

February 2017 Colorado River Basin Water Supply Briefing

Feb 7, 2017

Brenda Alcorn – Sr. Hydrologist

Colorado Basin River Forecast Center
National Weather Service
NOAA

Please mute your phone
until ready to ask questions



Today's Presentation

January weather - A game changing month

Current snowpack conditions

2017 Water supply forecasts overview

February forecasts - How good are they?

Upcoming weather - Potential impacts to water supply forecasts

Contacts & Questions

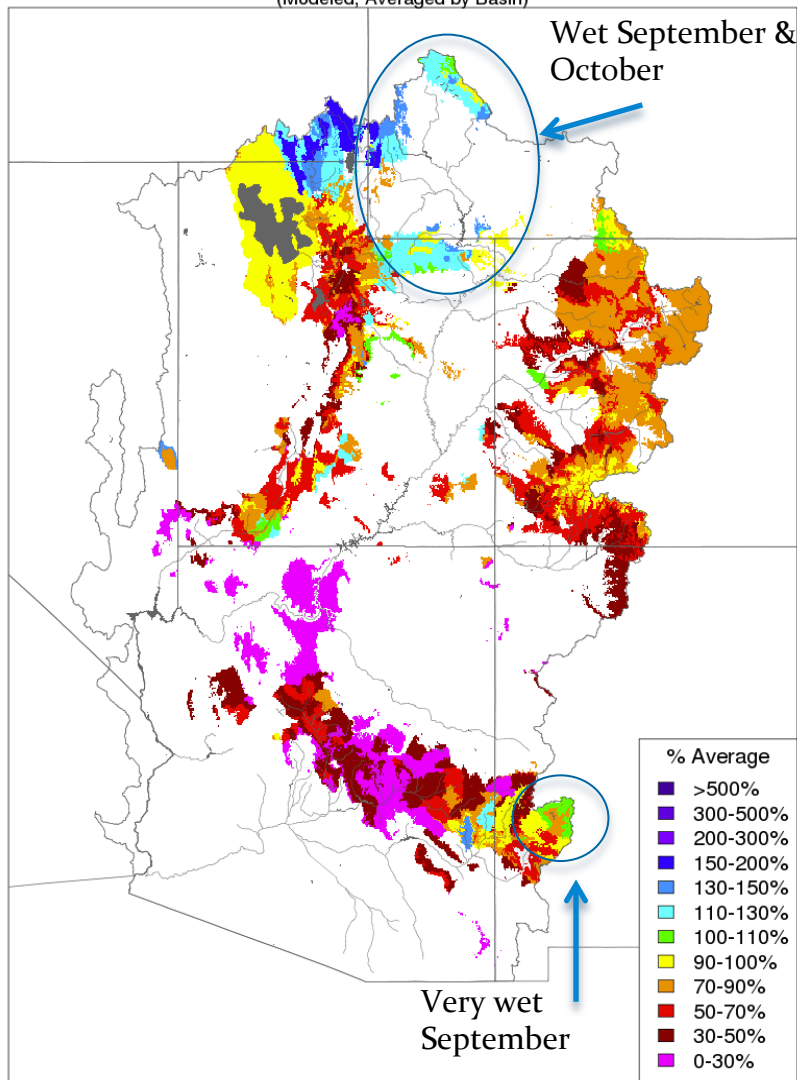
*** Please mute your phone until ready to ask questions ***

Fall Weather Impacts

Model Soil Moisture entering winter

Soil Moisture - Fall - 2016 (November 16)

(Modeled, Averaged by Basin)

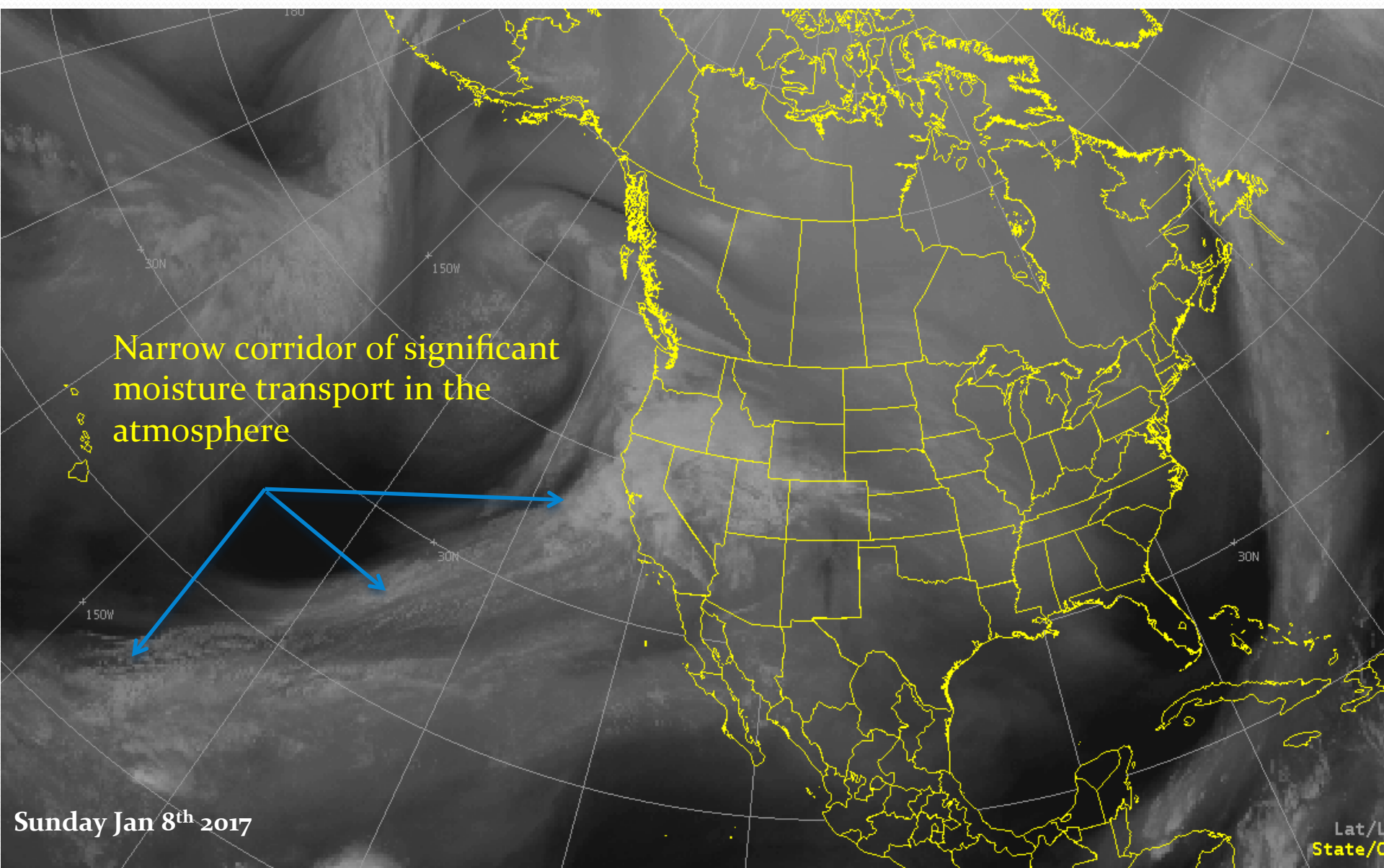


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrc.noaa.gov

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
 - Western Colorado basins, especially Gunnison and Dolores
- Significant snowpack + wet soils could see more enhanced spring runoff
 - Upper Green and Duchesne river basins

Mid December through January: "Atmospheric Rivers"



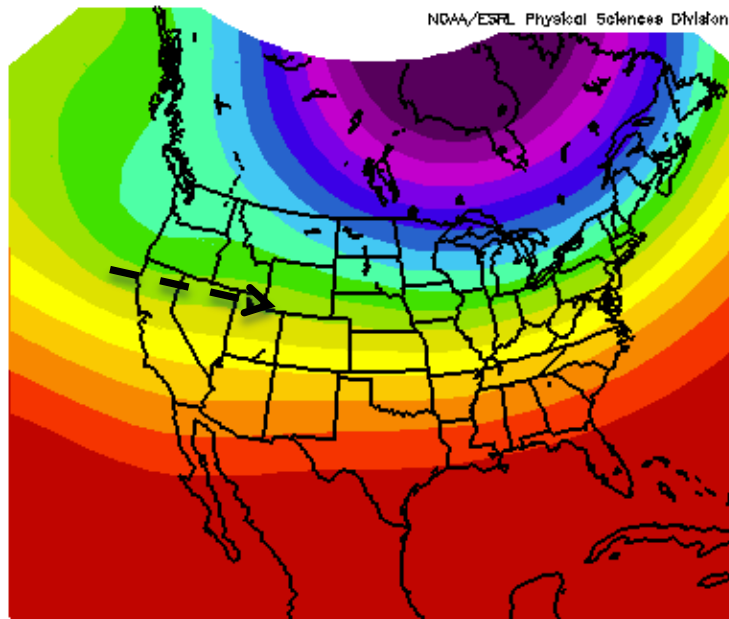
Narrow corridor of significant moisture transport in the atmosphere

Sunday Jan 8th 2017

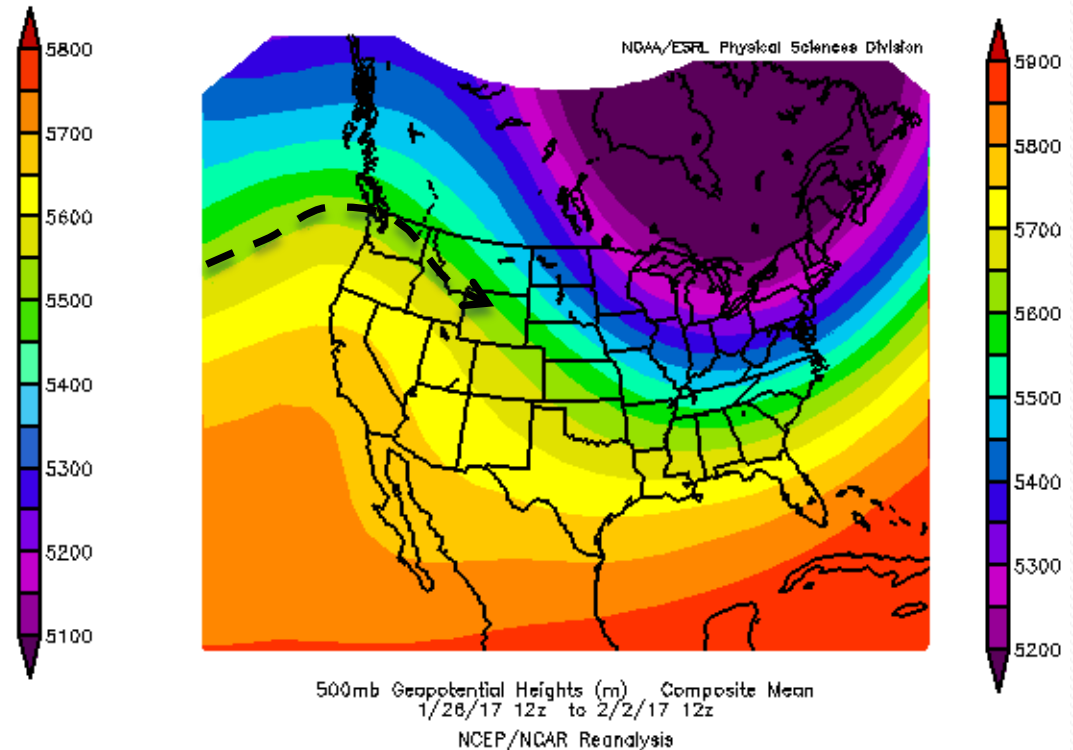
Lat/L
State/C

January Weather

*Active and wet pattern continued for most of the month
Drier conditions the last week of the month*



Strong onshore flow continued to transport significant moisture into the western U.S for most of the month.

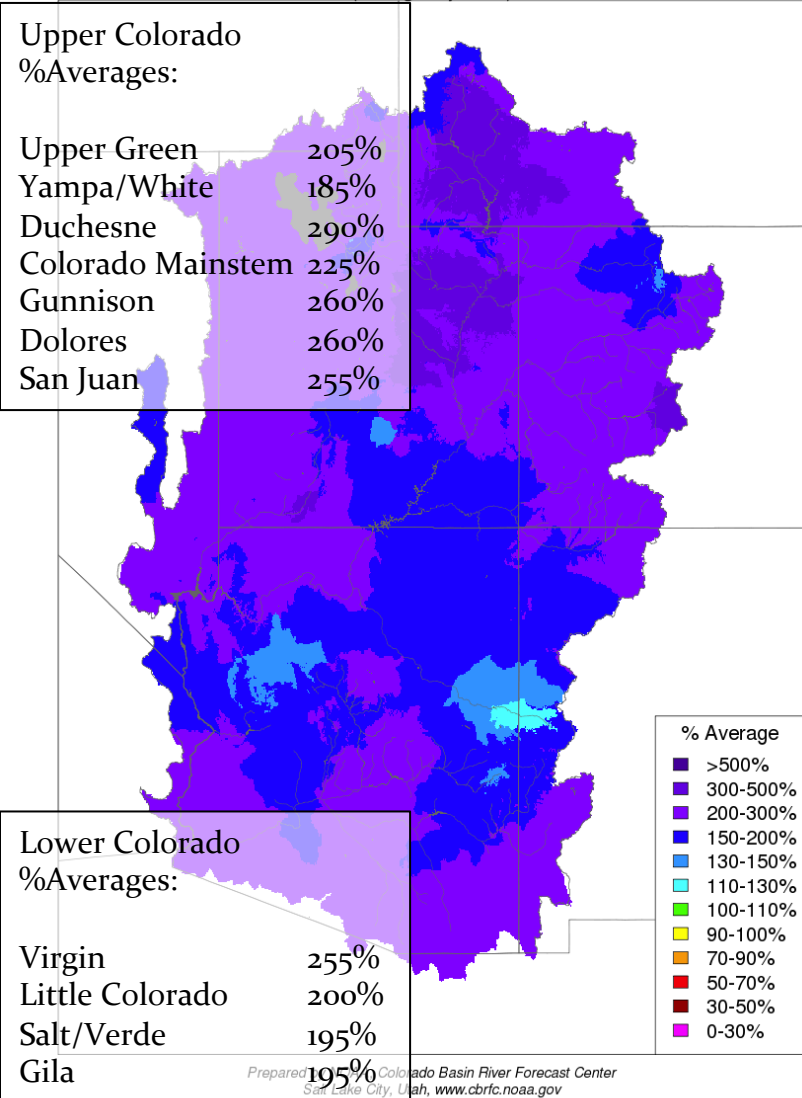


Ridging over the west coast during the last week of the month brought drier conditions to most of the Colorado River Basin.

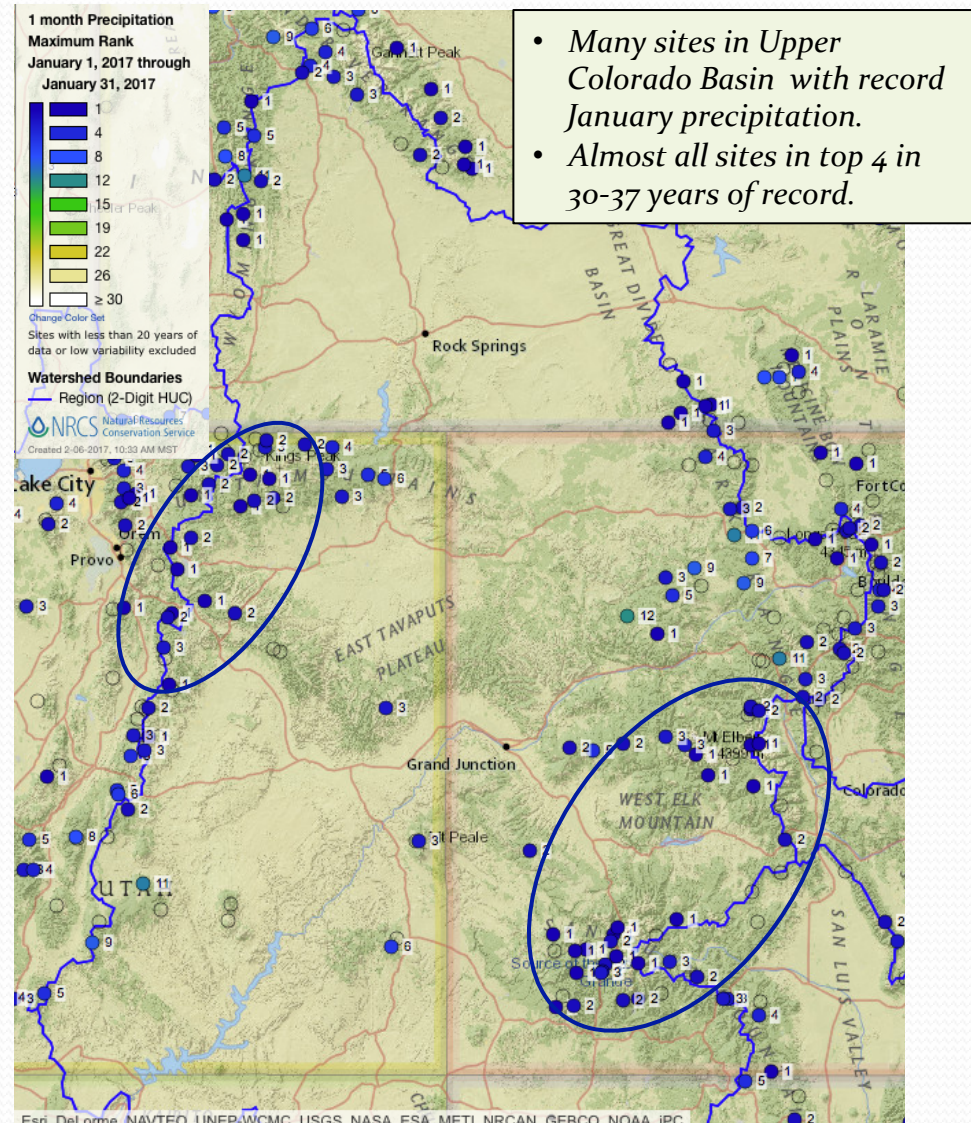
January Weather: Monthly Precipitation

Game changer for water supply!

Monthly Precipitation - January 2017
(Averaged by Basin)



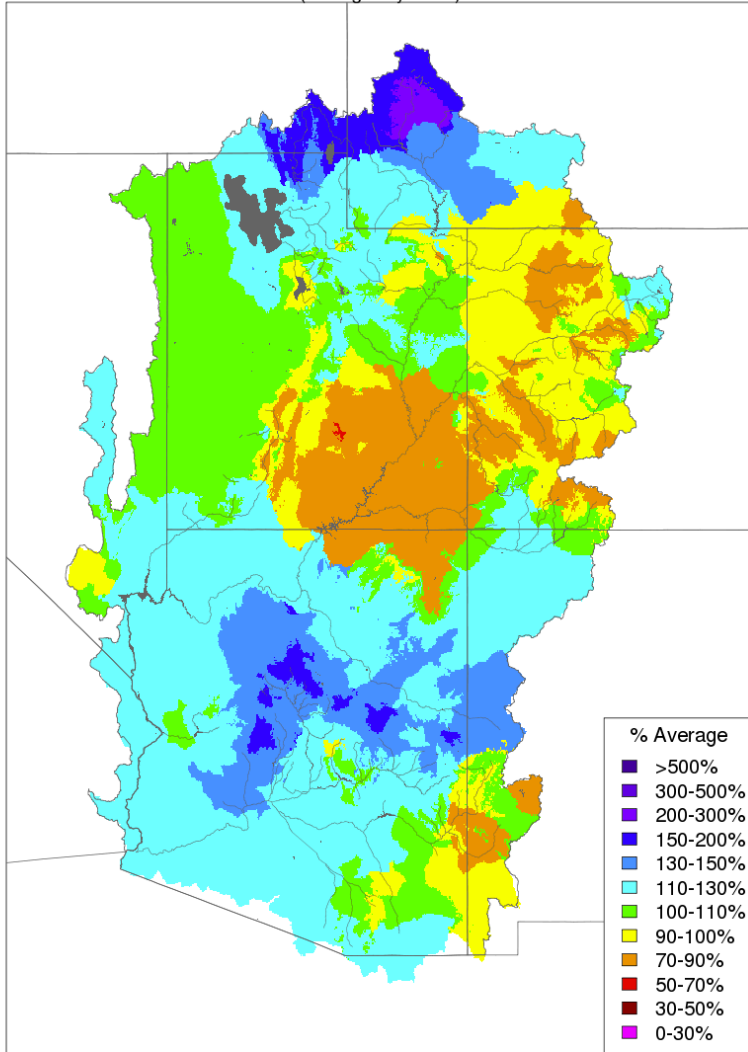
January SNOTEL Precipitation Rankings



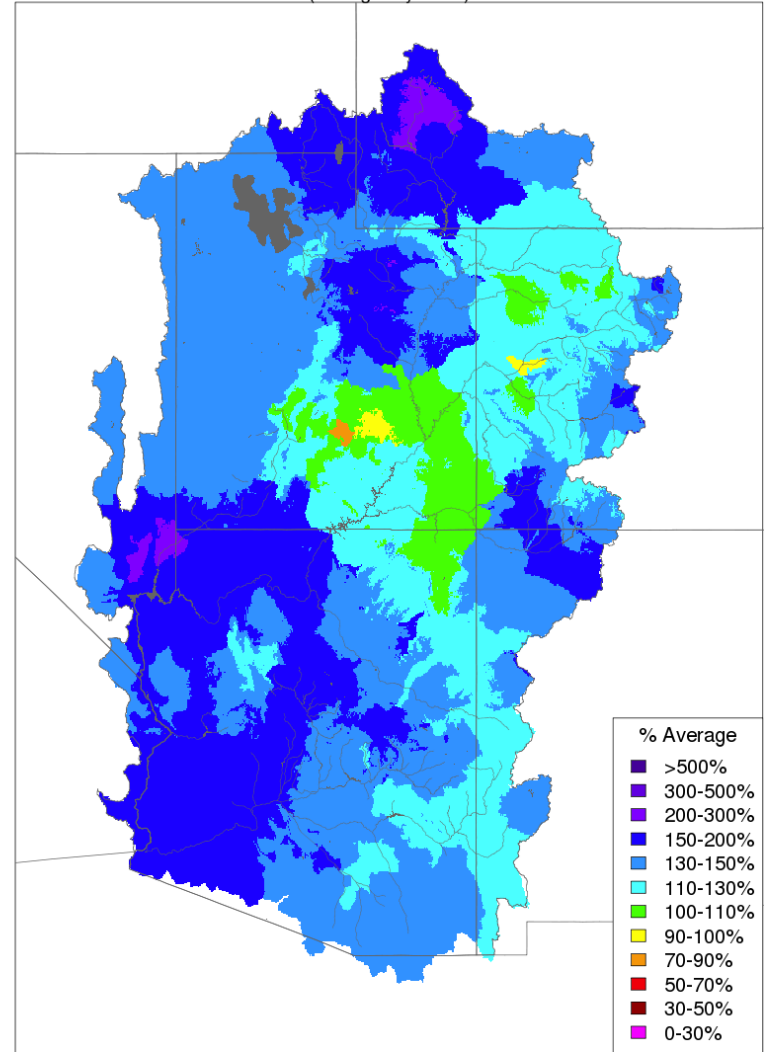
January Weather: Seasonal Precipitation

Basins above Lake Powell ~140% average overall.

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



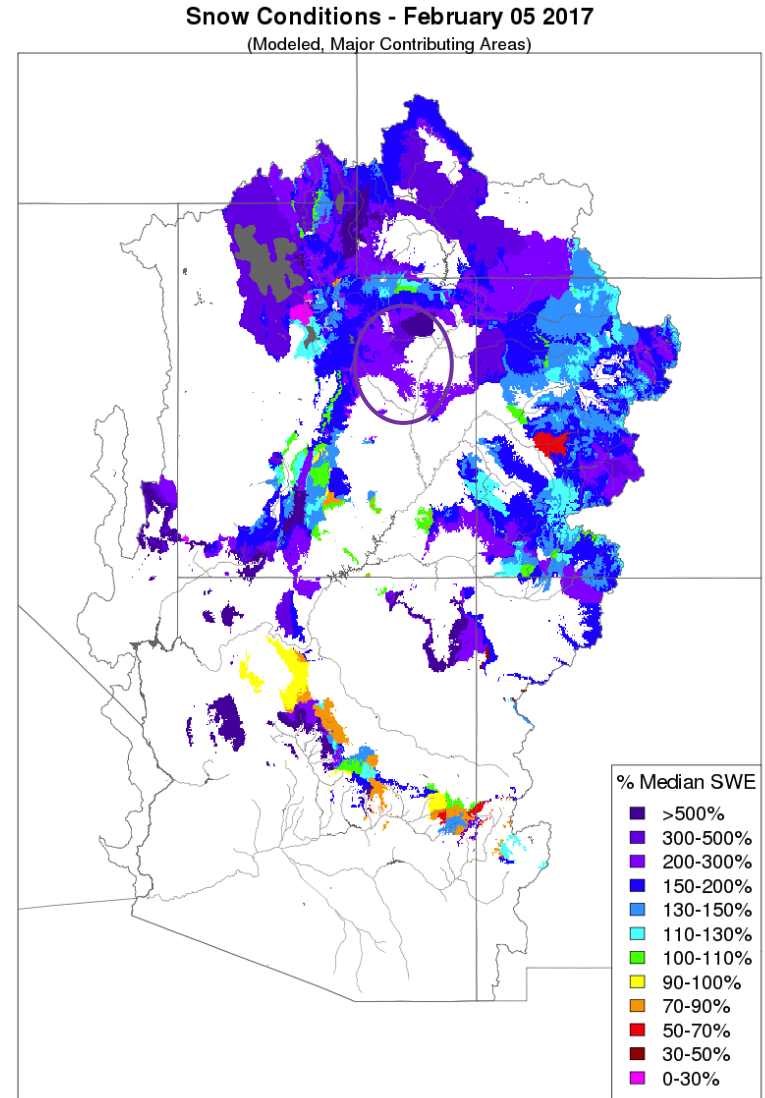
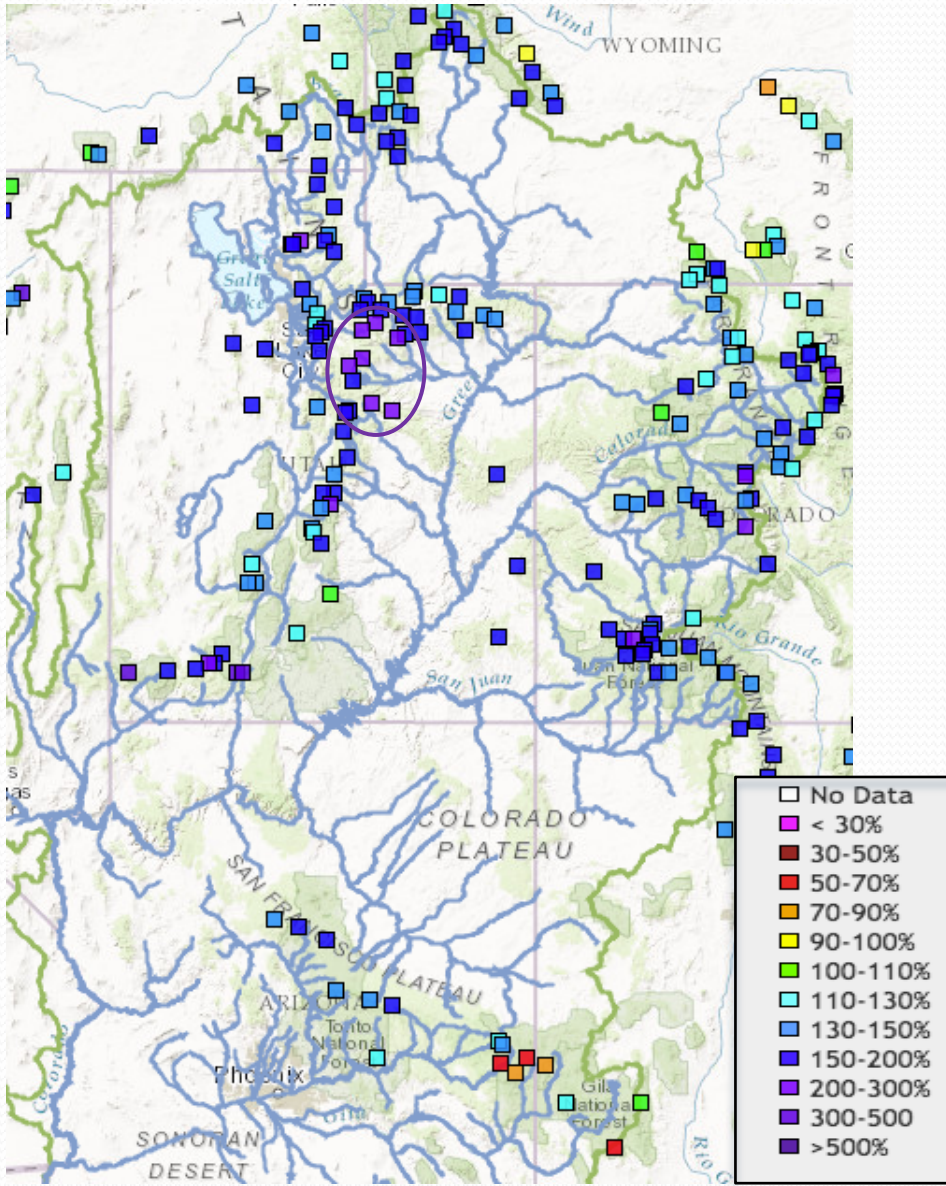
Water Year Precipitation, October 2016 - January 2017
(Averaged by Basin)



Snow Conditions

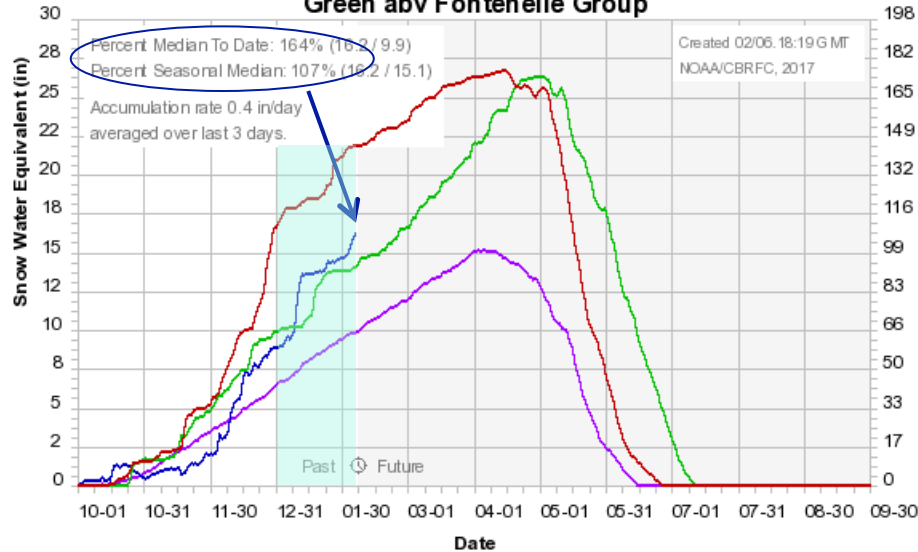
SNOTEL (% median): February 5, 2017

CBRFC MODEL SNOW (% median):

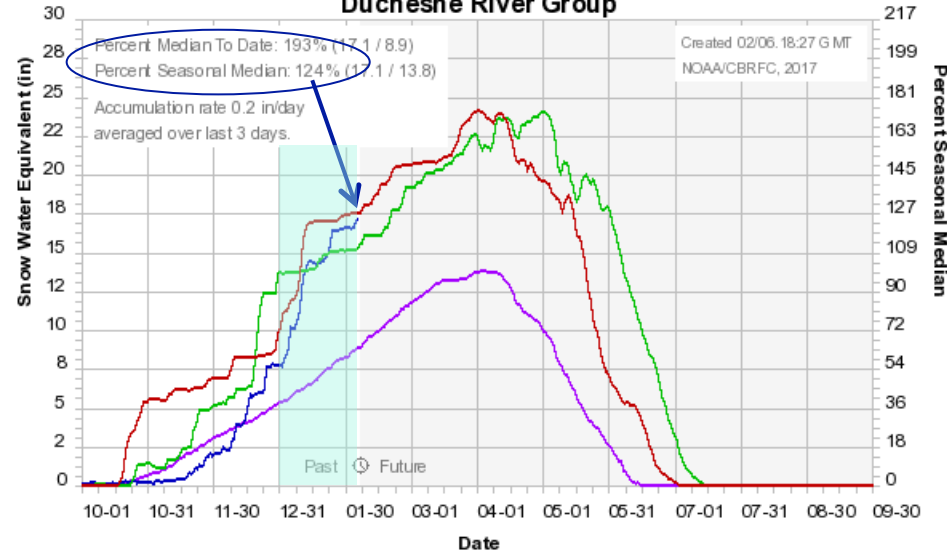


January Weather: Impact to the snowpack

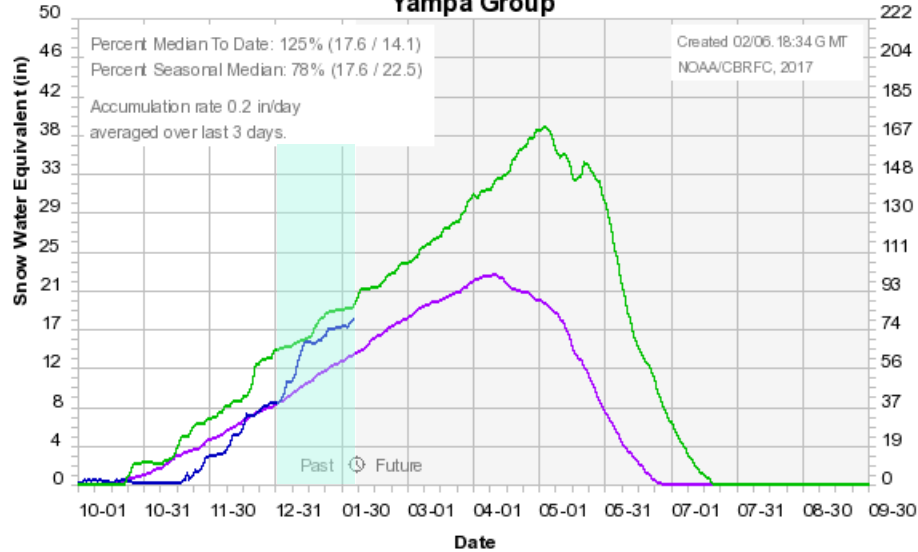
Colorado Basin River Forecast Center
Green abv Fontenelle Group



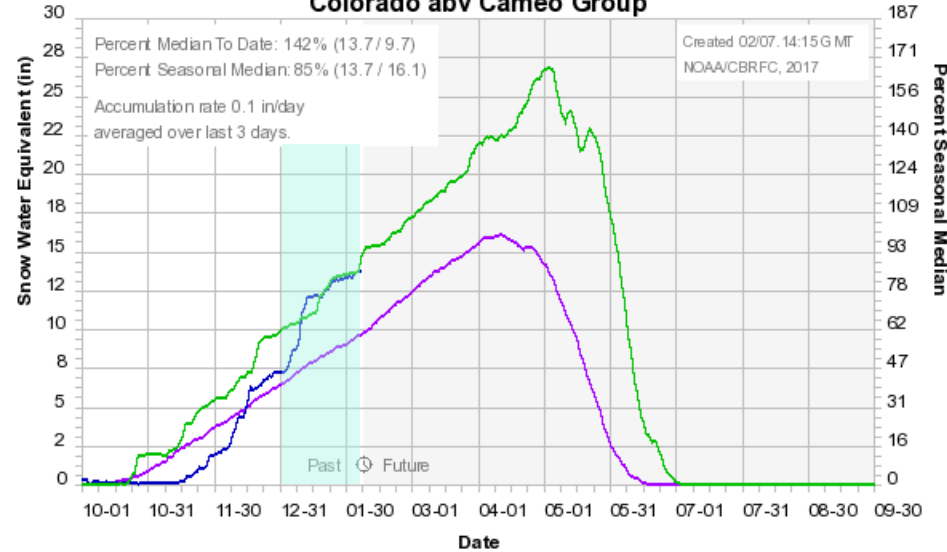
Colorado Basin River Forecast Center
Duchesne River Group



Colorado Basin River Forecast Center
Yampa Group

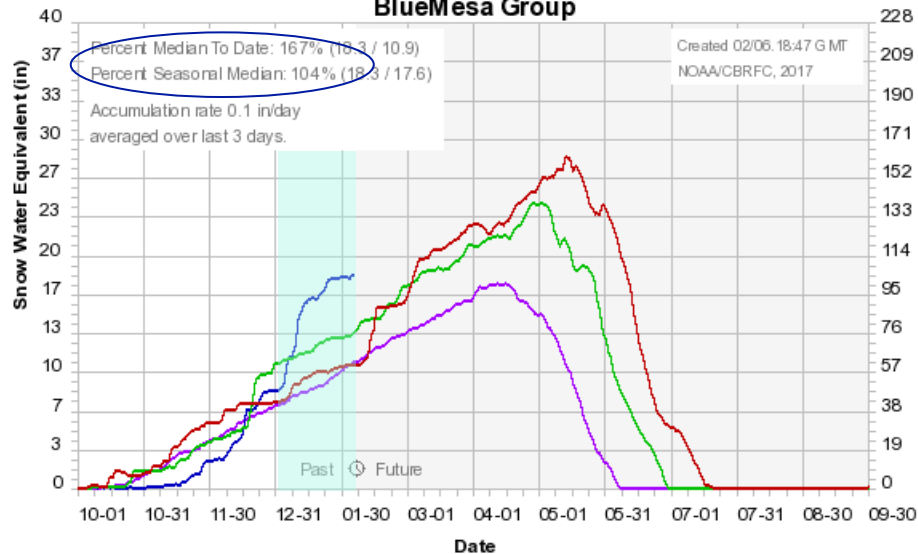


Colorado Basin River Forecast Center
Colorado abv Cameo Group

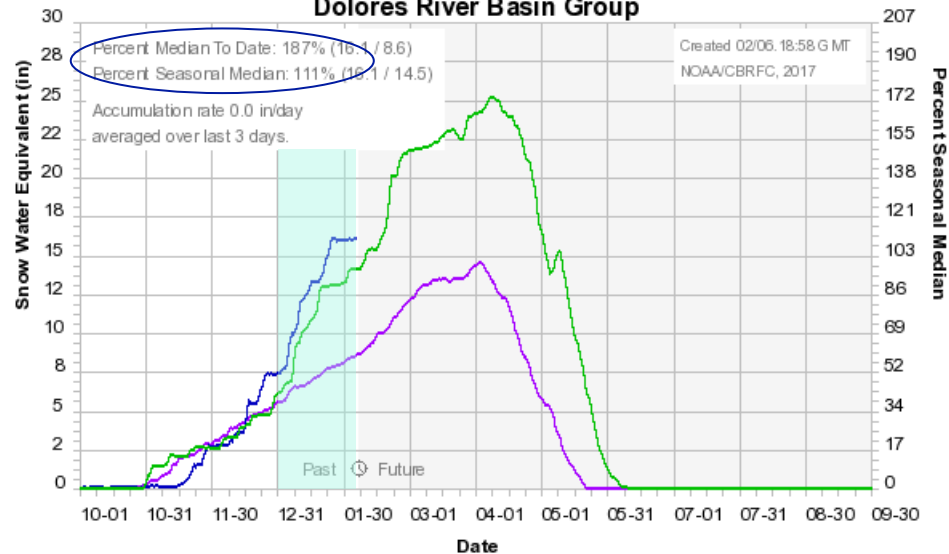


January Weather: Impact to the snowpack

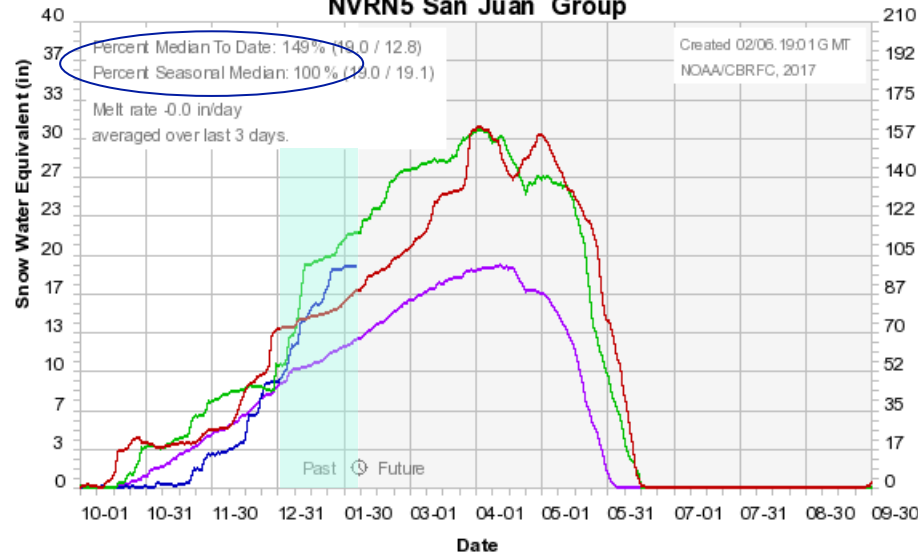
Colorado Basin River Forecast Center
BlueMesa Group



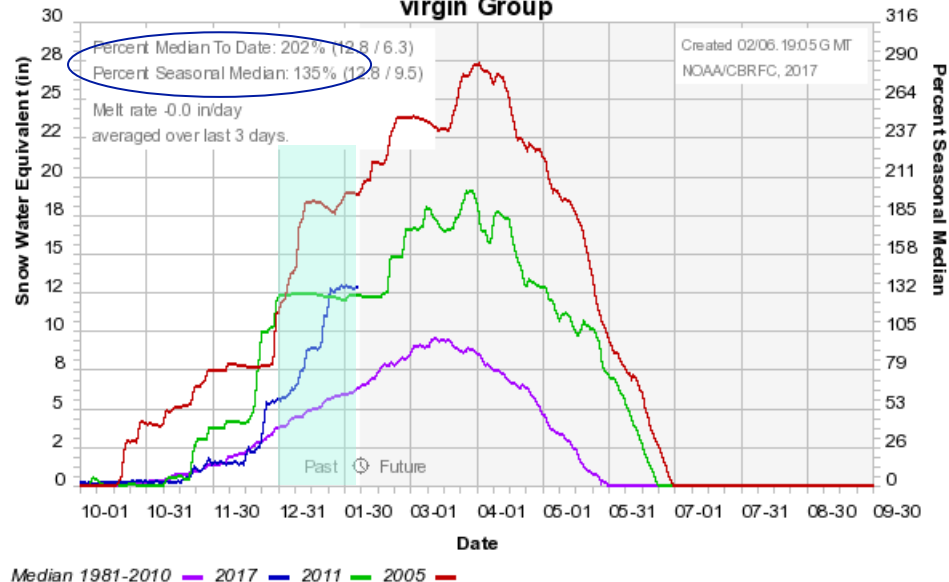
Colorado Basin River Forecast Center
Dolores River Basin Group



Colorado Basin River Forecast Center
NVRN5 San Juan Group

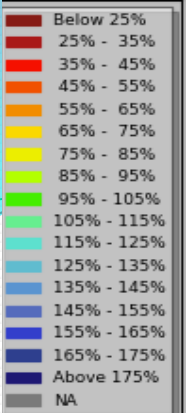


Colorado Basin River Forecast Center
virgin Group



Upper Colorado April-July Streamflow Volume Forecasts (% of 1981-2010 average)

Forecasts as of Feb 1 2017



Fontenelle:
1200 KAF / 166%

Flaming Gorge:
1650 KAF / 168%

Duchesne-Randlett:
655 KAF / 170%

Yampa-Deerlodge:
1400 KAF / 113%

Colorado-Cameo:
2780 KAF / 118%

Blue Mesa:
925 KAF / 137%

McPhee Res:
440 KAF / 149%

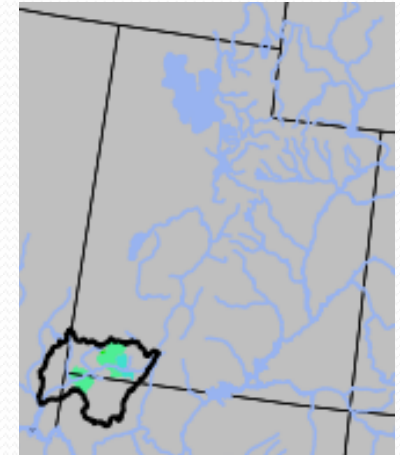
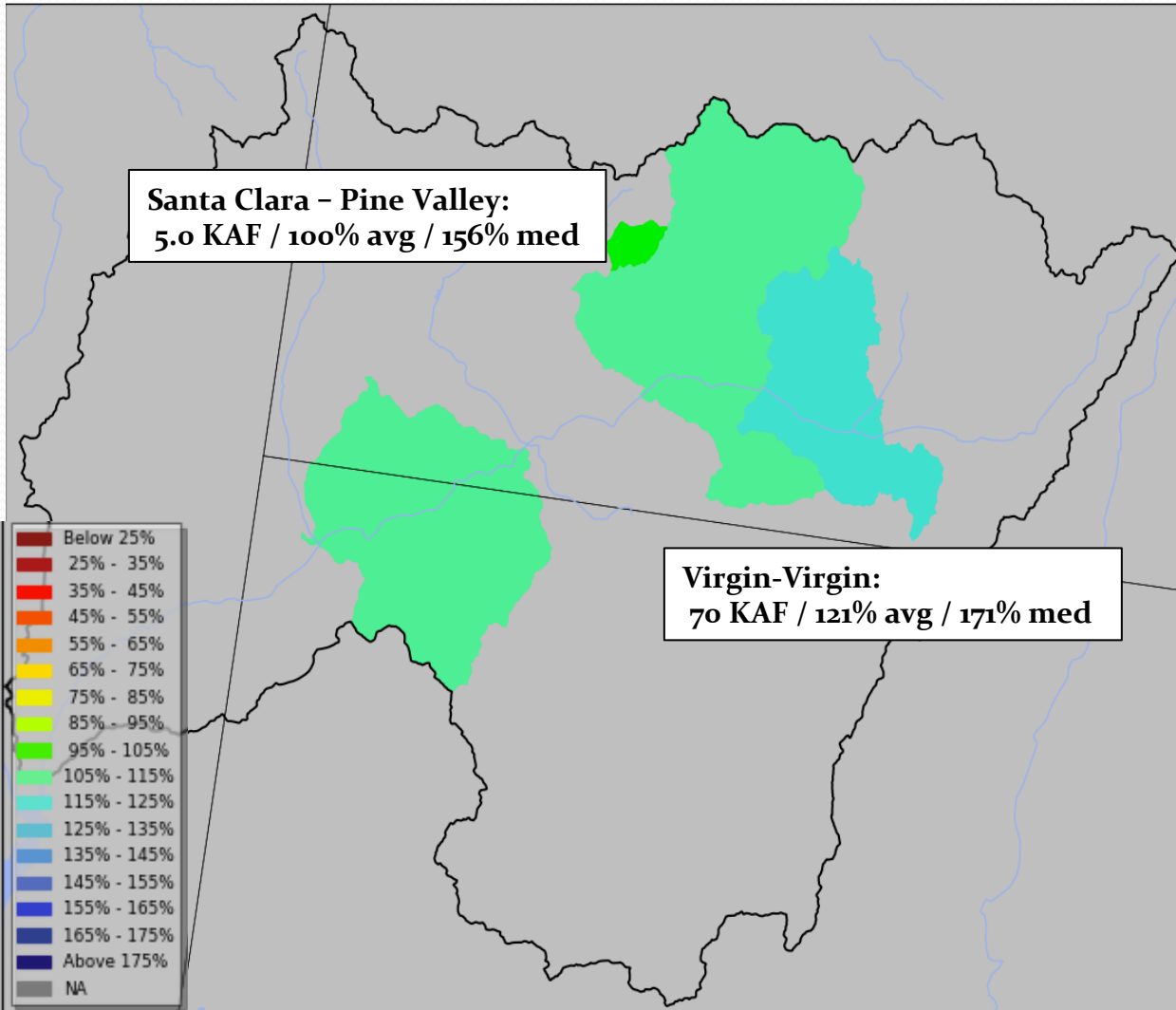
Lake Powell:
9600 KAF / 134%

Navajo Res:
880 KAF / 120%

Forecasted percent averages increased 20 - 50% since Jan 1

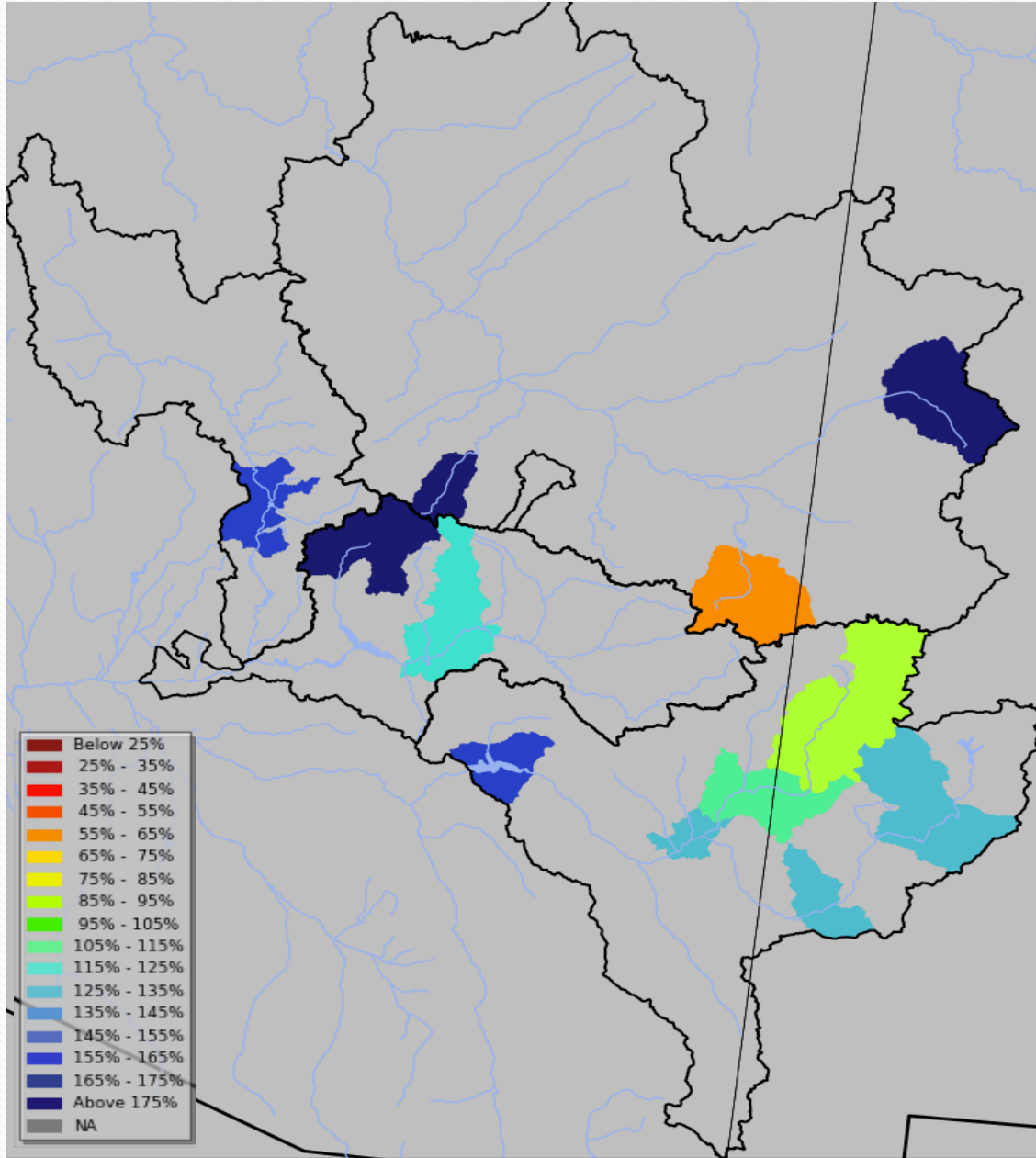
Lower Colorado (Virgin River) April-July Streamflow Volume Forecasts (% of 1981-2010 average / median)

Forecasts as of Feb 1 2017

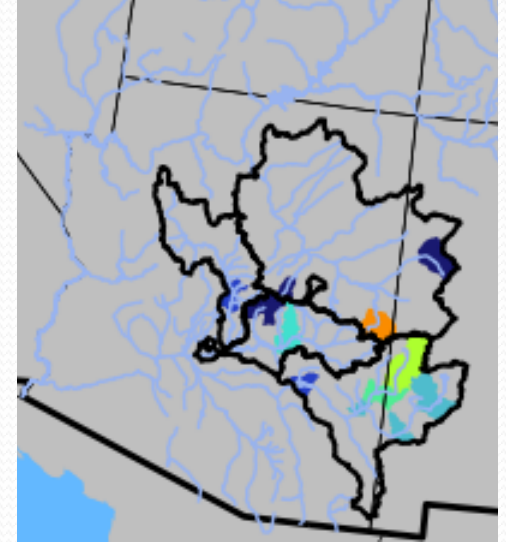


Lower Colorado Feb-May Streamflow Volume Forecasts

(% of 1981-2010 median)



Forecasts as of Feb 1 2017



Little Colorado-Lyman:
3.7 KAF / 56% med

Verde-Horseshoe:
215 KAF / 158% med

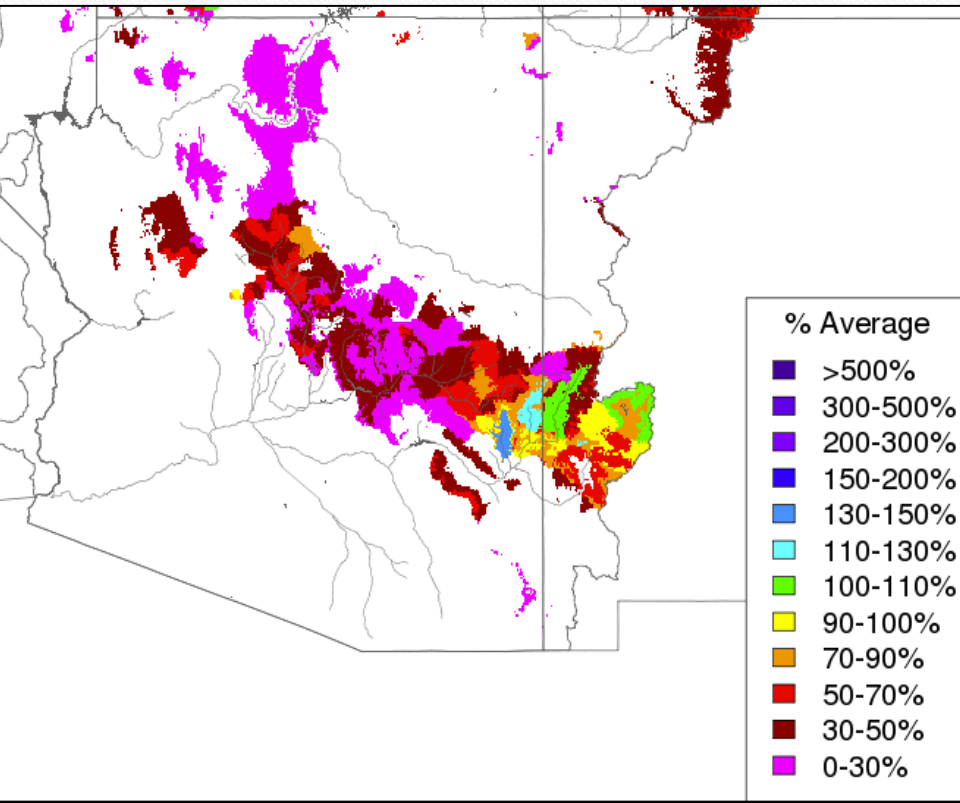
Salt - Roosevelt:
335 KAF / 118% med

Gila-Gila:
65 KAF / 130% med

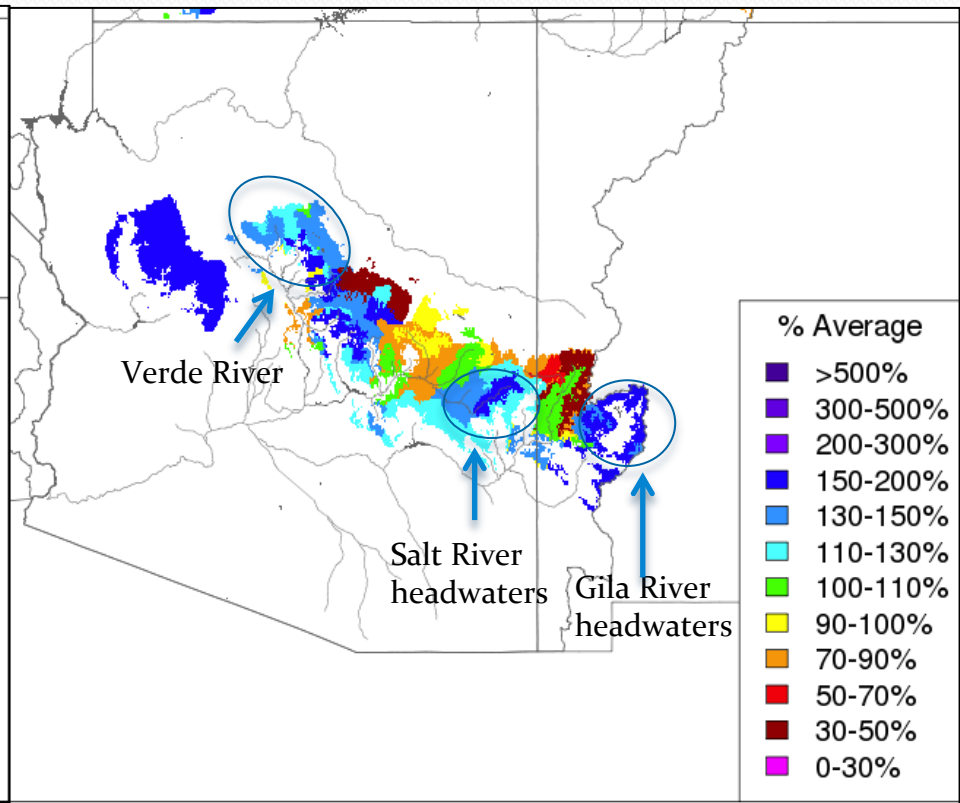
CBRFC Model Soil Moisture

Winter rain and snowmelt impacts to soil moisture in the Lower Colorado River Basin

Nov 15 2016

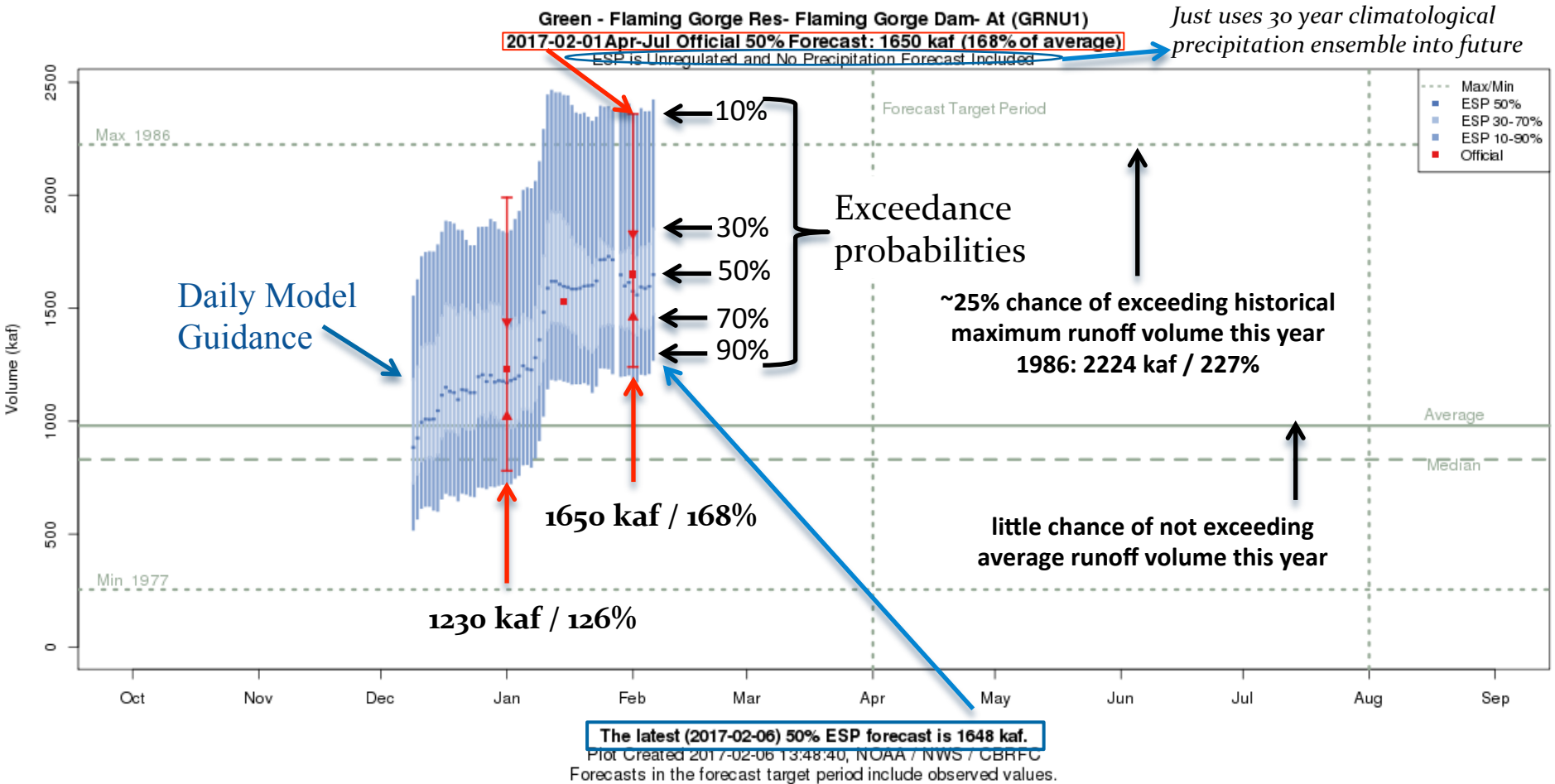


Feb 6 2017



Forecast Evolution Plot: Flaming Gorge Inflow

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

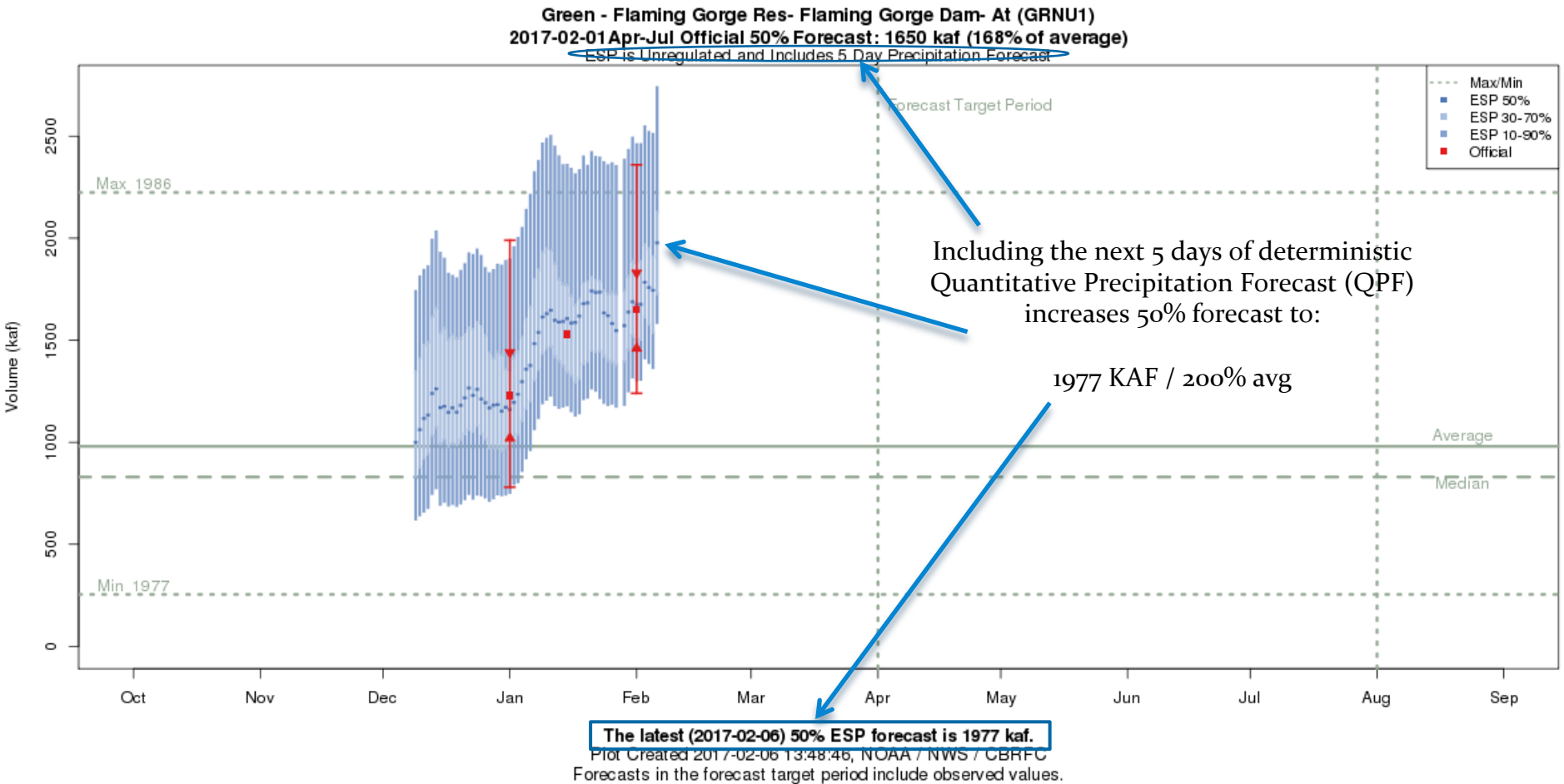


Plots are available at: <https://www.cbrfc.noaa.gov>

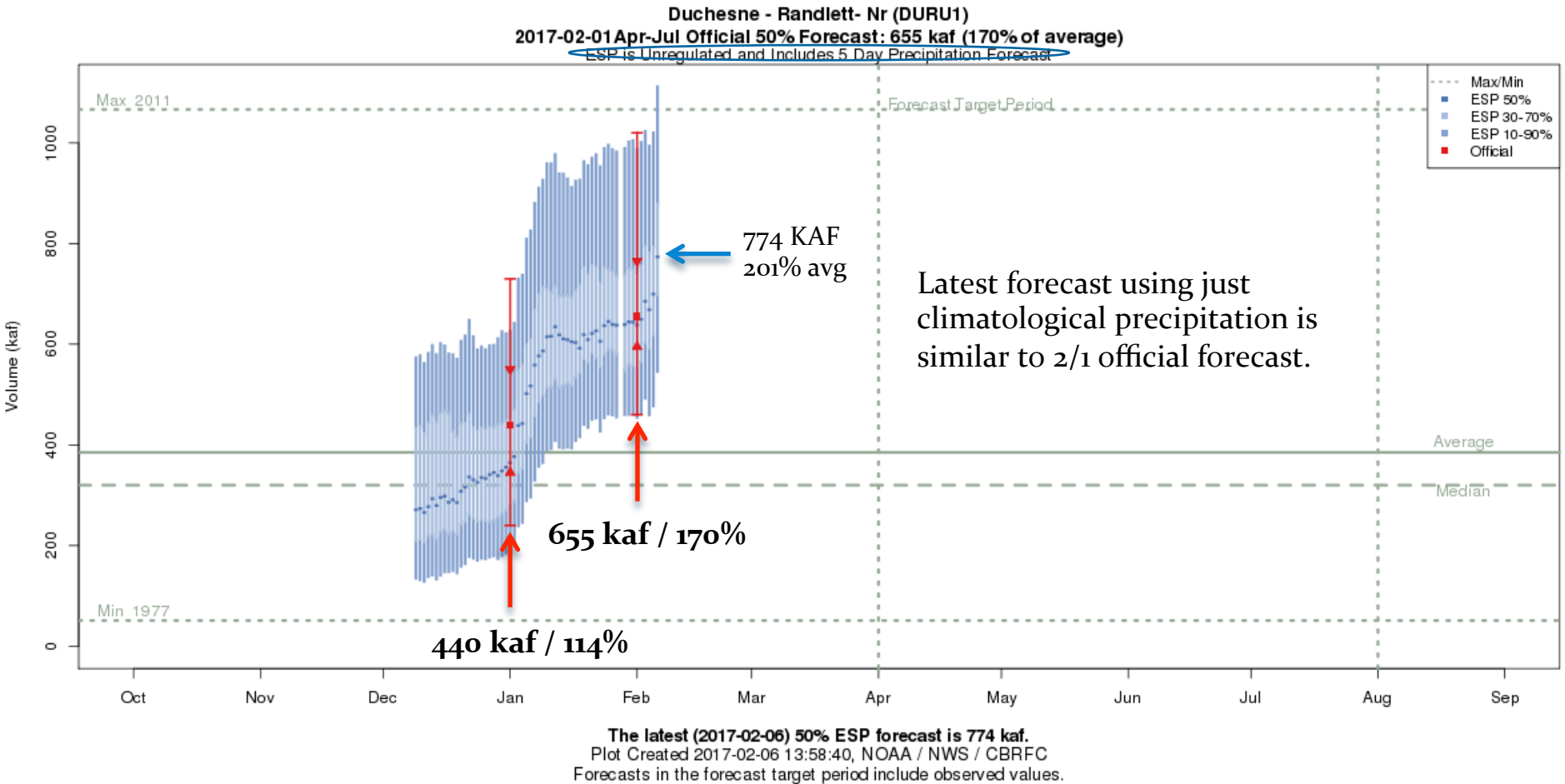
Select WATER SUPPLY from the top menu

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

Forecast Evolution Plot: Flaming Gorge Inflow

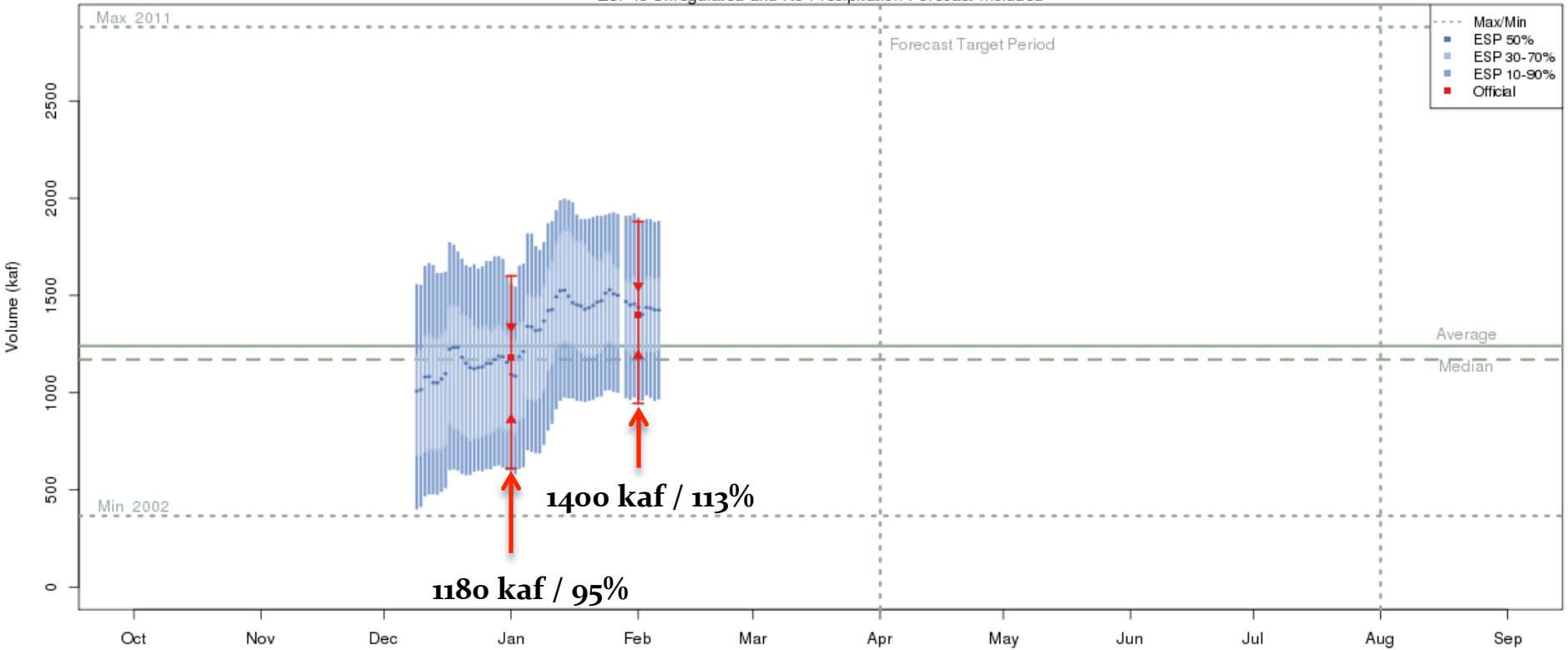


Forecast Evolution Plot: Duchesne-Randlett



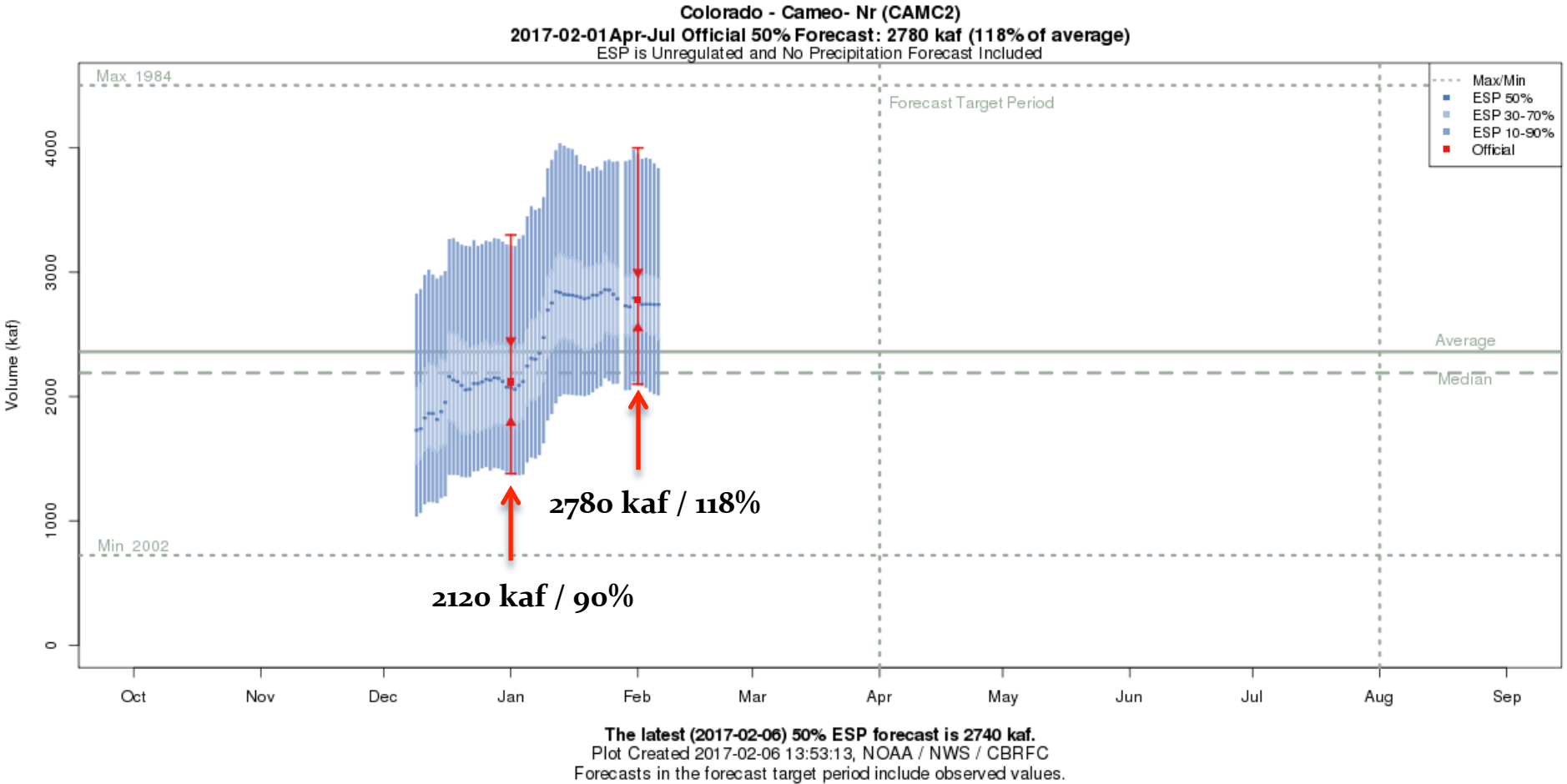
Forecast Evolution Plot: Yampa - Deerlodge Park

Yampa - Deerlodge Park (YDLC2)
2017-02-01 Apr-Jul Official 50% Forecast: 1400 kaf (113% of average)
ESP is Unregulated and No Precipitation Forecast Included

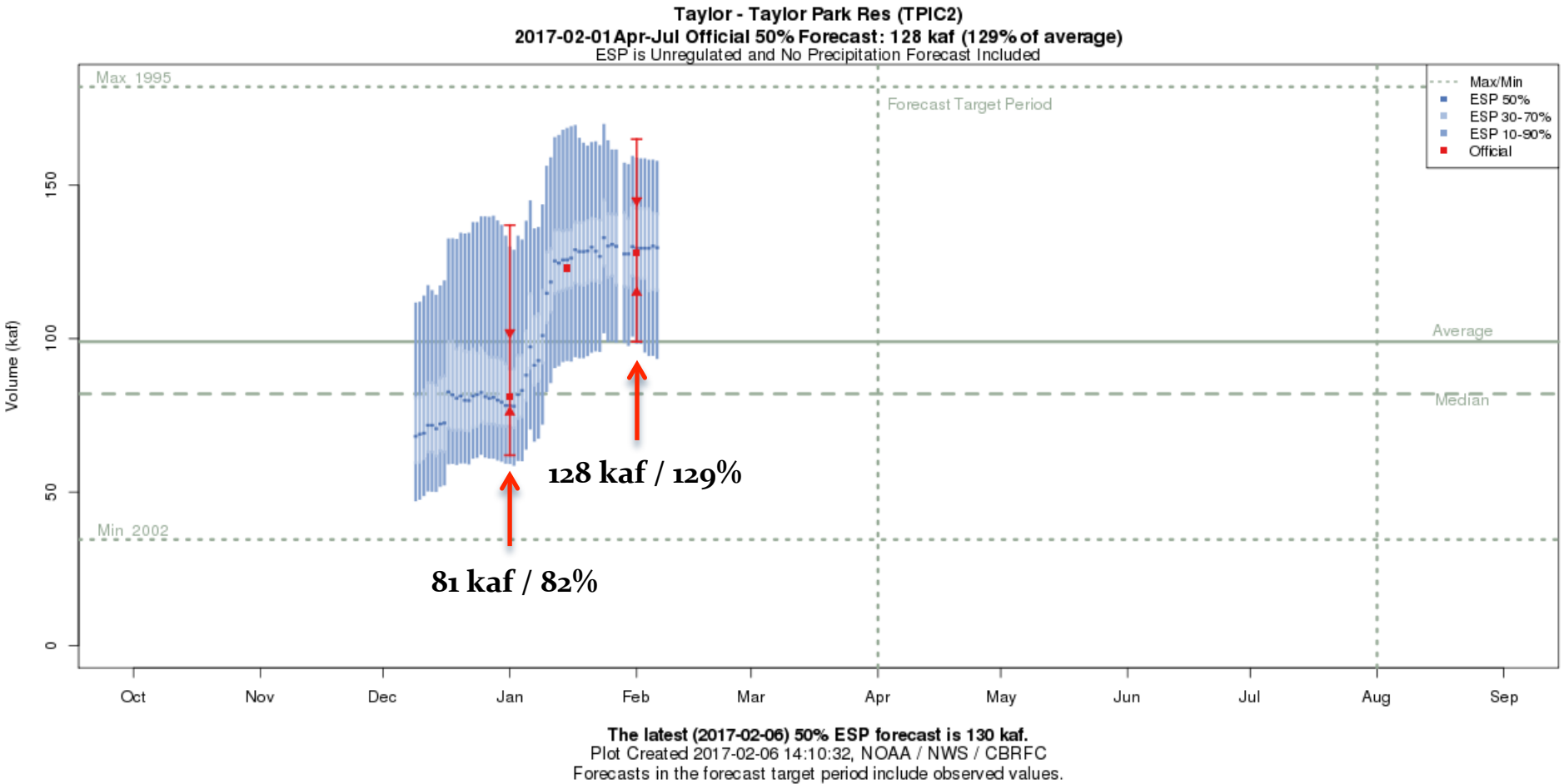


The latest (2017-02-06) 50% ESP forecast is 1425 kaf.
Plot Created 2017-02-06 13:57:26, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

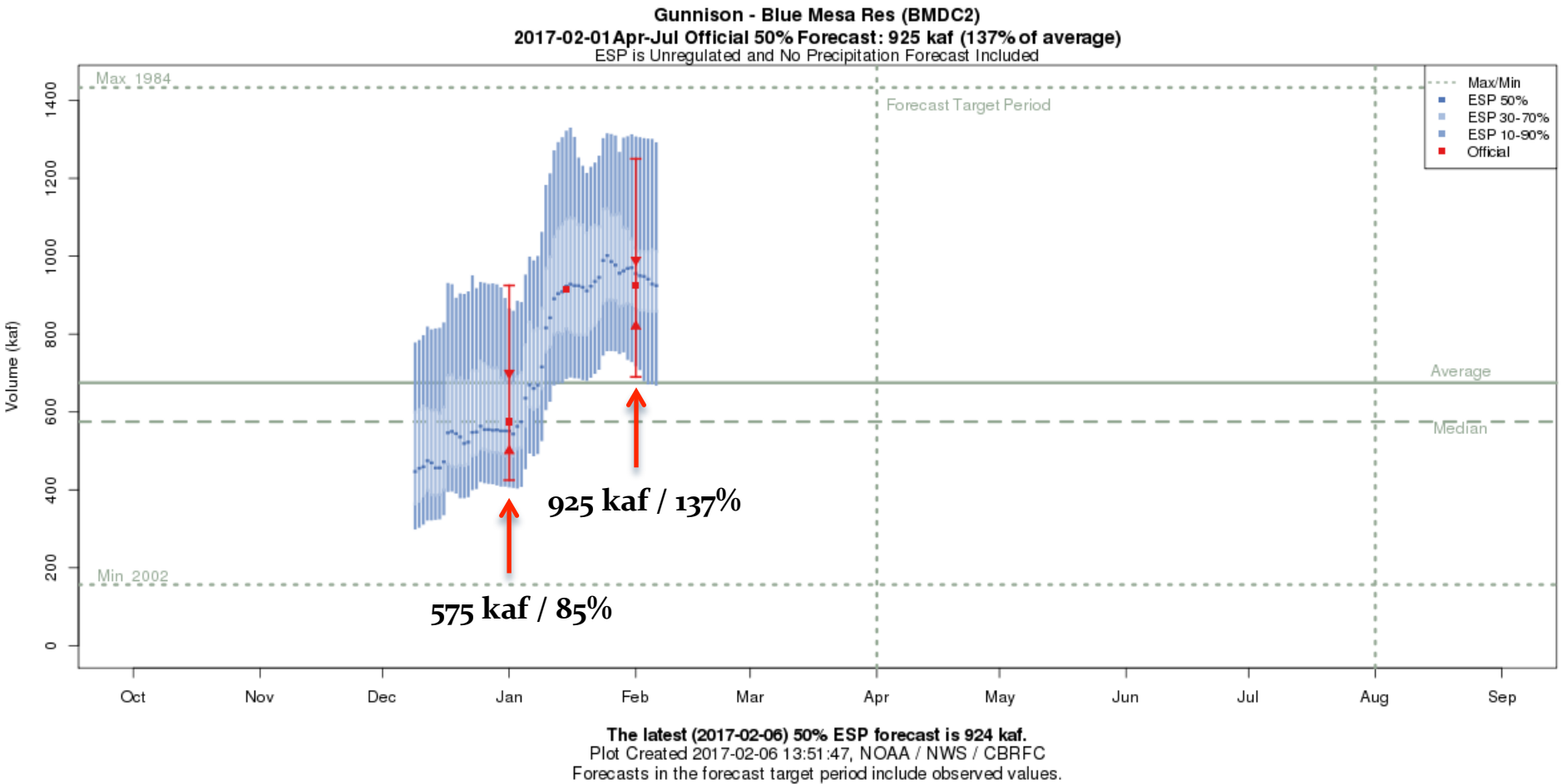
Forecast Evolution Plot: Colorado near Cameo



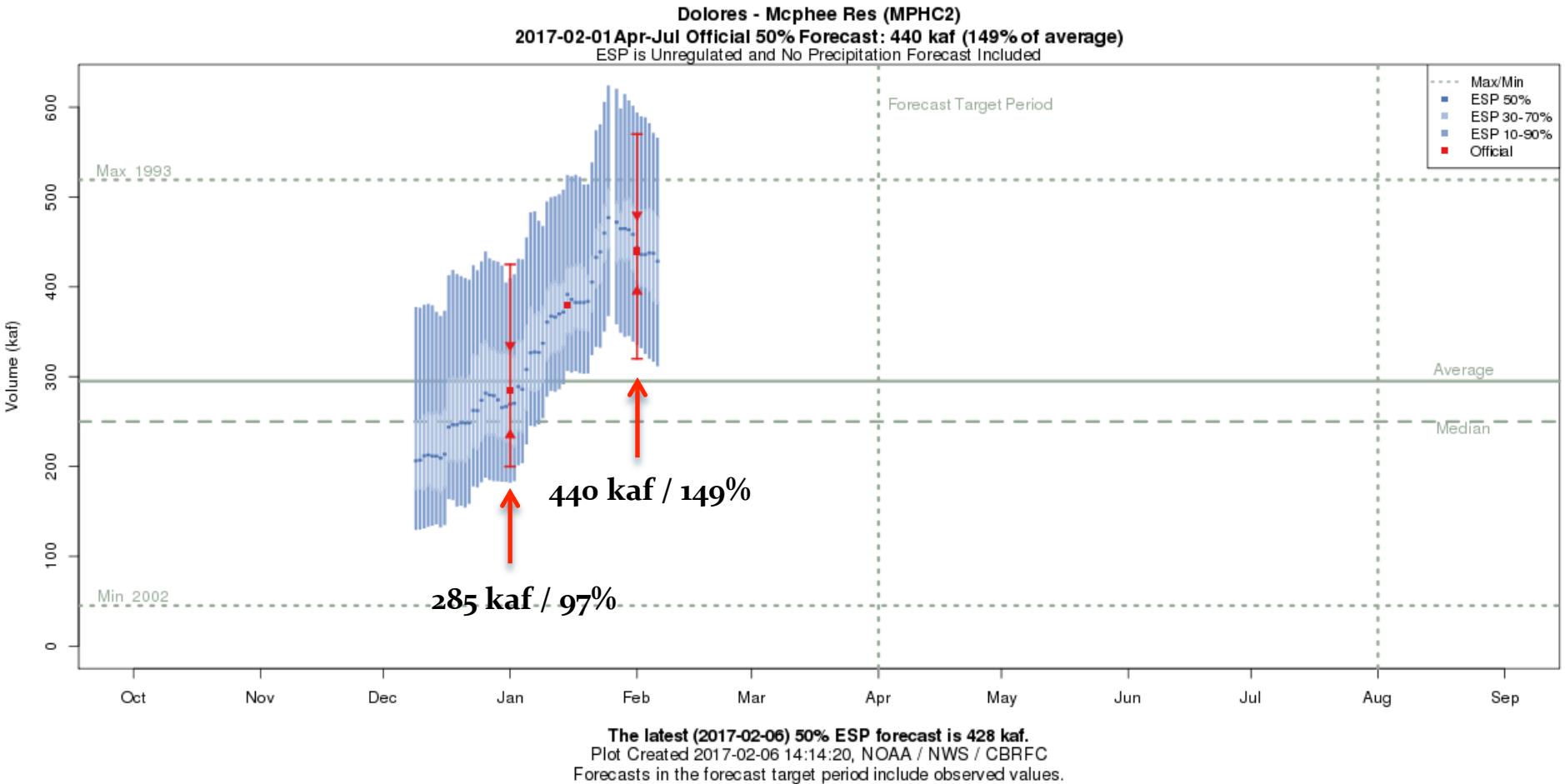
Forecast Evolution Plot: Taylor - Taylor Park Inflow



Forecast Evolution Plot: Gunnison - Blue Mesa Inflow

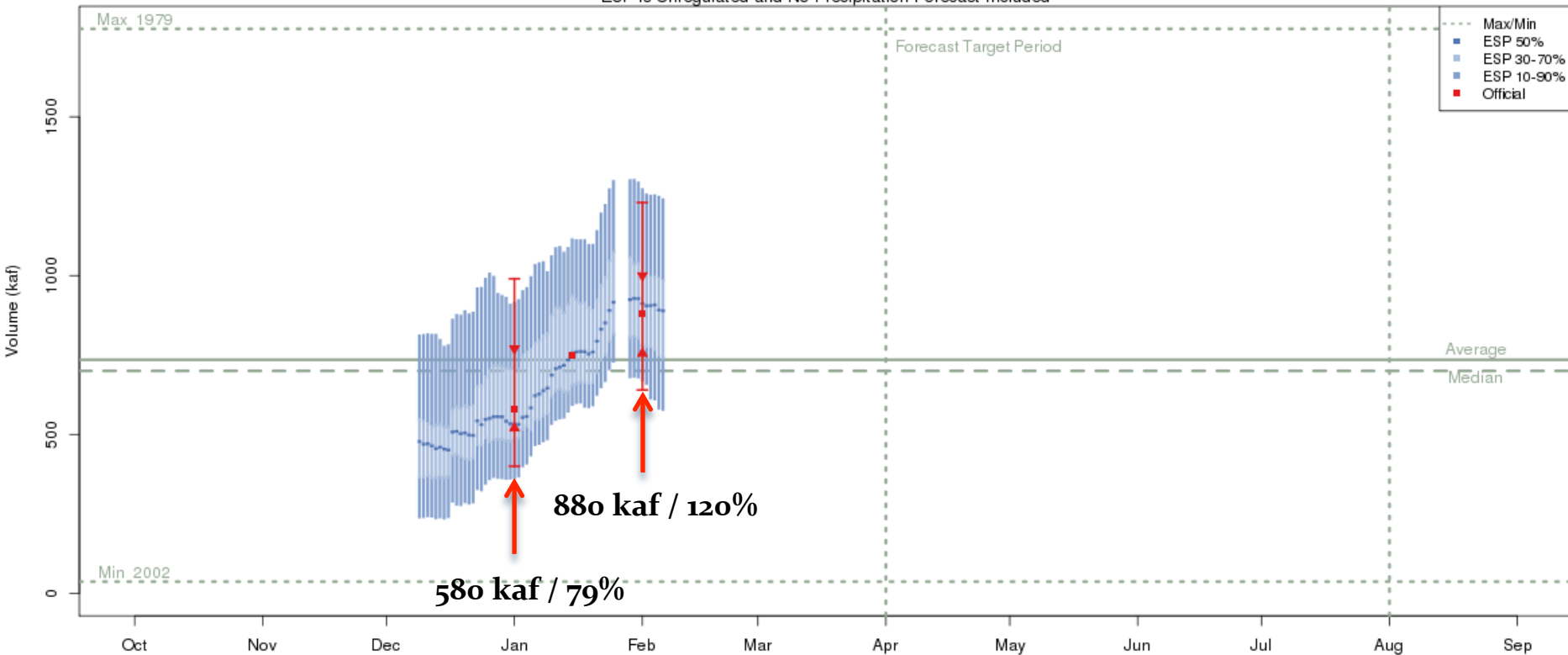


Forecast Evolution Plot: Dolores - McPhee Reservoir Inflow



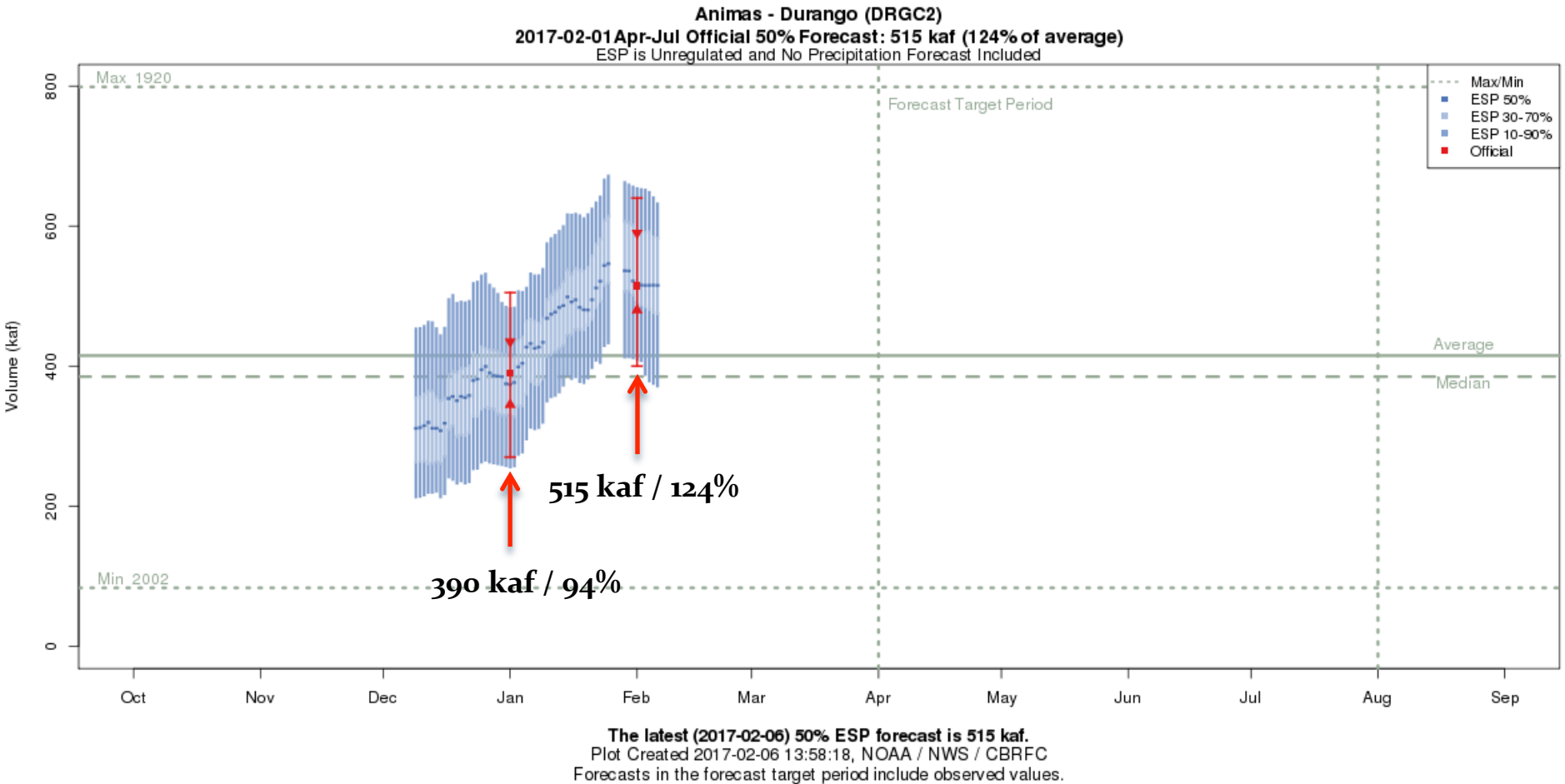
Forecast Evolution Plot: San Juan - Navajo Reservoir Inflow

San Juan - Navajo Res- Archuleta- Nr (NVRN5)
2017-02-01 Apr-Jul Official 50% Forecast: 880 kaf (120% of average)
ESP is Unregulated and No Precipitation Forecast Included



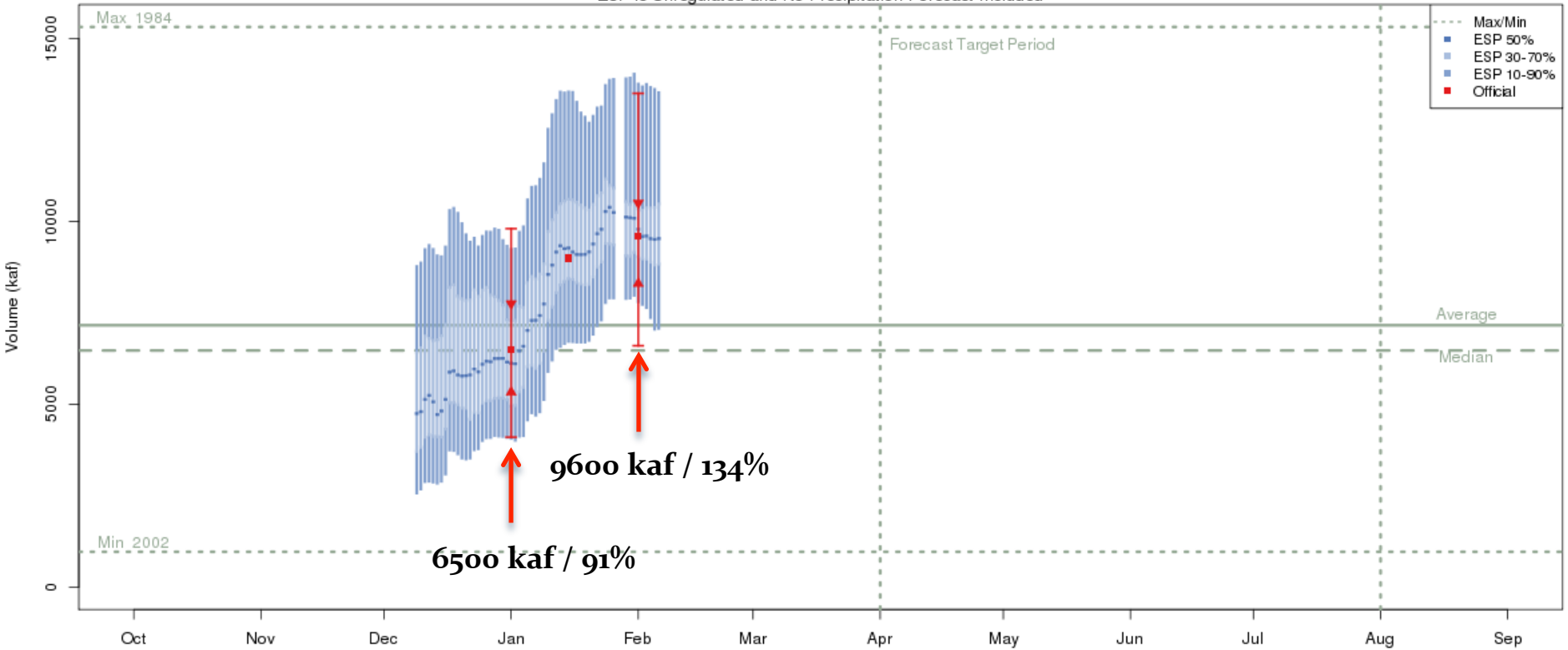
The latest (2017-02-06) 50% ESP forecast is 889 kaf.
Plot Created 2017-02-06 14:16:52, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Forecast Evolution Plot: Animas - Durango



Forecast Evolution Plot: Lake Powell Inflow

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
2017-02-01 Apr-Jul Official 50% Forecast: 9600 kaf (134% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2017-02-06) 50% ESP forecast is 9529 kaf.
Plot Created 2017-02-06 14:03:25, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Forecast Validation: How good are forecasts in February?

Historical Model Error 1981-2010

February forecast error a general improvement over January
 - significant snow accumulation period remains

Forecasts are better than just going with average

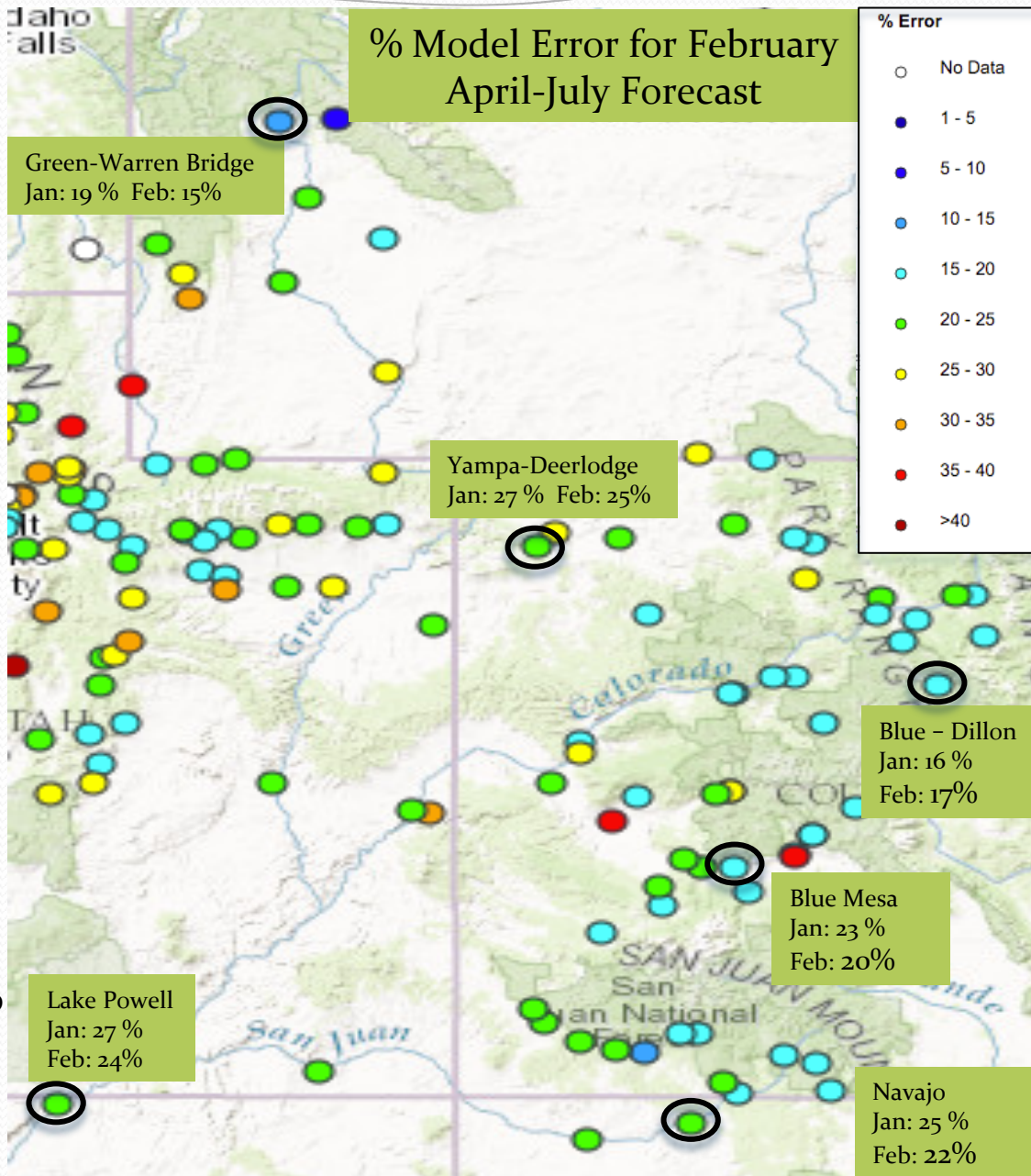
Error tends to decrease each month into the spring

- 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>

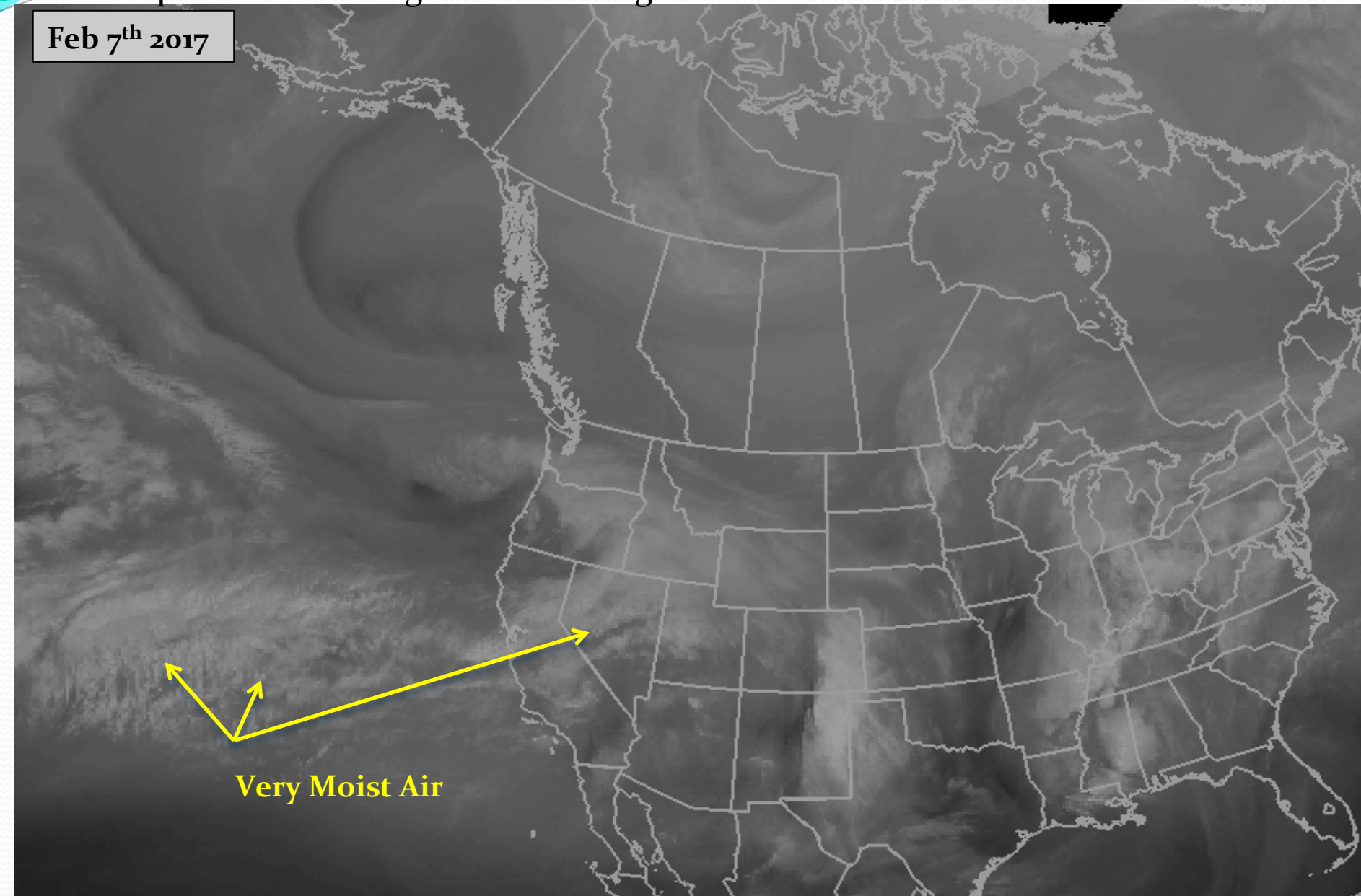
From Water Supply drop down menu
 → select Historical Verification Map



Upcoming Weather and Impacts to Water Supply Forecasts

Water Vapor Satellite Image This Morning - A wet week ahead

Feb 7th 2017

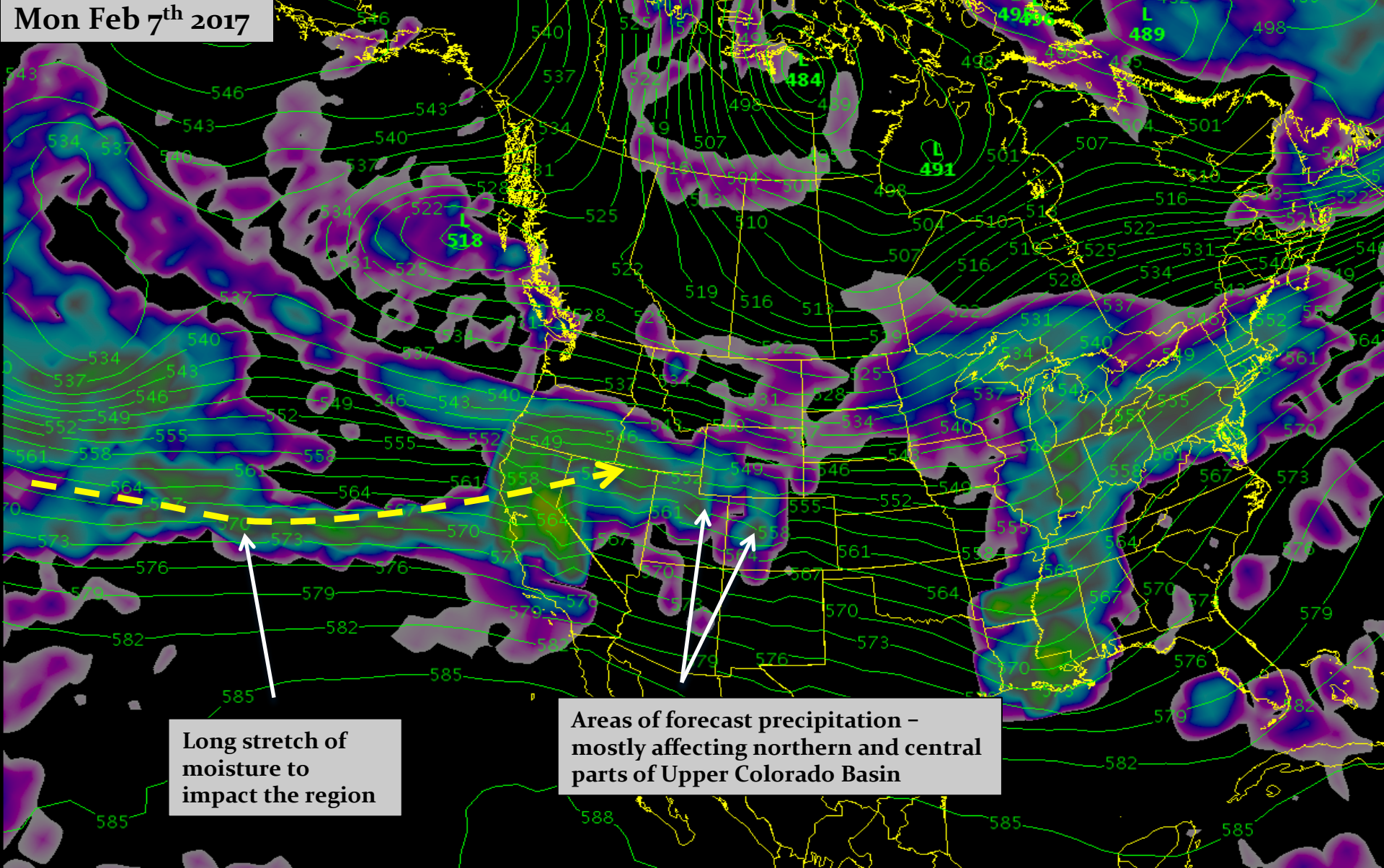


Very Moist Air

Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model Guidance: Monday through early Wednesday rain valleys / snow mountains (~6500 feet)
Fairly potent system with some 3-4 inch precipitation amounts possible in Upper Green and Duchesne basins

Mon Feb 7th 2017

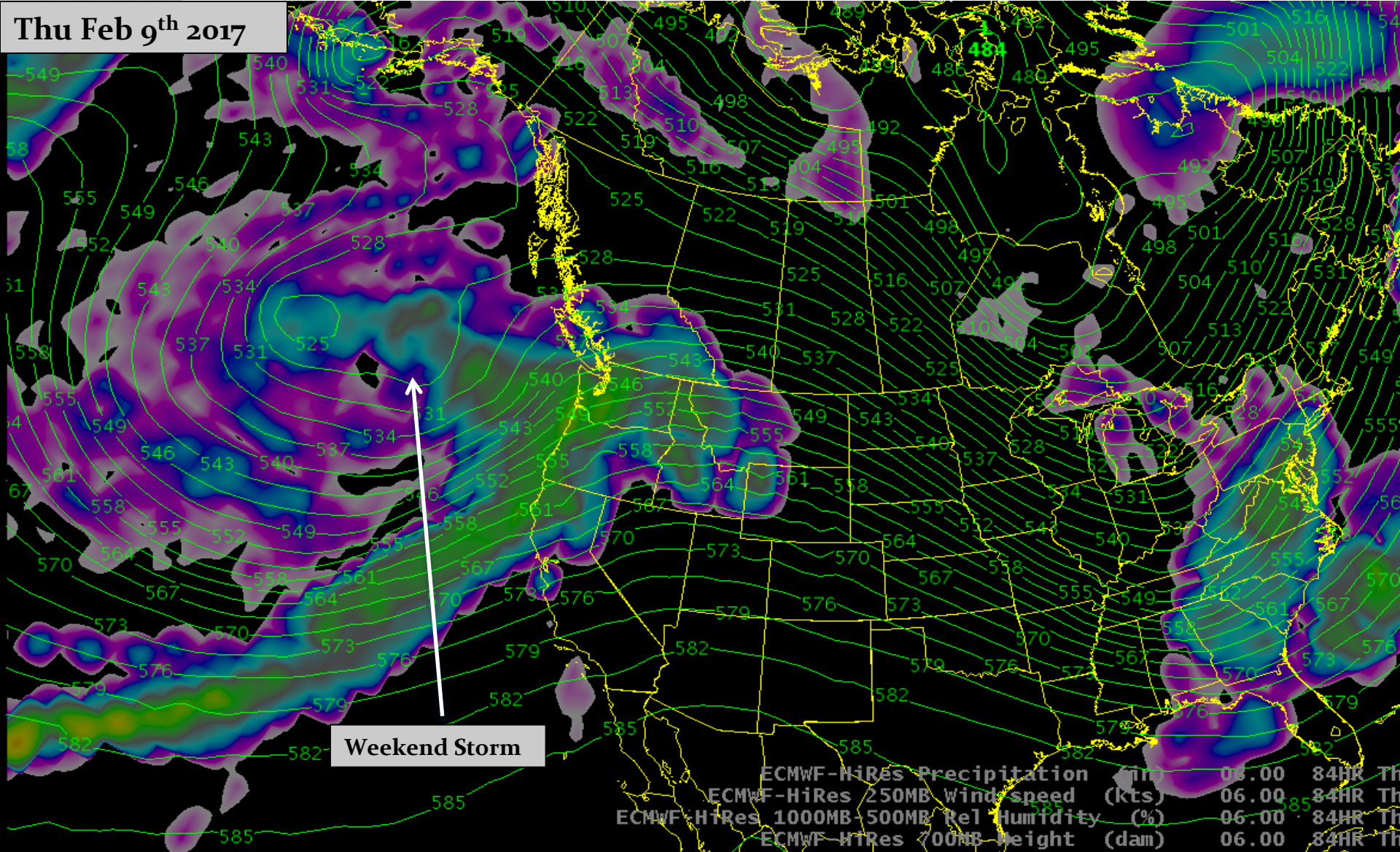


Long stretch of moisture to impact the region

Areas of forecast precipitation – mostly affecting northern and central parts of Upper Colorado Basin

Upcoming Weather and Impacts to Water Supply Forecasts

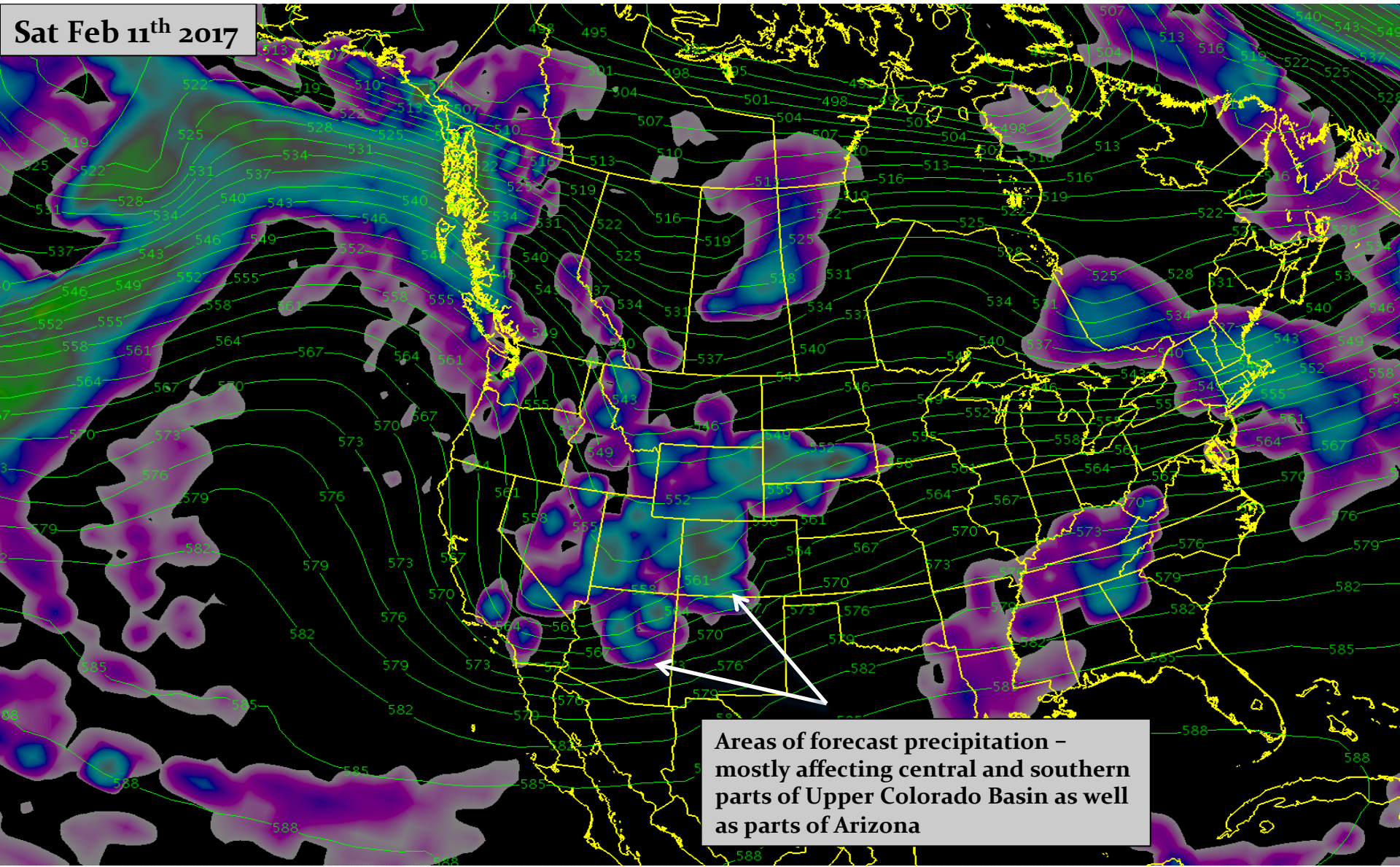
Meteorological Model Guidance: A lull in precipitation later Wednesday into Friday.



Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model Guidance: Increasing precipitation Friday into the Weekend, colder air, lowering snow levels

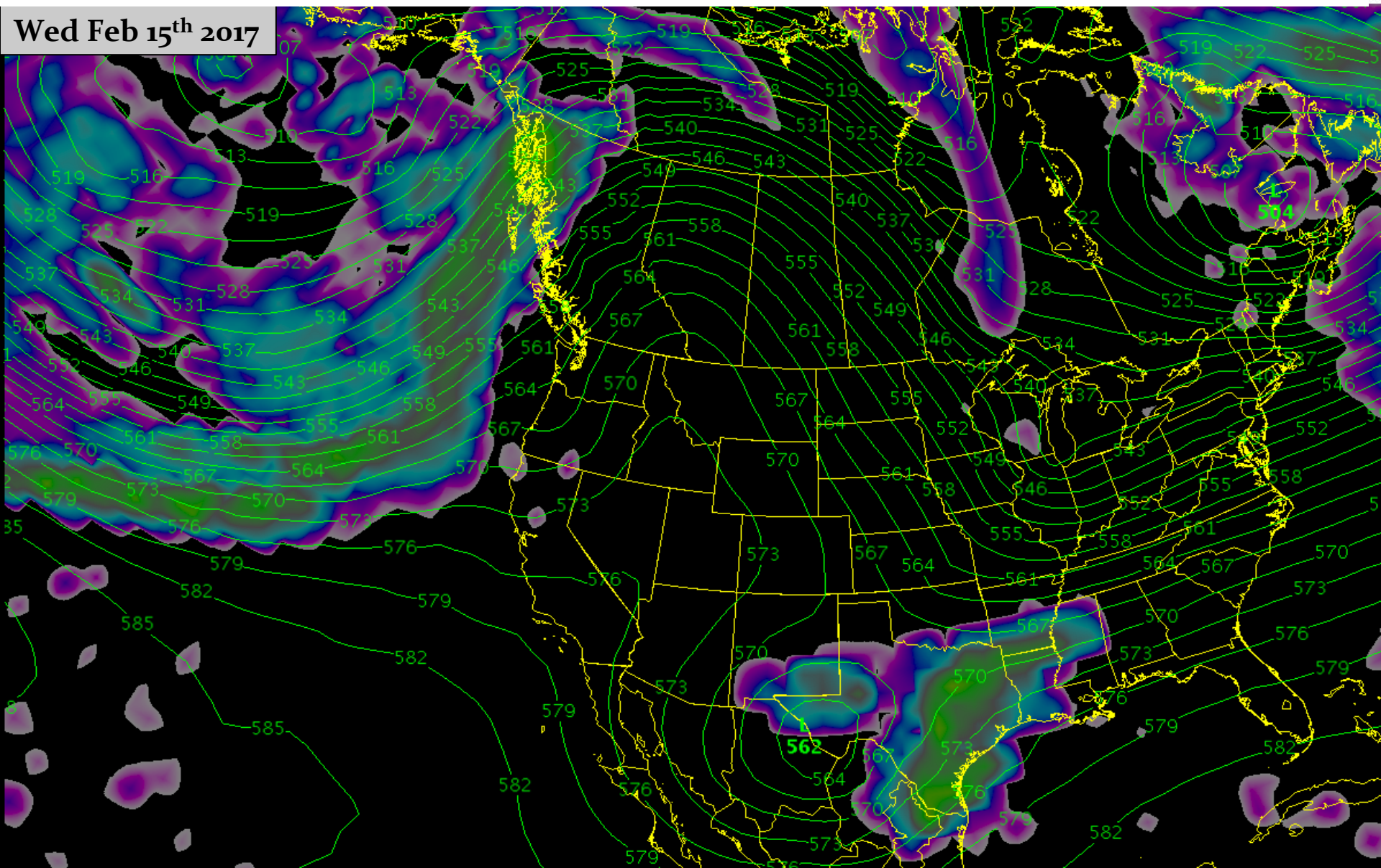
Sat Feb 11th 2017



Areas of forecast precipitation - mostly affecting central and southern parts of Upper Colorado Basin as well as parts of Arizona

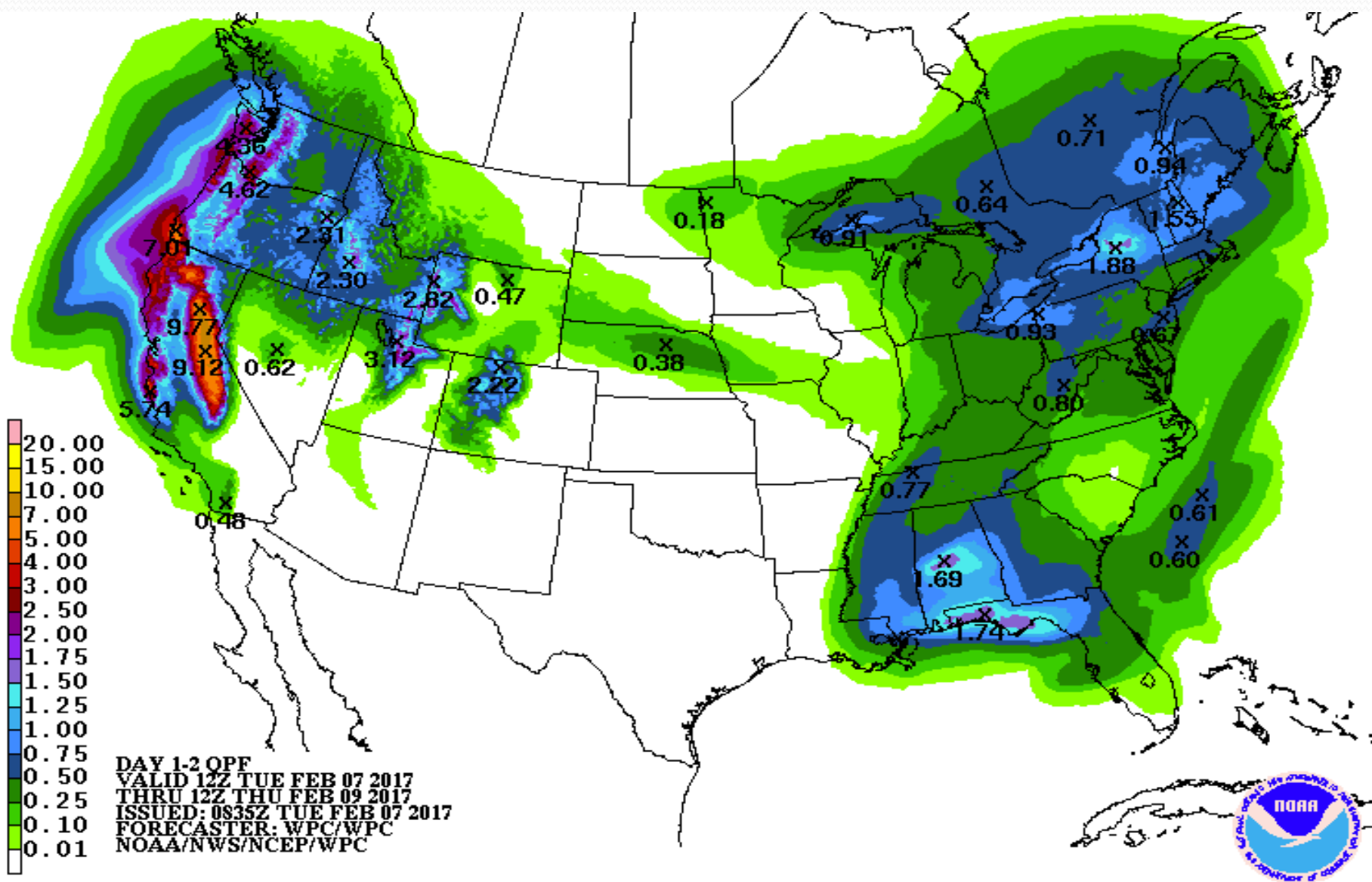
Upcoming Weather and Impacts to Water Supply Forecasts

Meteorological Model Guidance: Next week appears to be on the dry side.
Long range guidance suggest the pattern could become more active again by the weekend of the 18th.



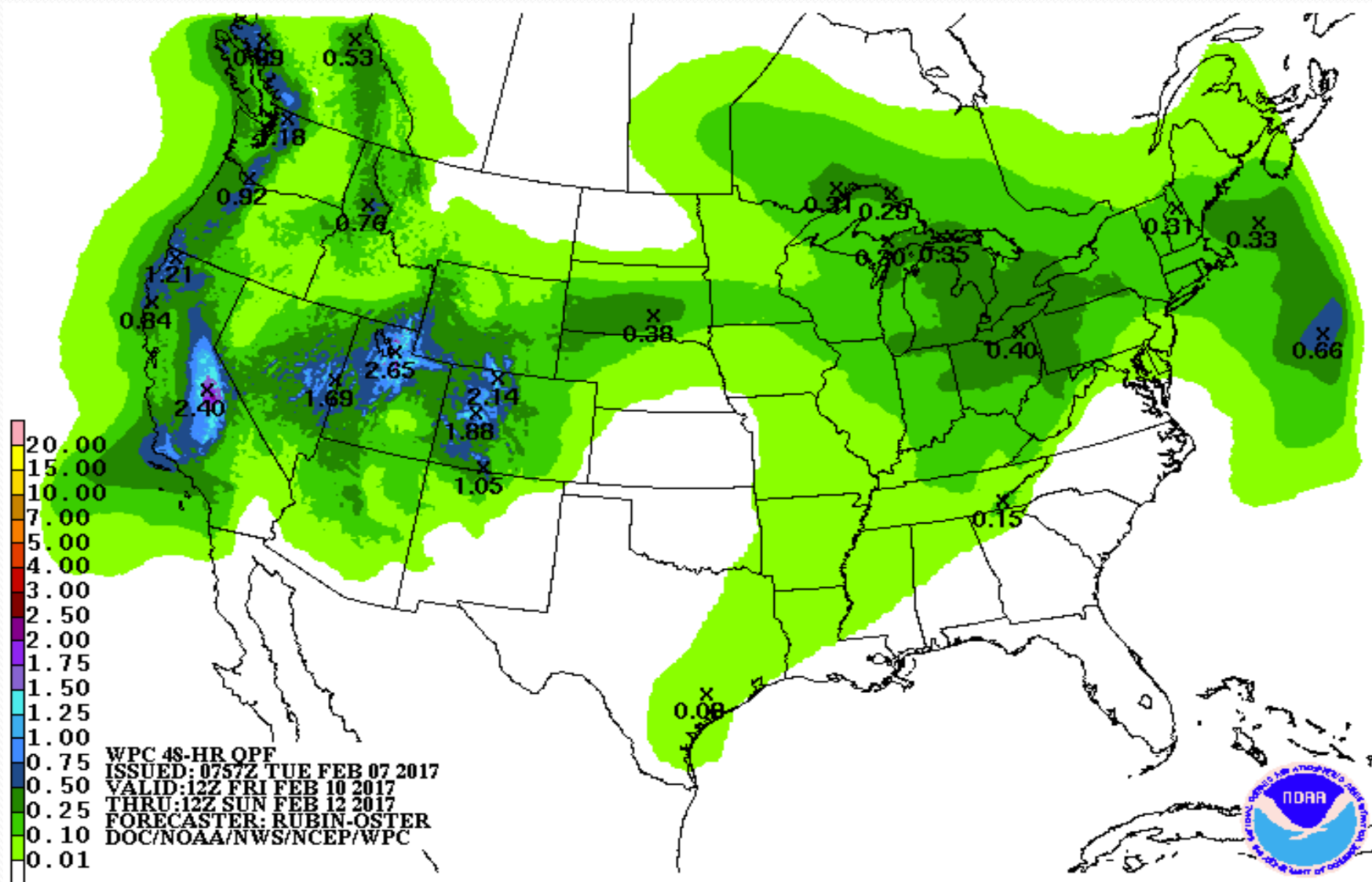
Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecasts the next 48 hours



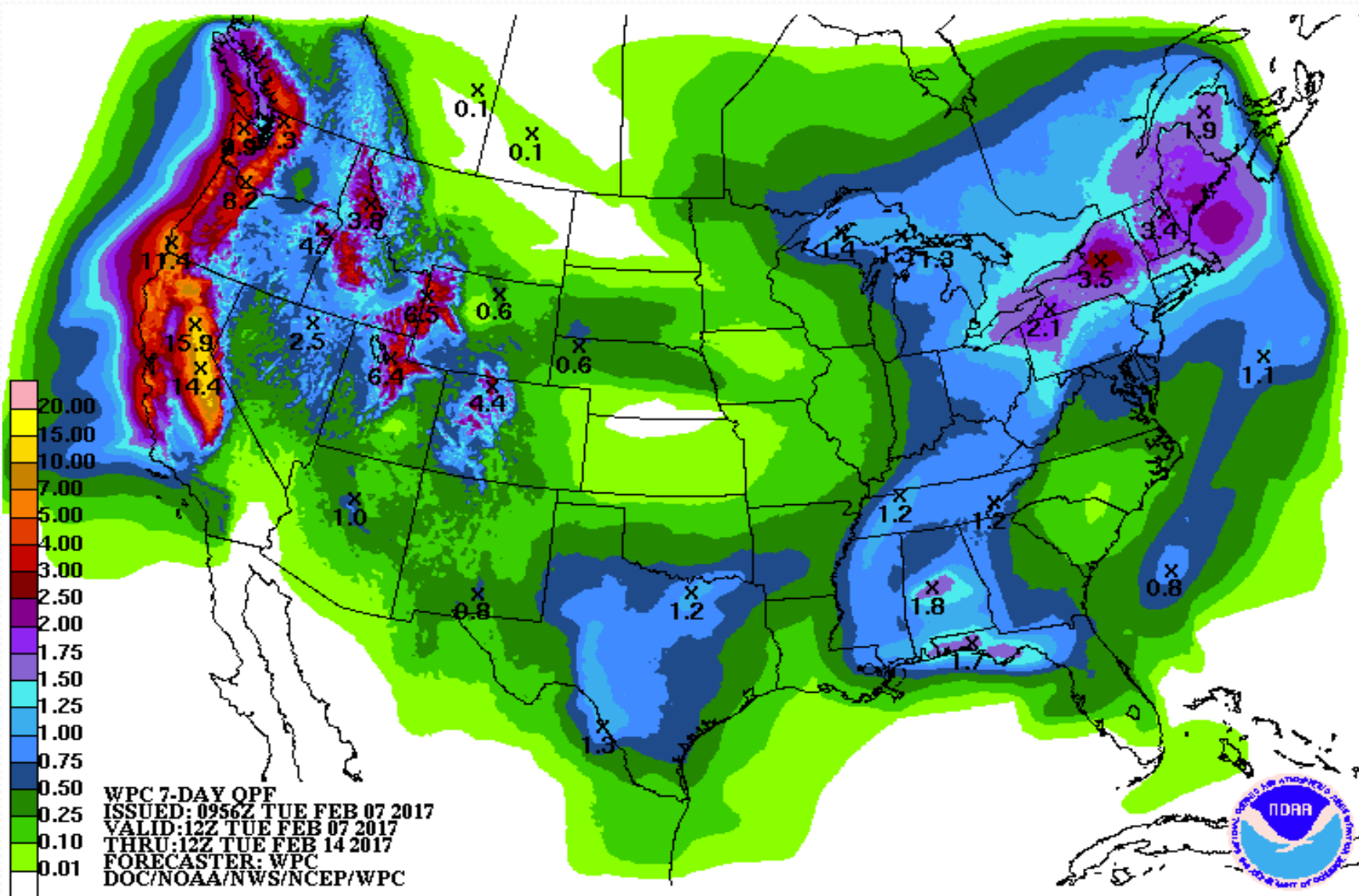
Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecasts for the Friday-Saturday storm



Upcoming Weather and Impacts to Water Supply Forecasts

Precipitation Forecast: 7 day total (Feb 6th-Feb 13th)



Key Points

Off to a great start due to the active Dec-Jan weather pattern with dramatic increases in water supply forecasts over those from January 1st .

We could still be impacted by abnormally dry spring weather, but impacts would be less in the Upper Green and Duchesne river basins (little chance we will see less than average runoff).

Dry soil moisture conditions in western Colorado basins will be less of a factor during the runoff if the snowpack remains much above average heading into the snowmelt period.

A wet week lies ahead for the mountains, especially Upper Green and Duchesne river basins.

Water Supply Forecasts are not likely to decrease in the short term and will likely increase in areas with heaviest precipitation amounts this week.

2017 water supply briefing schedule

- 2017 monthly water supply briefings for the Colorado River Basin
 - Tuesday Mar 7th @ 11 am MT
 - Thursday Apr 5th @ 11 am MT
 - Friday May 5th @ 11 am MT
 - Great Basin webinars are same dates at 1:30 pm MT
 - *NEXT UP: Today 1:30 pm*
- 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

Michelle Stokes – Hydrologist In Charge

michelle.stokes@noaa.gov

Paul Miller– Service Coordination Hydrologist

Paul.miller@noaa.gov

Basin Focal Points (Forecasters)

Brenda Alcorn – Colorado River, Lake Powell Focal Point

brenda.alcorn@noaa.gov

Greg Smith – San Juan, Gunnison, Dolores Focal Point

greg.smith@noaa.gov

Ashley Nielson – Green River Basin Focal Point

ashley.nielson@noaa.gov

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

tracy.cox@noaa.gov

Brent Bernard – Great Basin Focal Point

brent.bernard@noaa.gov