

# CBRFC February 2016 CUWCD Briefing

9 am February 18, 2016

Ashley Nielson

# Today's Presentation

- Review of Fall/Early Winter
  - Weather
  - Precipitation
- Current Conditions Impacting Forecasts
  - Soil Moisture (modeled)
  - Snow
  - El Niño event
- 2016 Water Supply Forecasts
- Weather Outlooks
- Website Demo

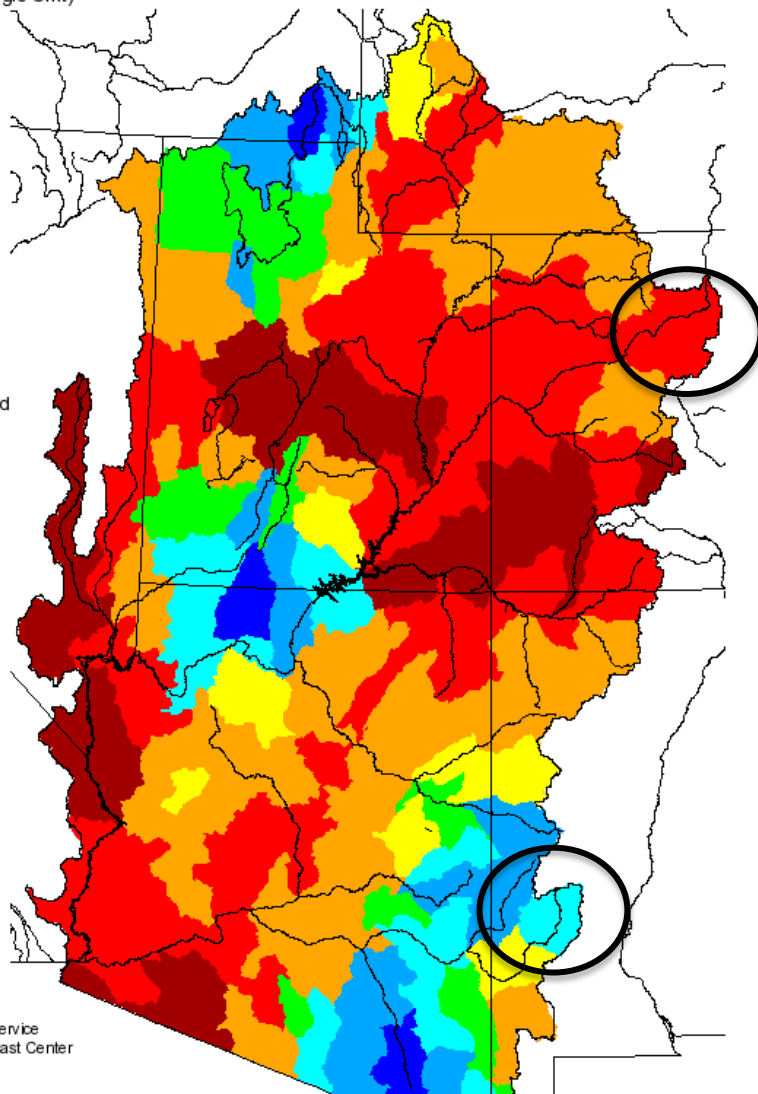
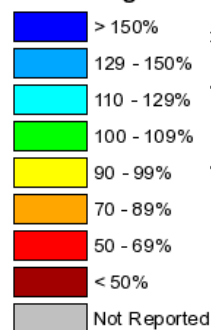
# New Precipitation Display

LEGACY  
(averaged by USGS HUC)

Monthly Precipitation for September 2015

(Averaged by Hydrologic Unit)

% Average

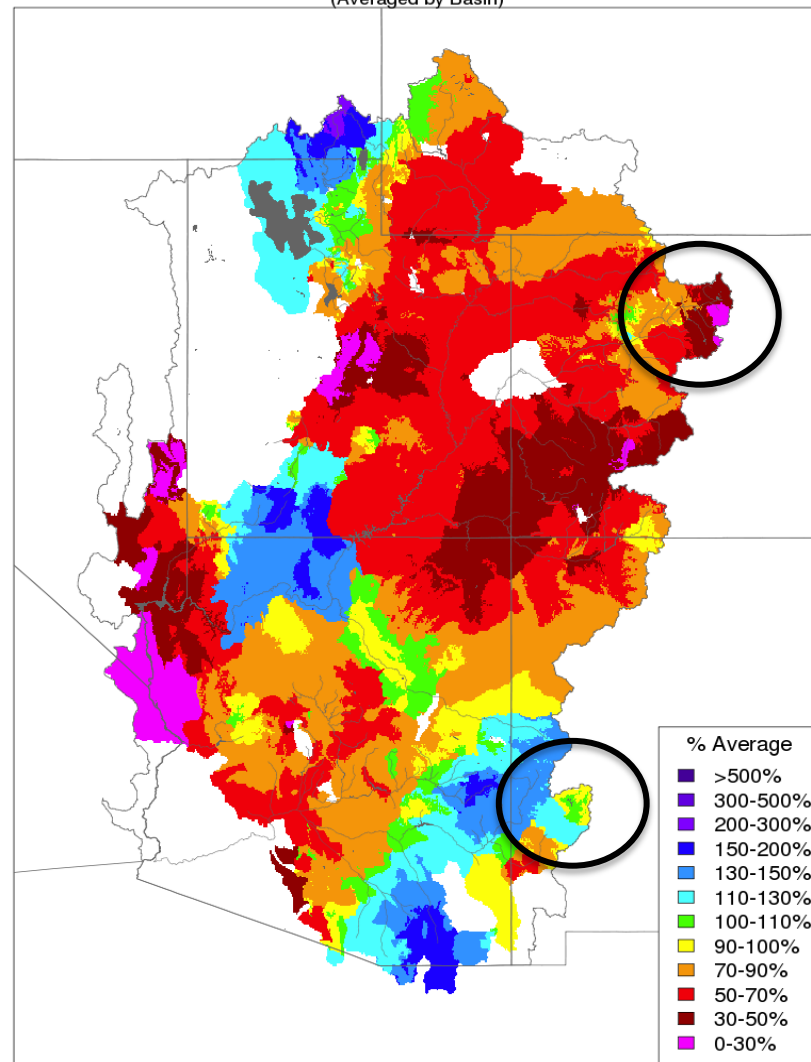


Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

NEW  
(averaged by CBRFC model basin)

Monthly Precipitation - September 2015

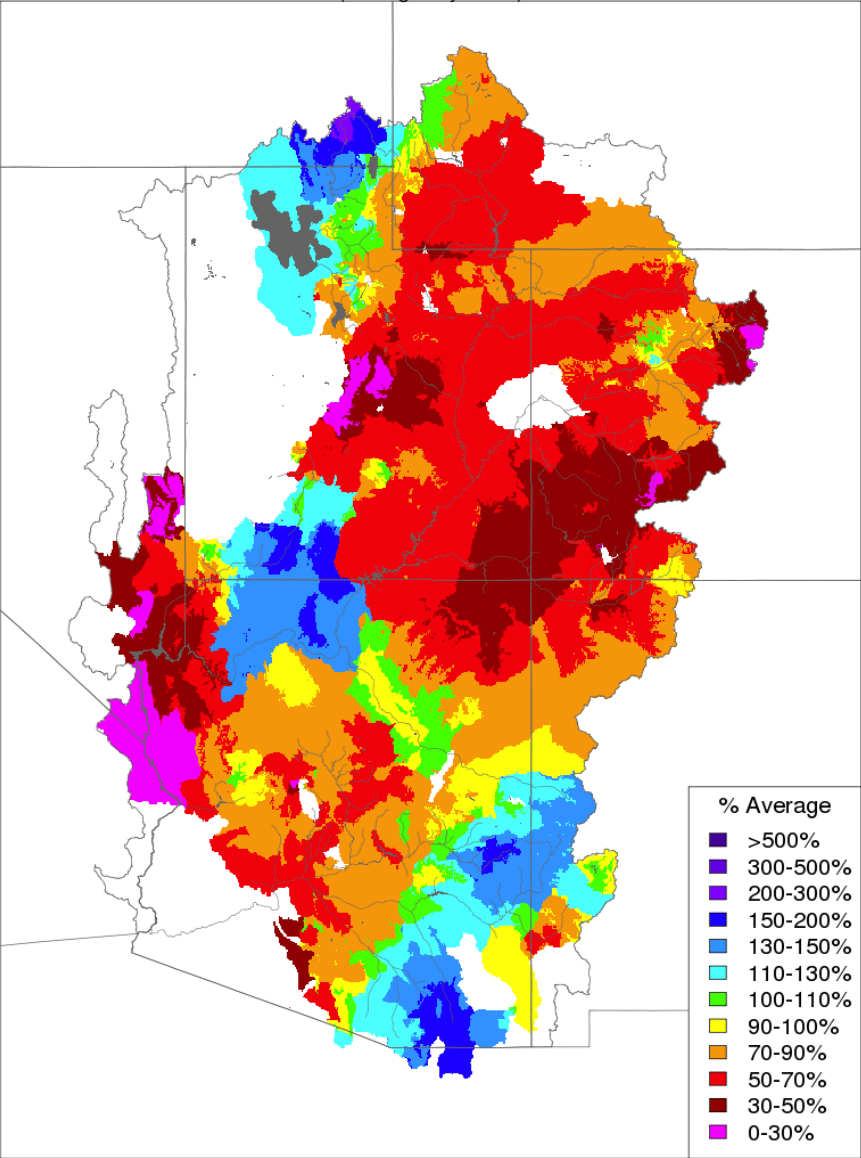
(Averaged by Basin)



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

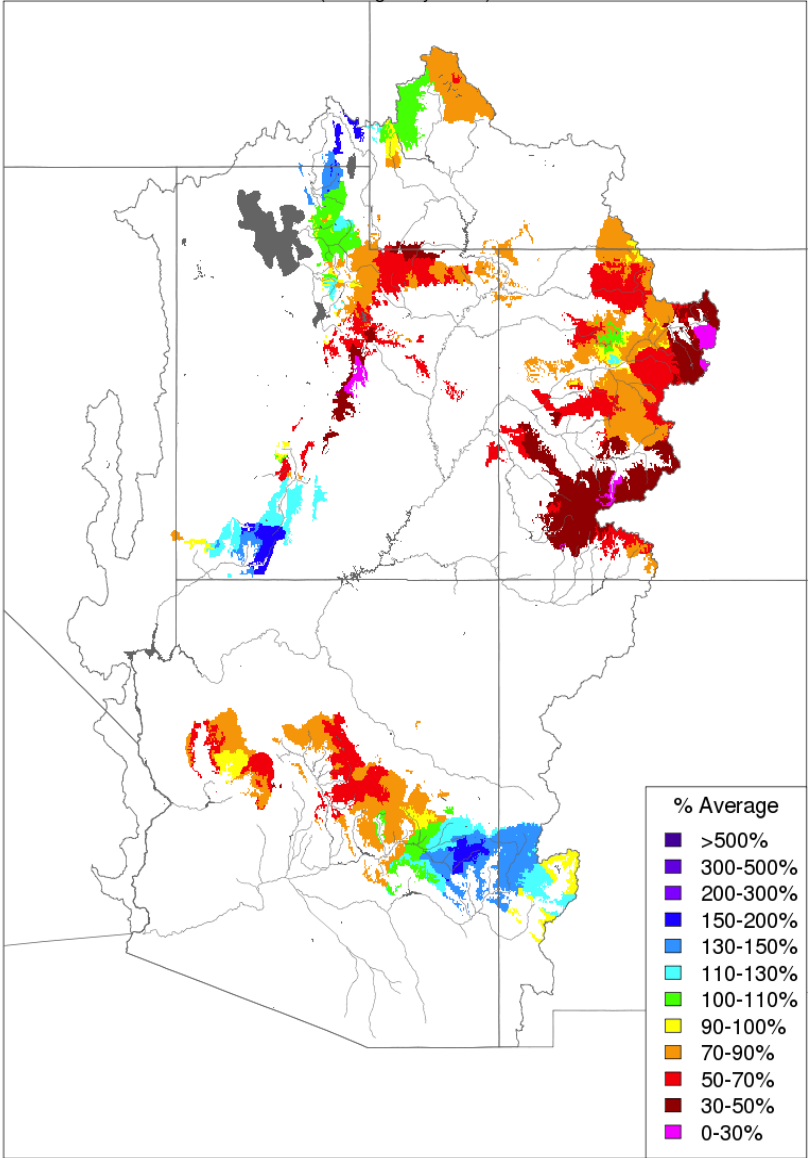
# New Precipitation Display-Trimmed to Runoff Producing Areas

Monthly Precipitation - September 2015  
(Averaged by Basin)



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

Monthly Precipitation - September 2015  
(Averaged by Basin)

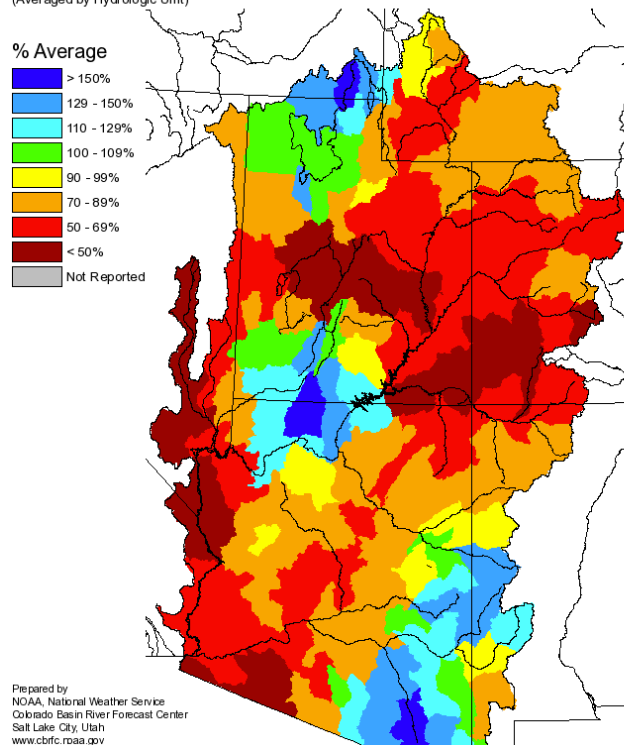


Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)



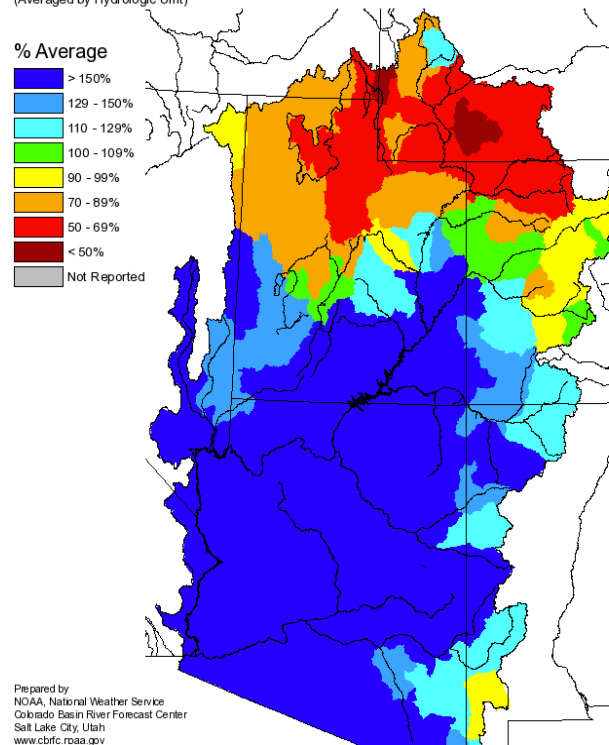
# Fall 2015 Precipitation

Monthly Precipitation for September 2015  
(Averaged by Hydrologic Unit)



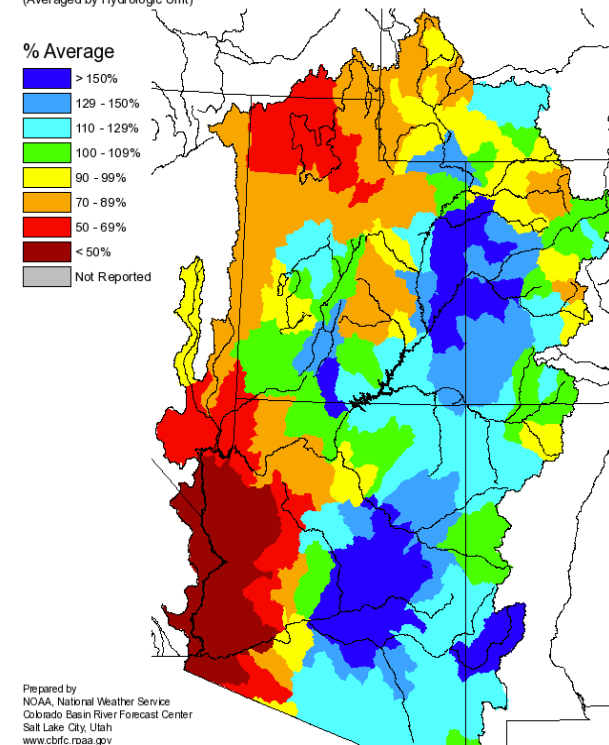
Duchesne: 68%  
Provo: 92%

Monthly Precipitation for October 2015  
(Averaged by Hydrologic Unit)



Duchesne: 82%  
Provo: 62%

Monthly Precipitation for November 2015  
(Averaged by Hydrologic Unit)

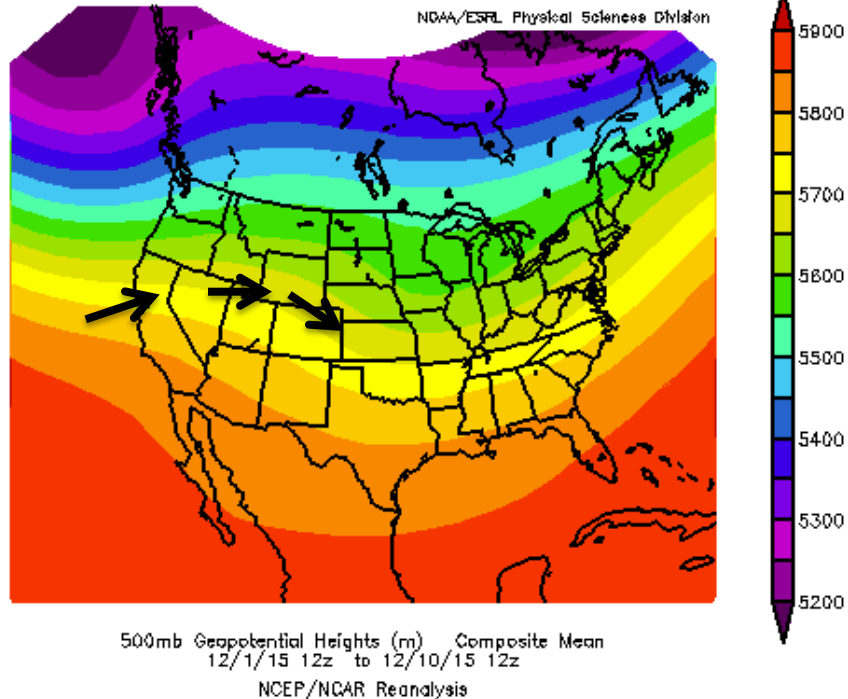


Duchesne: 87%  
Provo: 62%

# December Weather

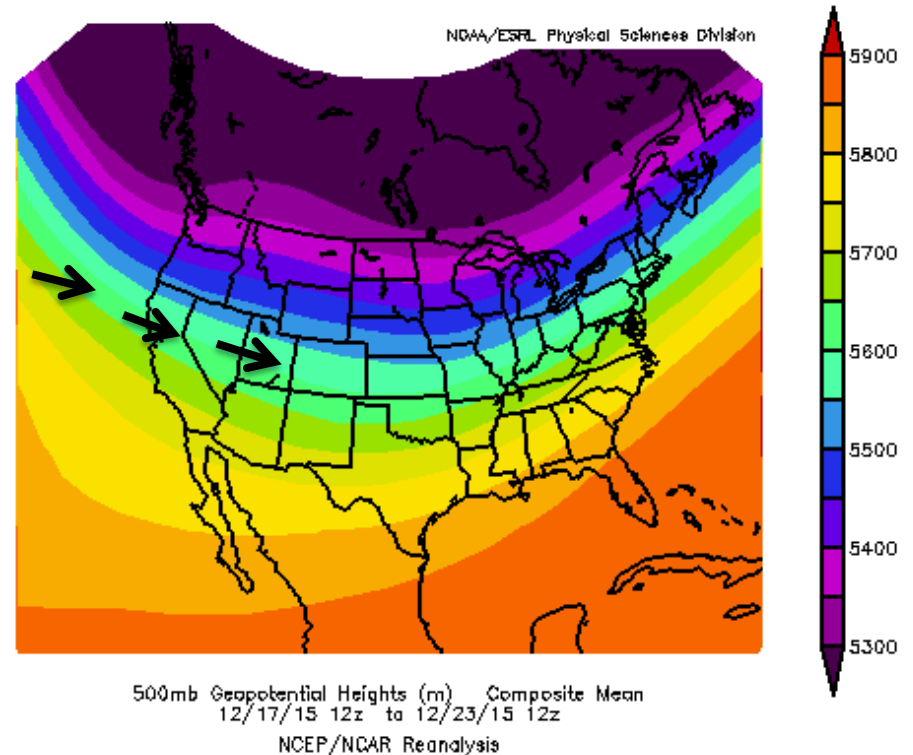
## Upper Atmosphere Pattern

December 1-10 2015



Early December temperatures  
+20 above normal

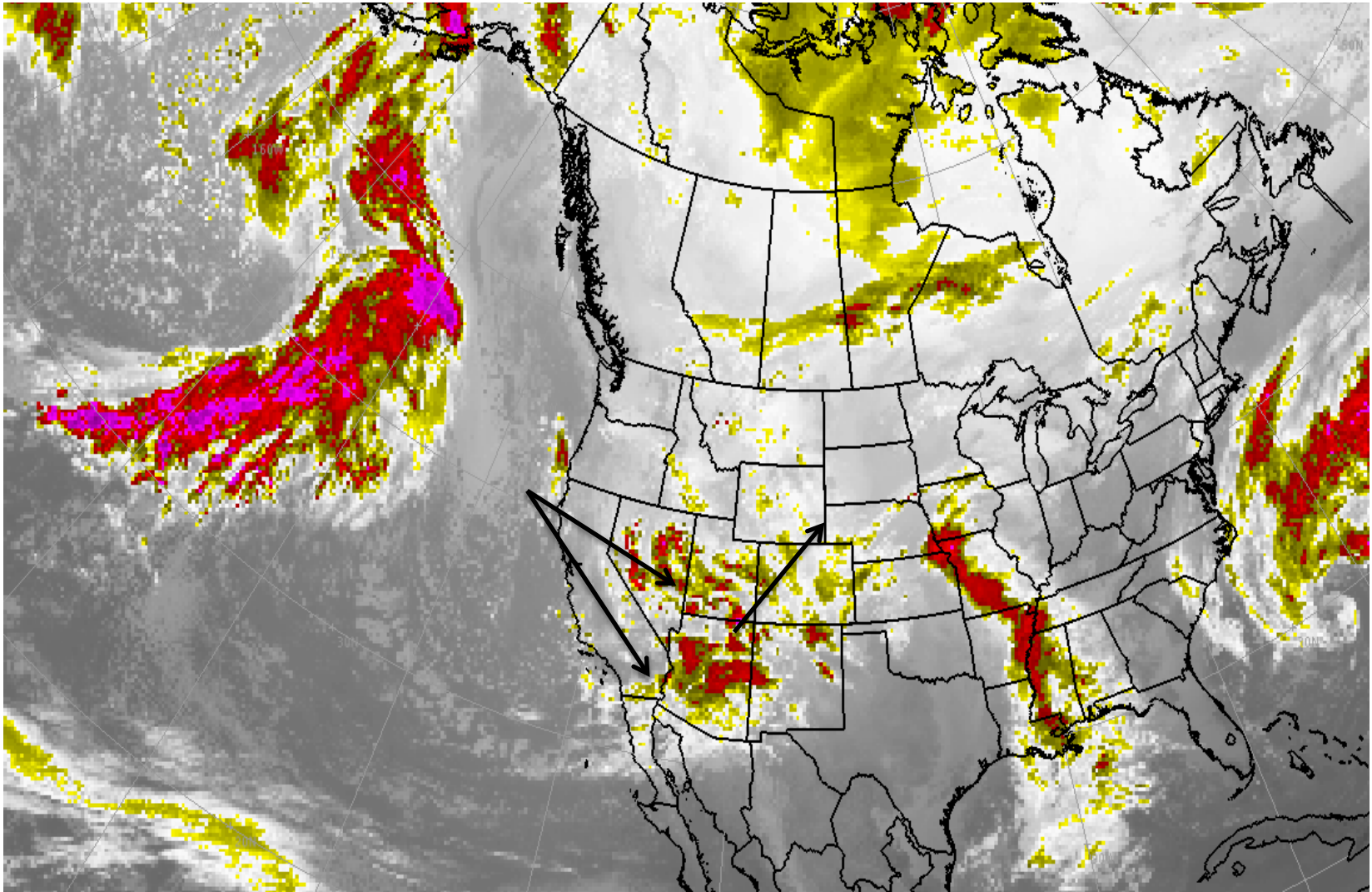
December 17-23 2015



Strong moisture influx into the  
region second half of December

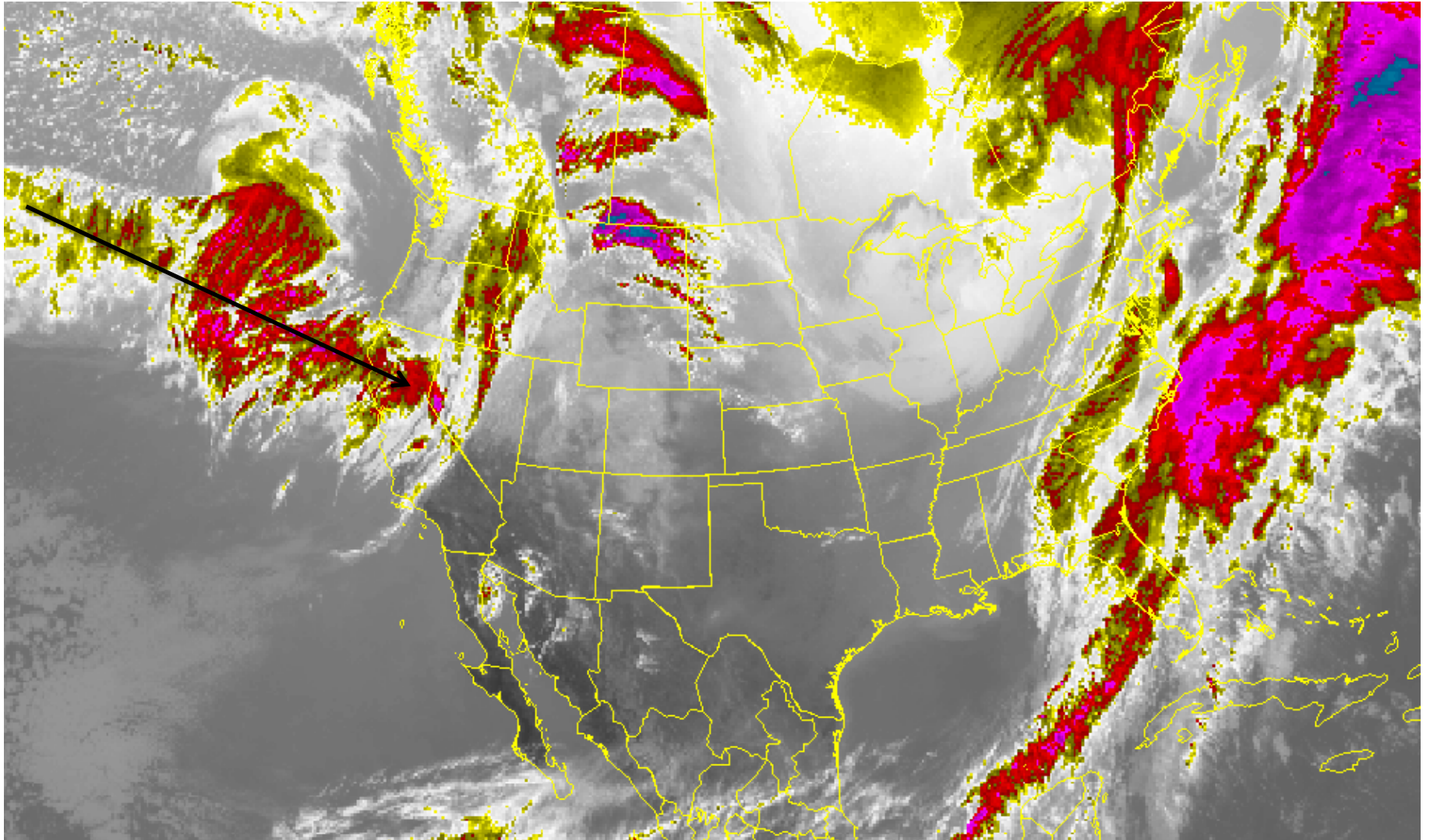
# January Weather

## January 7<sup>th</sup> Satellite Image Splitting Storm Systems – Various Precipitation Impacts



# January Weather

January 28<sup>th</sup> Satellite Image  
Significant Pacific Moisture – Widespread Precipitation



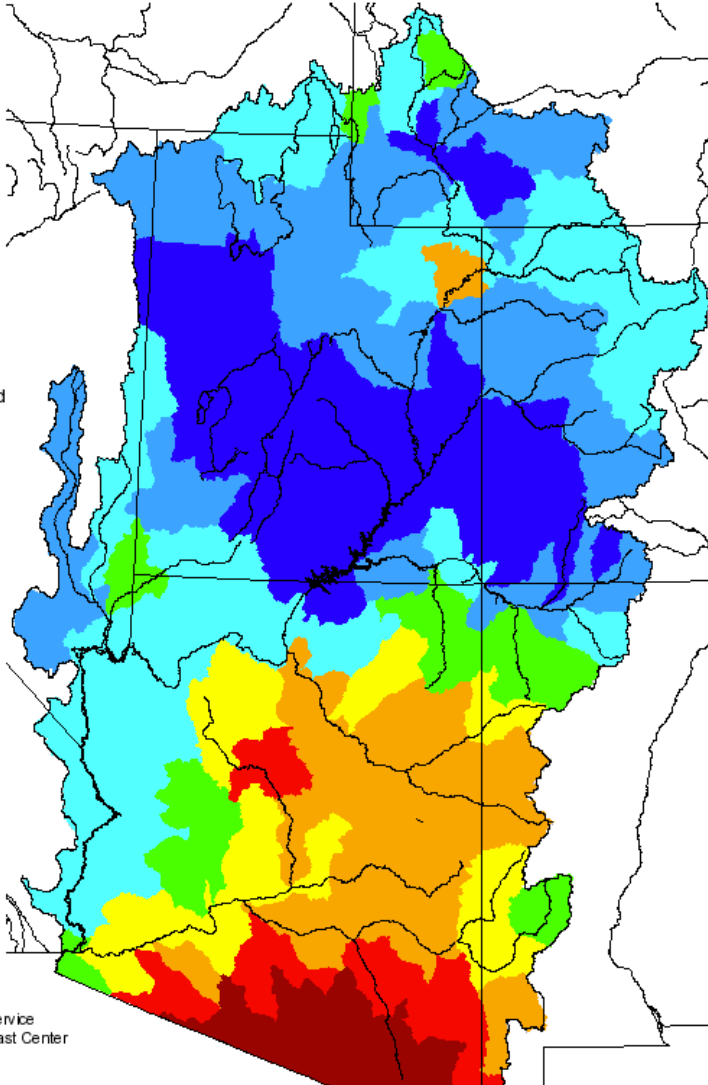
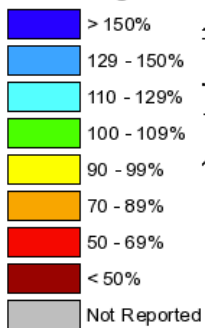


# Winter Precipitation

## Monthly Precipitation for December 2015

(Averaged by Hydrologic Unit)

### % Average



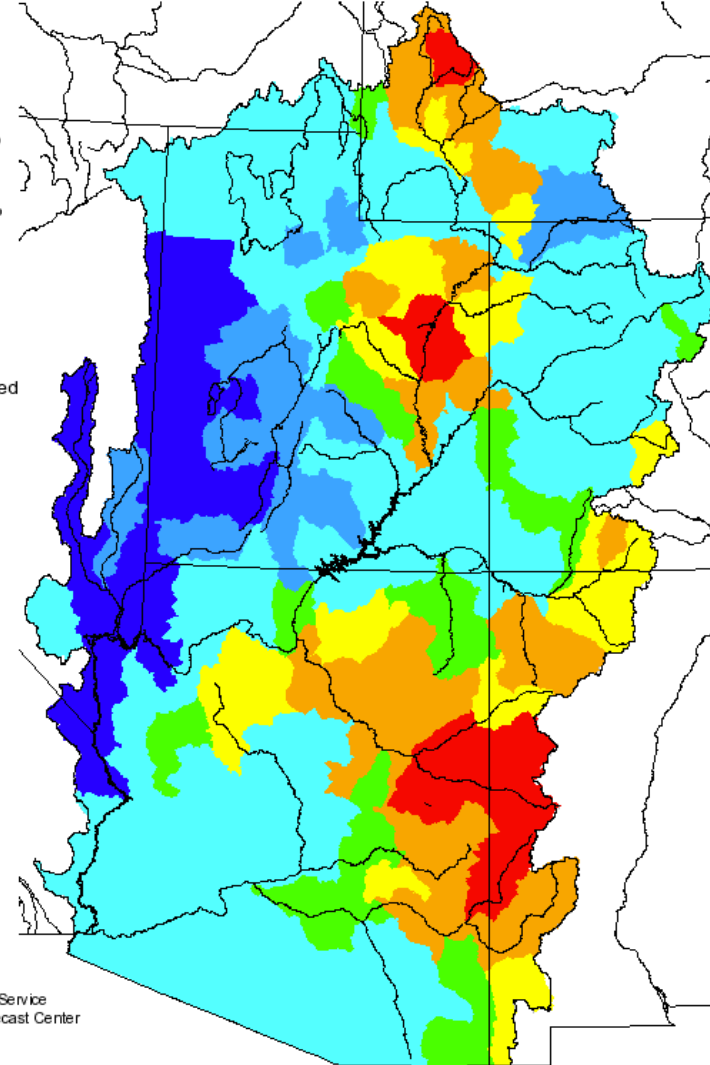
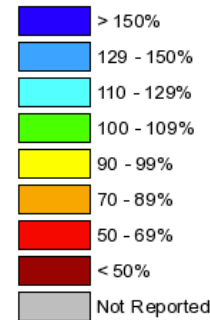
Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbafc.noaa.gov](http://www.cbafc.noaa.gov)

Duchesne: 125%  
Provo: 140%

## Monthly Precipitation for January 2016

(Averaged by Hydrologic Unit)

### % Average

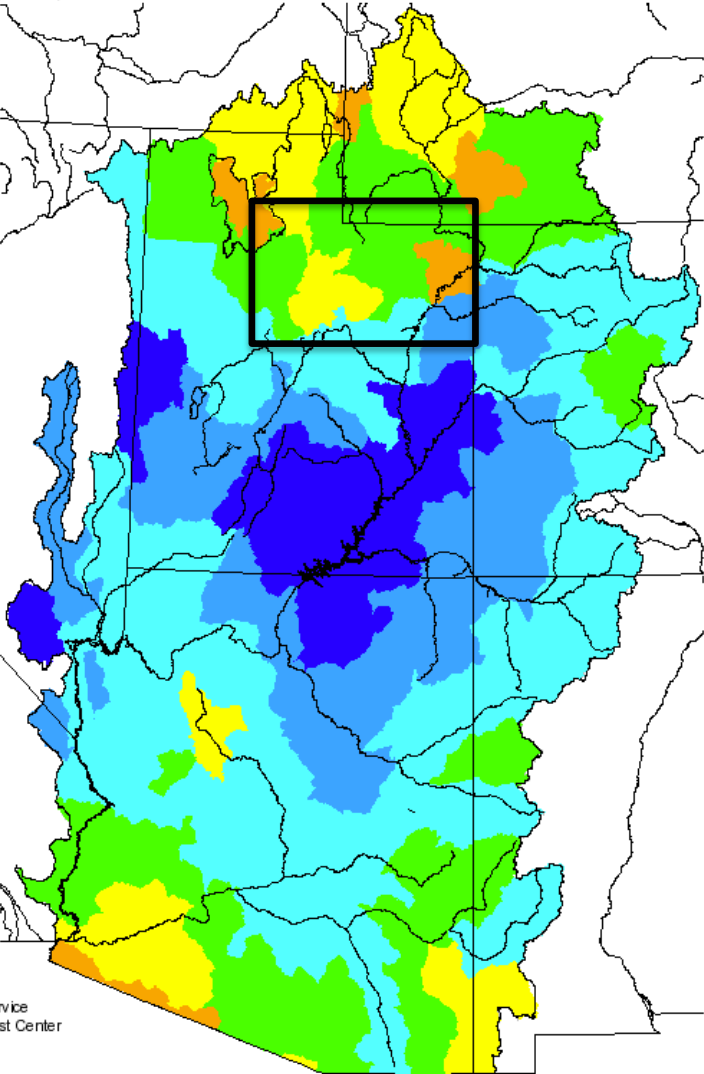
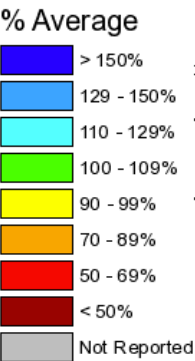


Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbafc.noaa.gov](http://www.cbafc.noaa.gov)

Duchesne: 92%  
Provo: 120%

# Seasonal Precipitation: October-January

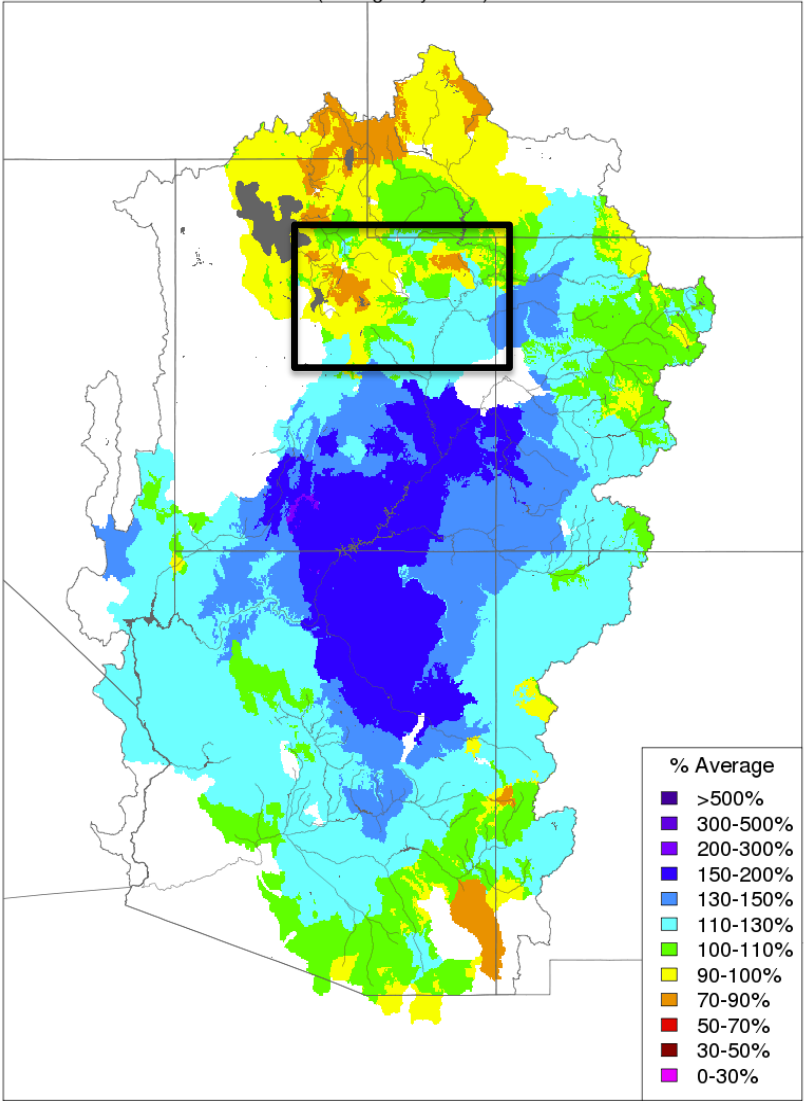
Seasonal Precipitation, October 2015 - January 2016  
(Averaged by Hydrologic Unit)



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

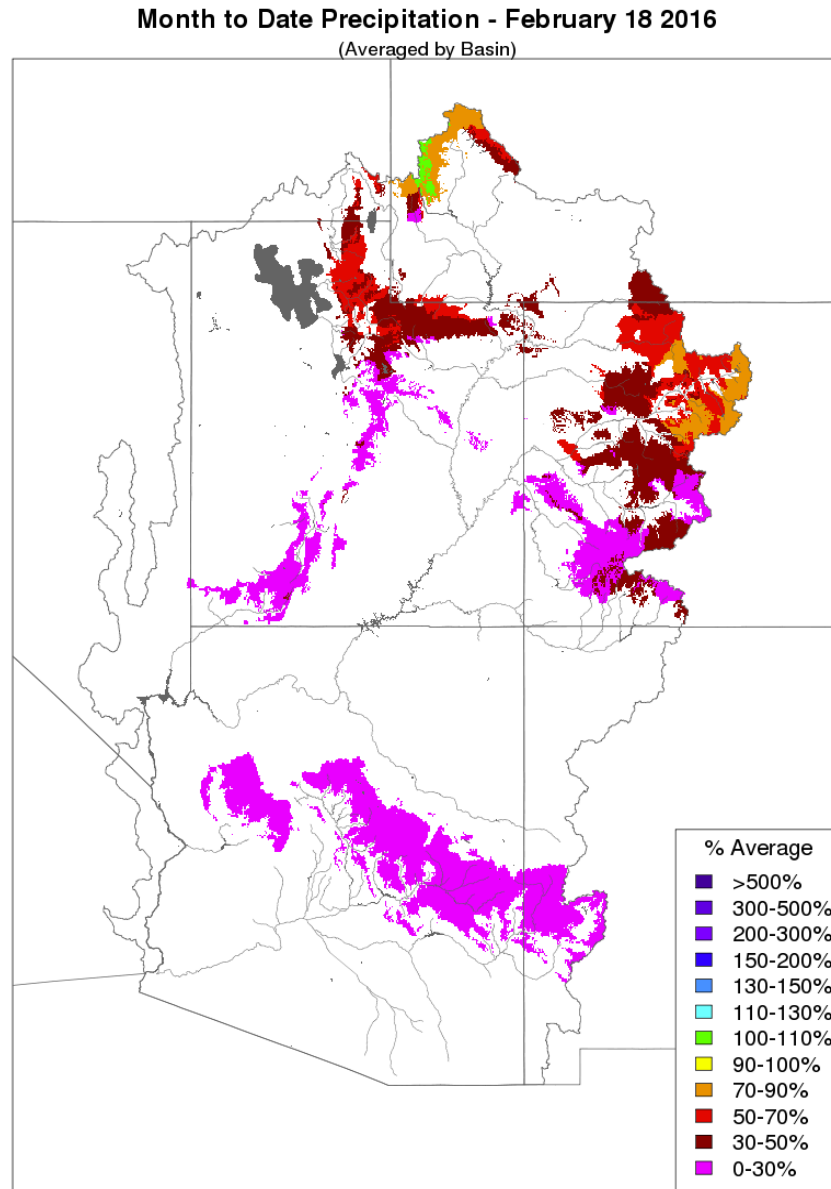
Duchesne: 95%  
Provo: 98%

Water Year Precipitation, October 2015 - January 2016  
(Averaged by Basin)



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

# Month to Date February Precipitation

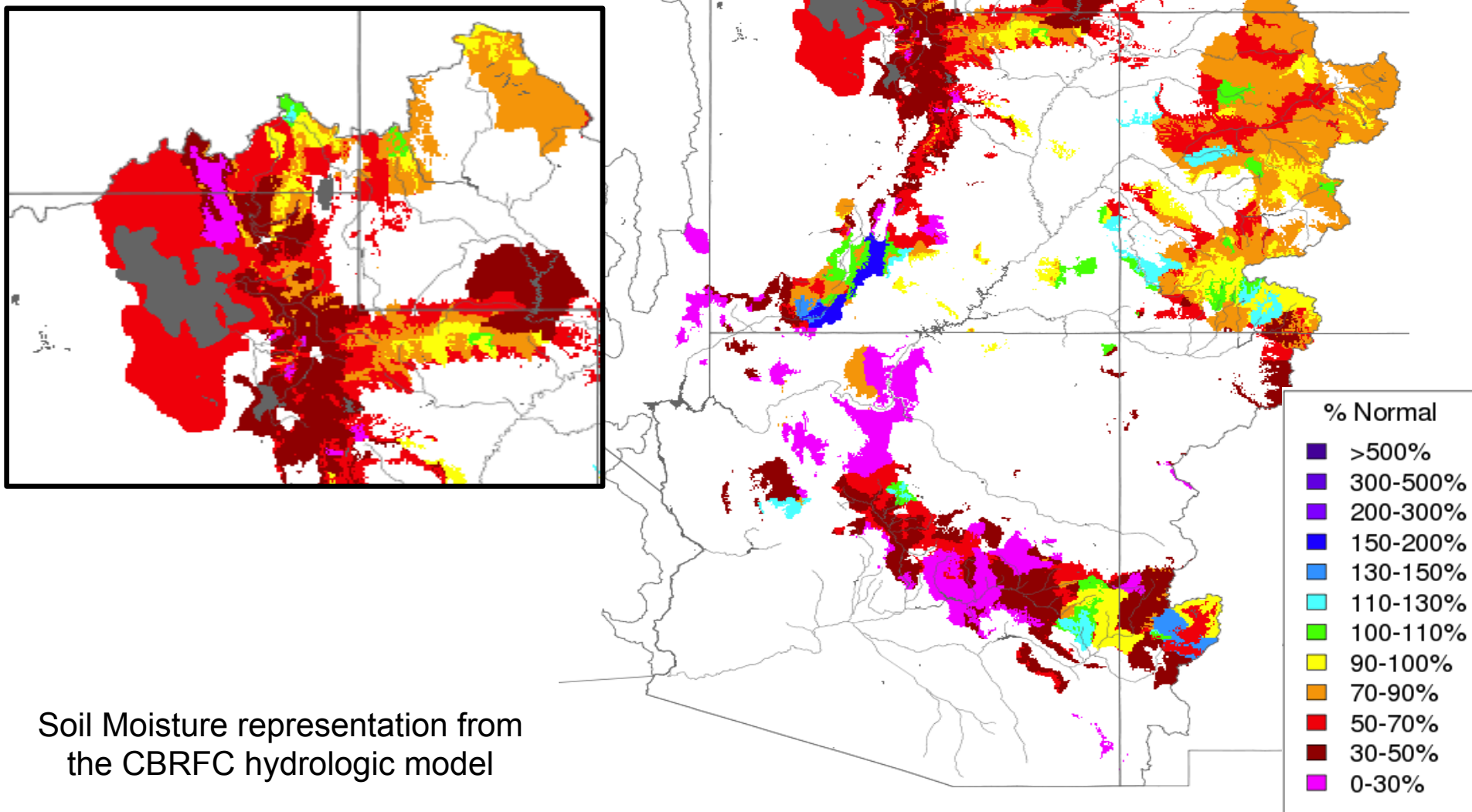


Below average precipitation so far for February

# Forecast Drivers: Soil Moisture

Soil Moisture

November 15, 2015

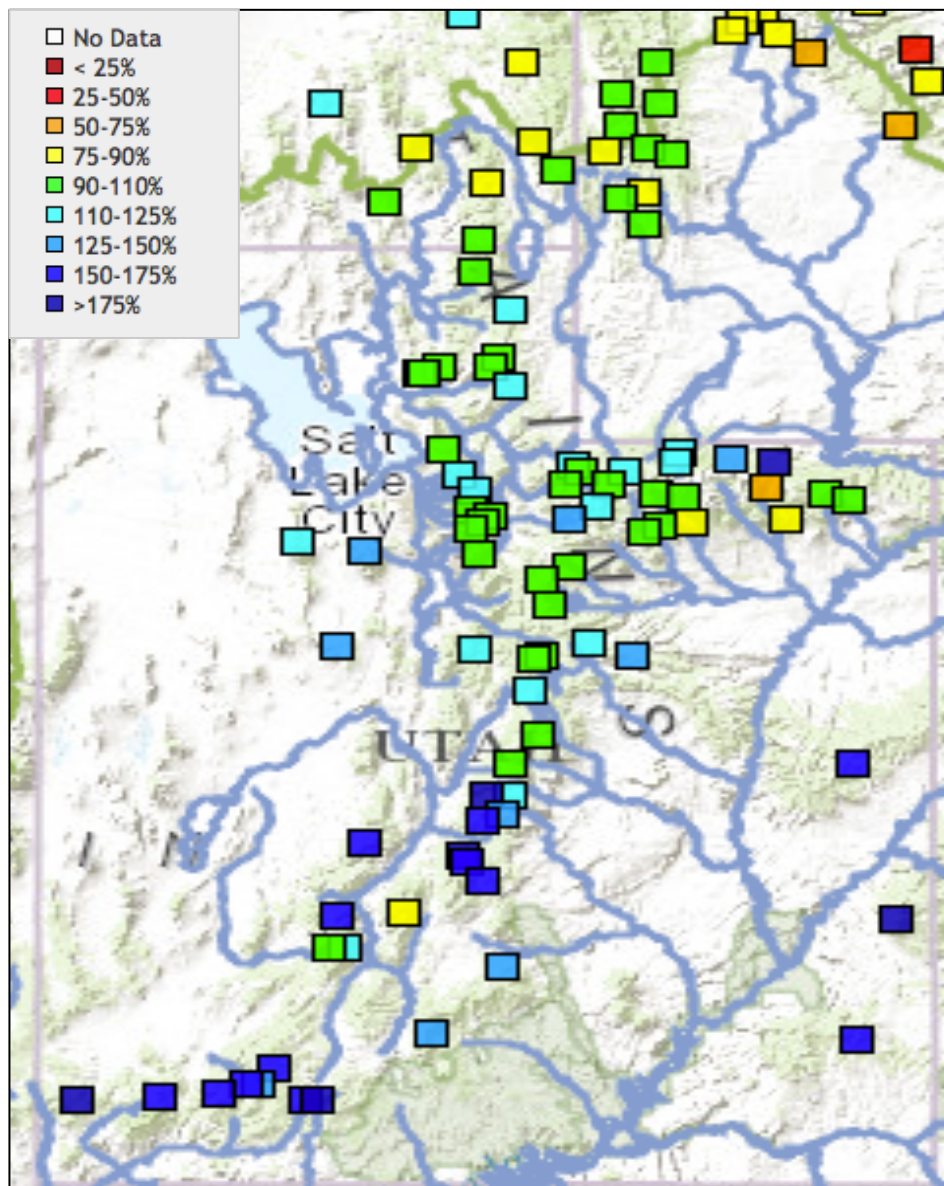


Soil Moisture representation from  
the CBRFC hydrologic model

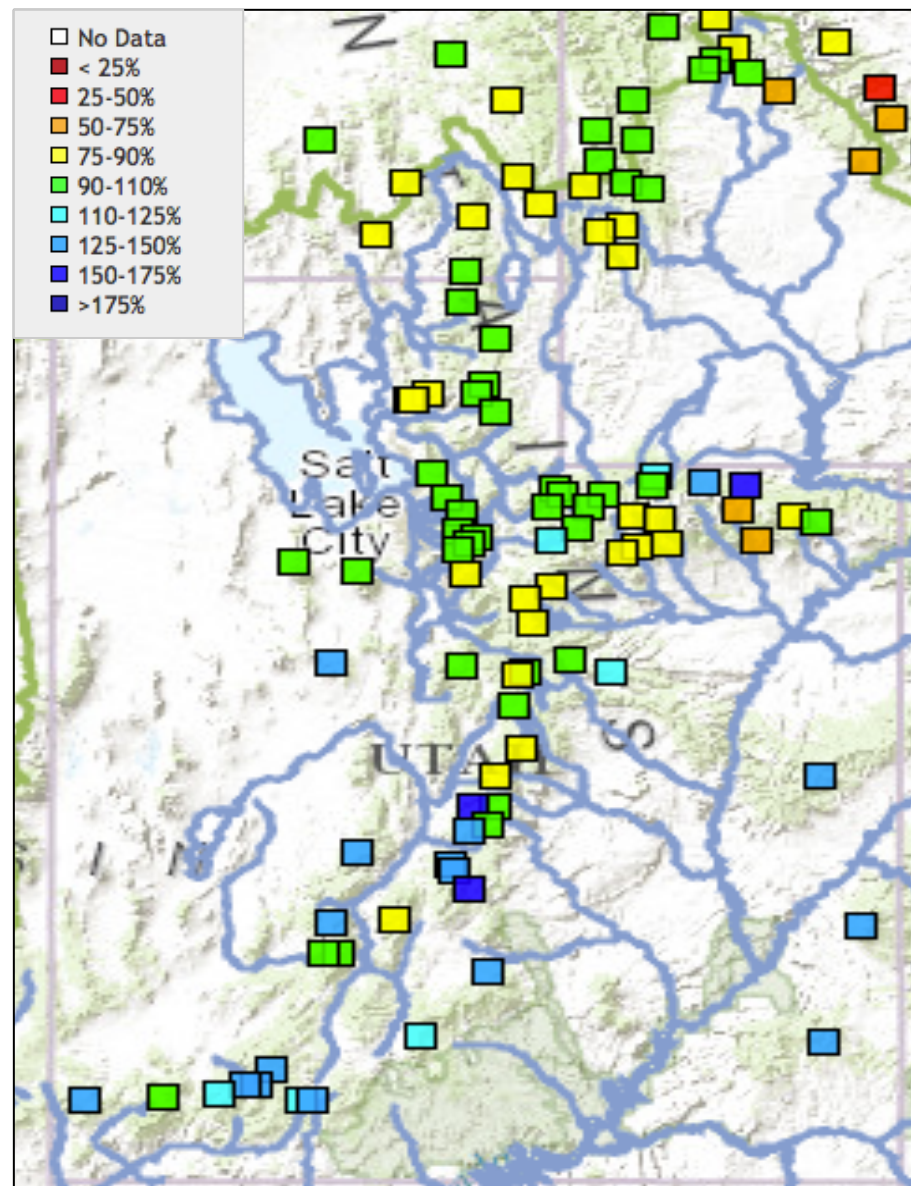


# Forecast Drivers: Snow Conditions

SNOW (% median): February 3 2016

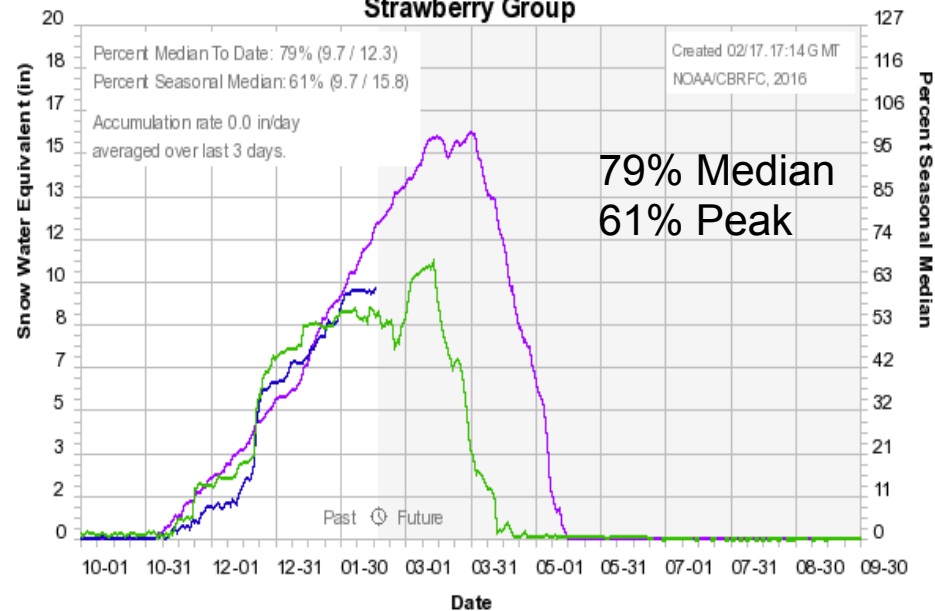


SNOW (% median): February 17 2016



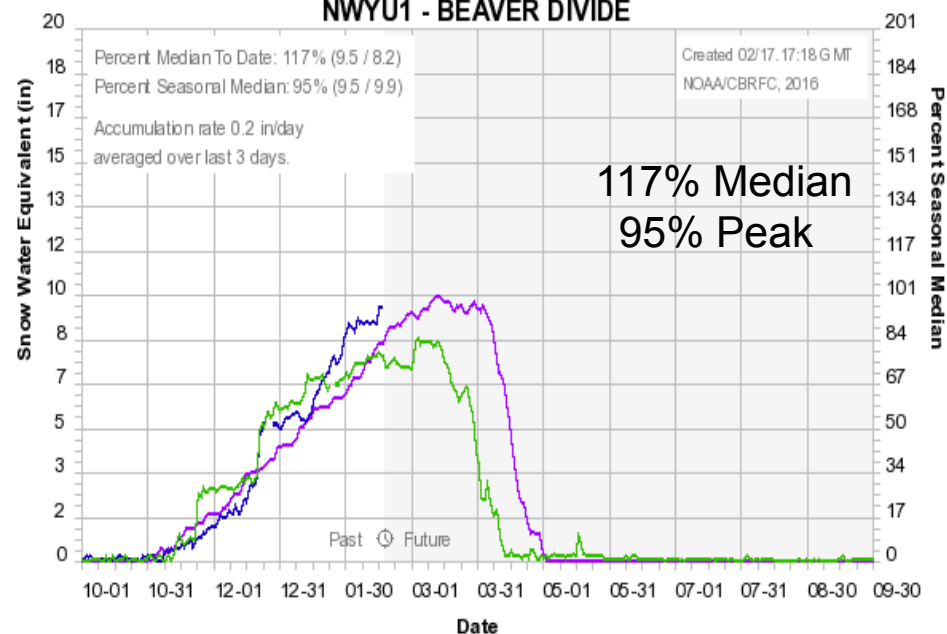
# Colorado Basin River Forecast Center

## Strawberry Group



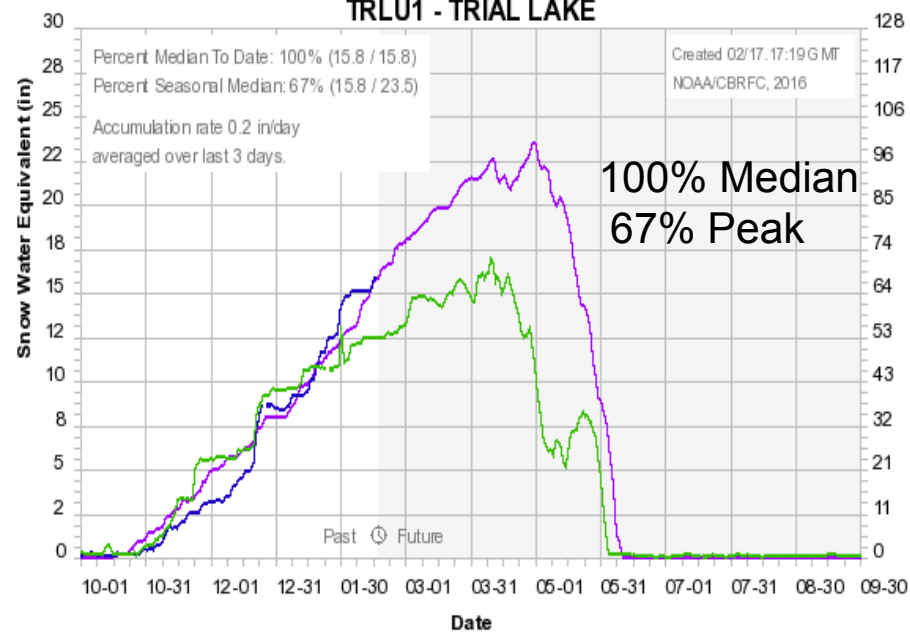
# Colorado Basin River Forecast Center

## NWYU1 - BEAVER DIVIDE



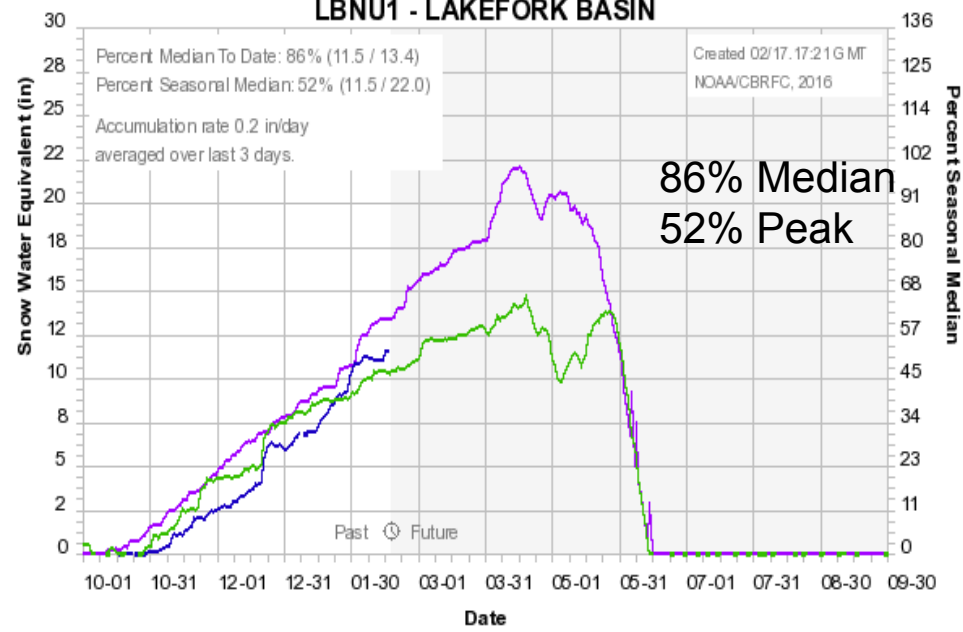
# Colorado Basin River Forecast Center

## TRLU1 - TRIAL LAKE

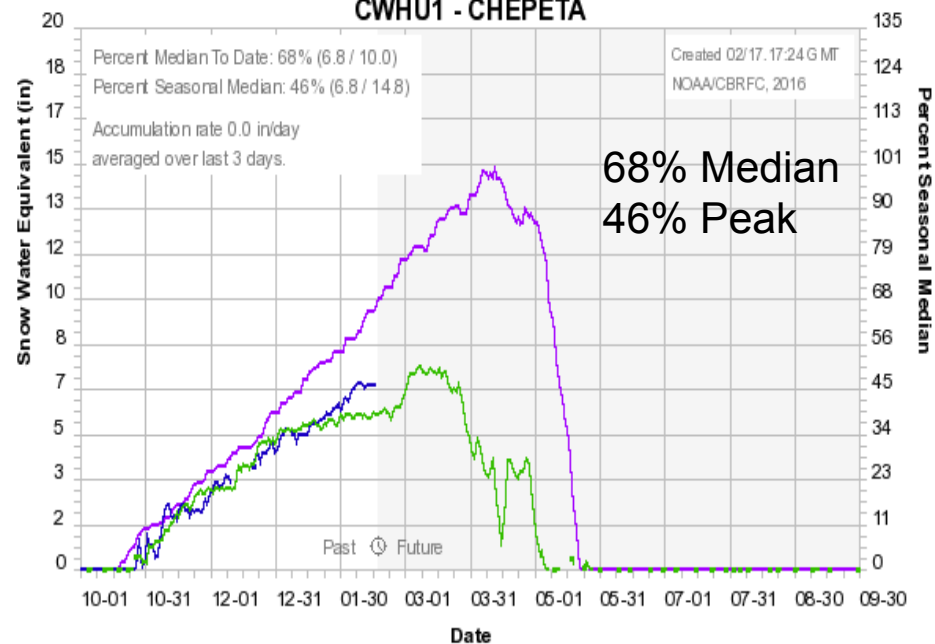


# Colorado Basin River Forecast Center

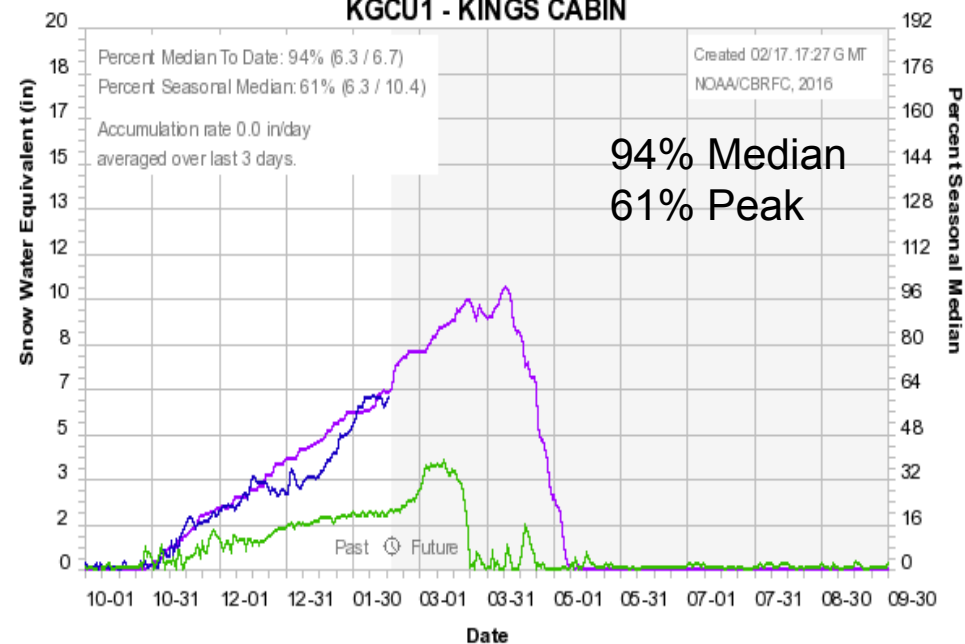
## LBNU1 - LAKEFORK BASIN



### Colorado Basin River Forecast Center CWHU1 - CHEPETA



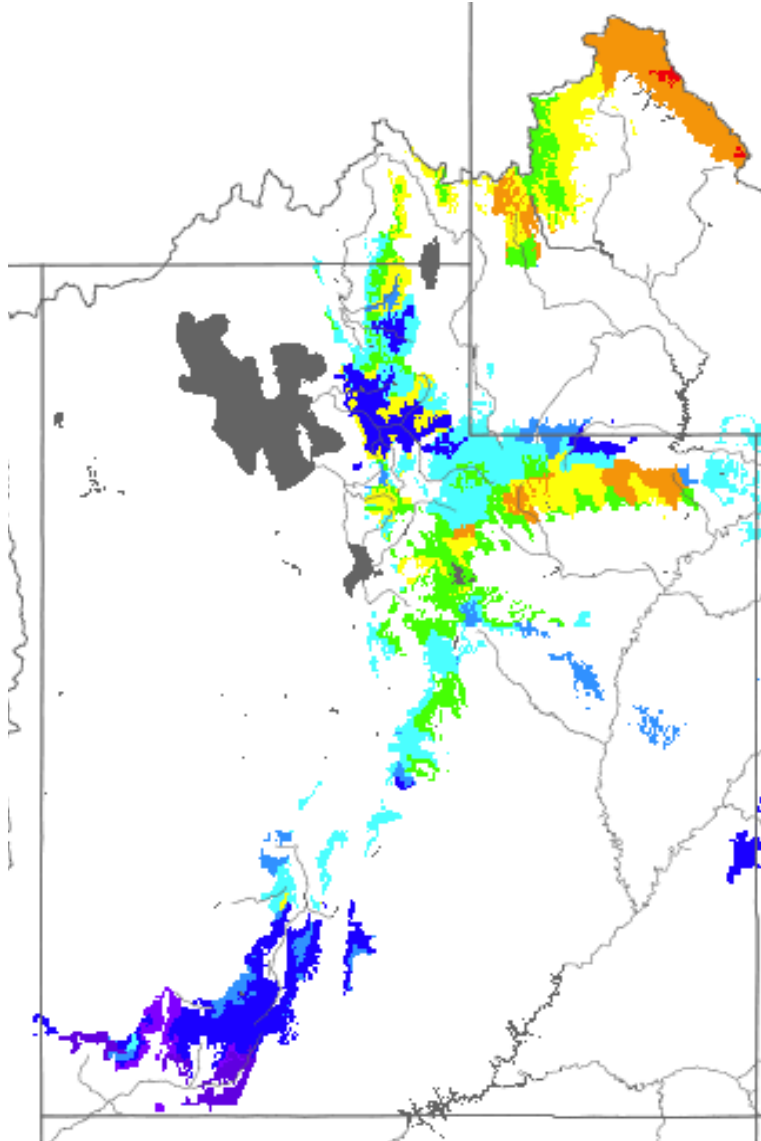
### Colorado Basin River Forecast Center KGCU1 - KINGS CABIN



# Forecast Drivers: Snow - CBRFC Hydro Model

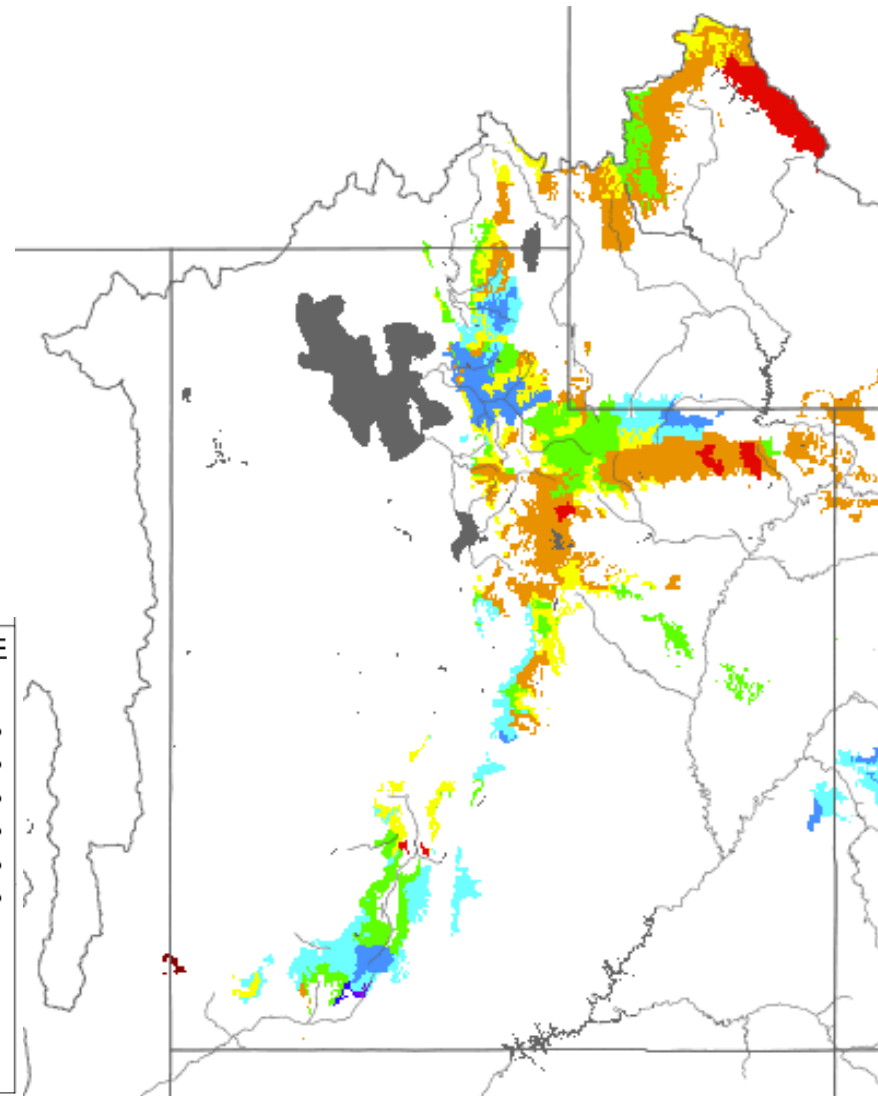
Feb 1<sup>st</sup> 2016

Significant Runoff Areas



Feb 17<sup>th</sup> 2016

Significant Runoff Areas



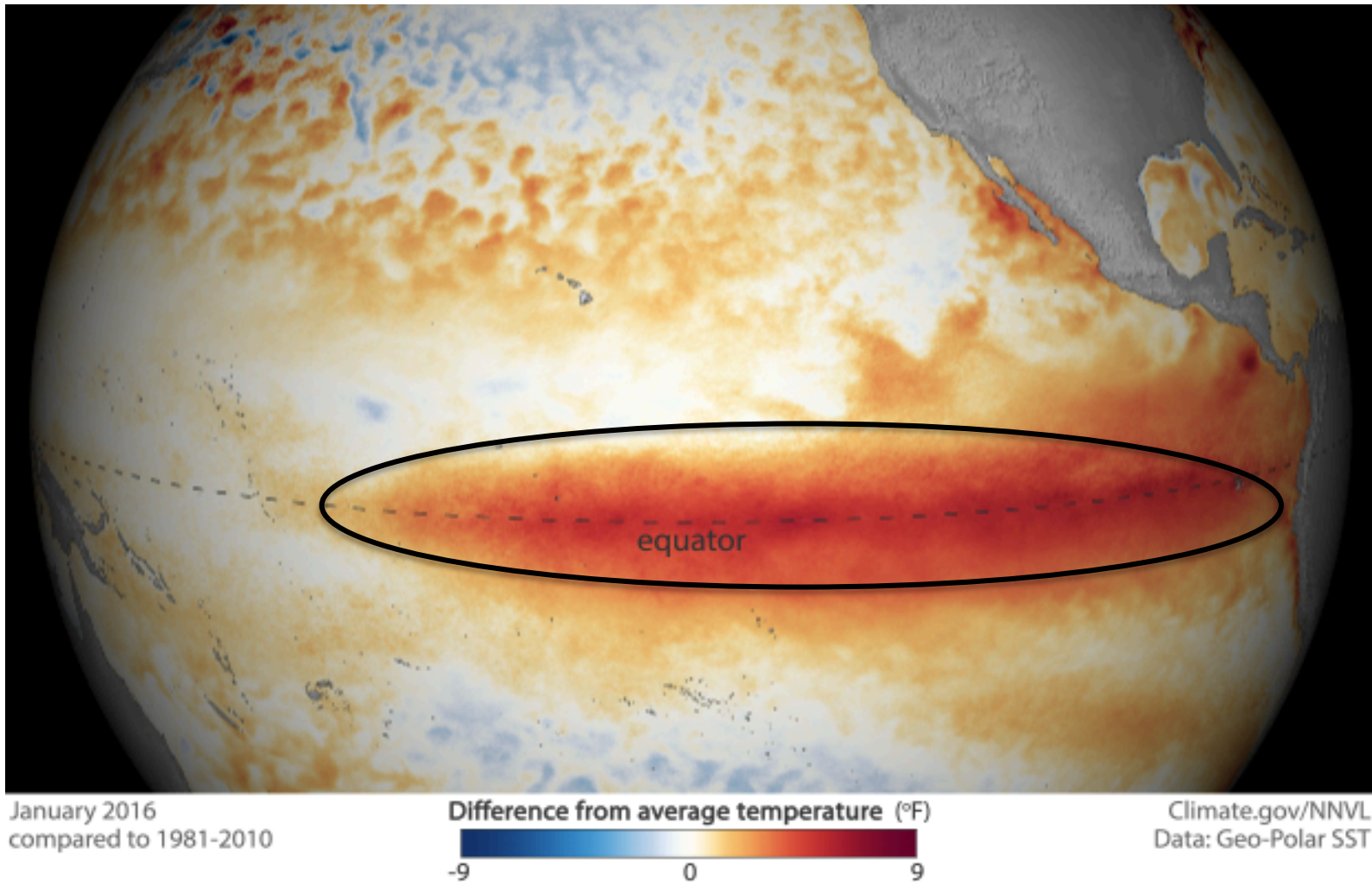
% Median SWE

- >500%
- 300-500%
- 200-300%
- 150-200%
- 130-150%
- 110-130%
- 100-110%
- 90-100%
- 70-90%
- 50-70%
- 30-50%
- 0-30%

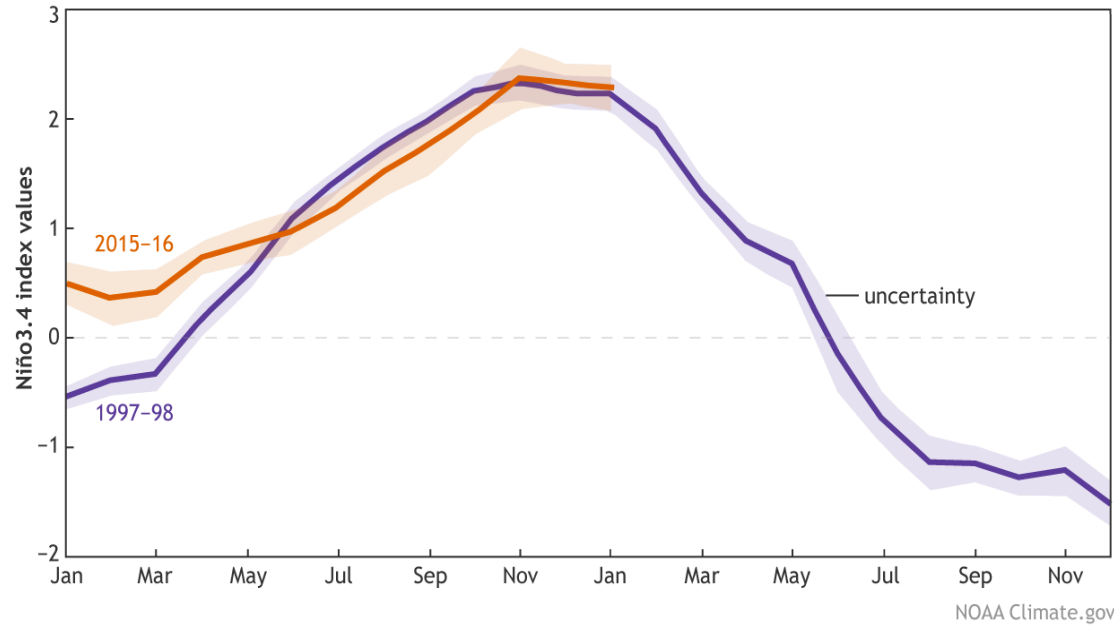


# Forecast Drivers: El Niño Event

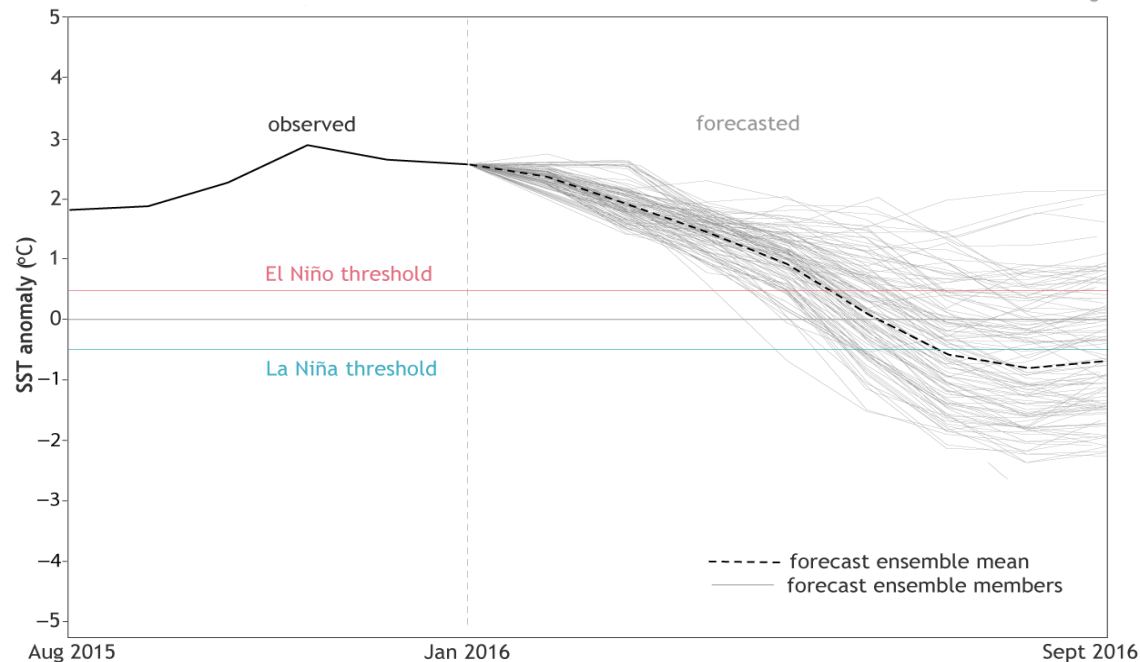
- Characterized by unusually warm temperatures in Pacific Ocean
- Recent Sea Surface Temperatures (SST) anomalies  $> 2$  degrees c.
- Expected to remain strong through winter 2015-2016, ENSO neutral by early summer



# Forecast Drivers: El Niño Event



Observed monthly sea surface temperature 2015-16 and 1997-98

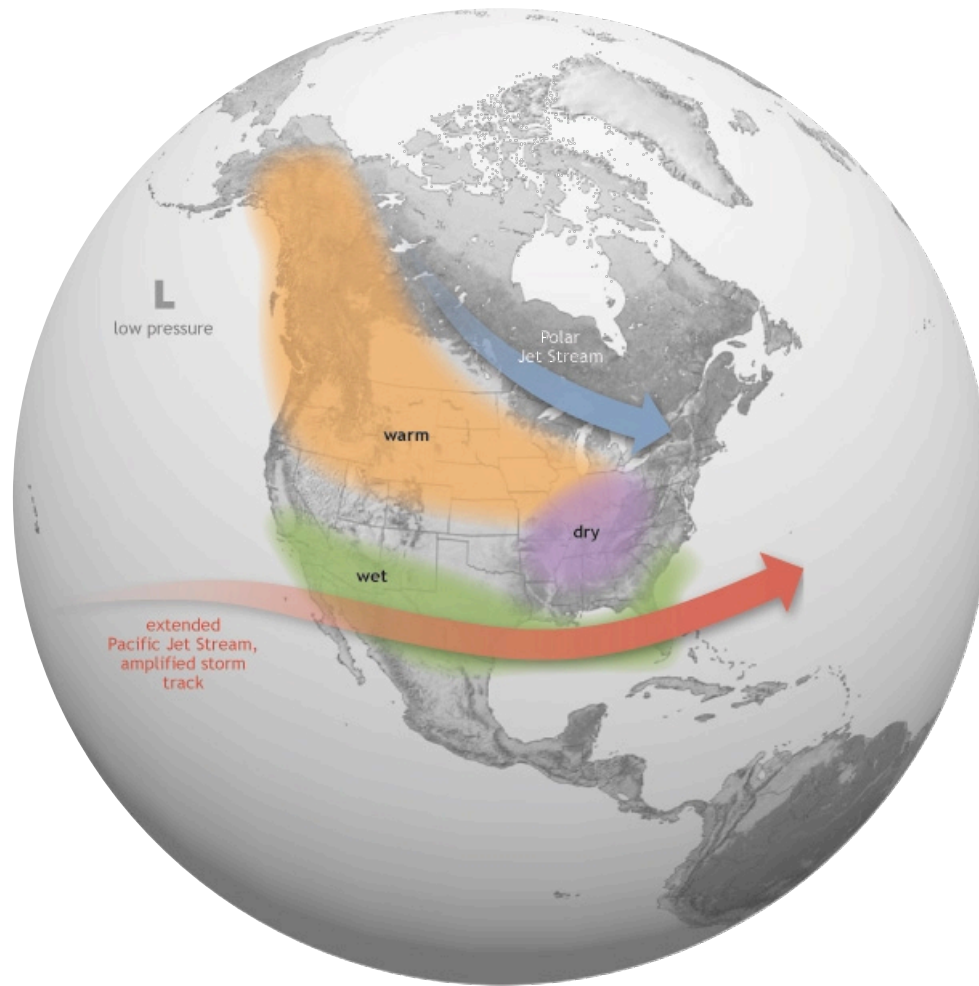


Forecast monthly sea surface temperatures through September 2016 - trending toward neutral/La Niña conditions

# Forecast Drivers: El Niño Event

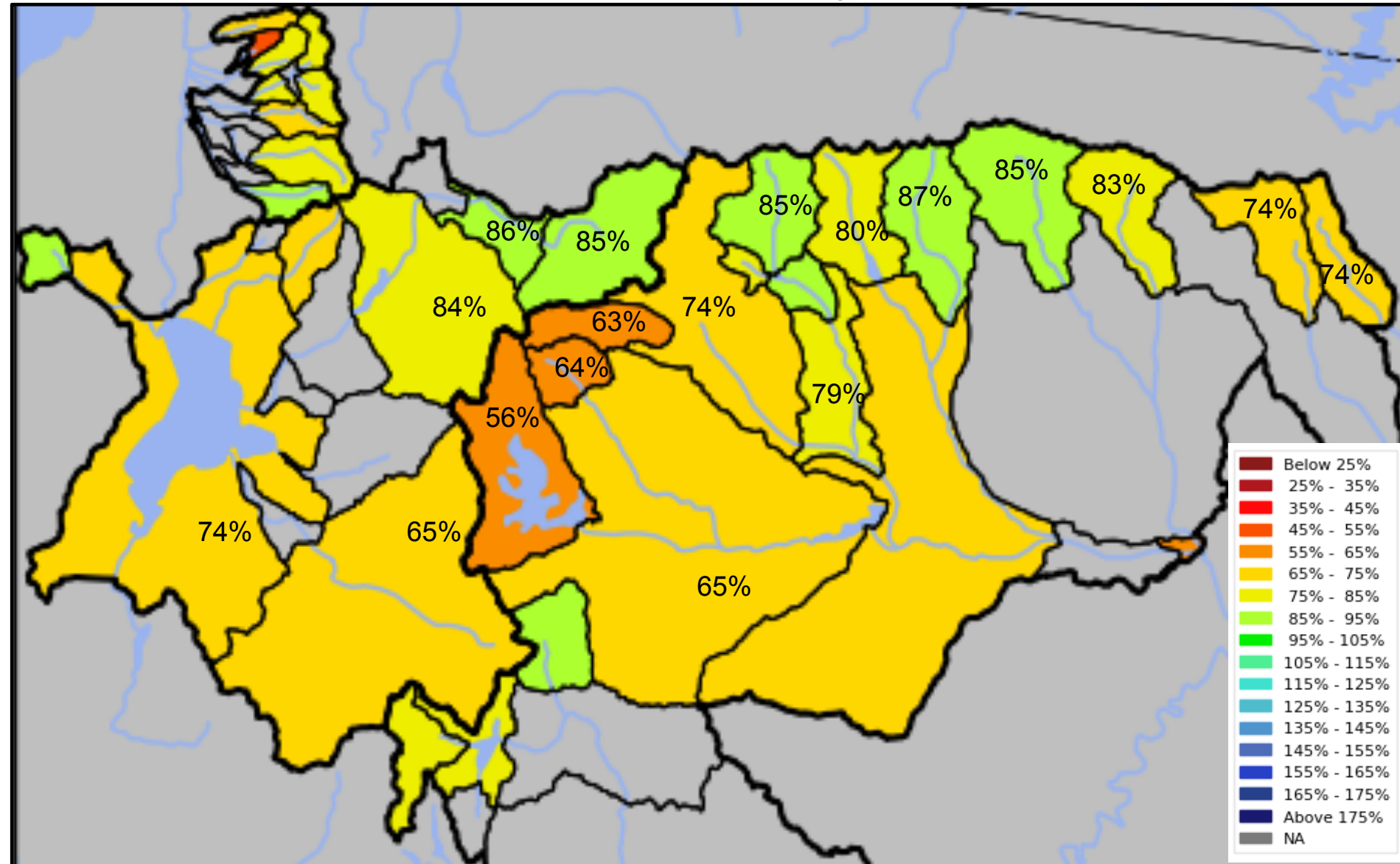
## Typical Impacts

- 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.



# February 1<sup>st</sup> Water Supply Forecasts

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





# Forecast Evolution Plot

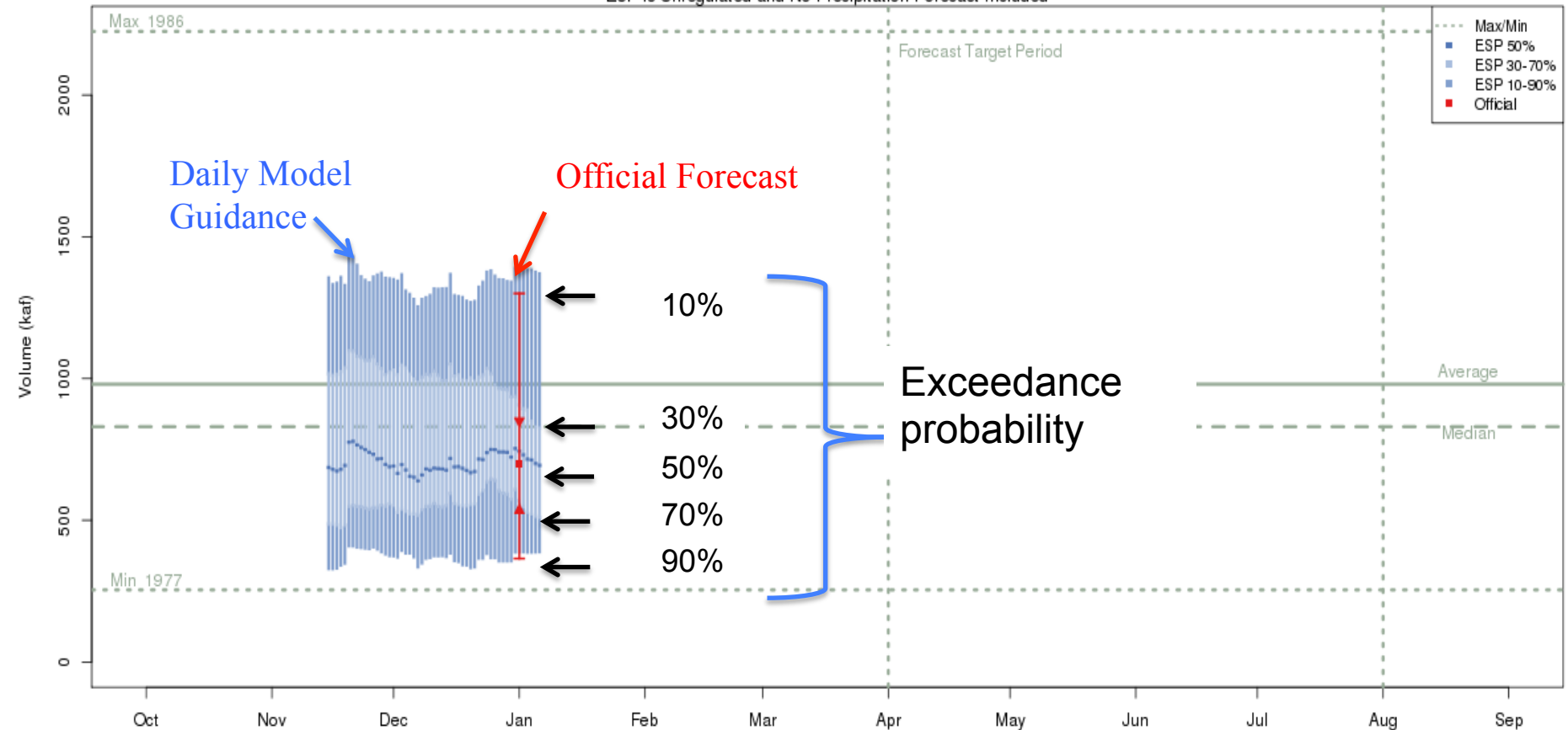
## Daily Ensemble Streamflow Prediction (ESP) Model Run & Official

Available at: [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov) Select: Water Supply Click: Point of Interest

Green - Flaming Gorge Res. Flaming Gorge Dam- At (GRNU1)

2016-01-01 Apr-Jul Official 50% Forecast: 700 kaf (71% of average)

ESP is Unregulated and No Precipitation Forecast Included

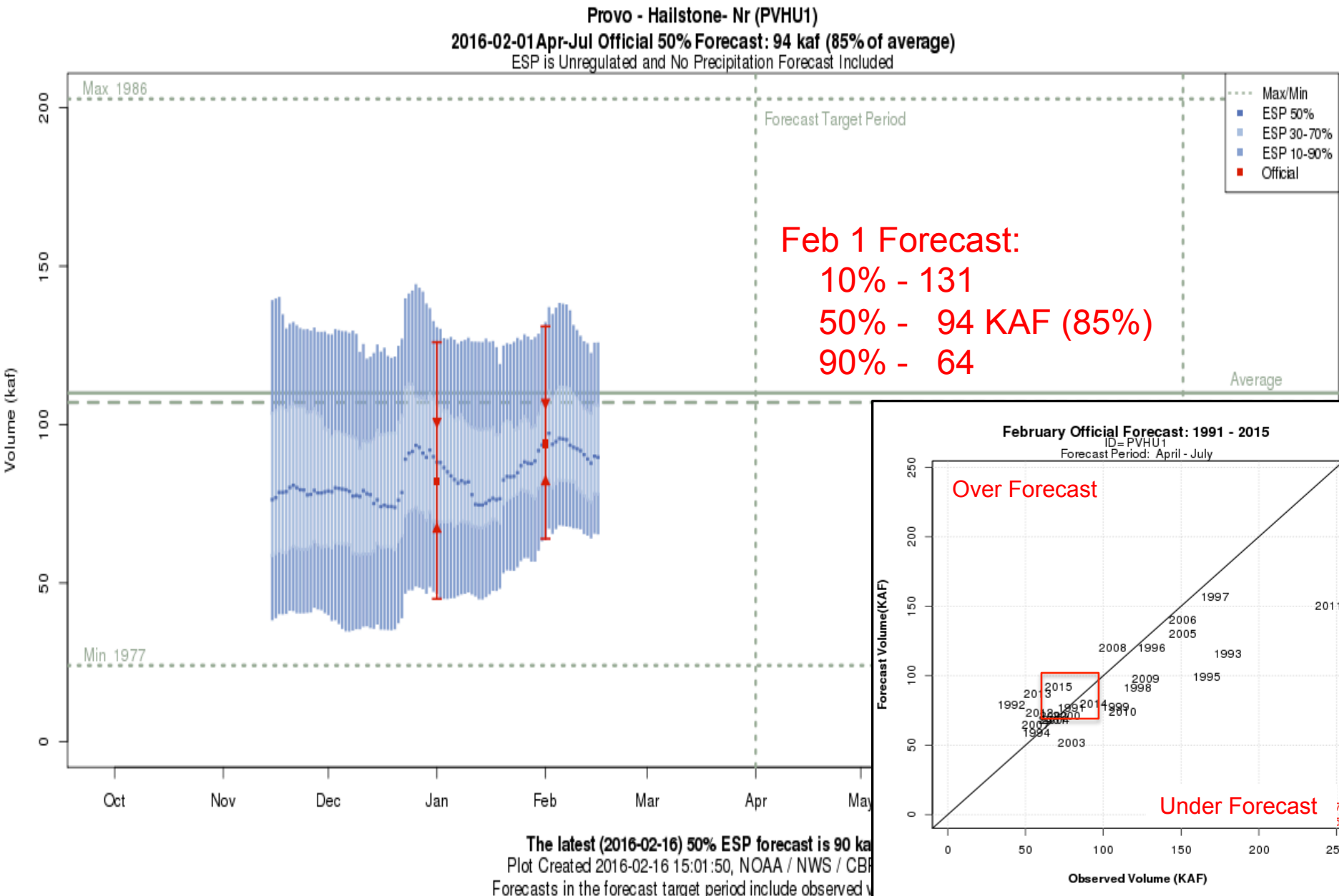


The latest (2016-01-06) 50% ESP forecast is 694 kaf.

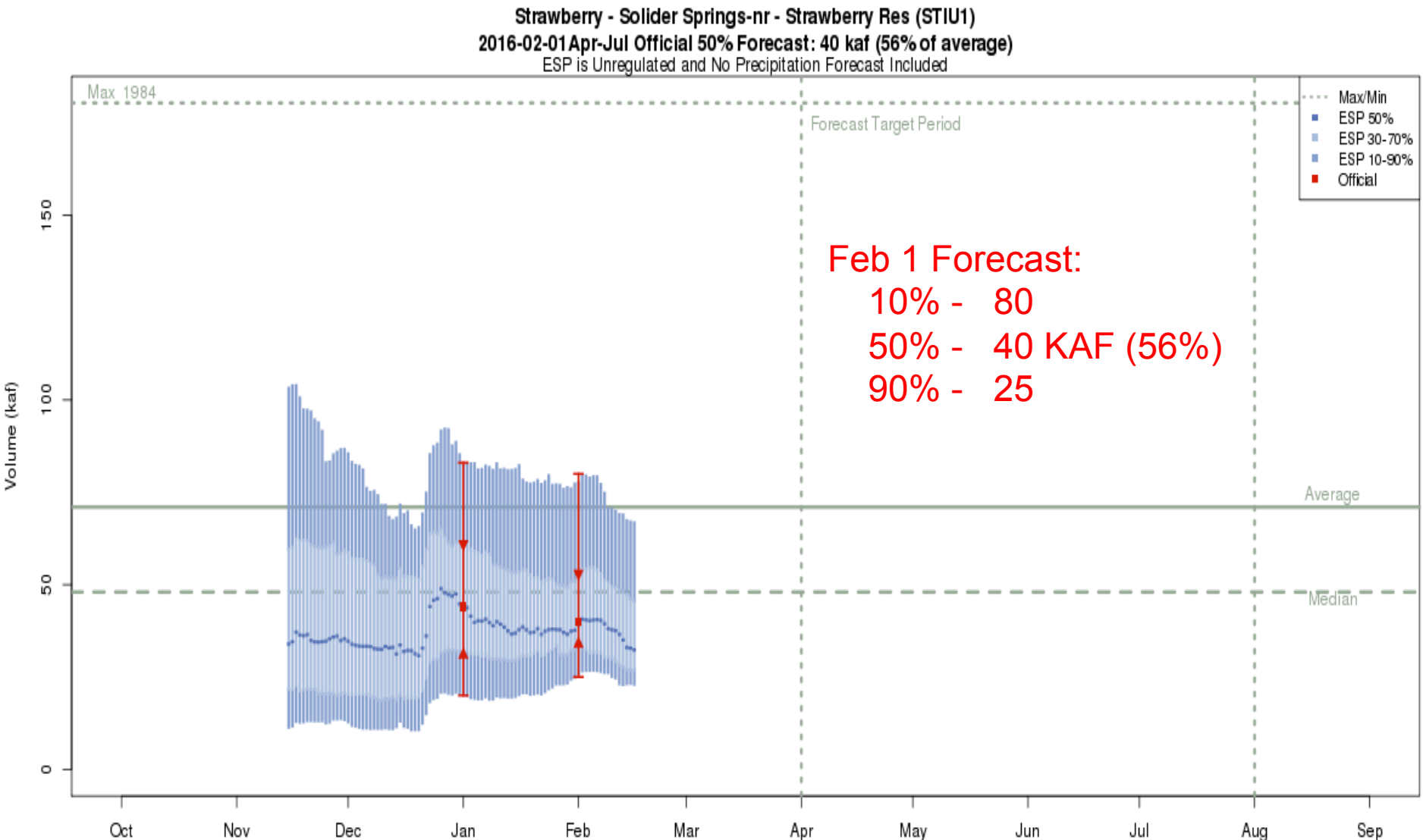
Plot Created 2016-01-06 15:43:26, NOAA / NWS / CBRFC

Forecasts in the forecast target period include observed values.

# Forecasts: Provo nr Hailstone



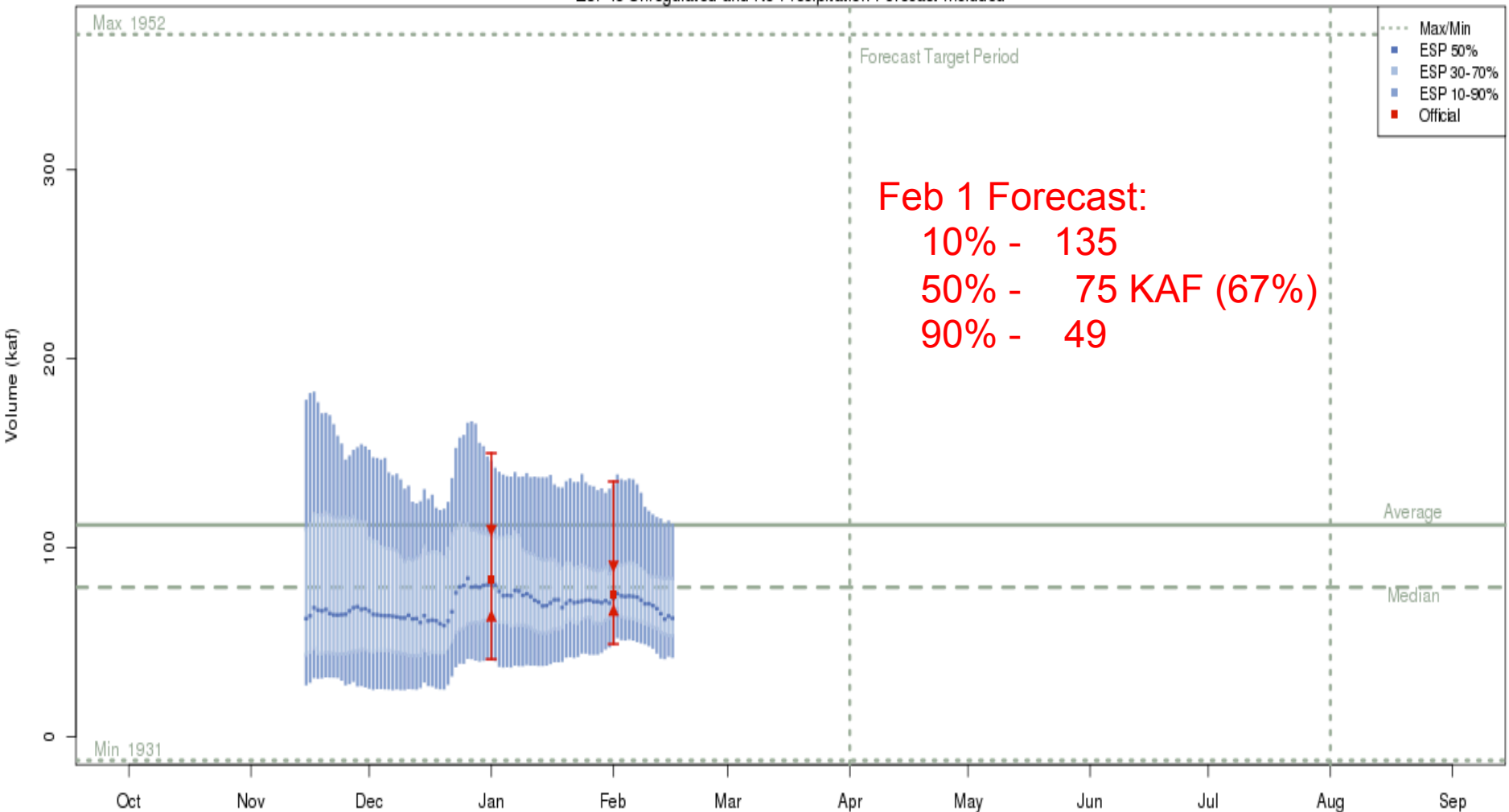
# Forecasts: Strawberry nr Solider Springs



The latest (2016-02-16) 50% ESP forecast is 32 kaf.  
Plot Created 2016-02-16 15:07:50, NOAA / NWS / CBRFC  
Forecasts in the forecast target period include observed values.

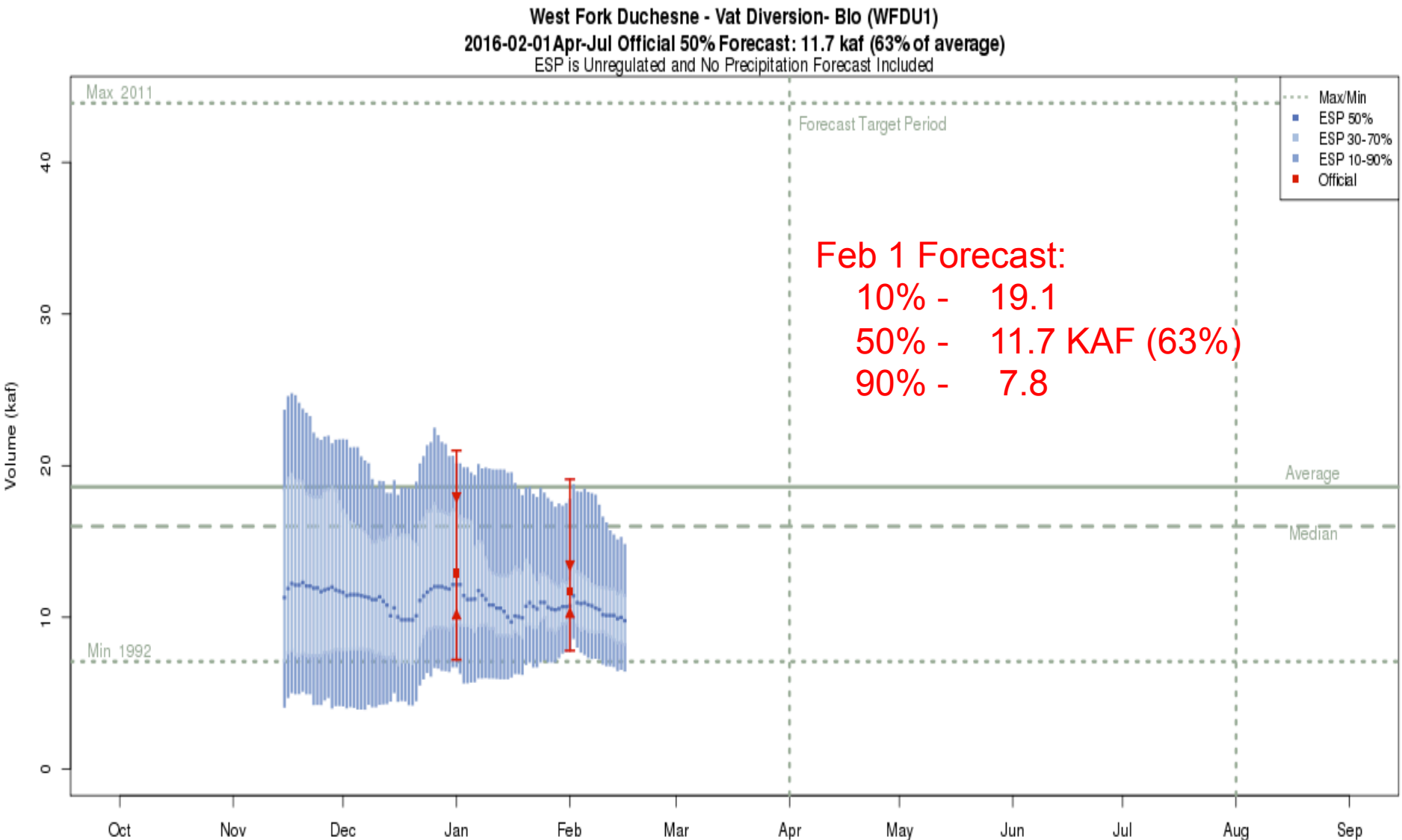
# Forecasts: Starvation Reservoir

Strawberry - Starvation Res- Duchesne- Nr (STAU1)  
2016-02-01 Apr-Jul Official 50% Forecast: 75 kaf (67% of average)  
ESP is Unregulated and No Precipitation Forecast Included



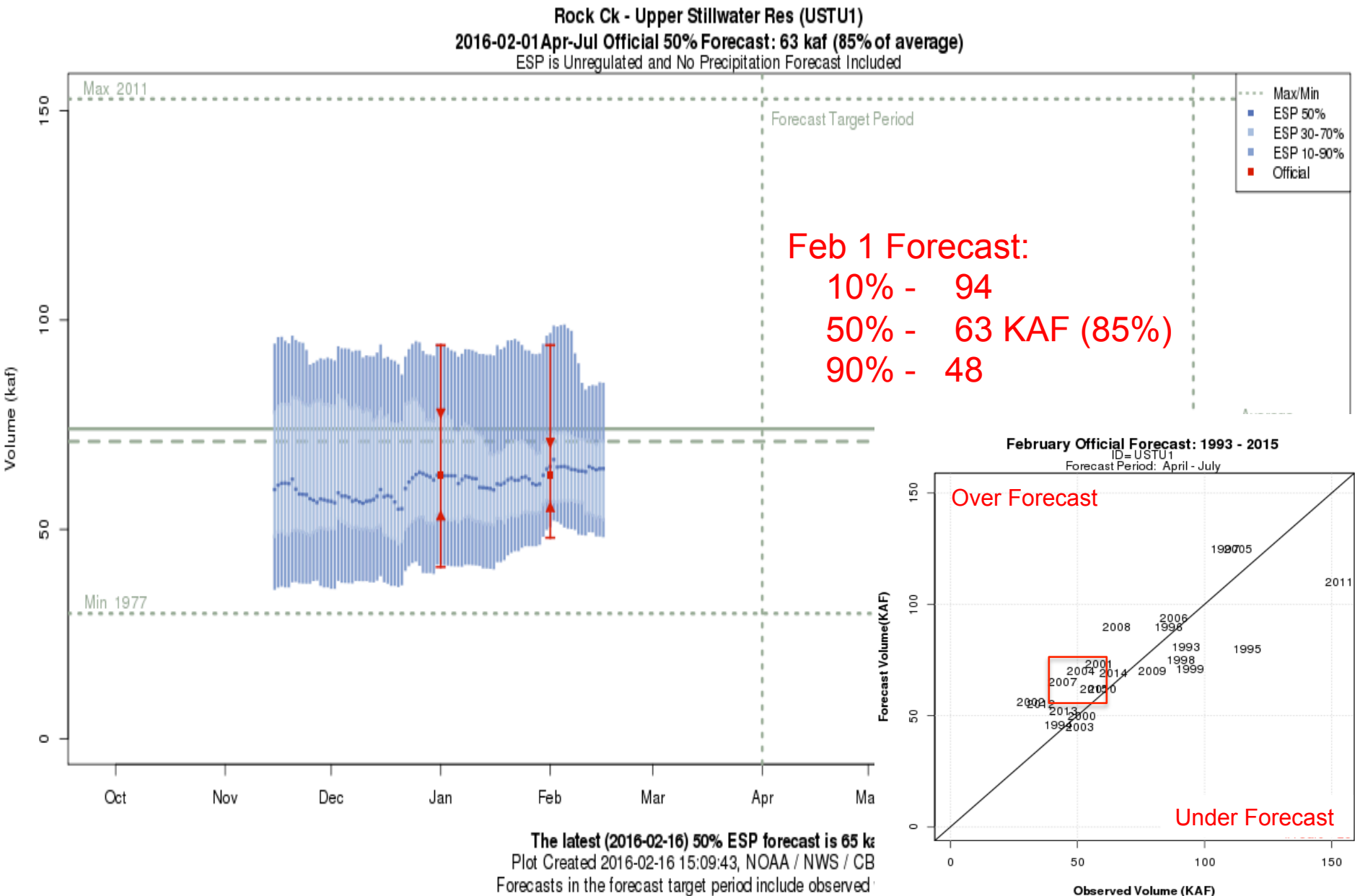
The latest (2016-02-16) 50% ESP forecast is 63 kaf.  
Plot Created 2016-02-16 15:07:03, NOAA / NWS / CBRFC  
Forecasts in the forecast target period include observed values.

# Forecasts: West Fork below Vat



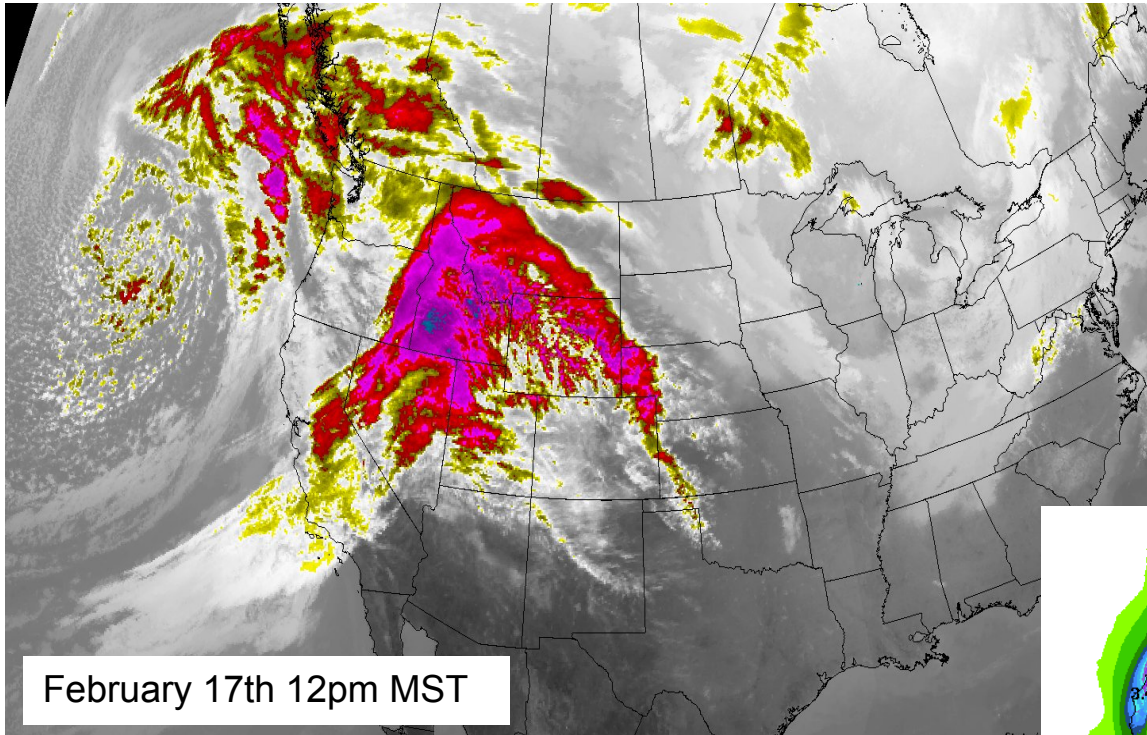
The latest (2016-02-16) 50% ESP forecast is 10 kaf.  
Plot Created 2016-02-16 15:13:03, NOAA / NWS / CBRFC  
Forecasts in the forecast target period include observed values.

# Forecasts: Upper Stillwater Reservoir

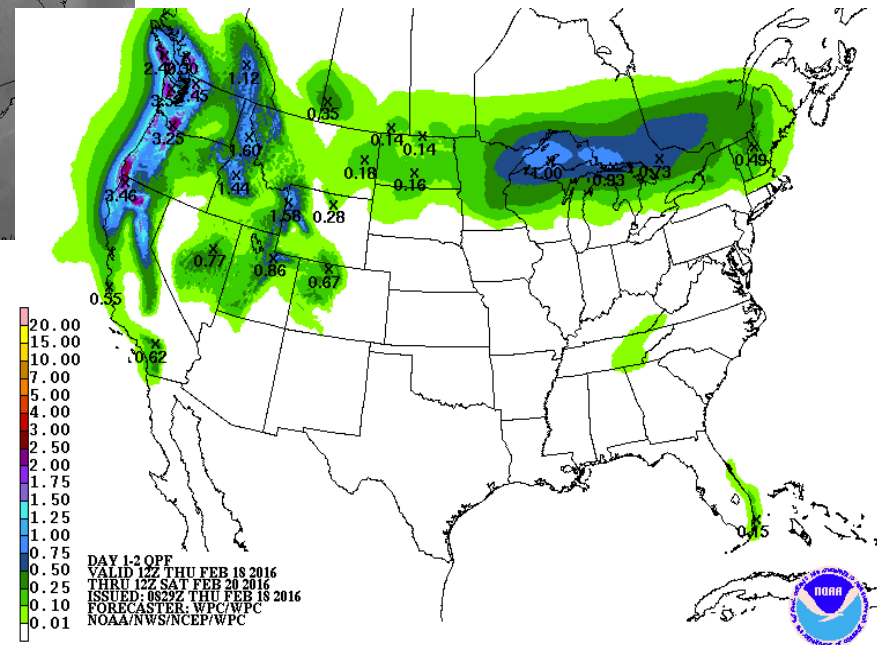


# Weather Outlook

- Quick moving storm system for Thursday
- Snow in mountains, rain in valleys before changing to snow



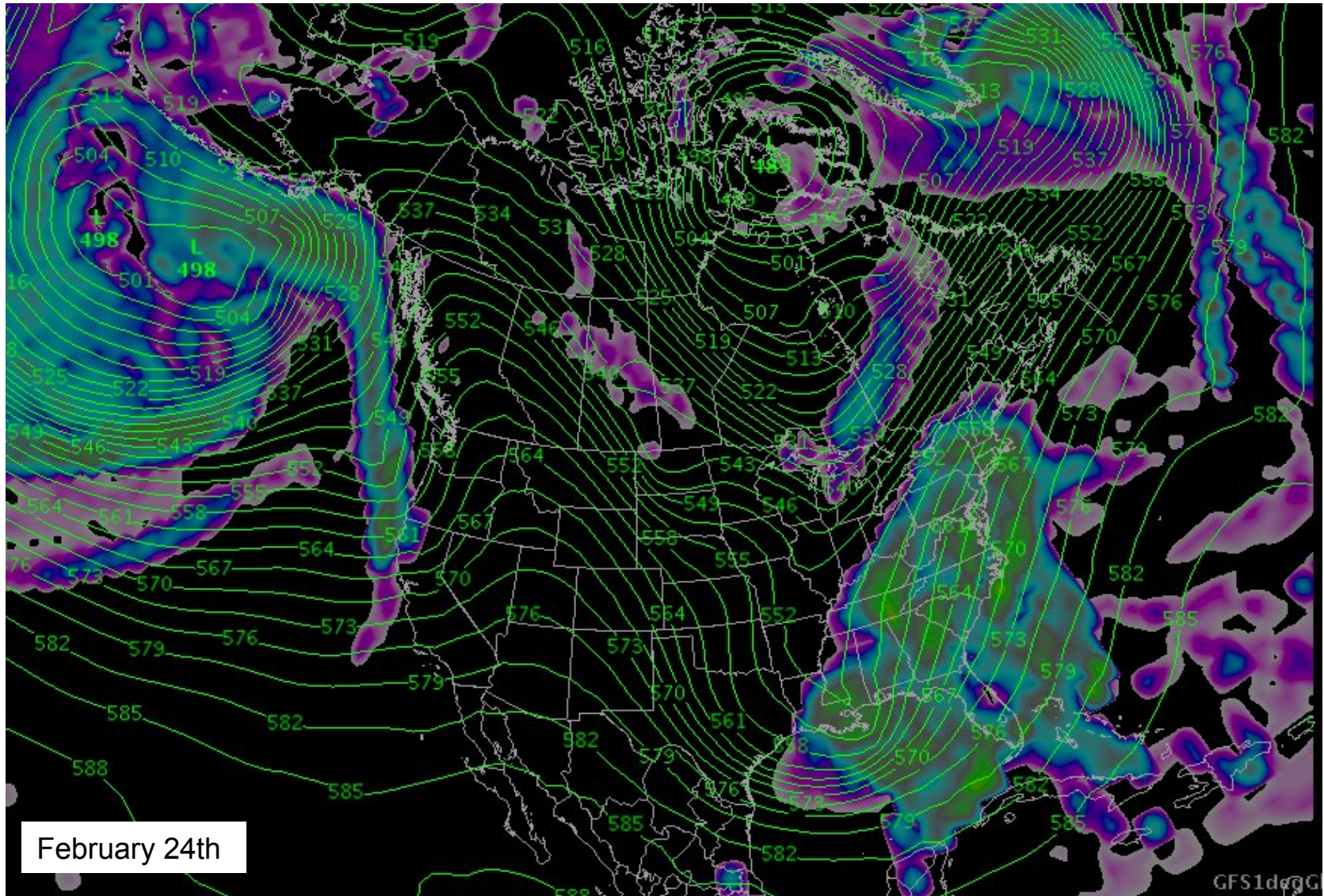
2/18-2/19 Forecasted Precipitation





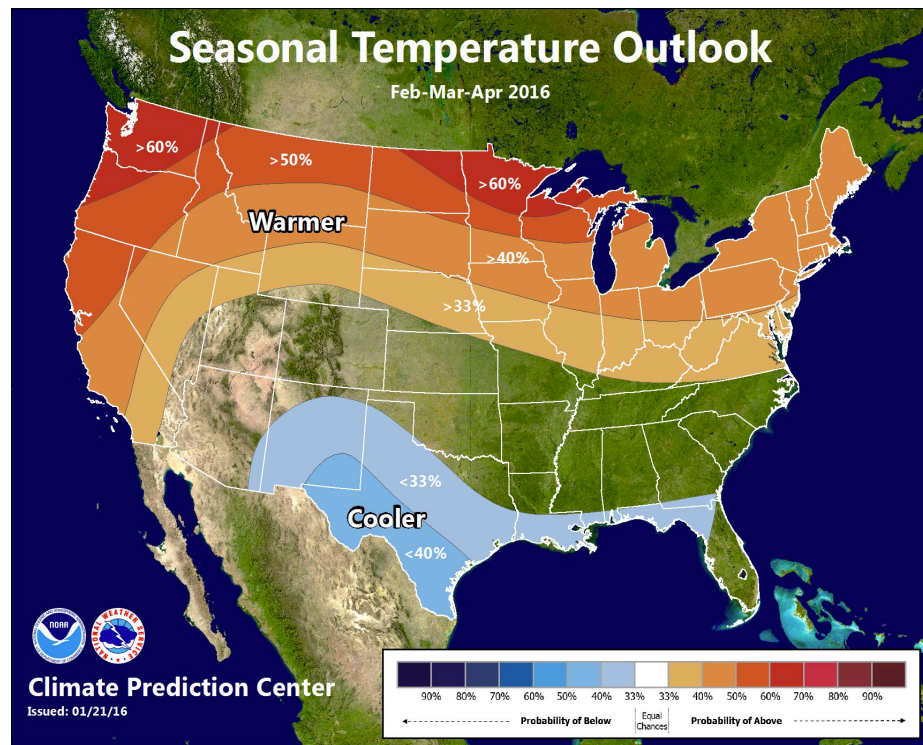
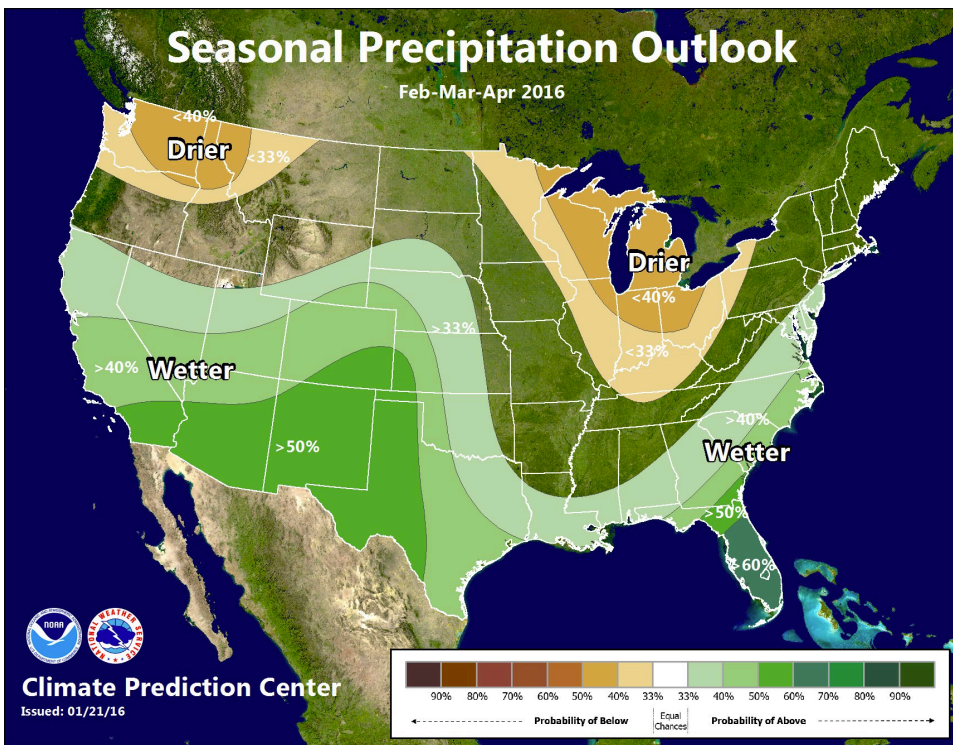
# Weather Outlook

- A few weak systems for the weekend- mostly Northern Utah/Wyoming
- High pressure/drying conditions return for next week

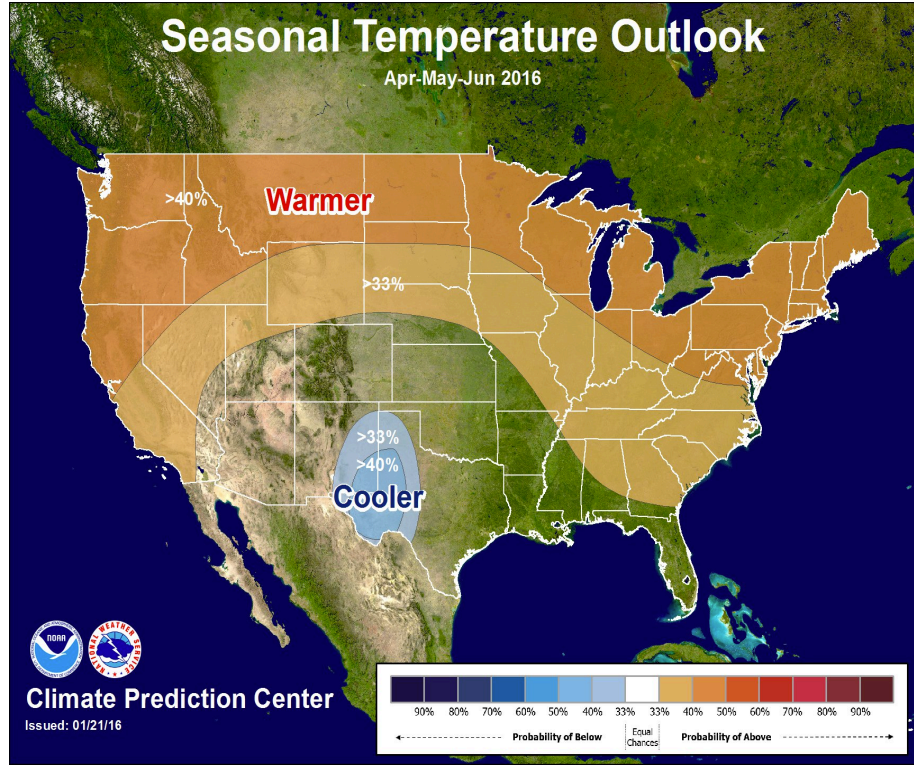
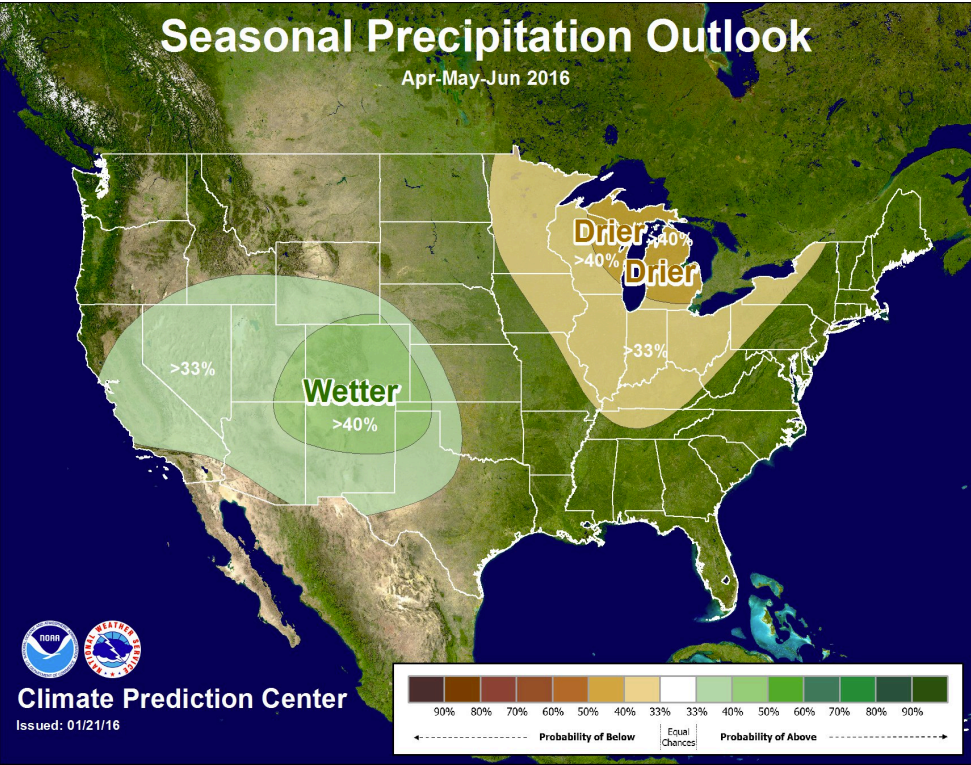




# Weather Outlook: February-April



# Weather Outlook: April-July



# Discussion/Website Demo

- Forecast Discussion
  - Peak Flow Forecasts in March
- Operations Discussion
- Next briefing date?
  - Week of March 14<sup>th</sup>?

Other webinars:

- 2/23 @11am Live Web Page Demo
- 3/7 @10am Great Basin Webinar