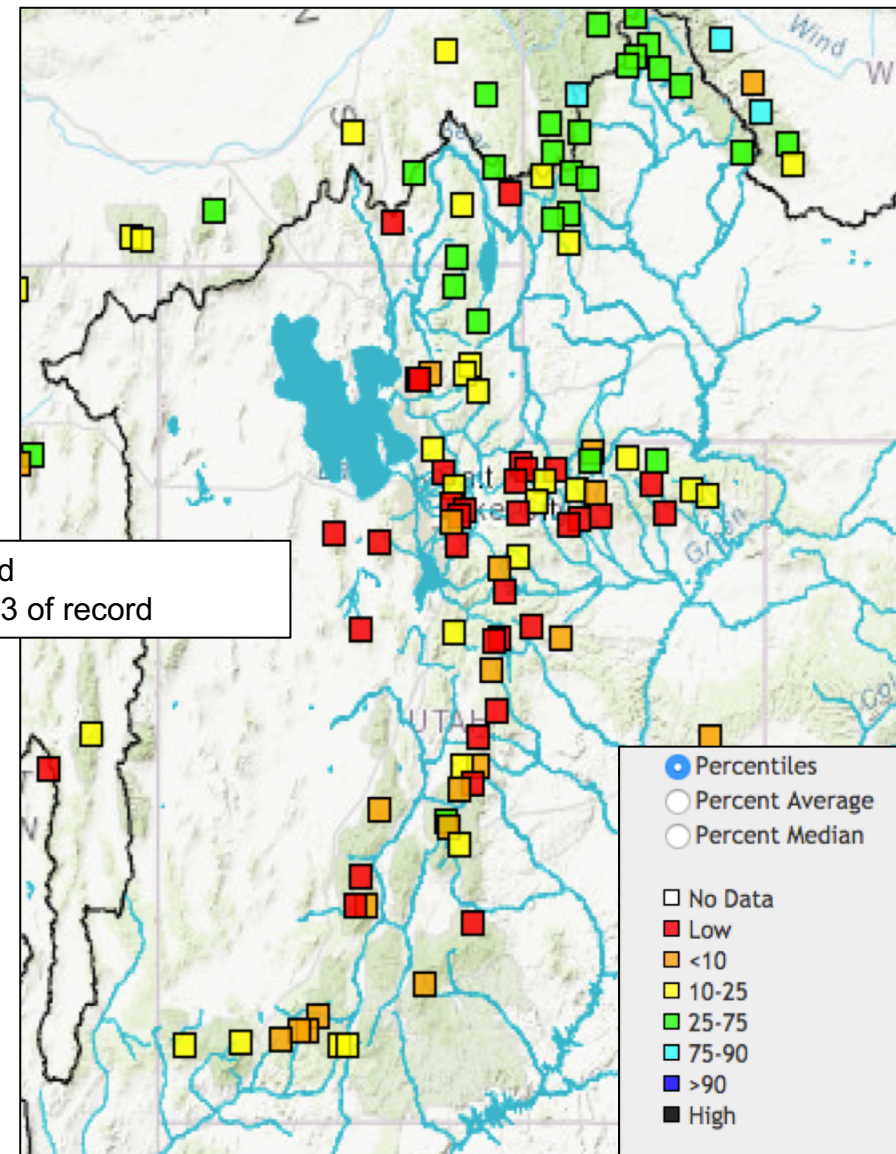
(\*\*earliest year 1978+)

February 5, 2018

March 6, 2018



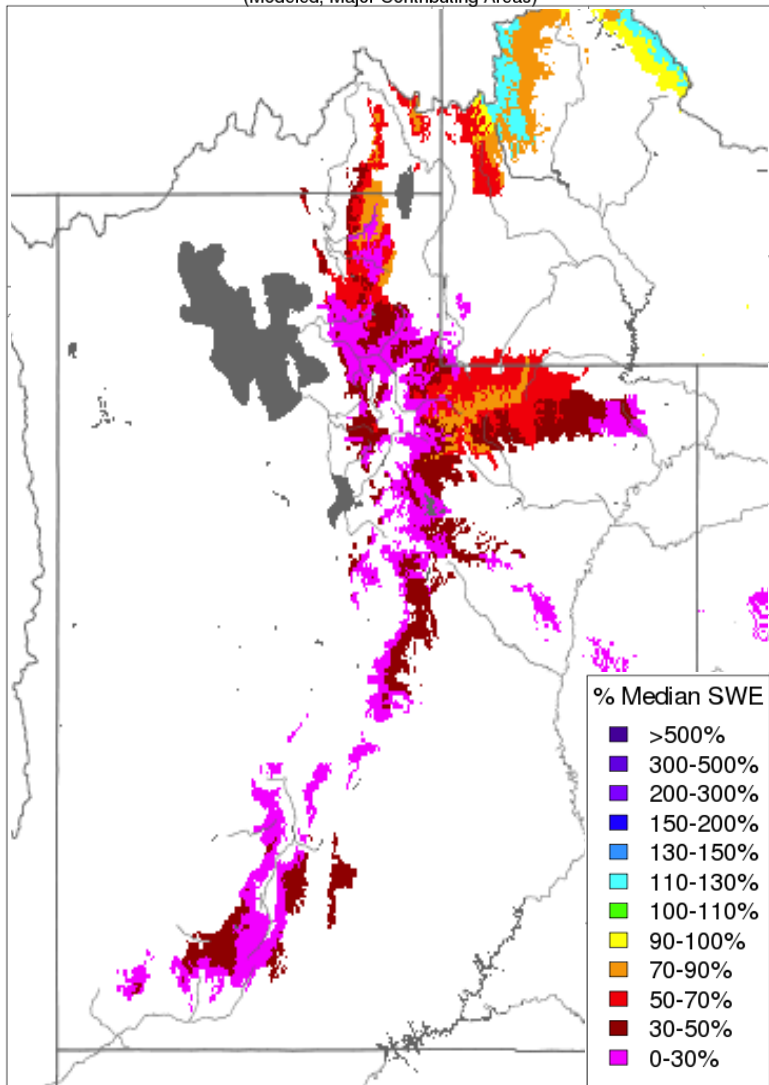
Red: Lowest on record  
Orange: Many in bottom 3 of record



# CBRFC Model Snow Water Equivalent (% median)

**Snow Conditions – February 05 2018**

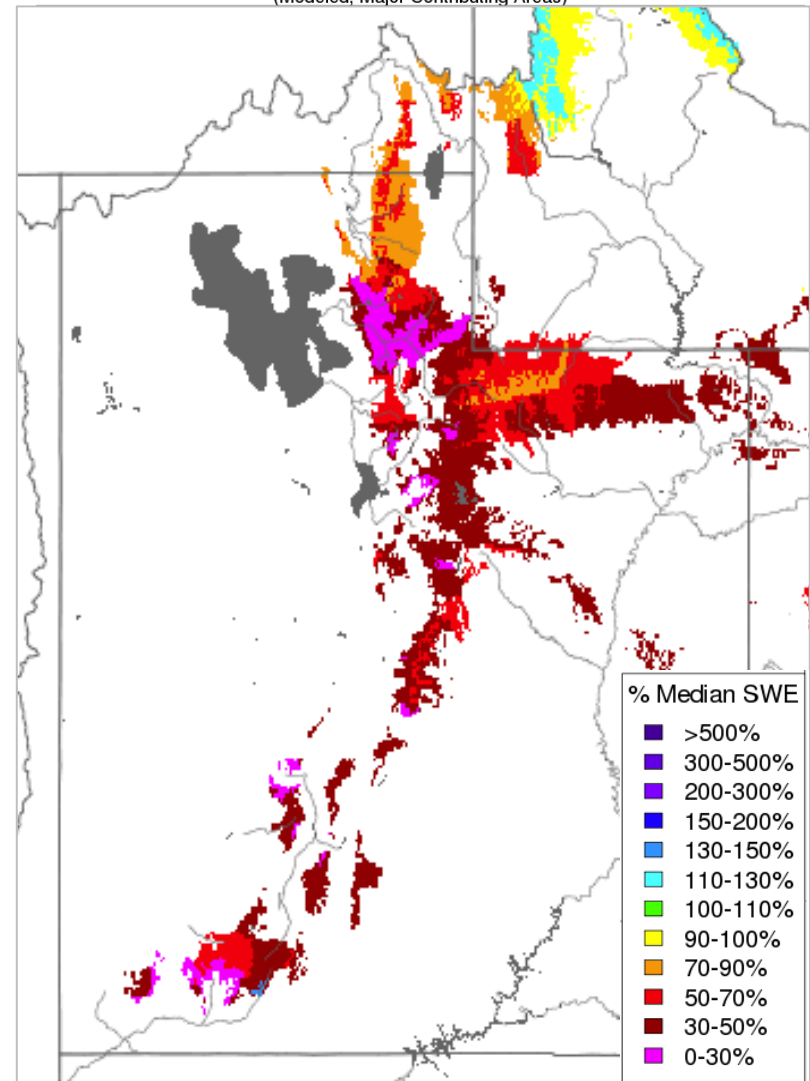
(Modeled, Major Contributing Areas)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

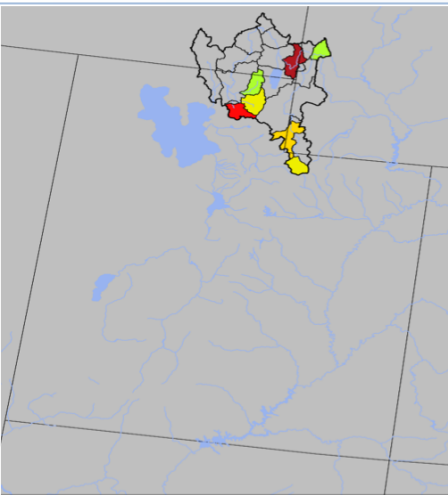
**Snow Conditions – March 06 2018**

(Modeled, Major Contributing Areas)

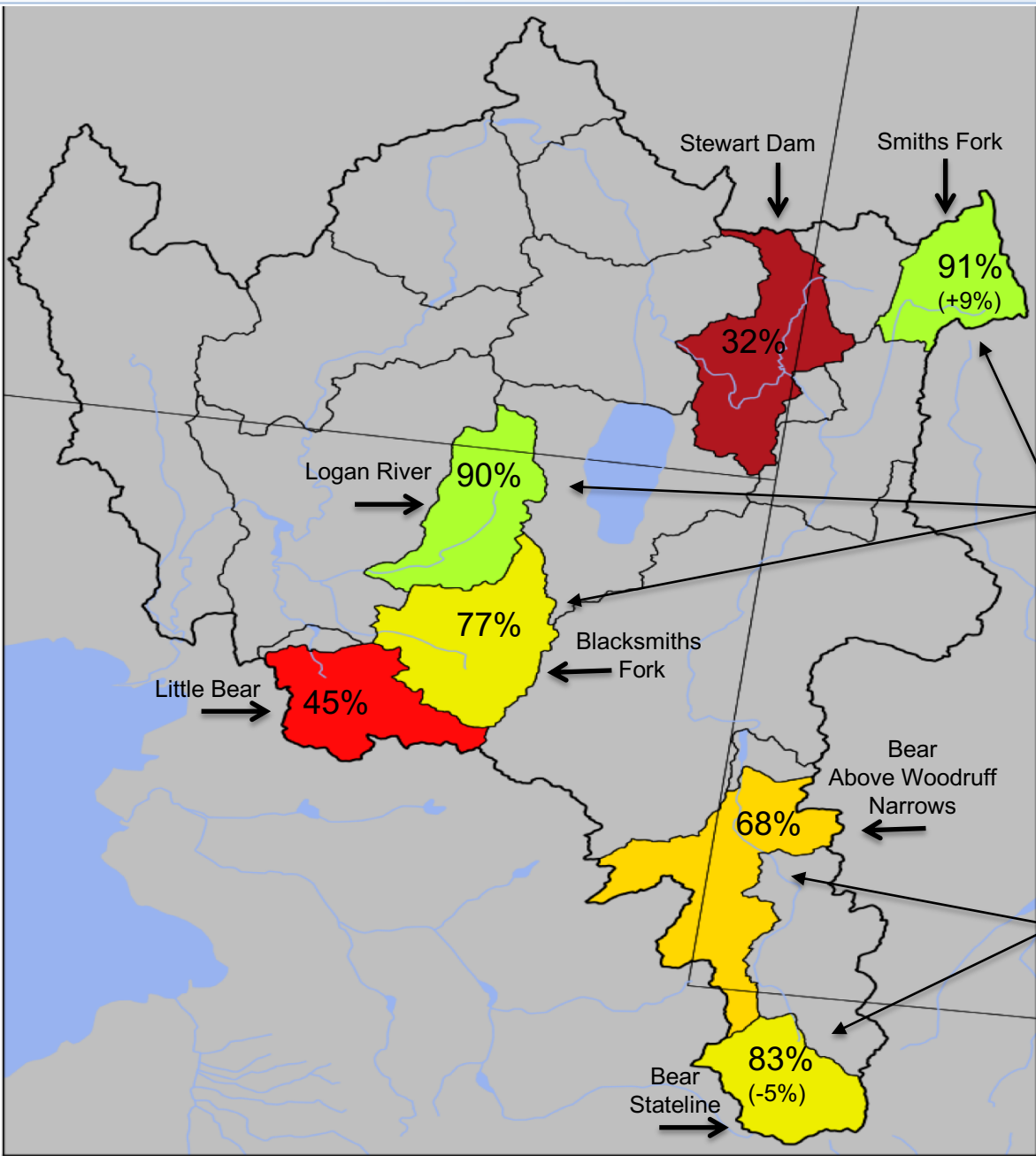
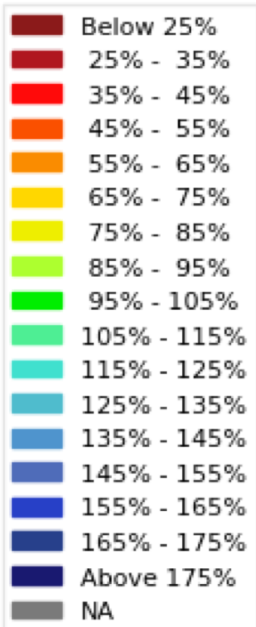


Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

# March 1<sup>st</sup> Water Supply Forecasts – Bear River Basin



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



Median  
Basin  
Forecast:

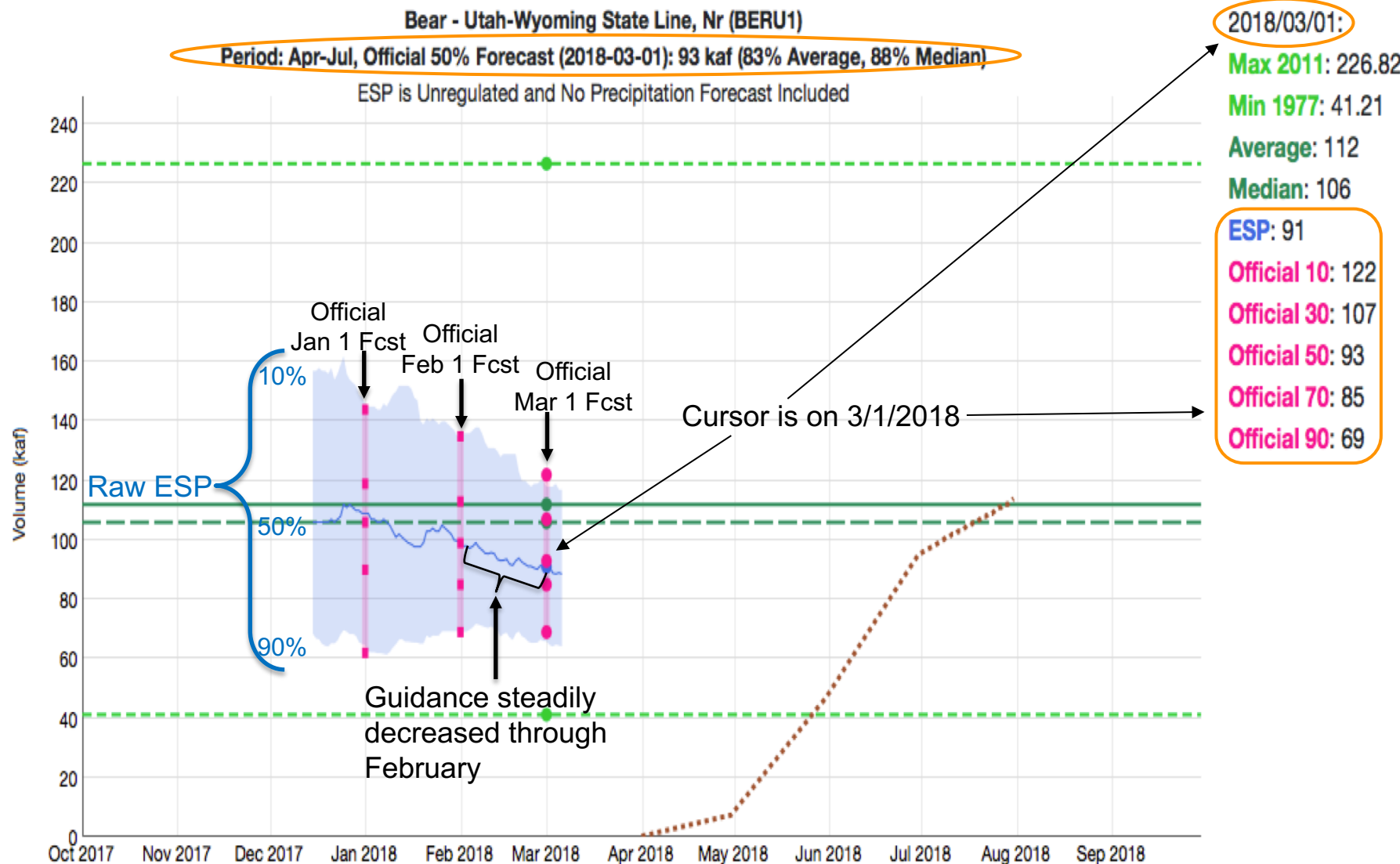
Jan – 85%  
Feb – 75%  
Mar – 75%

*Increased*

*Decreased*

# Forecast Evolution Plot

## Bear – UT/WY Stateline: 93 kaf / 83%

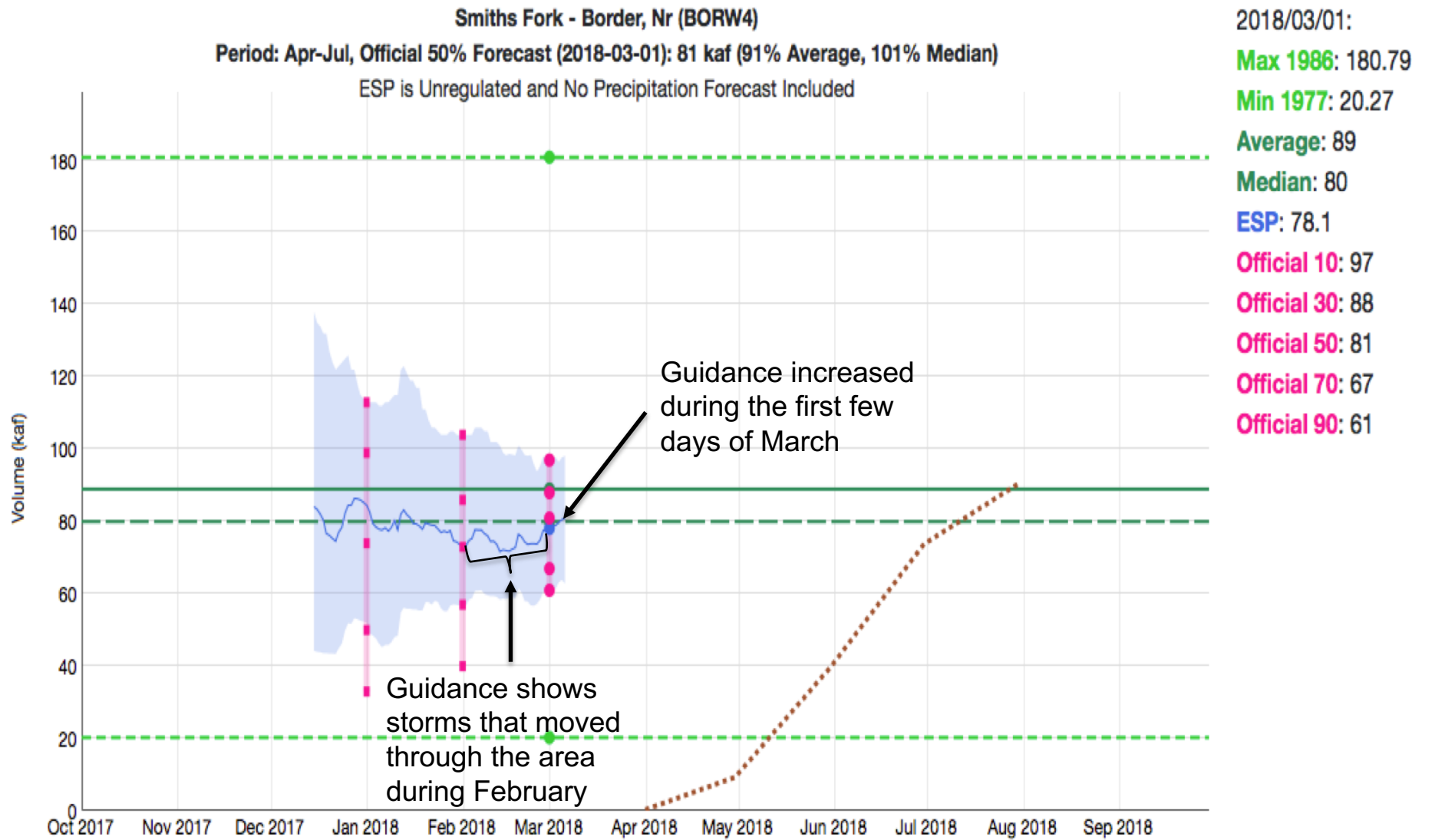


Available on CBRFC web page by selecting sites from  
map: <https://www.cbrfc.noaa.gov/lmap/lmap.php?interface=wsup>  
list: <https://www.cbrfc.noaa.gov/rmap/wsupsuplist.php>



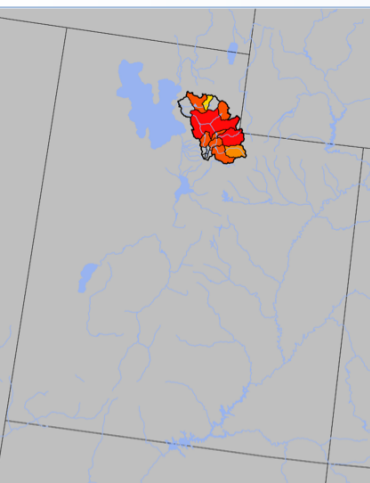
# Forecast Evolution Plot

## Smiths Fork – WY/ID Border – 81 kaf / 91%

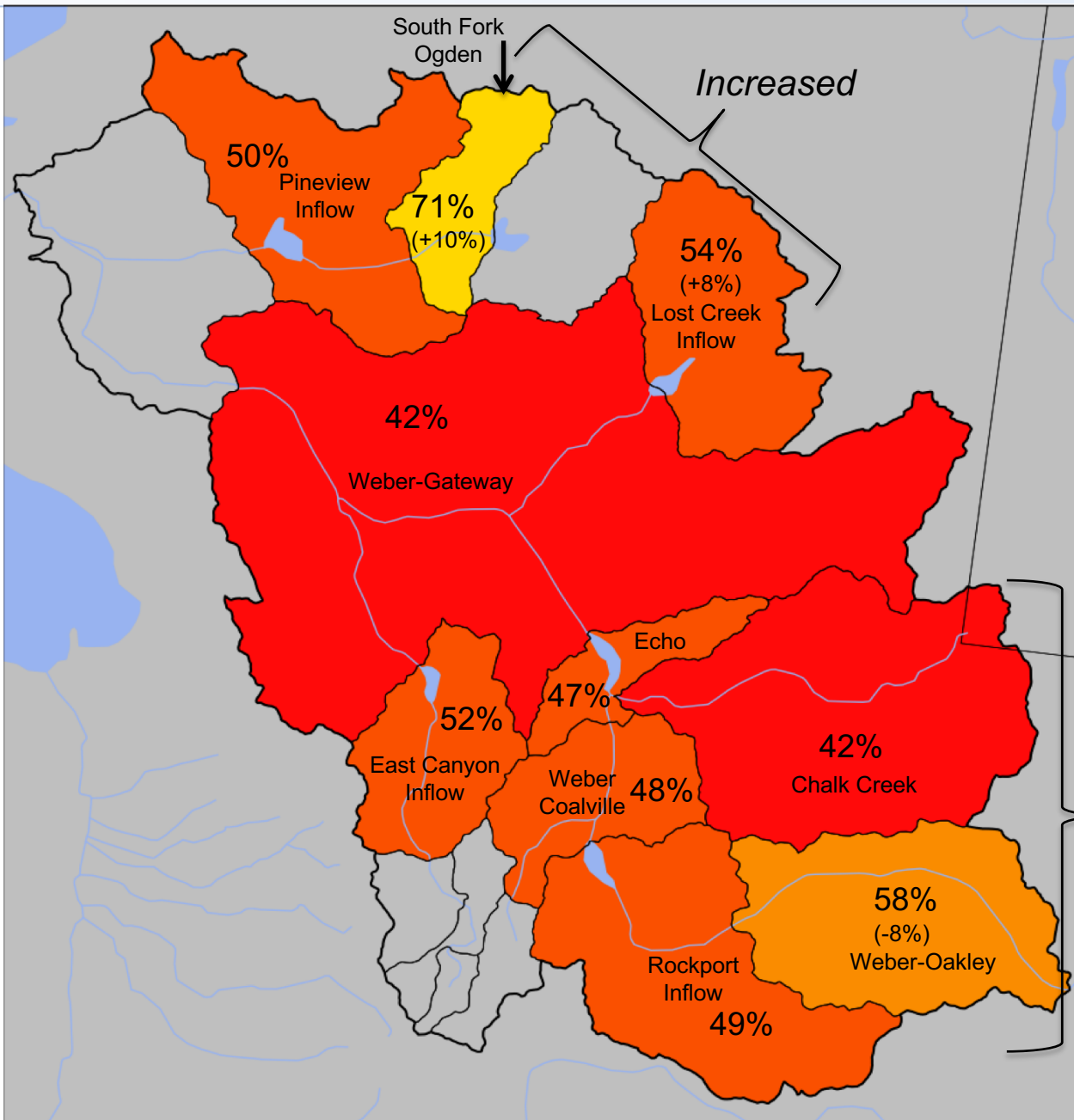
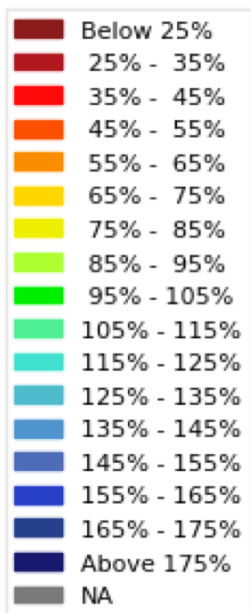




# March 1<sup>st</sup> Water Supply Forecasts – Weber River Basin



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



Median  
Basin  
Forecast:

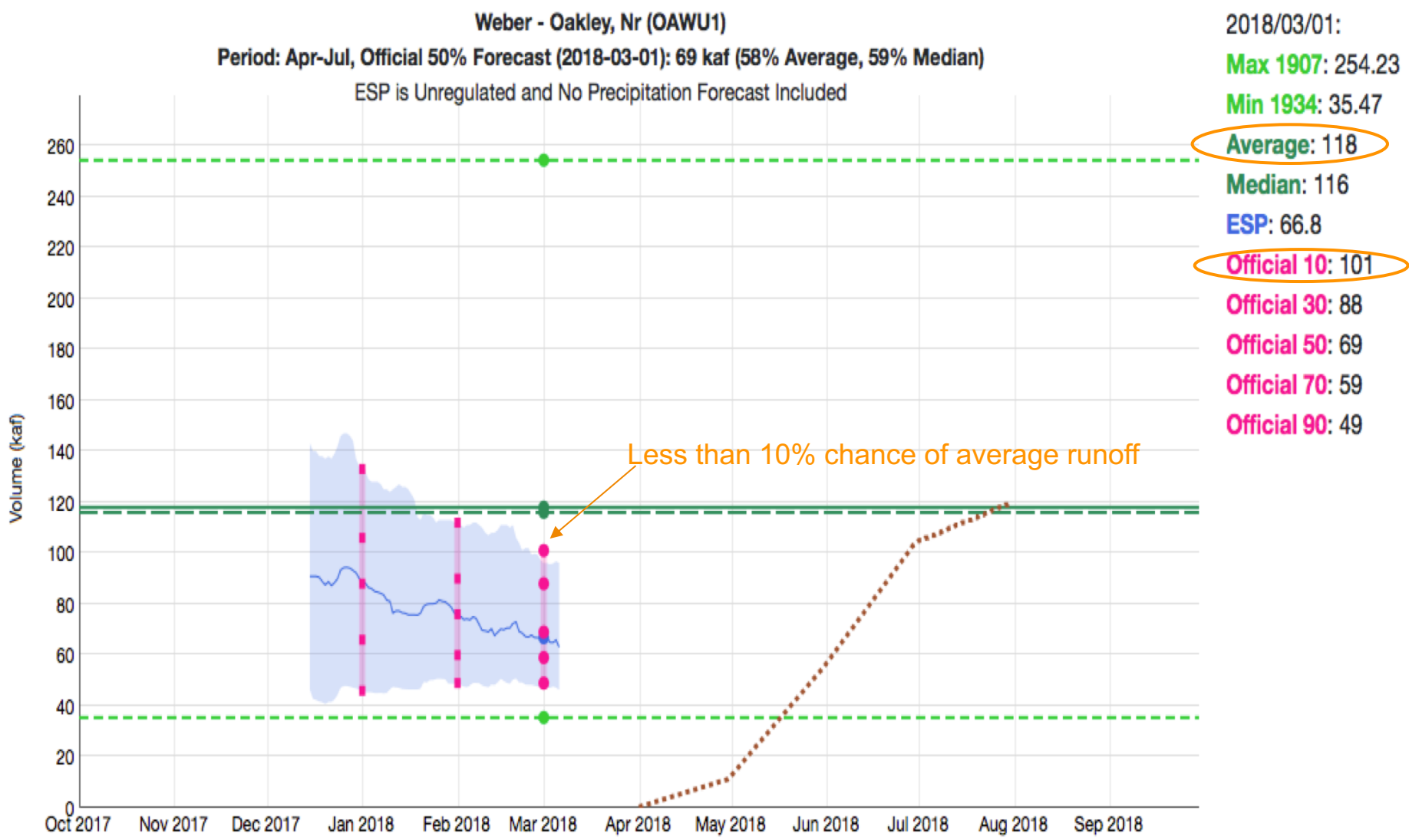
Jan – 65%  
Feb – 50%  
Mar – 50%

Increased

Decreased

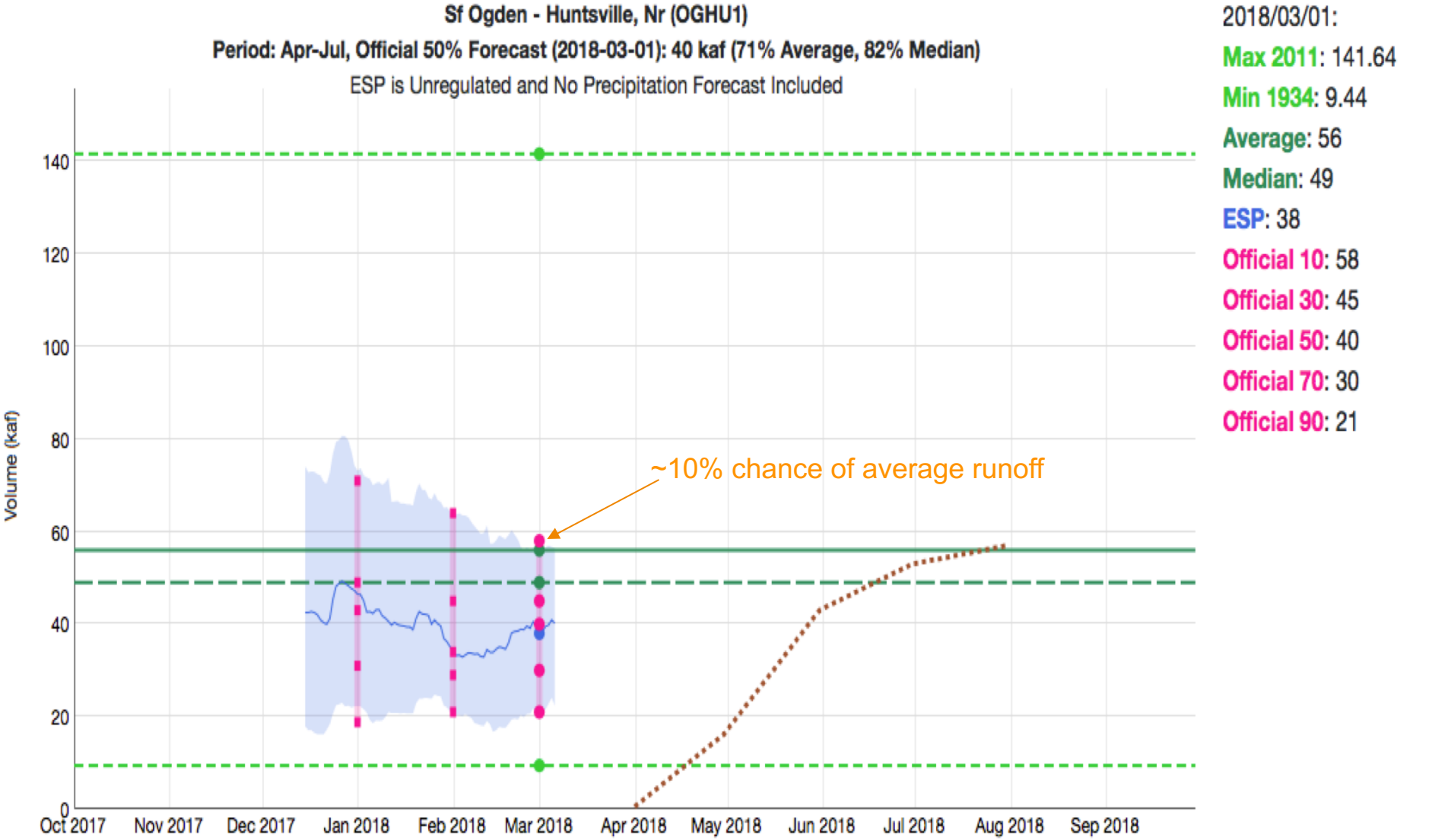
# Forecast Evolution Plot

## Weber – Oakley: 69 kaf / 58%

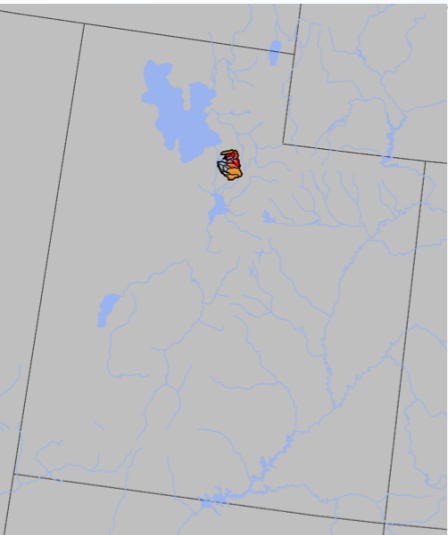


# Forecast Evolution Plot

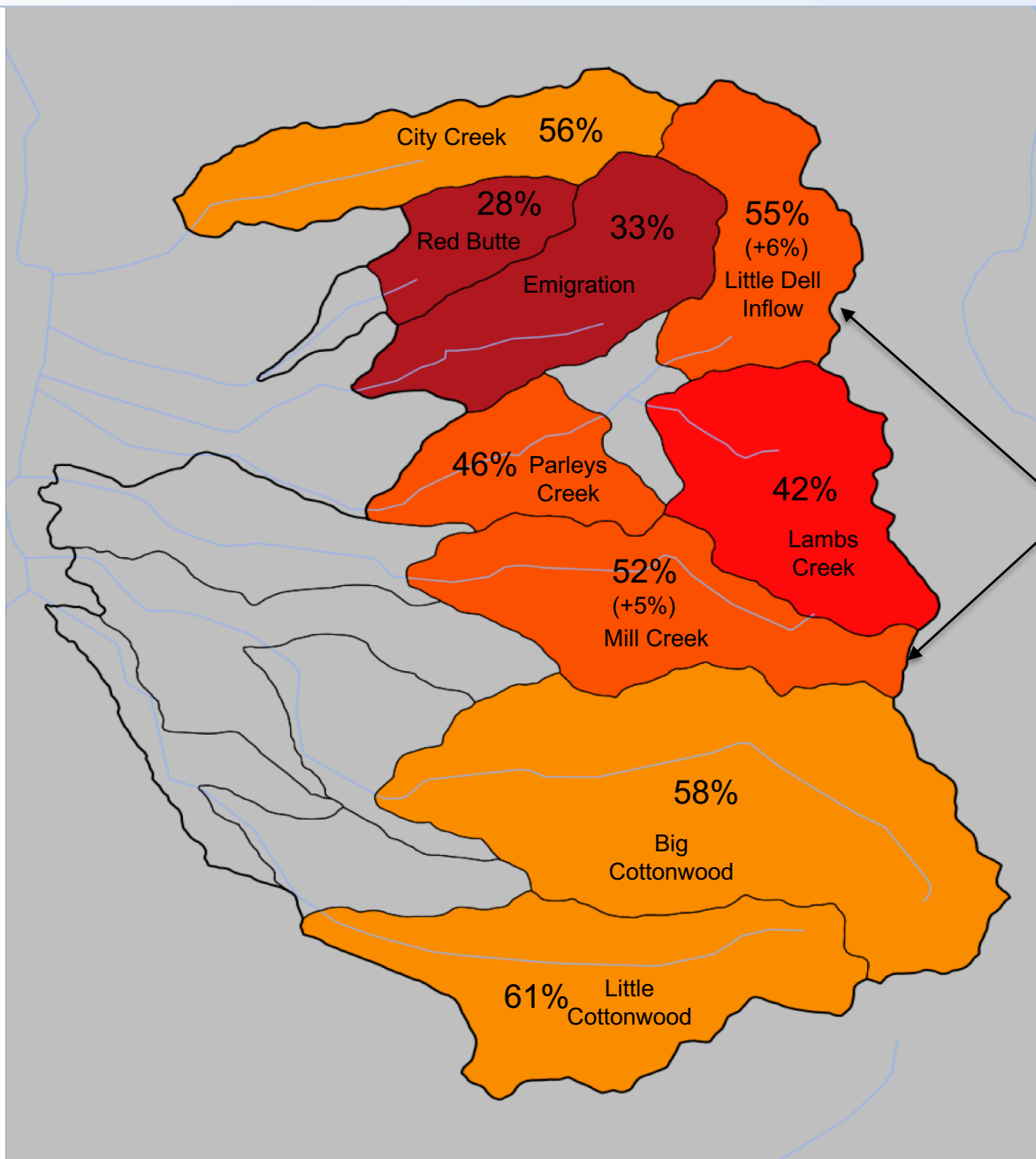
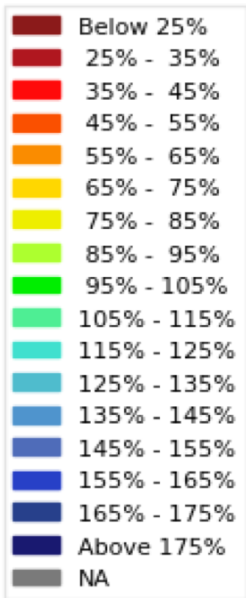
## SF Ogden – Huntsville – 40 kaf / 71%



# March 1<sup>st</sup> Water Supply Forecasts – Six Creeks



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



Median  
Basin  
Forecast:

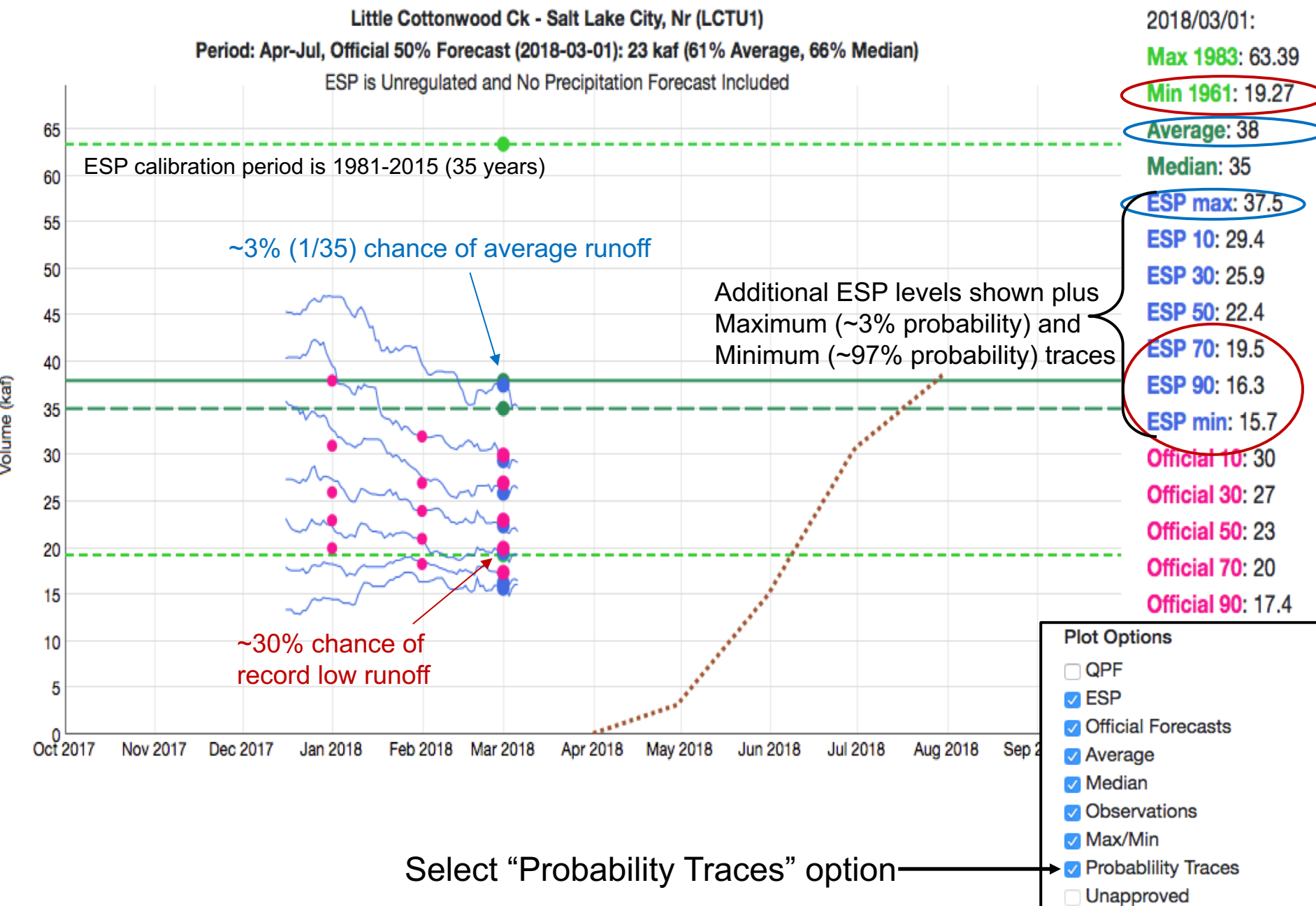
Jan – 55%  
Feb – 45%  
Mar – 50%

*Increased*

*Small +/-  
changes  
elsewhere*

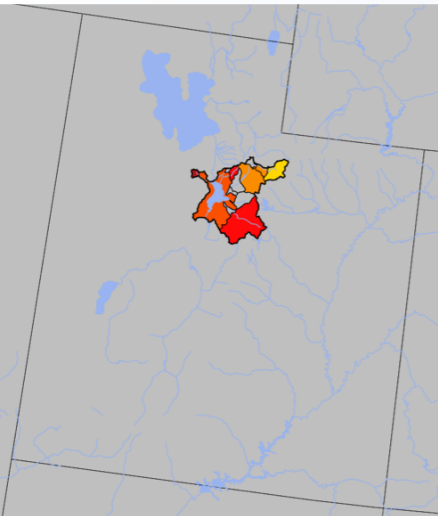
# Forecast Evolution Plot

## Little Cottonwood Creek: 23 kaf / 61%

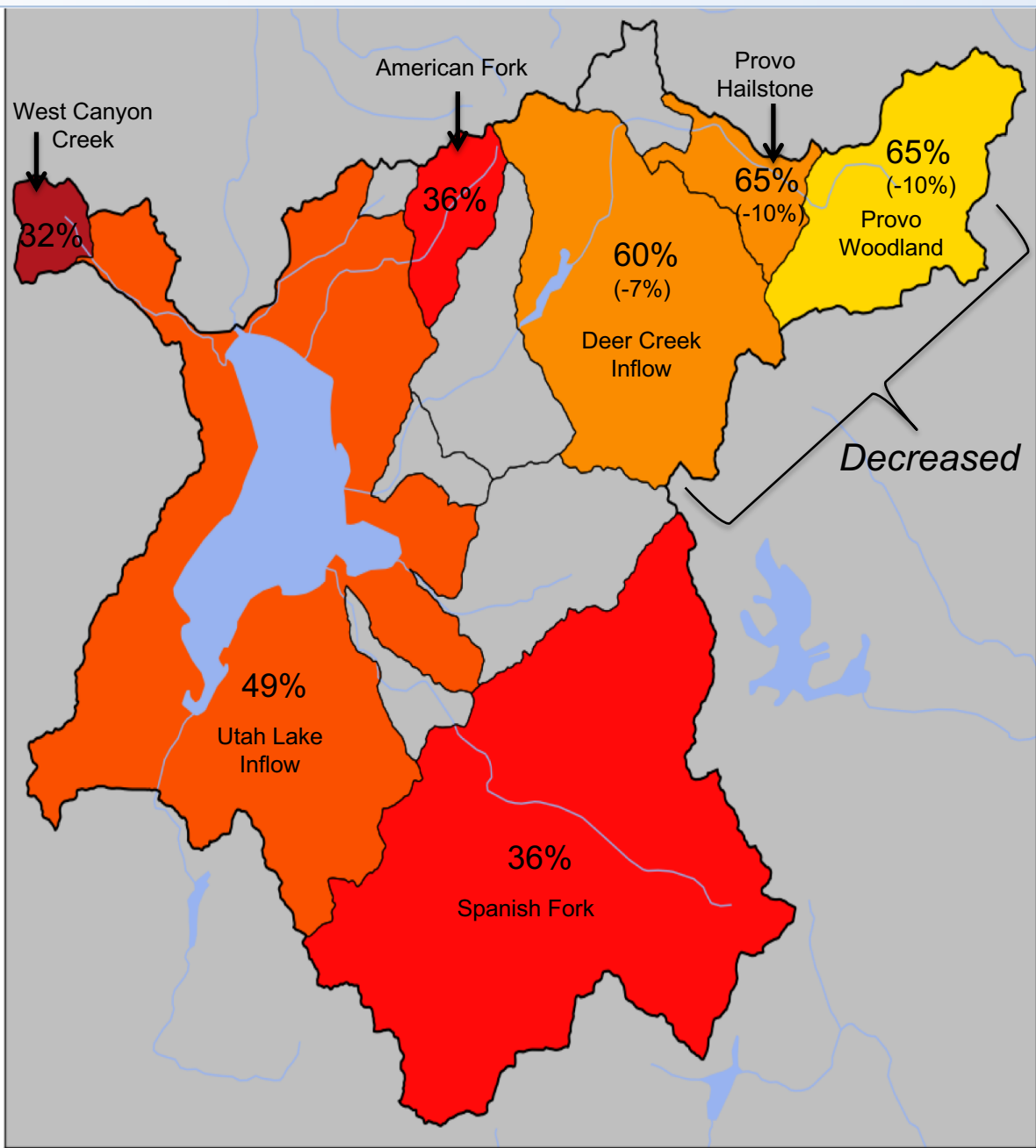
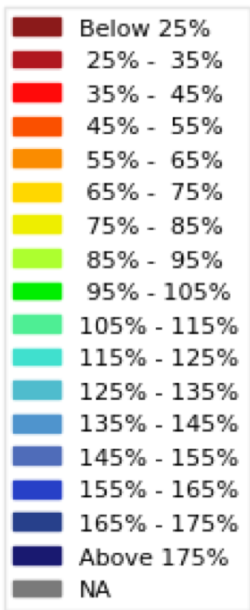




# March 1<sup>st</sup> Water Supply Forecasts – Provo River/Utah Lake



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



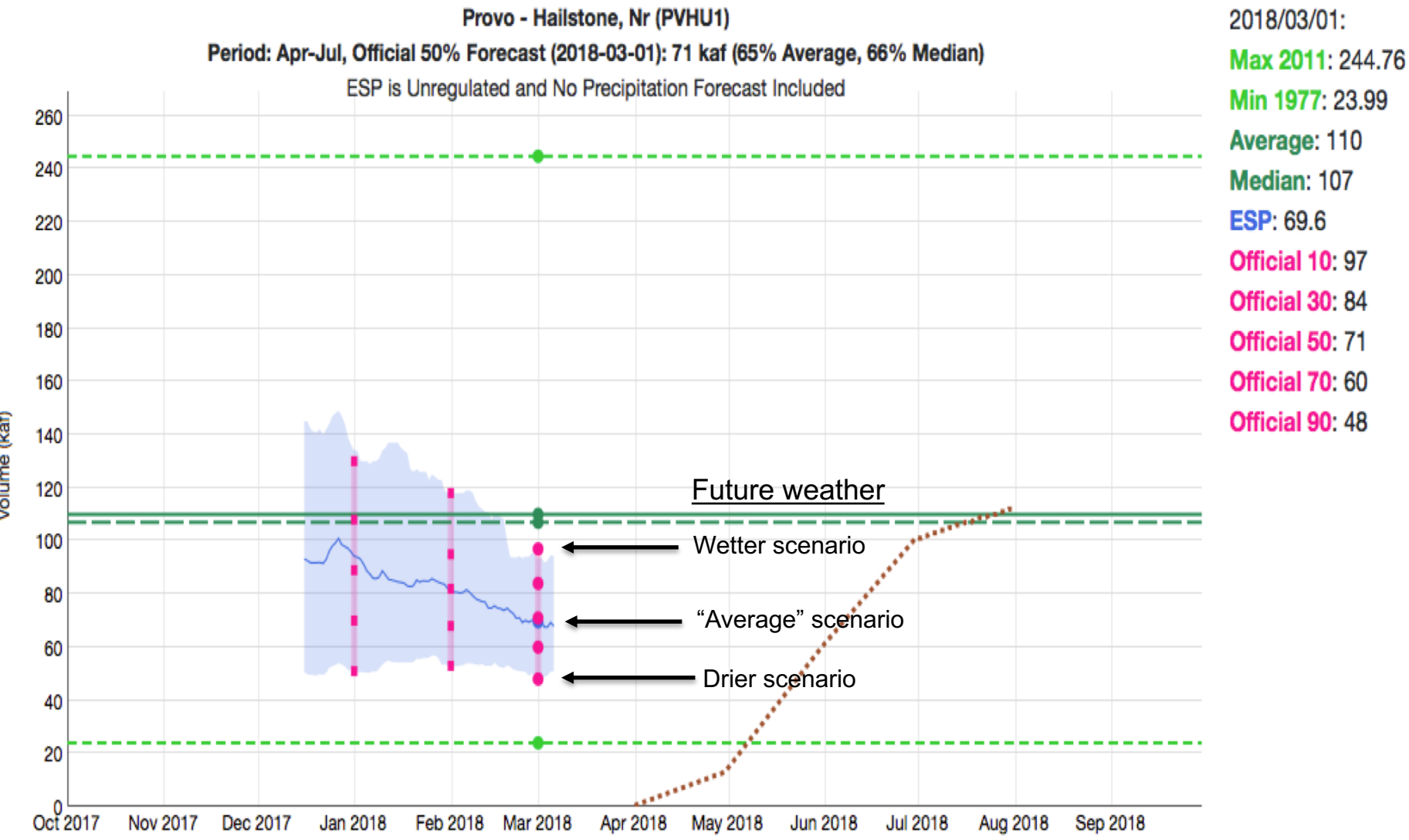
Median  
Basin  
Forecast:

Jan – 50%  
Feb – 45%  
Mar – 45%

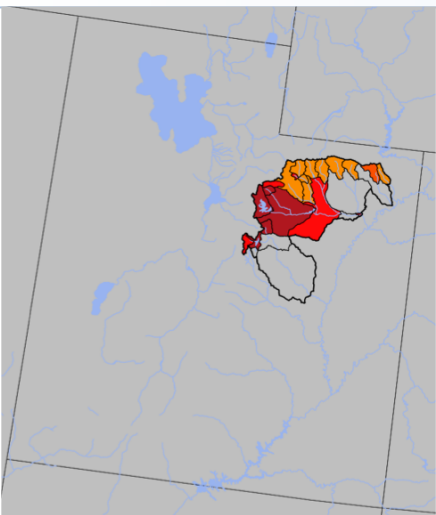
*Little  
change  
elsewhere*

# Forecast Evolution Plot

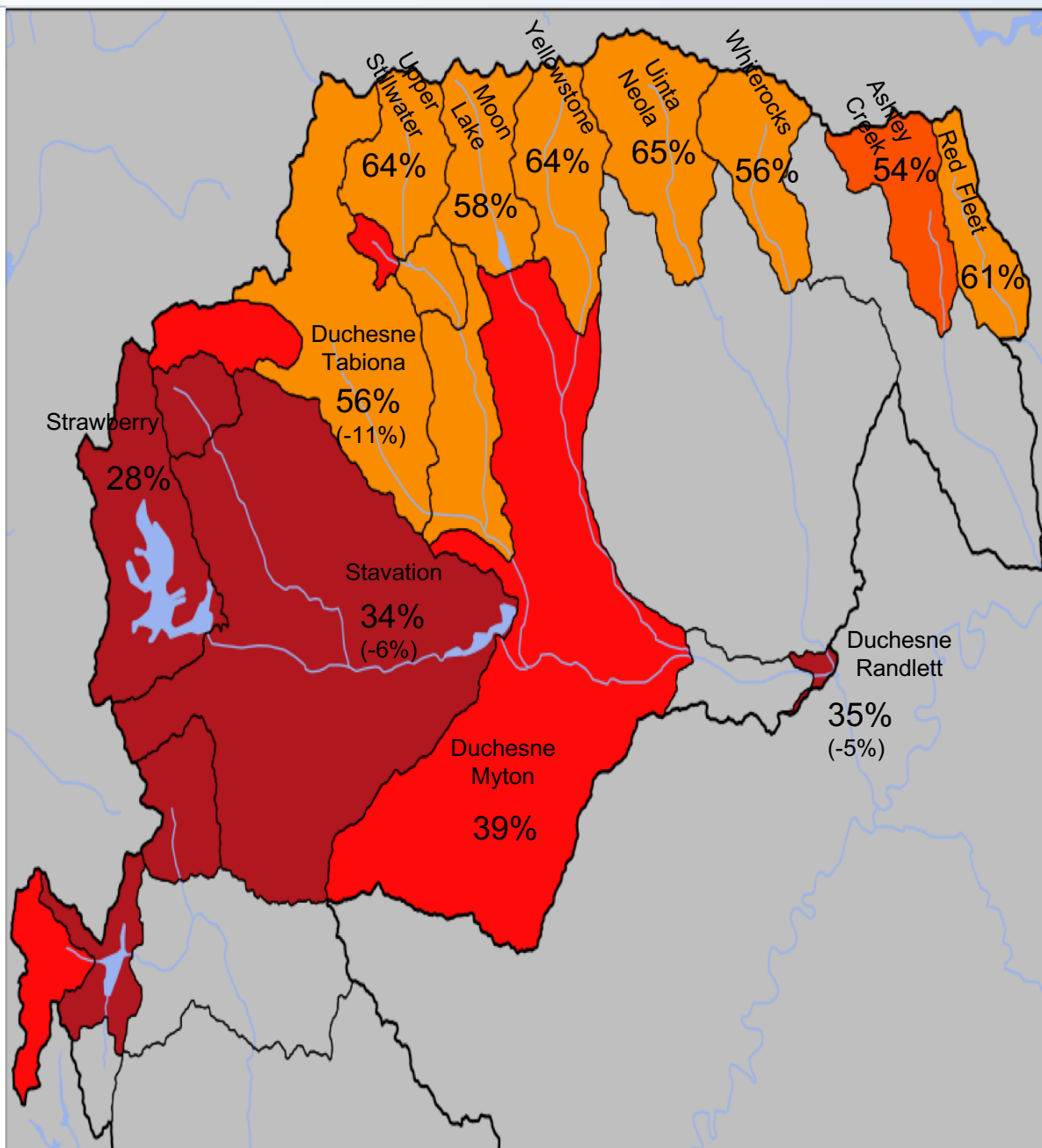
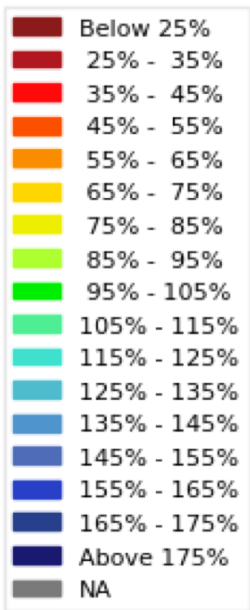
## Provo – Hailstone (Jordanelle Inflow) – 71 kaf / 65%



# March 1<sup>st</sup> Water Supply Forecasts – Duchesne



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



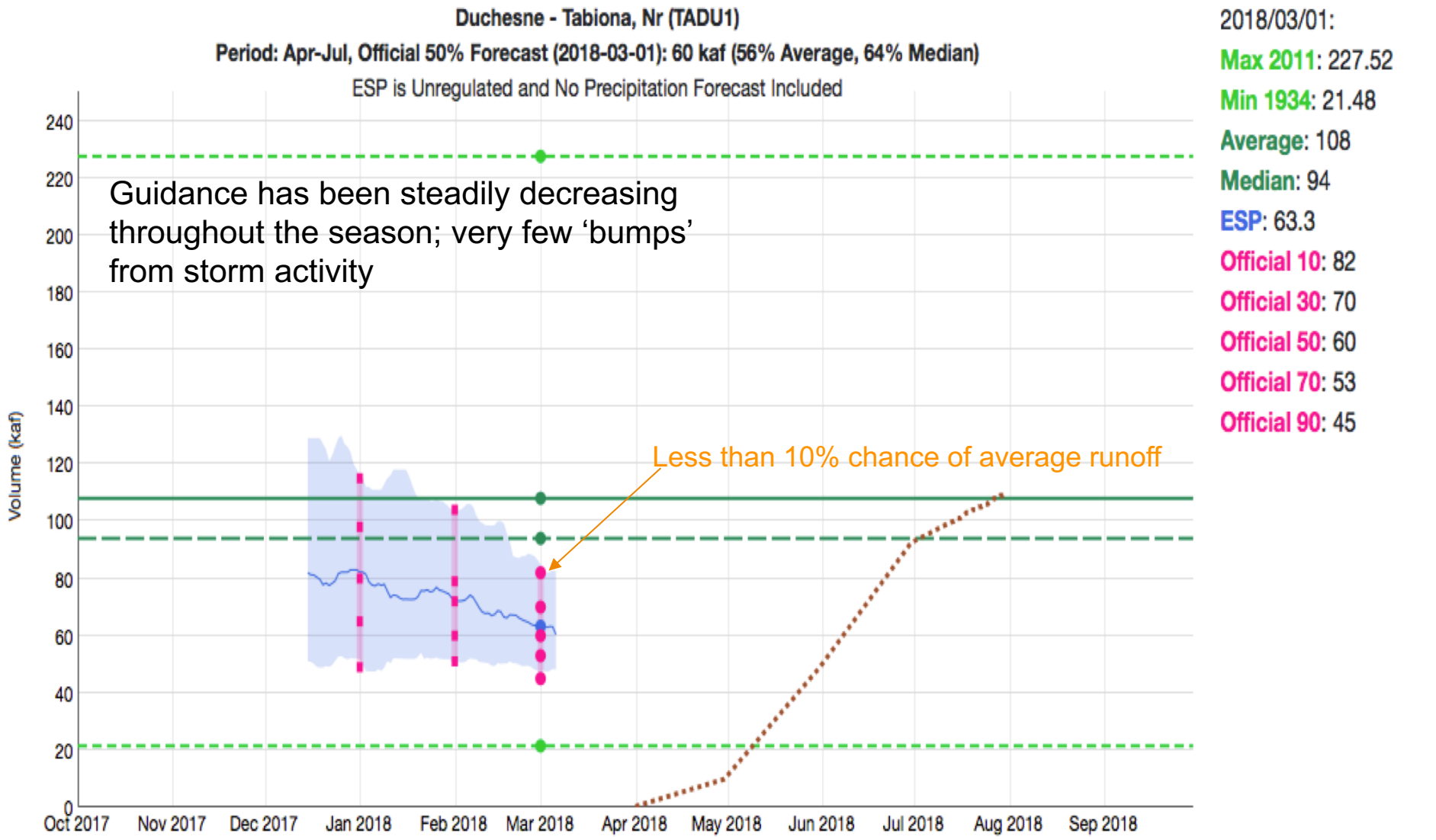
Median  
Basin  
Forecast:

Jan – 60%  
Feb – 60%  
Mar – 55%

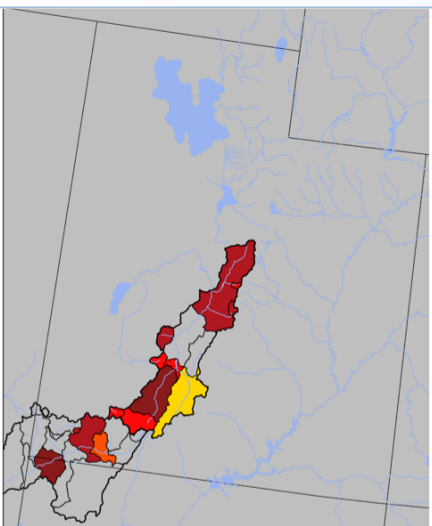
*Decreased  
everywhere*

# Forecast Evolution Plot

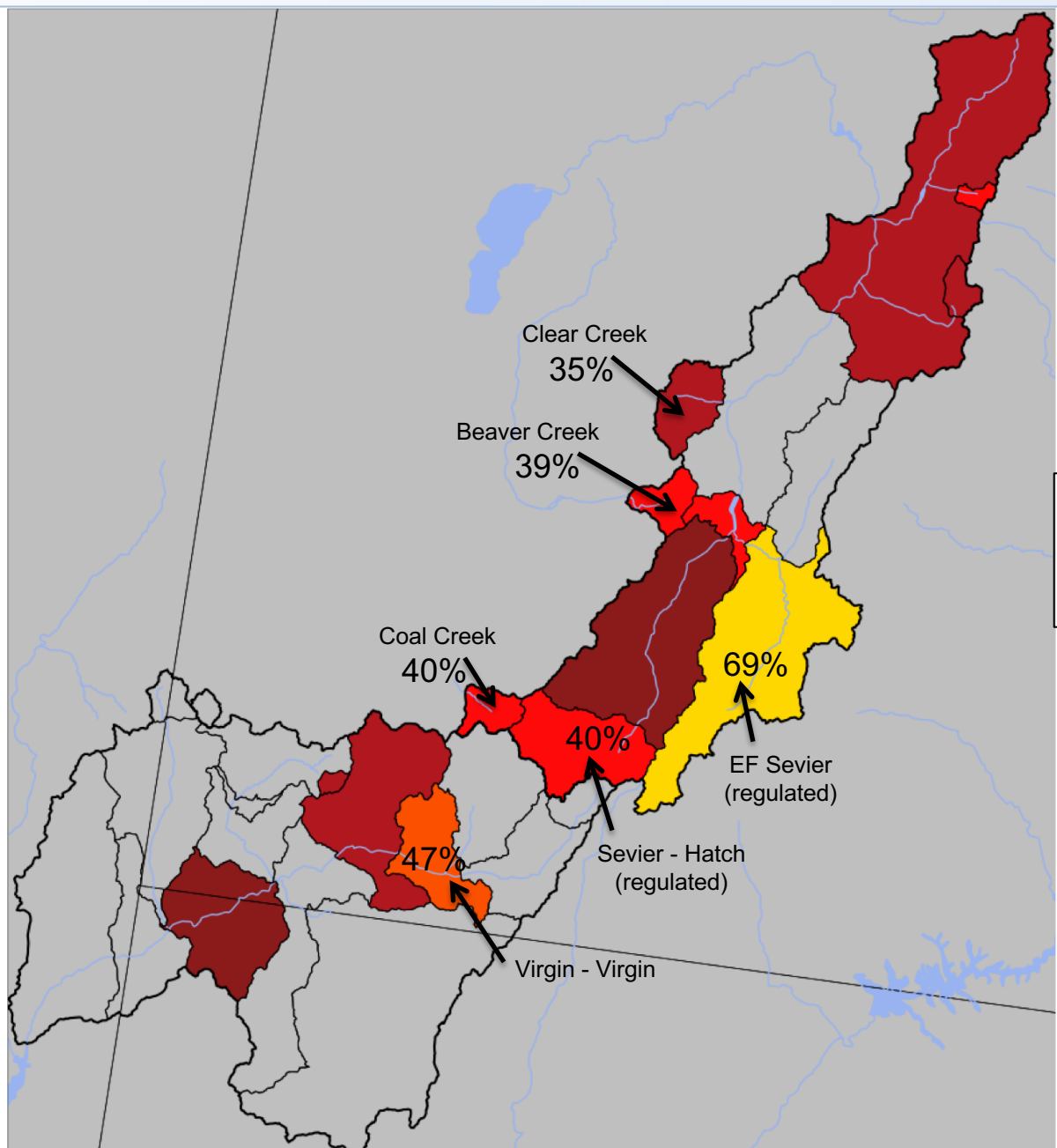
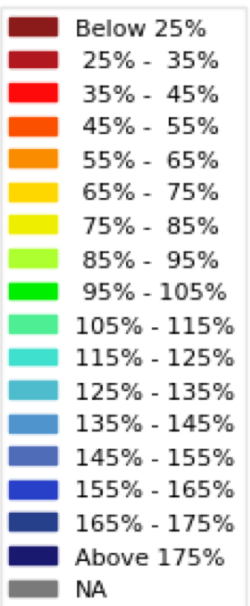
## Duchesne – Tabiona – 60 kaf / 56%



# March 1<sup>st</sup> Water Supply Forecasts – Sevier and Virgin



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



Sevier  
Median  
Basin  
Forecast:

Jan – 40%  
Feb – 40%  
Mar – 40%

*Little  
change  
everywhere*

Virgin  
Median  
Basin  
Forecast:

Jan – 35%  
Feb – 30%  
Mar – 30%



# 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:

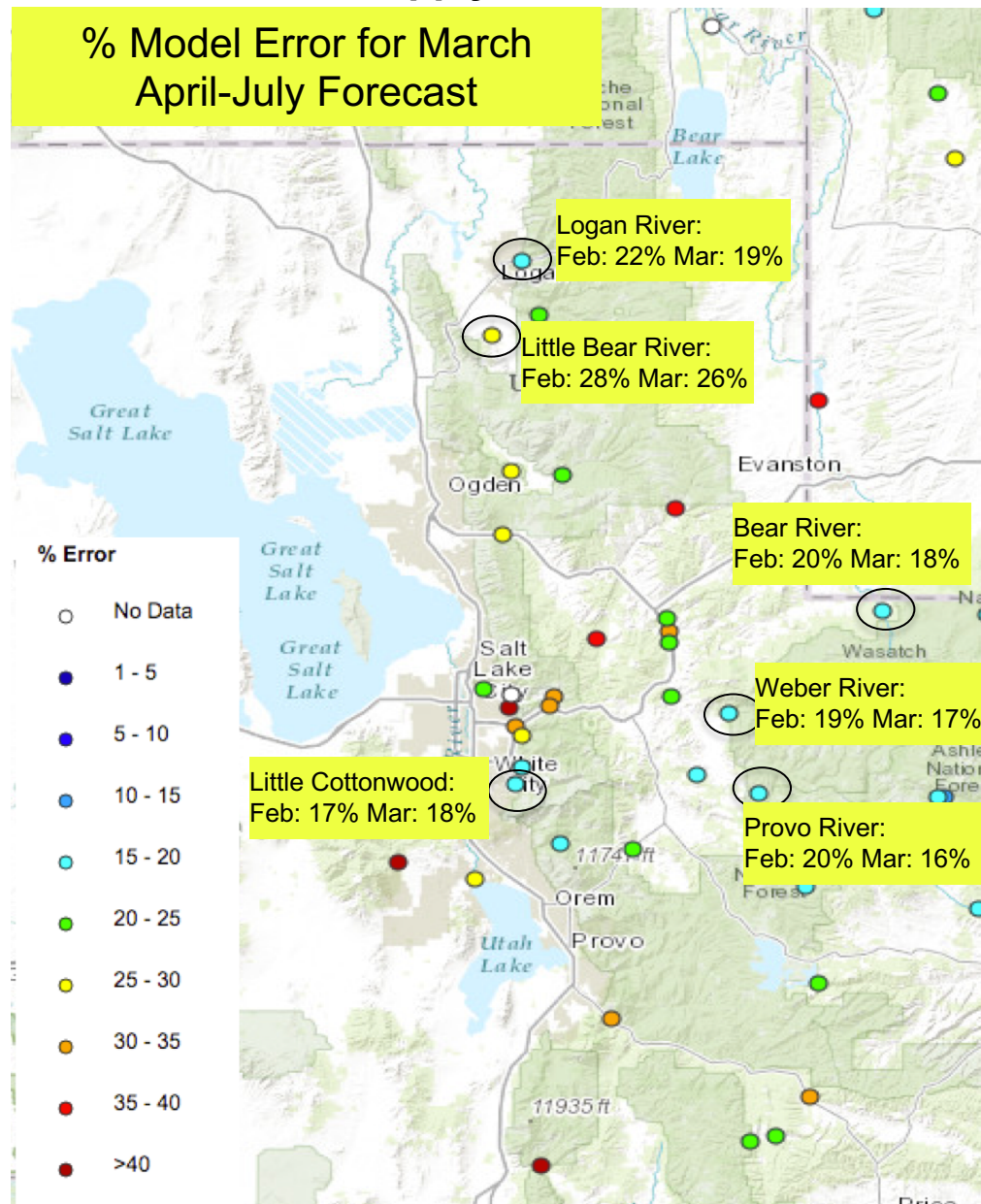
- Lower elevations (rain or early melt)
- Downstream of diversions / irrigation
- Little is known about diversions / demands

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



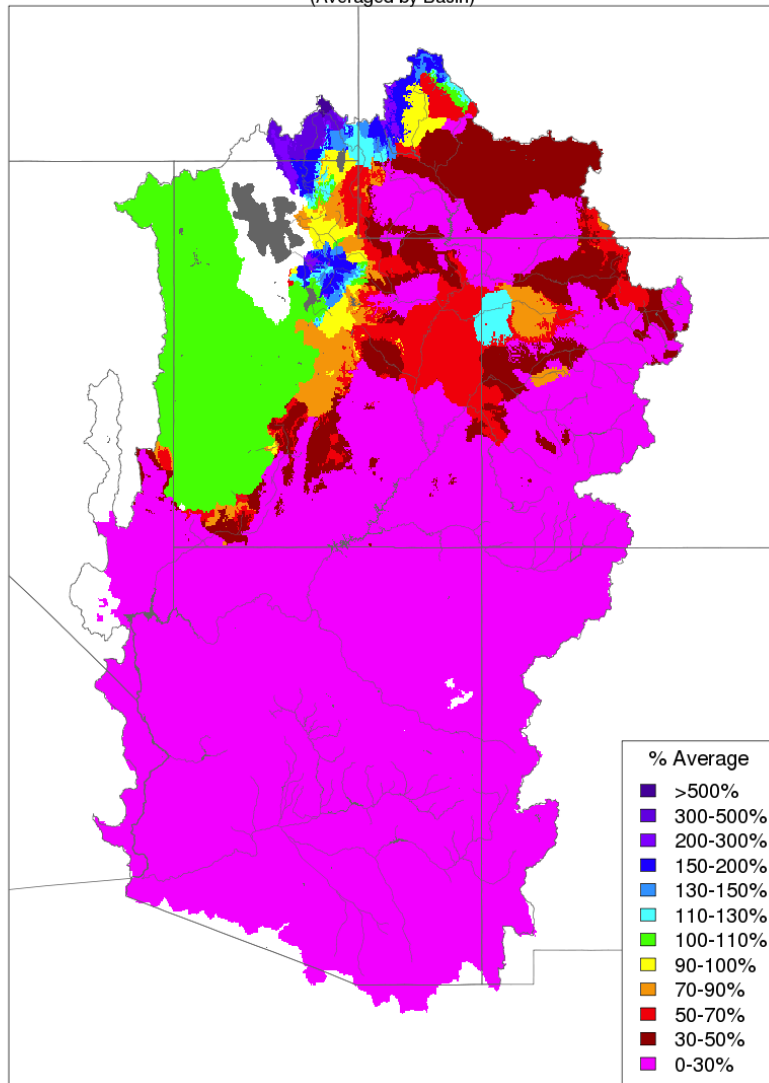
# How are forecasts trending?

## March Precipitation to Date

Early March storm benefitted the Great Basin... but Duchesne Basin missed out

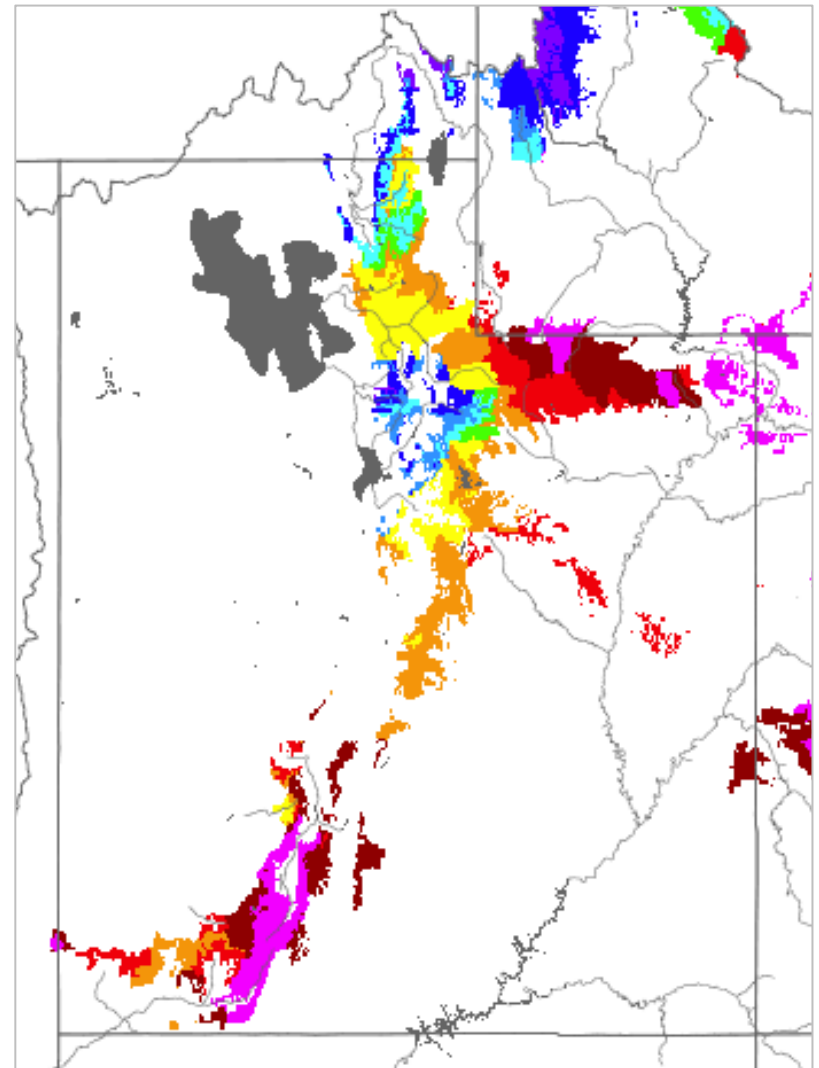
Month to Date Precipitation - March 06 2018

(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

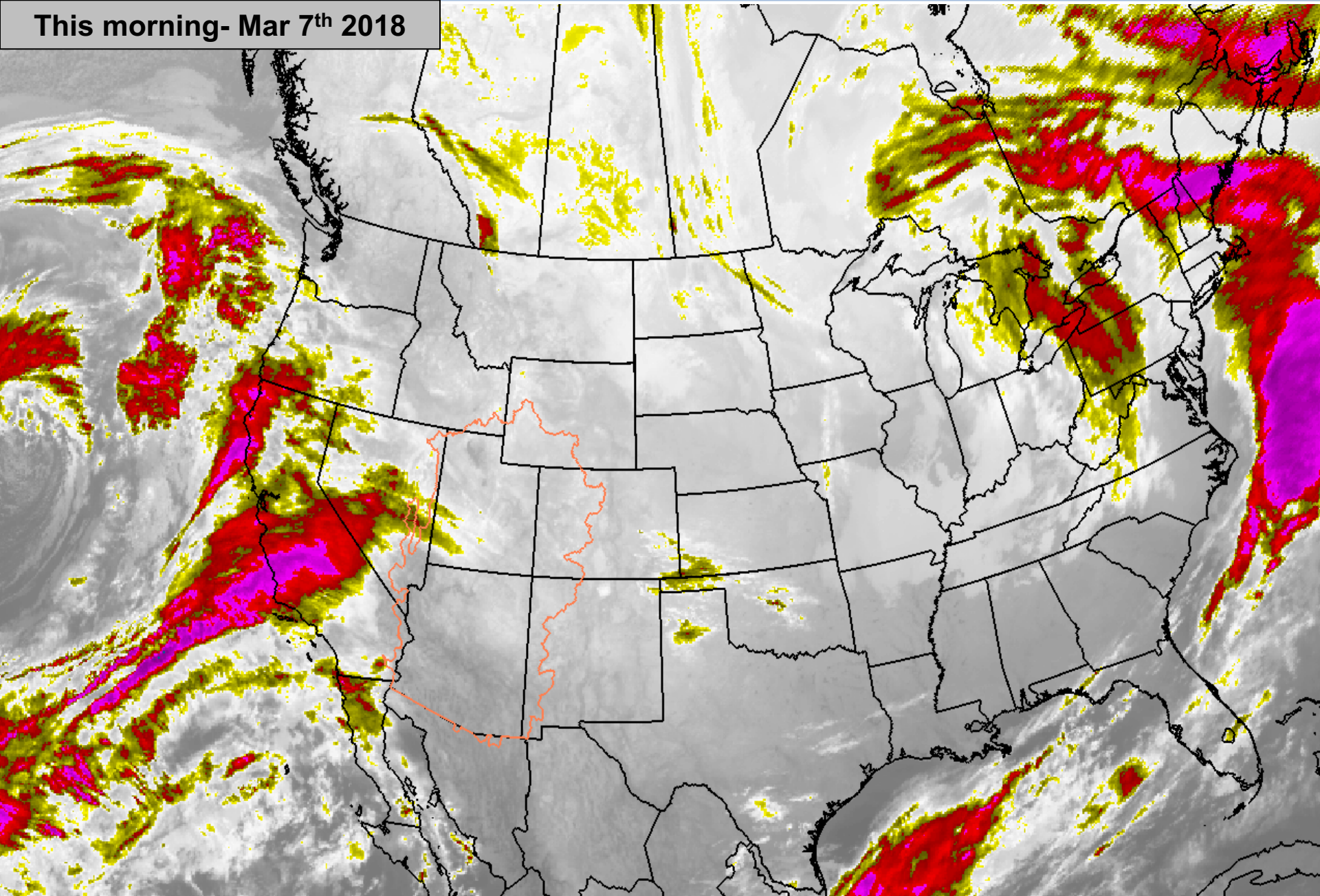
Utah (primary contributing areas)



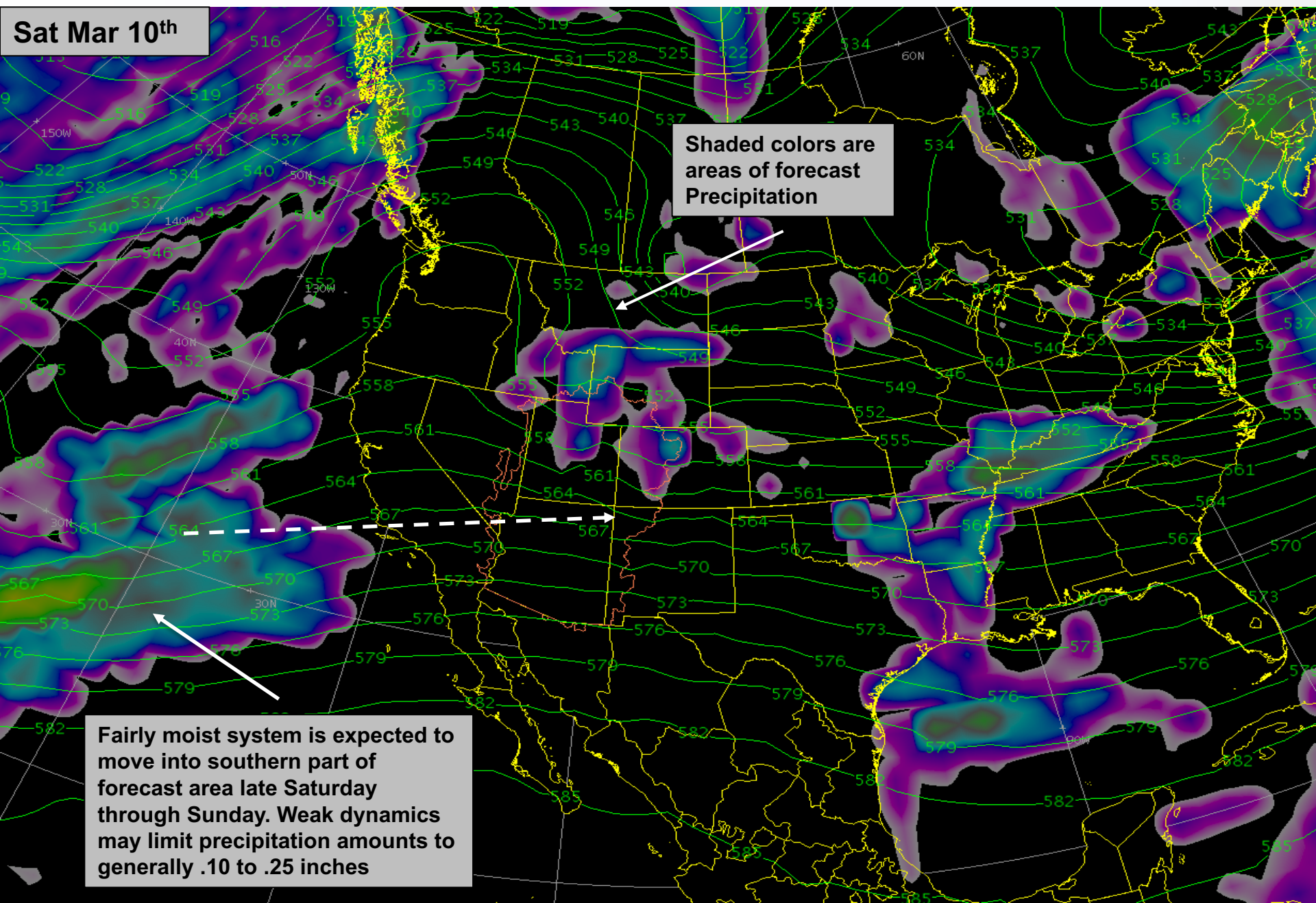


Current and Future weather – High pressure ridge currently over the area with dry conditions in the near term

This morning- Mar 7<sup>th</sup> 2018



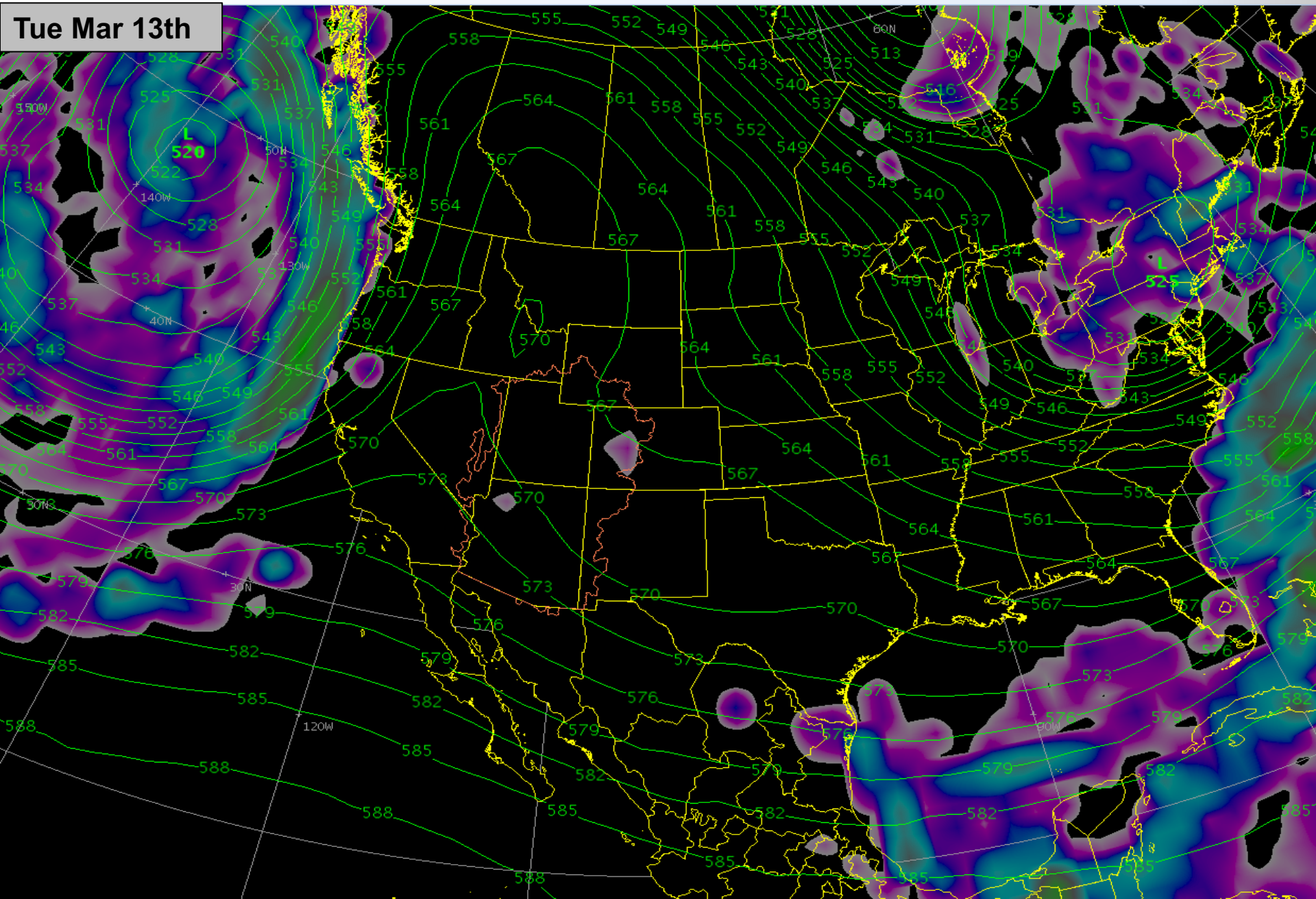
Upcoming Weather: Very weak system moving through the mean ridge may bring light precipitation to the Bear River Basin and far northern Utah. Insignificant amounts.





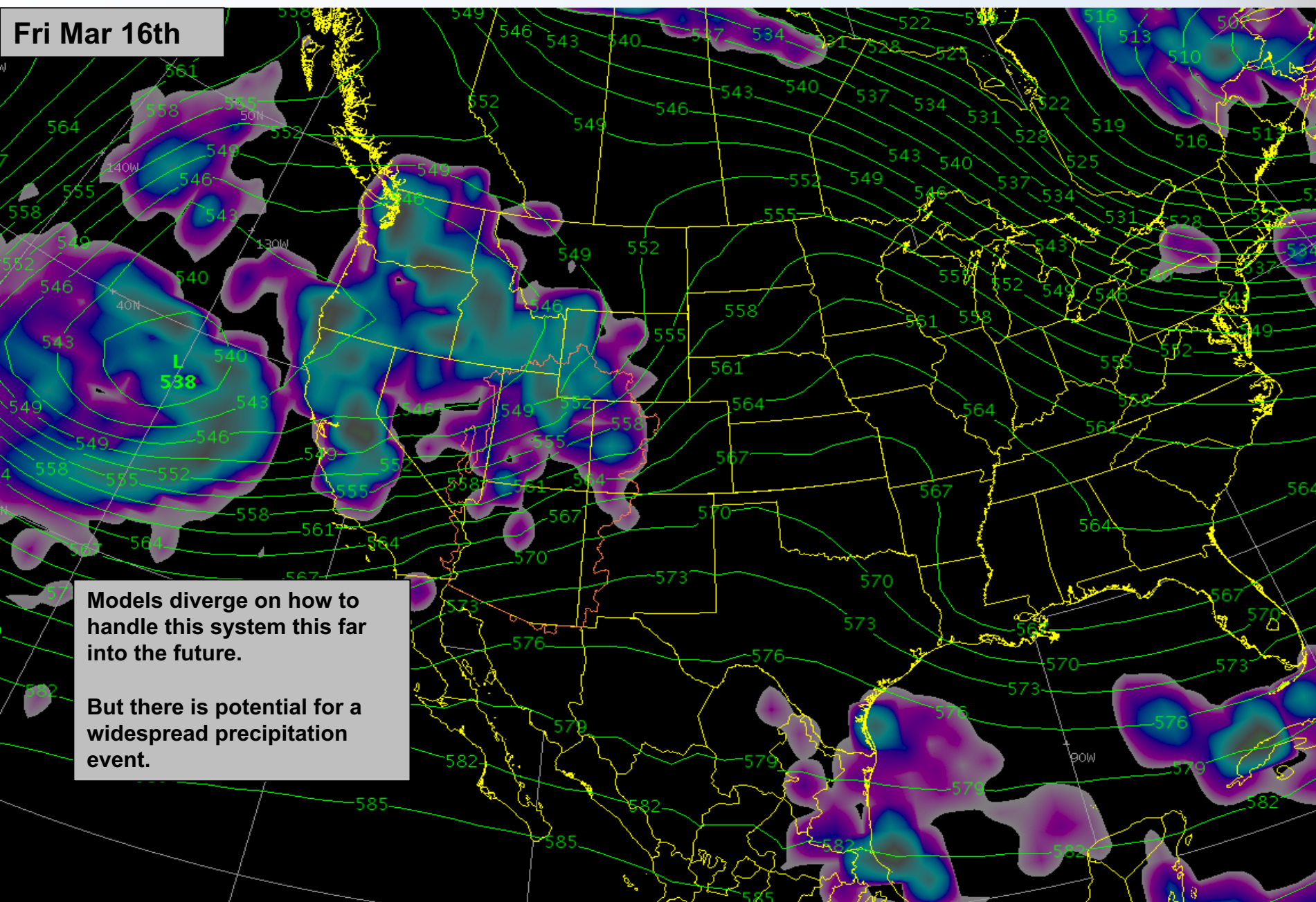
Upcoming Weather: High pressure ridge centered over the area resulting in dry conditions and above normal temperatures.

Tue Mar 13th

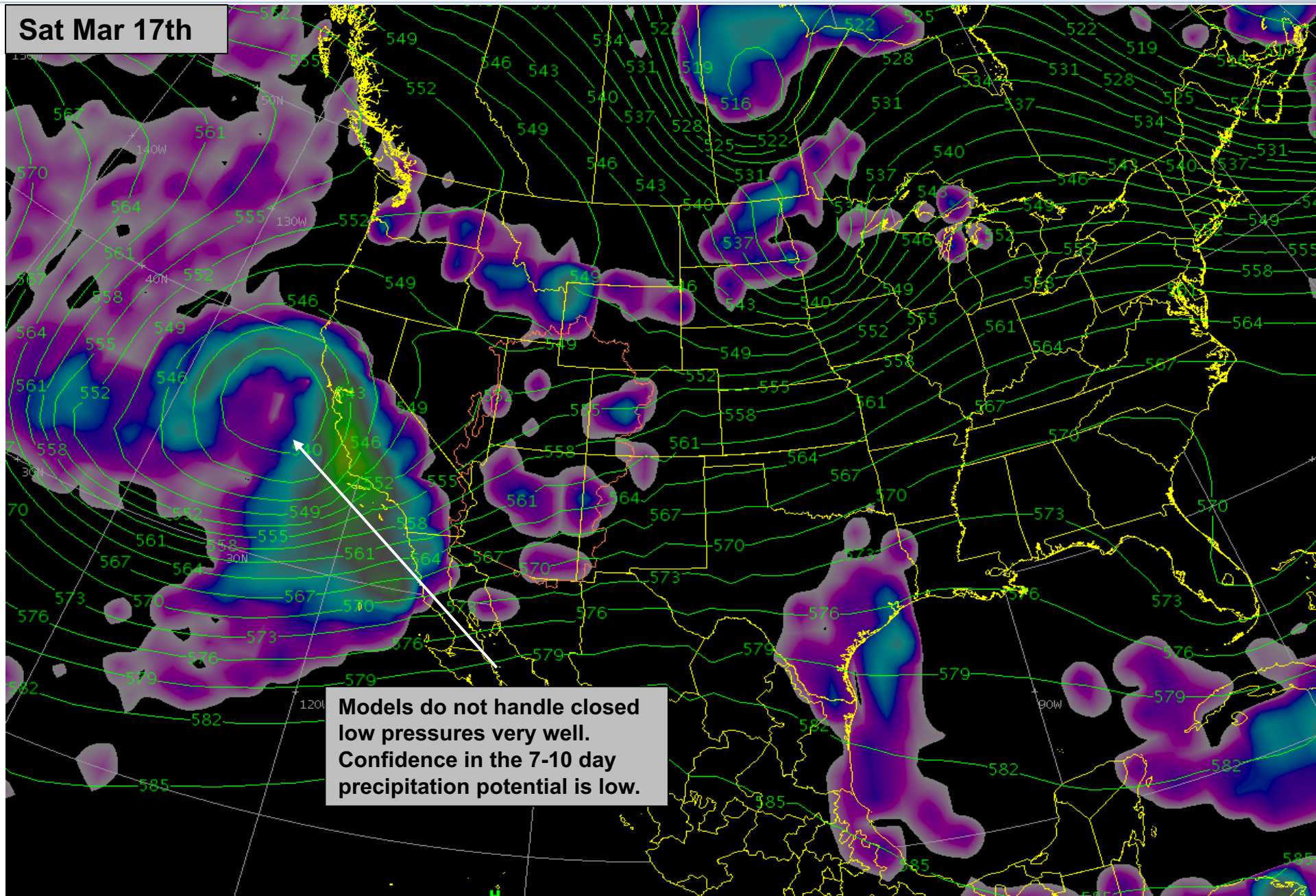




Upcoming Weather: The next best chance for precipitation as moisture kicks inland from the Low pressure system off the west coast. Confidence is low.



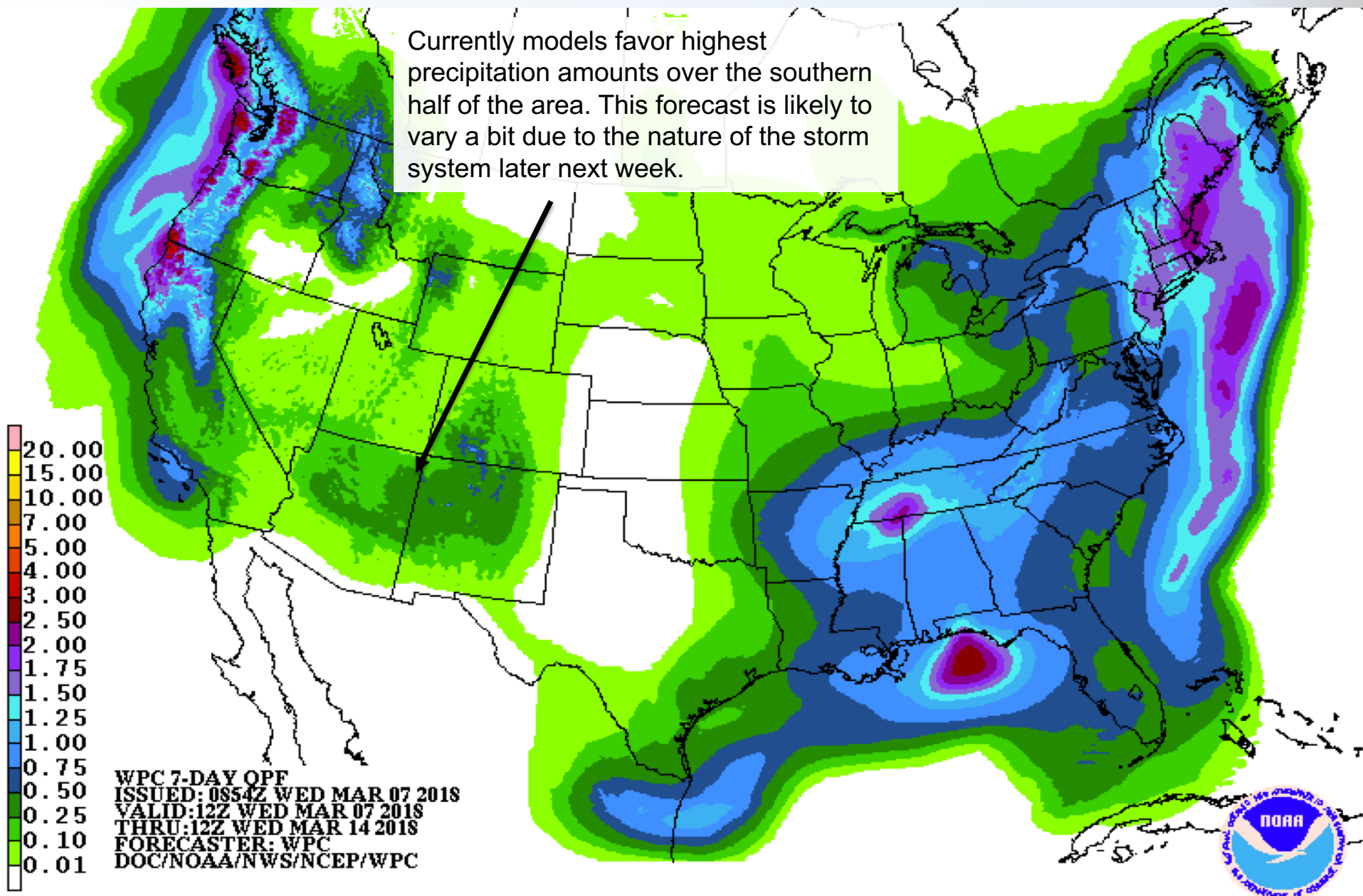
Upcoming Weather: Does the closed low linger off the coast? Move inland? Tap subtropical moisture? Weaken and move through as an open wave? Many implications.



# Upcoming Weather

## NWS Weather Prediction Center: Precipitation Forecast Mar 7 – Mar 14

Currently models favor highest precipitation amounts over the southern half of the area. This forecast is likely to vary a bit due to the nature of the storm system later next week.

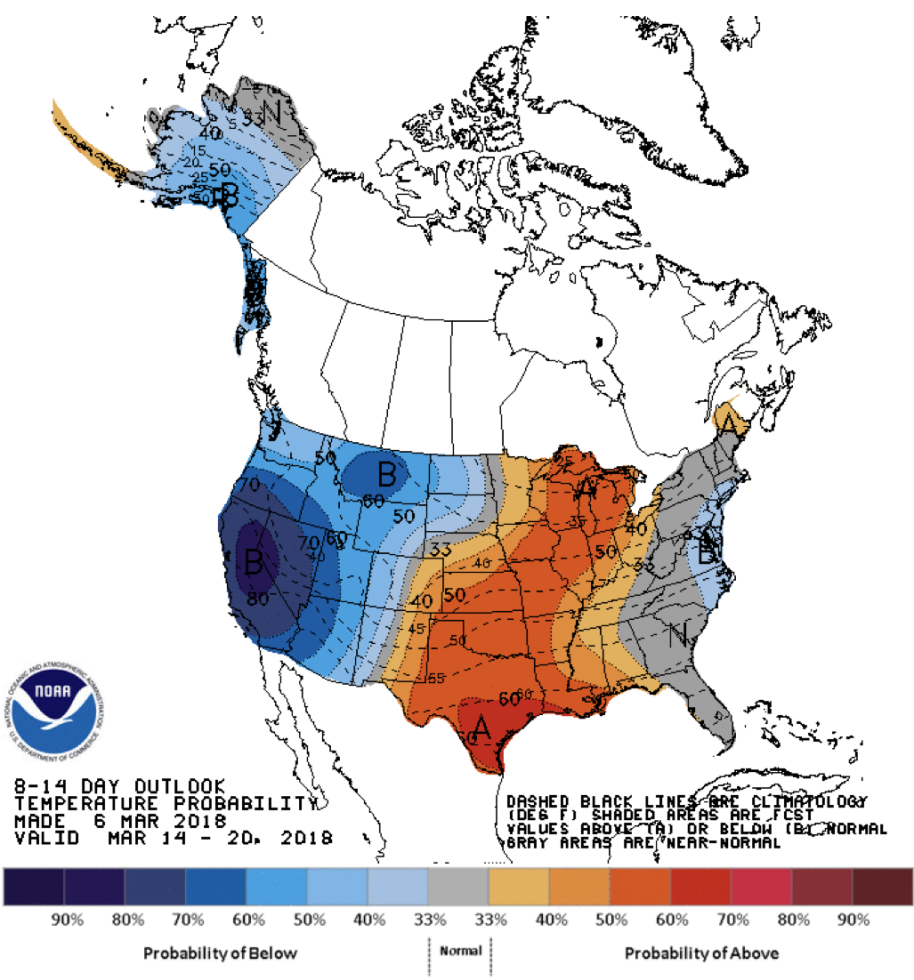




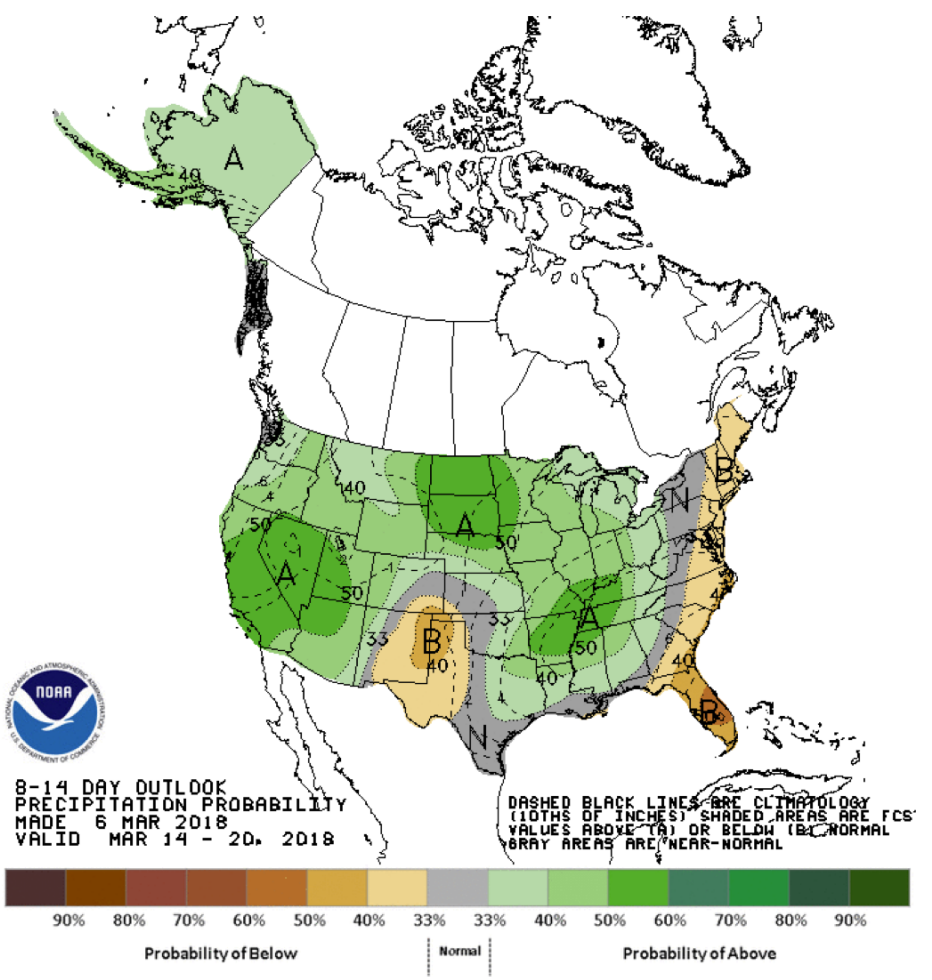
# Upcoming Weather and Impacts to Water Supply Forecasts

NWS Climate Prediction Center: Temperatures & Precipitation probability Mar 14 - Mar 20

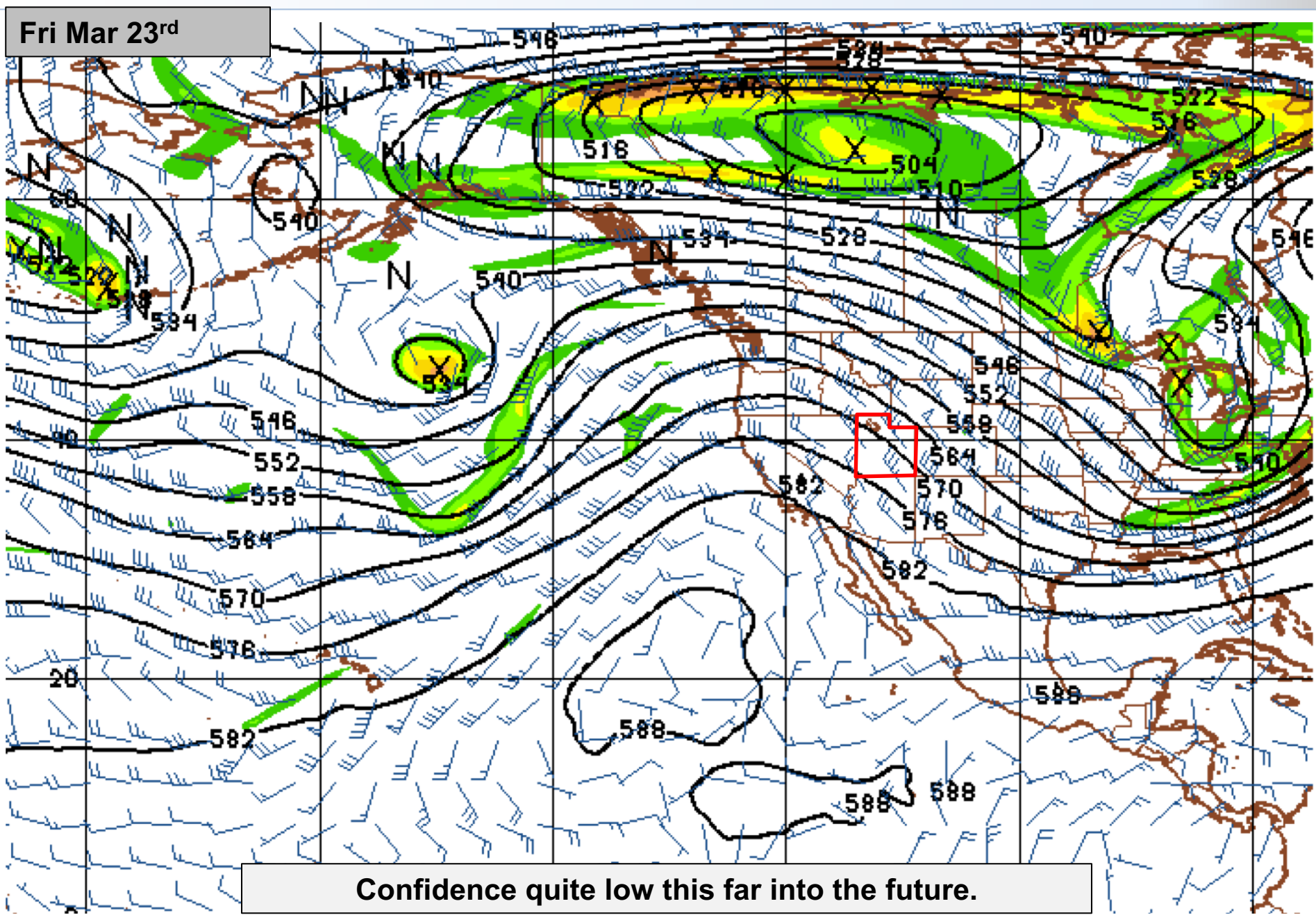
## Temperature Probabilities



## Precipitation Probabilities



Long Range Weather Outlook: This model suggests warmer/drier last week of March. Zonal flow component across the Pacific Ocean so pattern may remain progressive.





# Key Points

The dry fall and early winter continued through most of February with much below average precipitation across most of Utah.

Snowpack in the Great Basin, outside of the Bear River Basin, and in the Duchesne River Basin is near record low for this time of year.

There was a mix of increases and decreases to runoff forecasts from those issued in February. Most changes were less than 5% of average.

On average the snow accumulation season runs into early April in the runoff producing areas. As we get further into spring significant snow accumulation, while possible, becomes much less likely. Reaching near average runoff would take abnormally wet spring conditions in many areas.

The first half of March will likely end up with below average precipitation in basins throughout Utah. There is at least some potential for additional precipitation beyond mid March.

# 2018 water supply briefing schedule

2018 monthly water supply briefings for the Great Basin:

Thursday Apr 5<sup>th</sup> @ 1:30 pm MT

Monday May 7<sup>th</sup> @ 1:30 pm MT

Colorado River Basin webinars are same dates at 11 am MT

Peak flow briefing (additional briefings scheduled as needed):

Tuesday Mar 13<sup>th</sup> @ 11:00 am MT

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

Michelle Stokes – Hydrologist In Charge

[michelle.stokes@noaa.gov](mailto:michelle.stokes@noaa.gov)

Paul Miller– Service Coordination Hydrologist

[paul.miller@noaa.gov](mailto:paul.miller@noaa.gov)

Basin Focal Points (Forecasters)

Greg Smith – San Juan, Gunnison, Dolores Focal Point

[greg.smith@noaa.gov](mailto:greg.smith@noaa.gov)

Ashley Nielson – Green River Basin, Lake Powell Focal Point

[ashley.nielson@noaa.gov](mailto:ashley.nielson@noaa.gov)

Cody Moser – Upper Colorado Mainstem Focal Point

[cody.moser@noaa.gov](mailto:cody.moser@noaa.gov)

Tracy Cox and Zach Finch – Lower Colorado Basin, Virgin Focal Point

[tracy.cox@noaa.gov](mailto:tracy.cox@noaa.gov)

[zach.finch@noaa.gov](mailto:zach.finch@noaa.gov)

Brent Bernard – Six Creeks, Provo , Sevier Focal Point

[brent.bernard@noaa.gov](mailto:brent.bernard@noaa.gov)

Patrick Kormos – Bear, Weber Focal Point

[patrick.kormos@noaa.gov](mailto:patrick.kormos@noaa.gov)