

NOAA's Colorado Basin River Forecast Center

Water Year 2016 Hydrologic Conditions and Forecasts

Brenda Alcorn, *Senior Hydrologist*

Basin States Technical Committee Meeting

April 21, 2016

Las Vegas, NV – McCarran International Airport



Overview

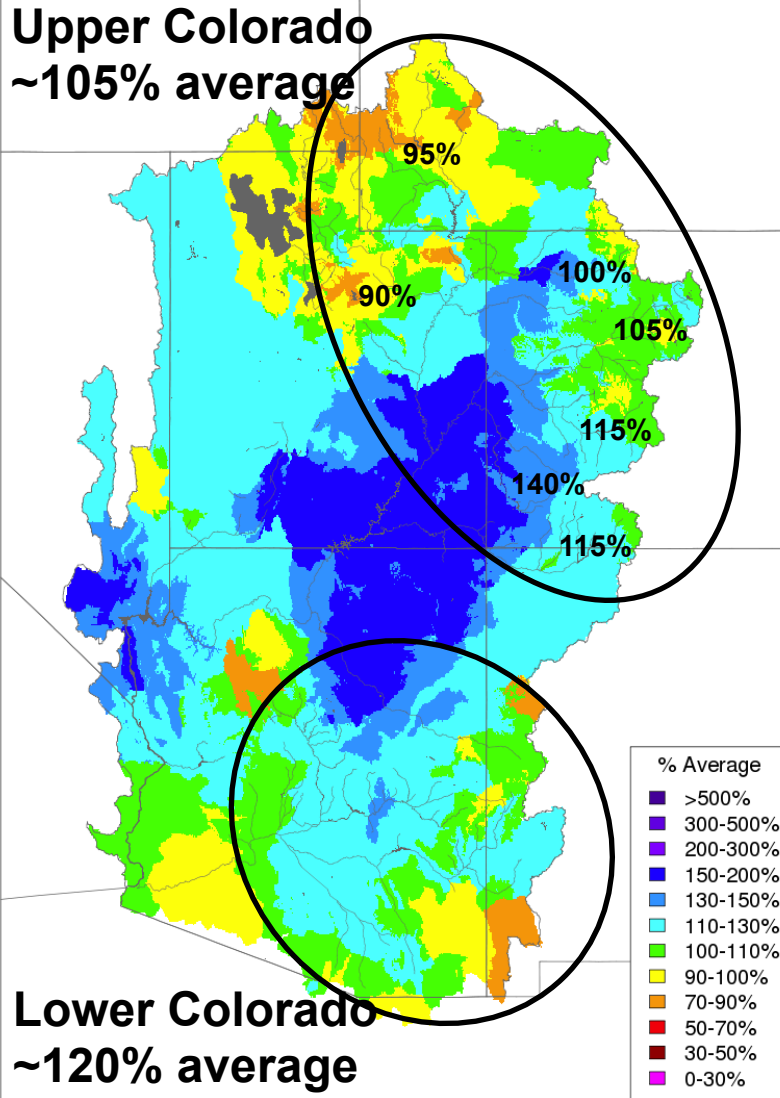
2

- Overview of hydrologic conditions to date
- April water supply forecasts
- Looking ahead
- Questions and comments



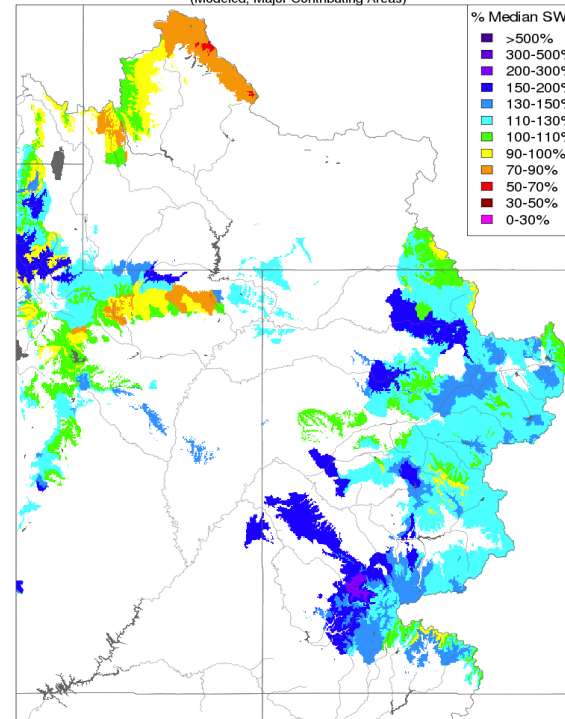
February 1 Conditions/Forecasts

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



- Water year precipitation near to above average in both the Upper and Lower basins.
- Snow water equivalent 115% of median above Powell.
- Lake Powell April-July inflow forecast: 6.7 MAF / 94% AVG

Snow Conditions - February 01 2016
(Modeled, Major Contributing Areas)



April-July Volume Forecasts:

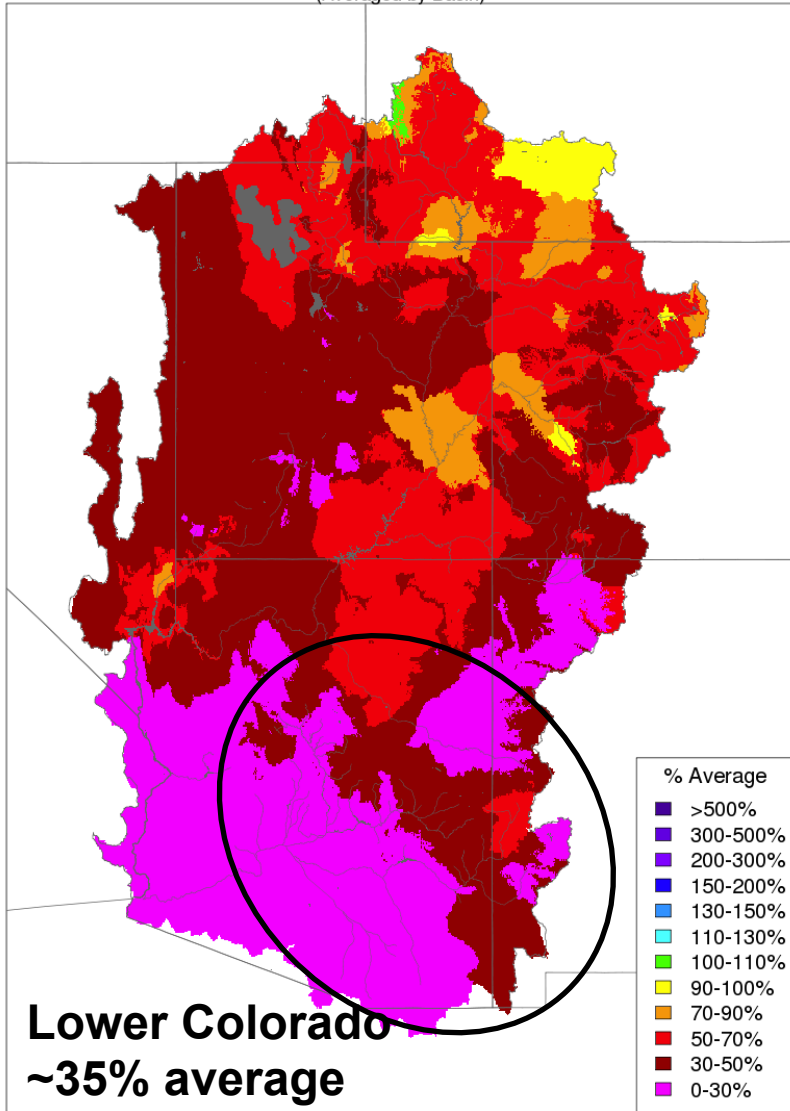
Flaming Gorge Res
685 kaf / 70%
Green River UT
2460 kaf / 83%

Blue Mesa Res
640 kaf / 95%
Colorado – Cisco
4500 kaf / 101%

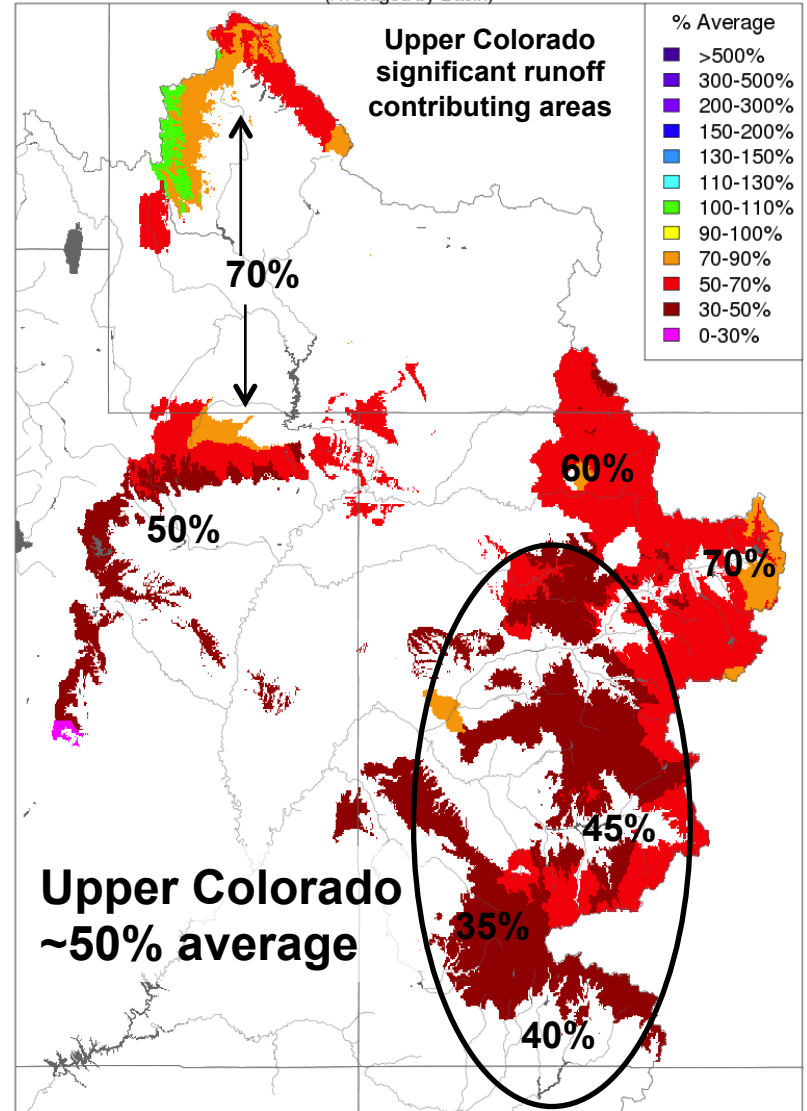
Navajo Res
735 kaf / 100%
San Juan – Bluff
1100 kaf / 100%

February Precipitation

Monthly Precipitation - February 2016
(Averaged by Basin)

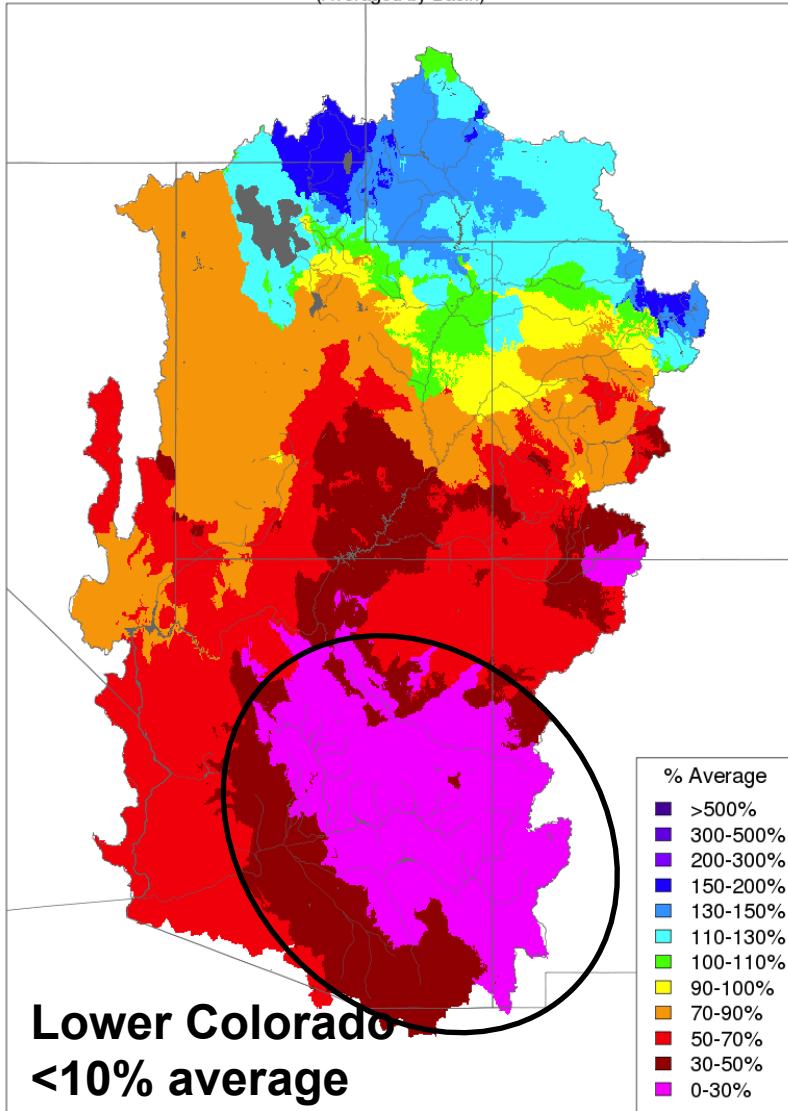


Monthly Precipitation - February 2016
(Averaged by Basin)

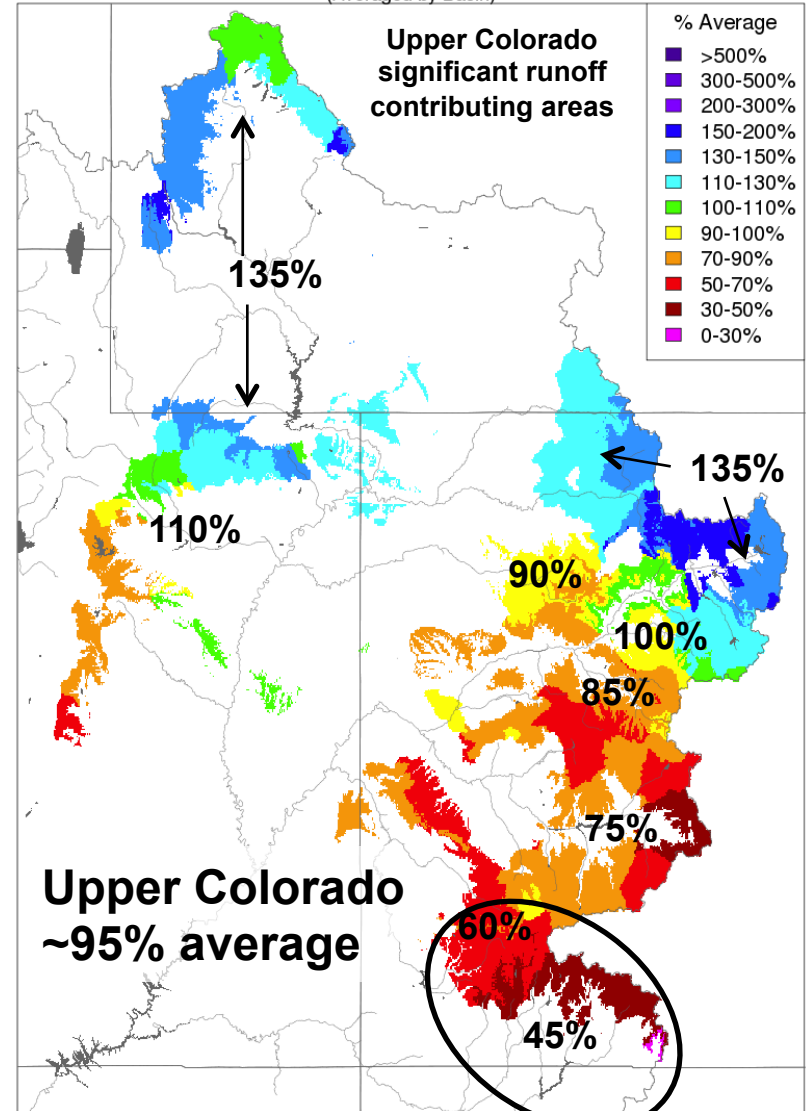


March Precipitation

Monthly Precipitation - March 2016
(Averaged by Basin)

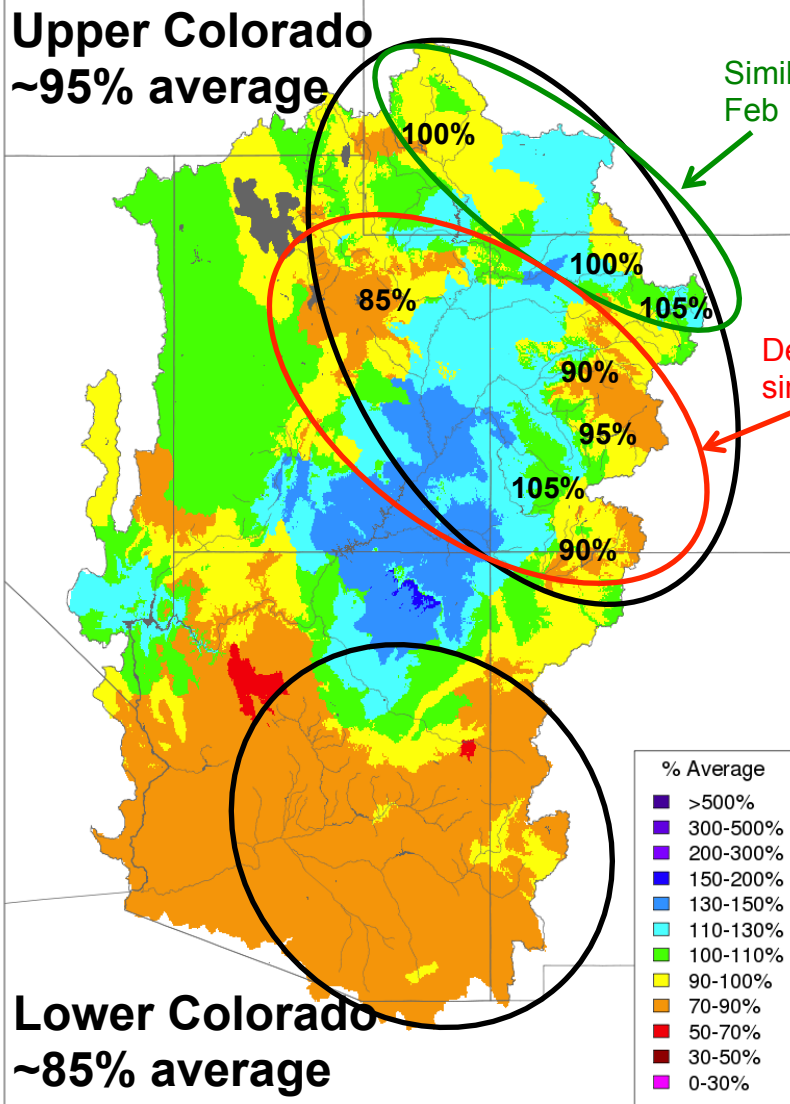


Monthly Precipitation - March 2016
(Averaged by Basin)



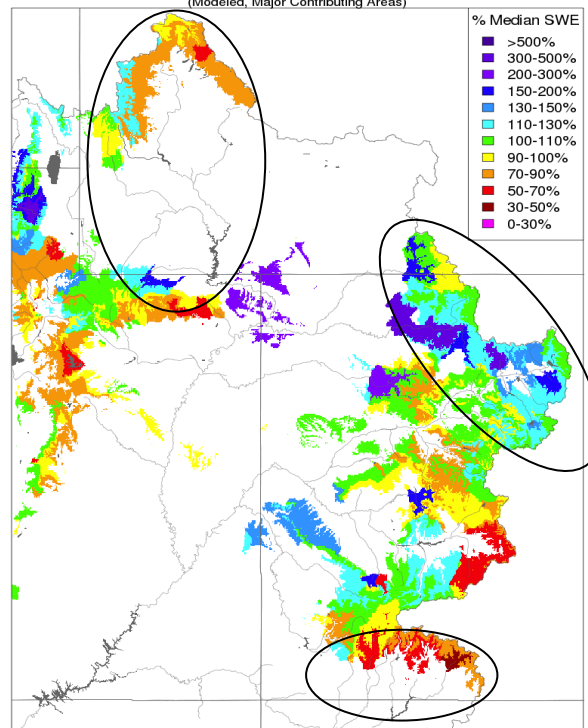
April 1 Conditions/Forecasts

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



- Water year precipitation near to below average in both the Upper and Lower basins.
- Snow water equivalent 95% of median above Powell.
- Lake Powell April-July inflow forecast: 5.3 MAF / 74% AVG

Snow Conditions - April 01 2016
(Modeled, Major Contributing Areas)



April-July Volume Forecasts:

Flaming Gorge Res
740 kaf / 76%

Green River UT
2250 kaf / 76%

Blue Mesa Res
515 kaf / 76%

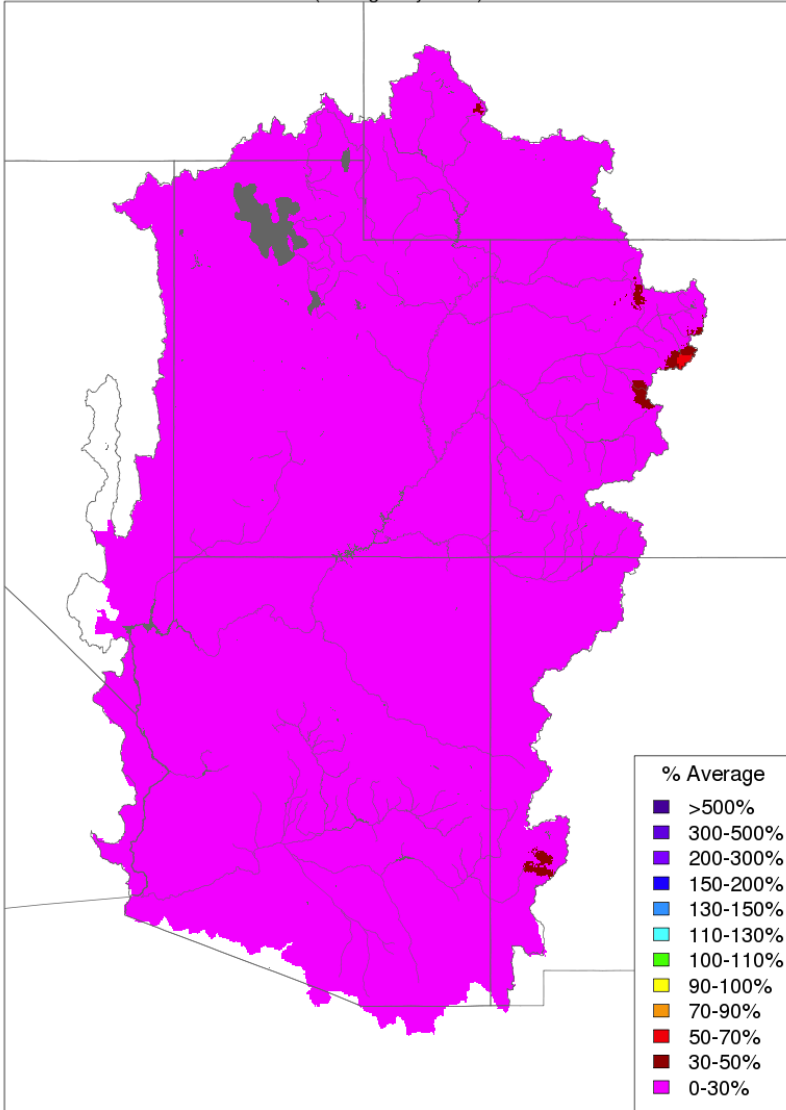
Colorado – Cisco
3700 kaf / 83%

Navajo Res
530 kaf / 72%

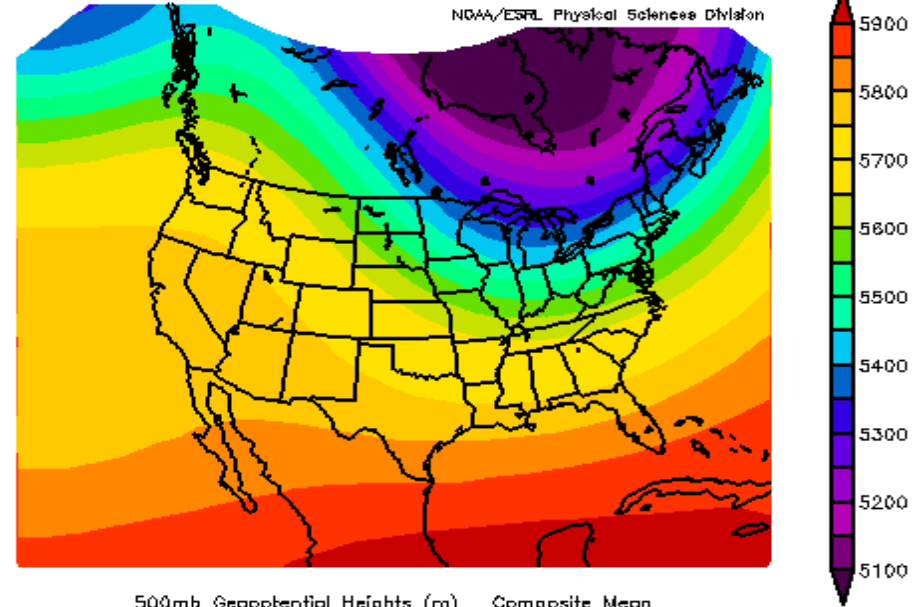
San Juan – Bluff
790 kaf / 72%

April Weather

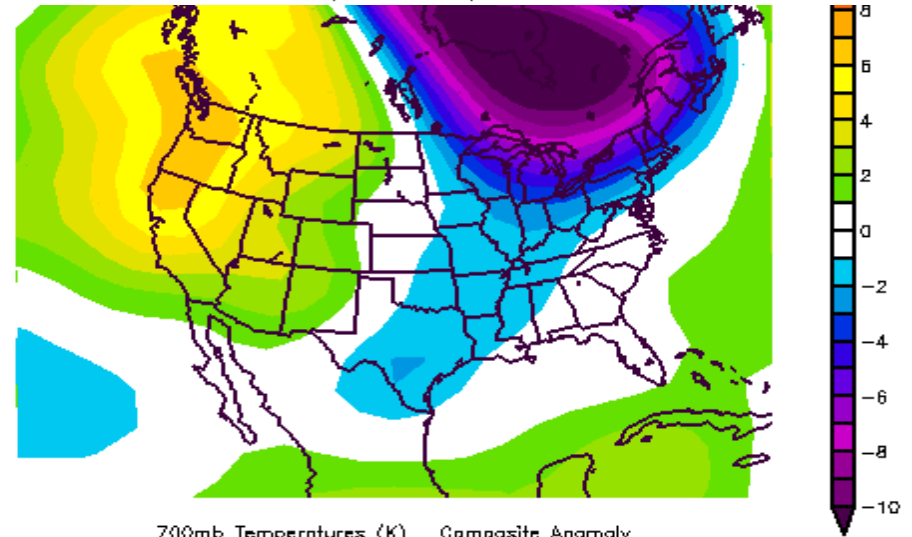
Month to Date Precipitation - April 07 2016
(Averaged by Basin)



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



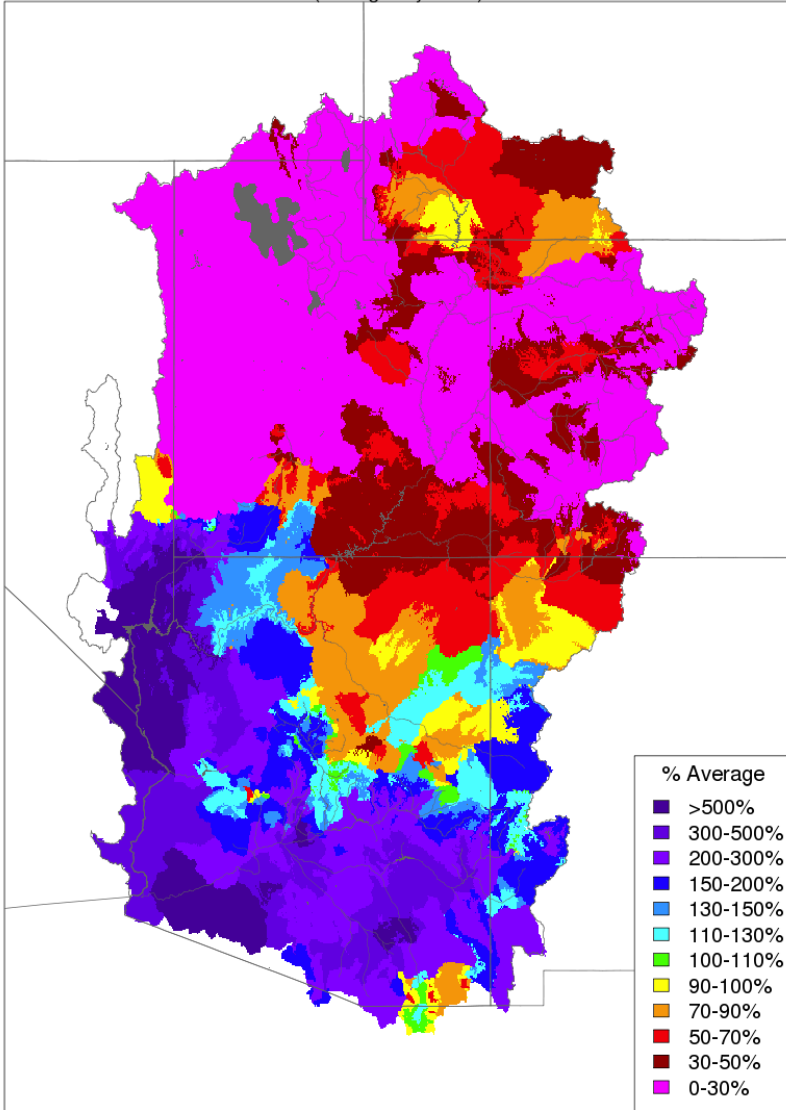
500mb Geopotential Heights (m) Composite Mean
4/1/16 12z to 4/7/16 12z
NCEP/NCAR Reanalysis



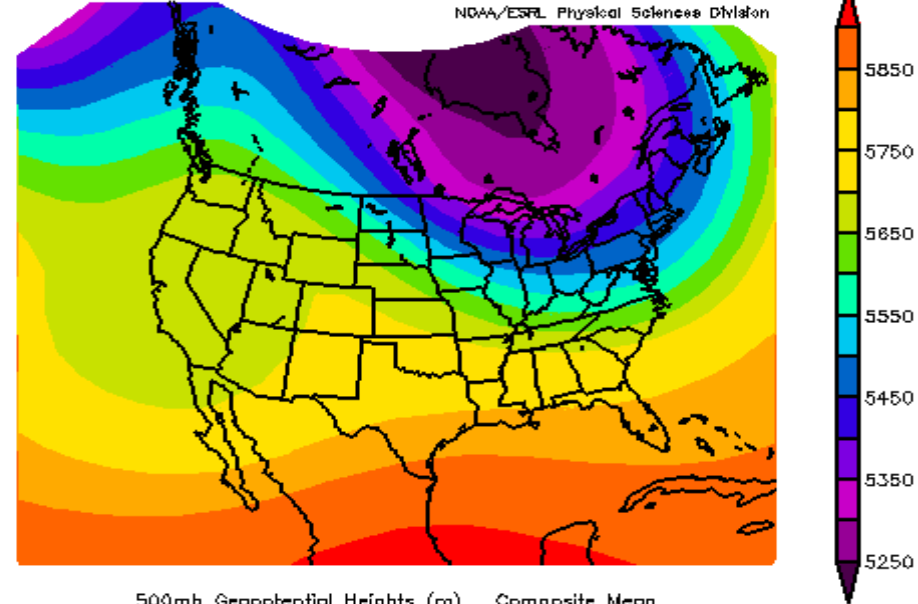
700mb Temperatures (K) Composite Anomaly
4/1/16 12z to 4/7/16 12z
NCEP/NCAR Reanalysis

April Weather

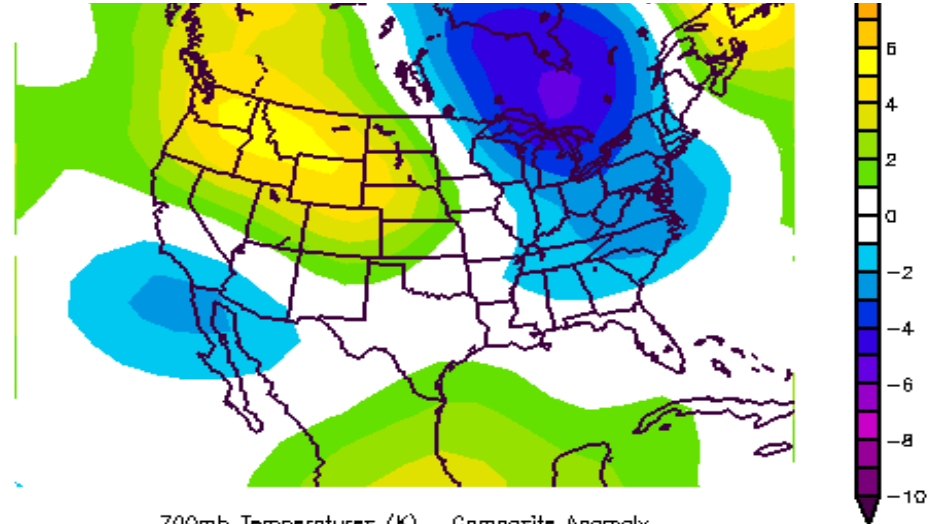
Month to Date Precipitation - April 12 2016
(Averaged by Basin)



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



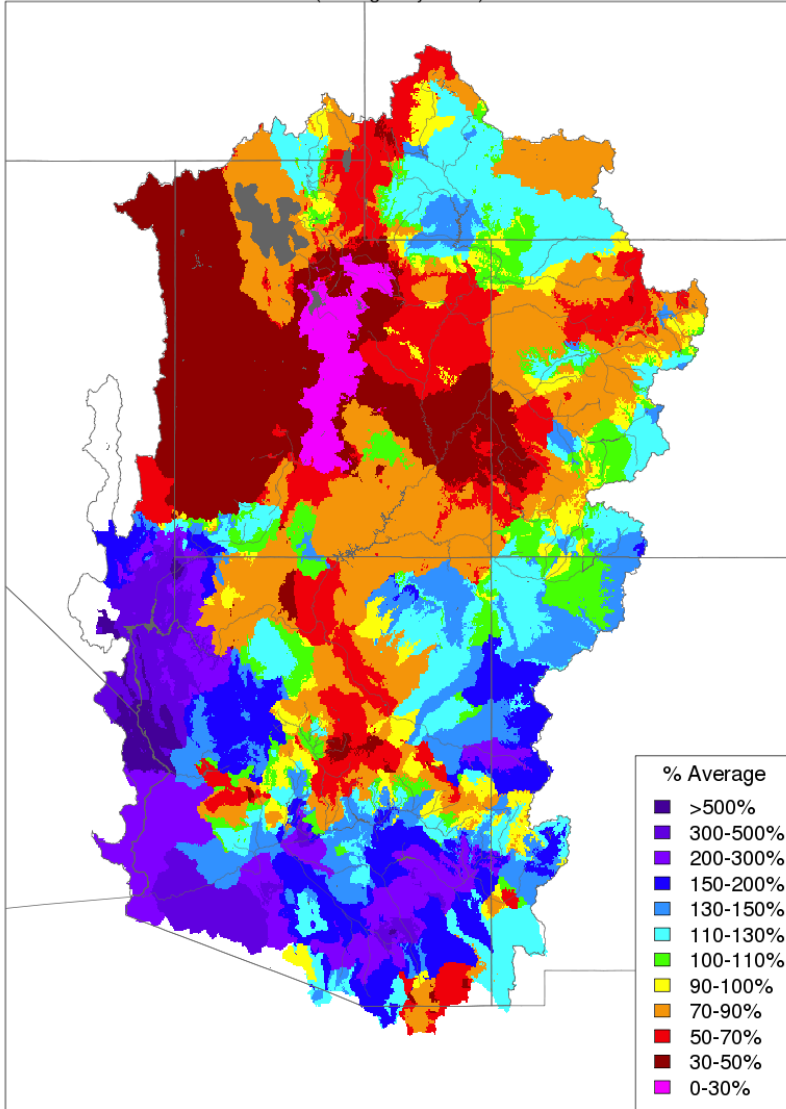
500mb Geopotential Heights (m) Composite Mean
4/8/16 12z to 4/12/16 12z
NCEP/NCAR Reanalysis



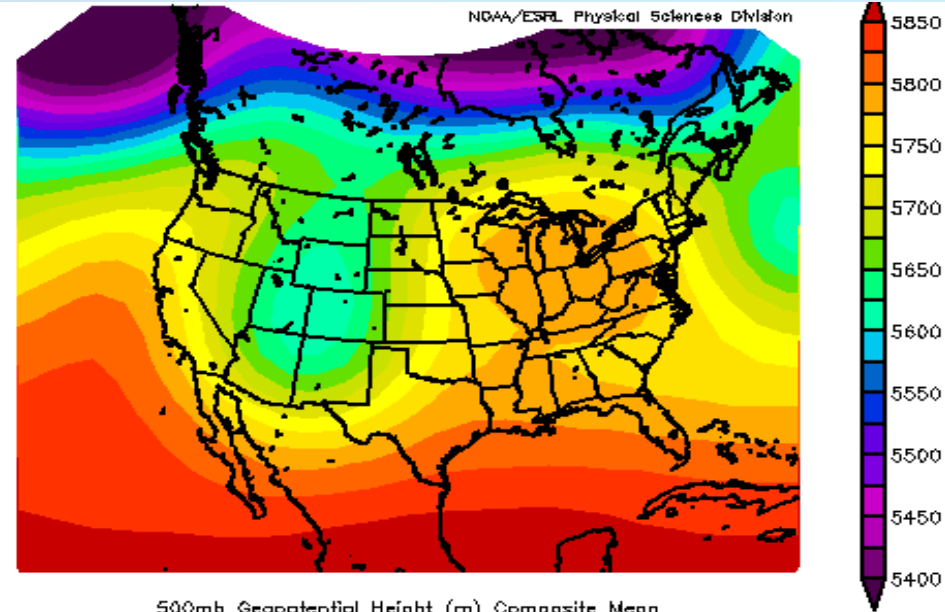
700mb Temperatures (K) Composite Anomaly
4/8/16 12z to 4/15/16 12z
NCEP/NCAR Reanalysis

April Weather

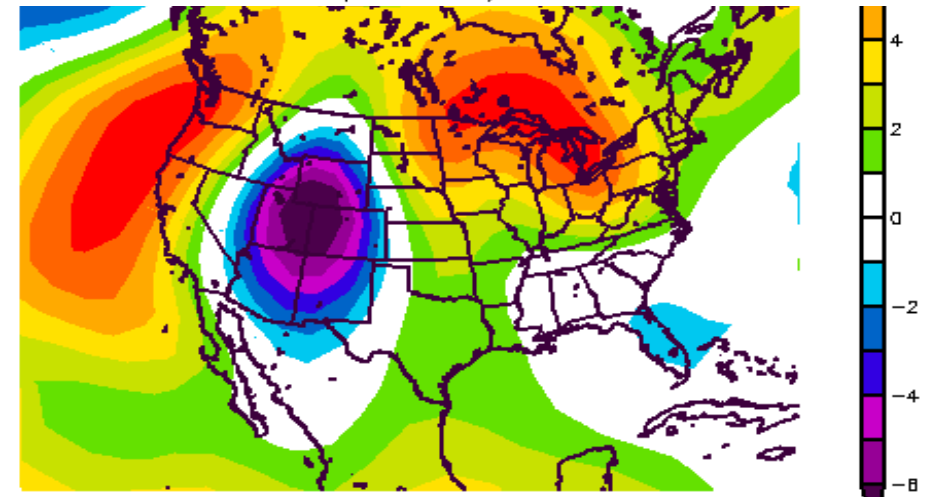
Month to Date Precipitation - April 20 2016
(Averaged by Basin)



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



500mb Geopotential Height (m) Composite Mean
4/15/16 to 4/18/16
NCEP/NCAR Reanalysis

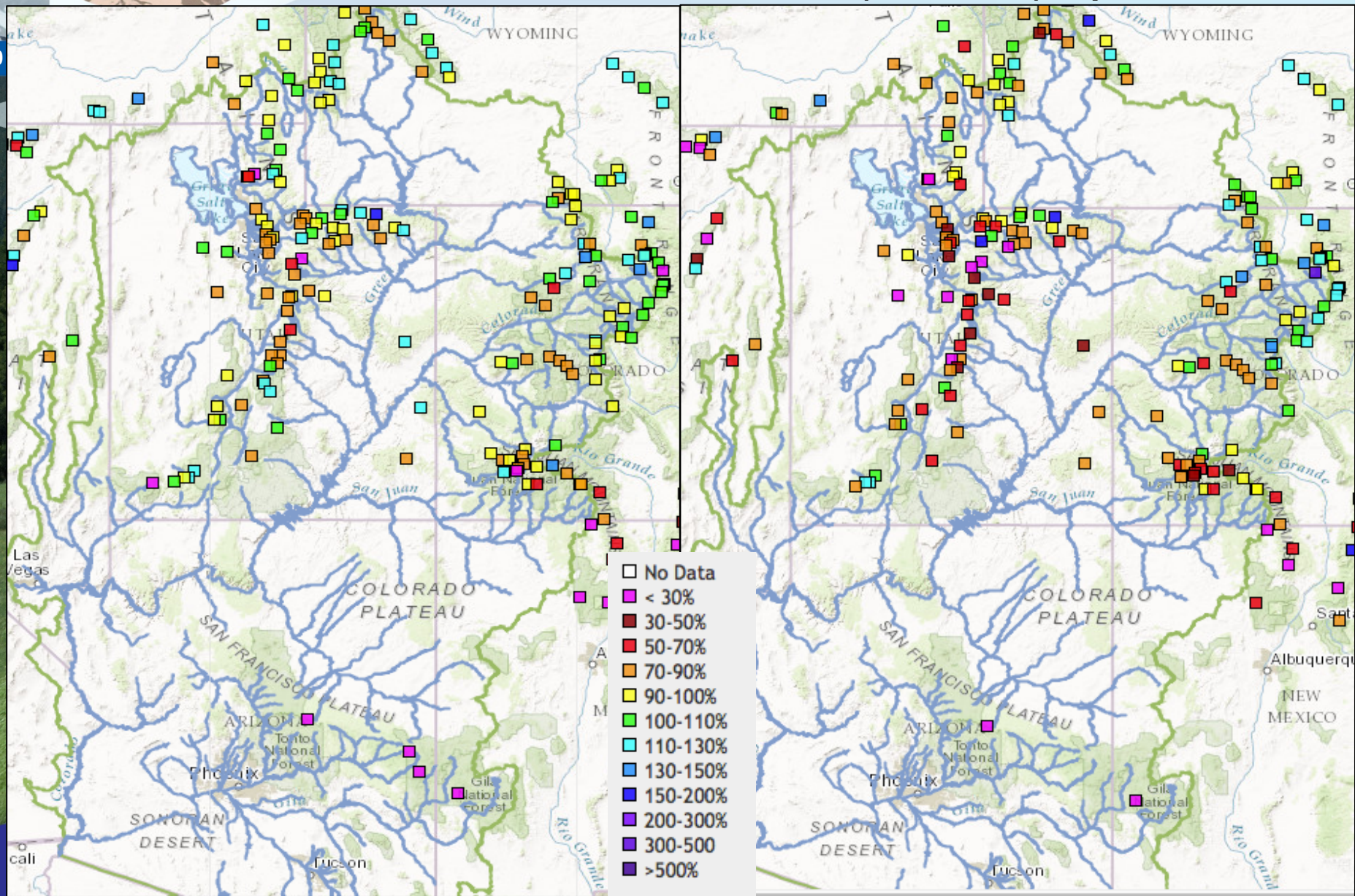


700mb Air Temperature (K) Composite Anomaly (1981-2010 Climatology)
4/15/16 to 4/18/16
NCEP/NCAR Reanalysis

Snow – SNOTEL Network

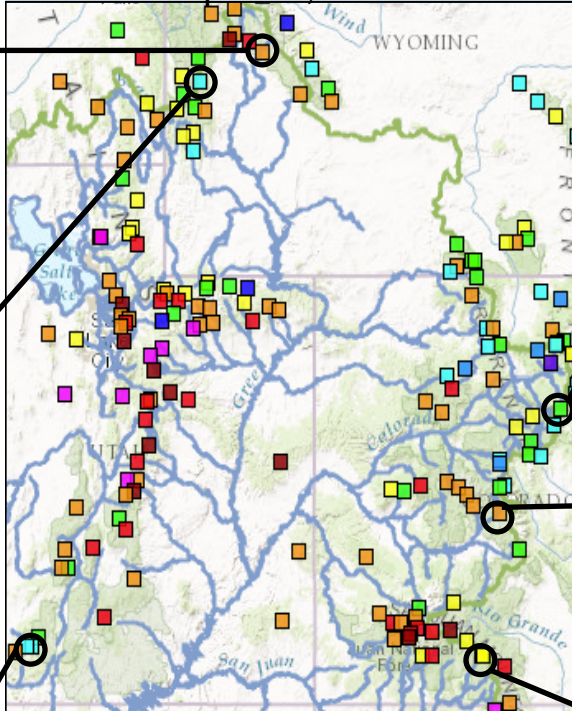
Snow (% median): April 5, 2016

Snow (% median): April 19, 2016

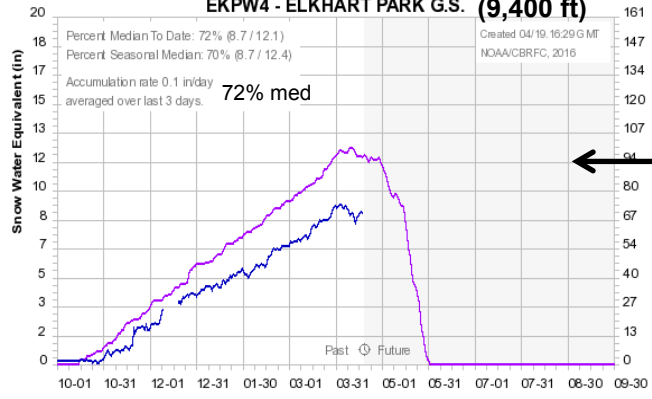


Snow – SNOTEL Network

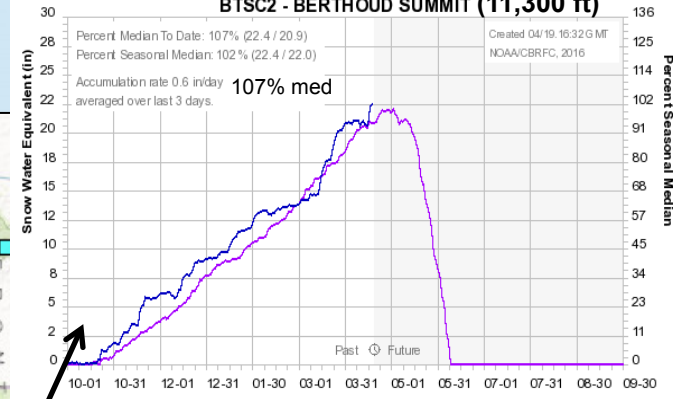
Snow (% median):
April 19, 2016



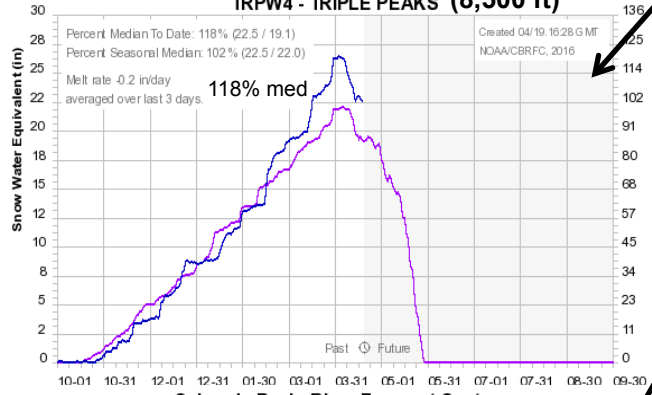
Colorado Basin River Forecast Center
EKPW4 - ELKHART PARK G.S. (9,400 ft)



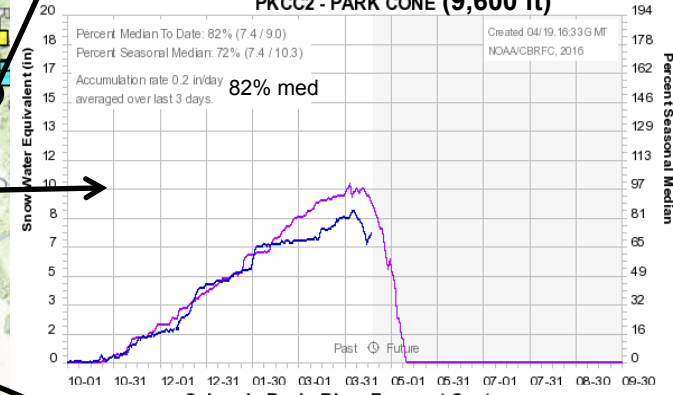
Colorado Basin River Forecast Center
BTSC2 - BERTHOUD SUMMIT (11,300 ft)



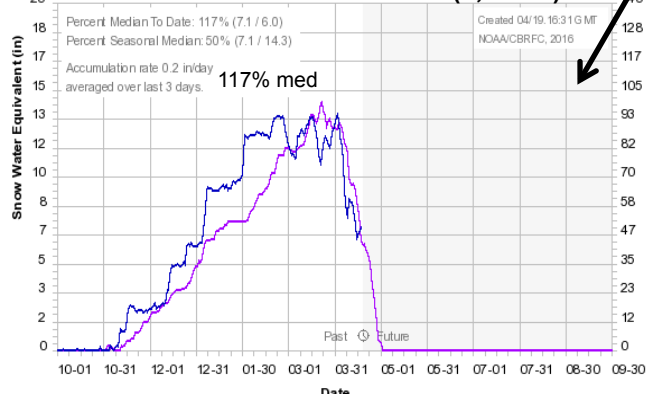
Colorado Basin River Forecast Center
TRPW4 - TRIPLE PEAKS (8,500 ft)



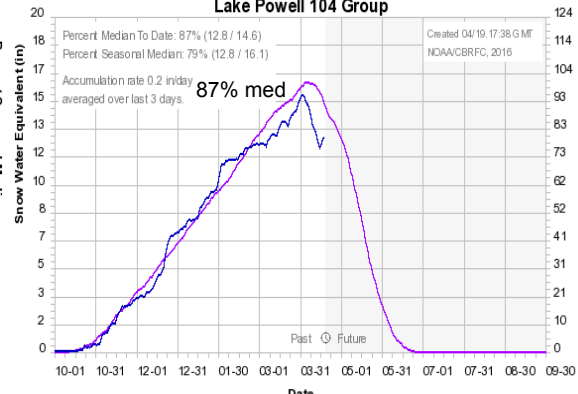
Colorado Basin River Forecast Center
PKCC2 - PARK CONE (9,600 ft)



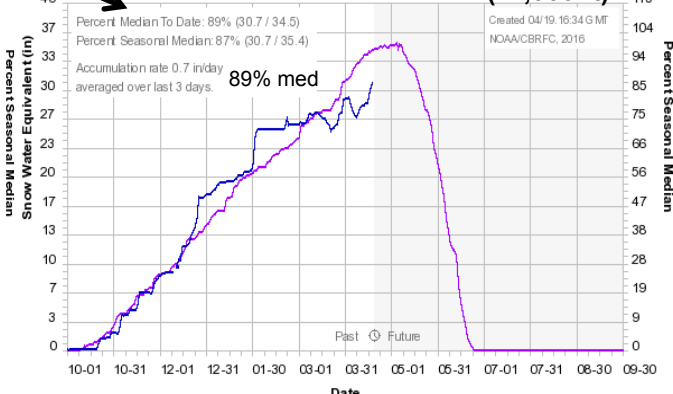
Colorado Basin River Forecast Center
WFLU1 - WEBSTER FLAT (9,170 ft)



Colorado Basin River Forecast Center
Lake Powell 104 Group



Colorado Basin River Forecast Center
WCSC2 - WOLF CREEK SUMMIT (11,000 ft)



April Mid-Month Forecasts

(change since 4/1 forecast)

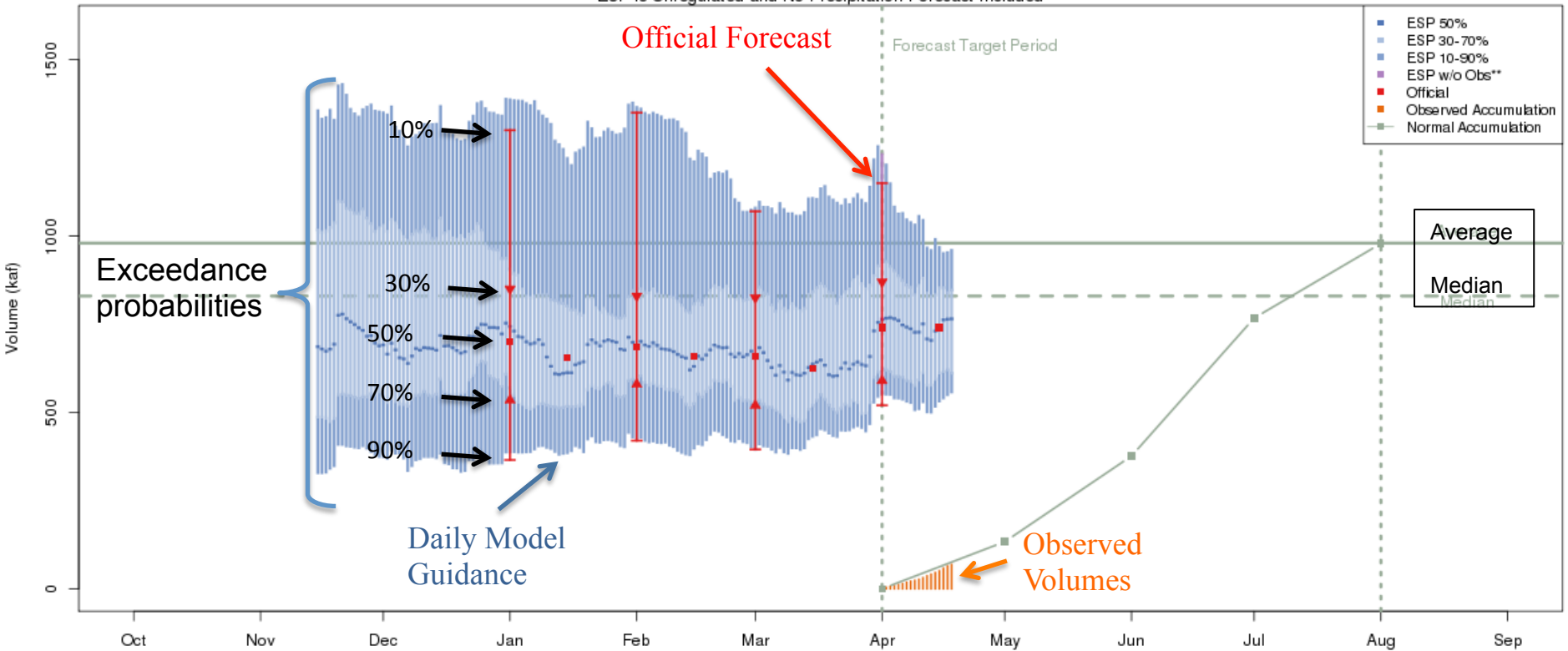
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- Flaming Gorge
 - 740 kaf / 76% (no change)
- Blue Mesa
 - 515 kaf / 76% (no change)
- Navajo
 - 515 kaf / 70% (-15 kaf)
- Powell
 - 5300 kaf / 74% (no change)



Flaming Gorge Reservoir

Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1)
 2016-04-15 Apr-Jul Official 50% Forecast: 740 kaf (76% of average)
 ESP is Unregulated and No Precipitation Forecast Included



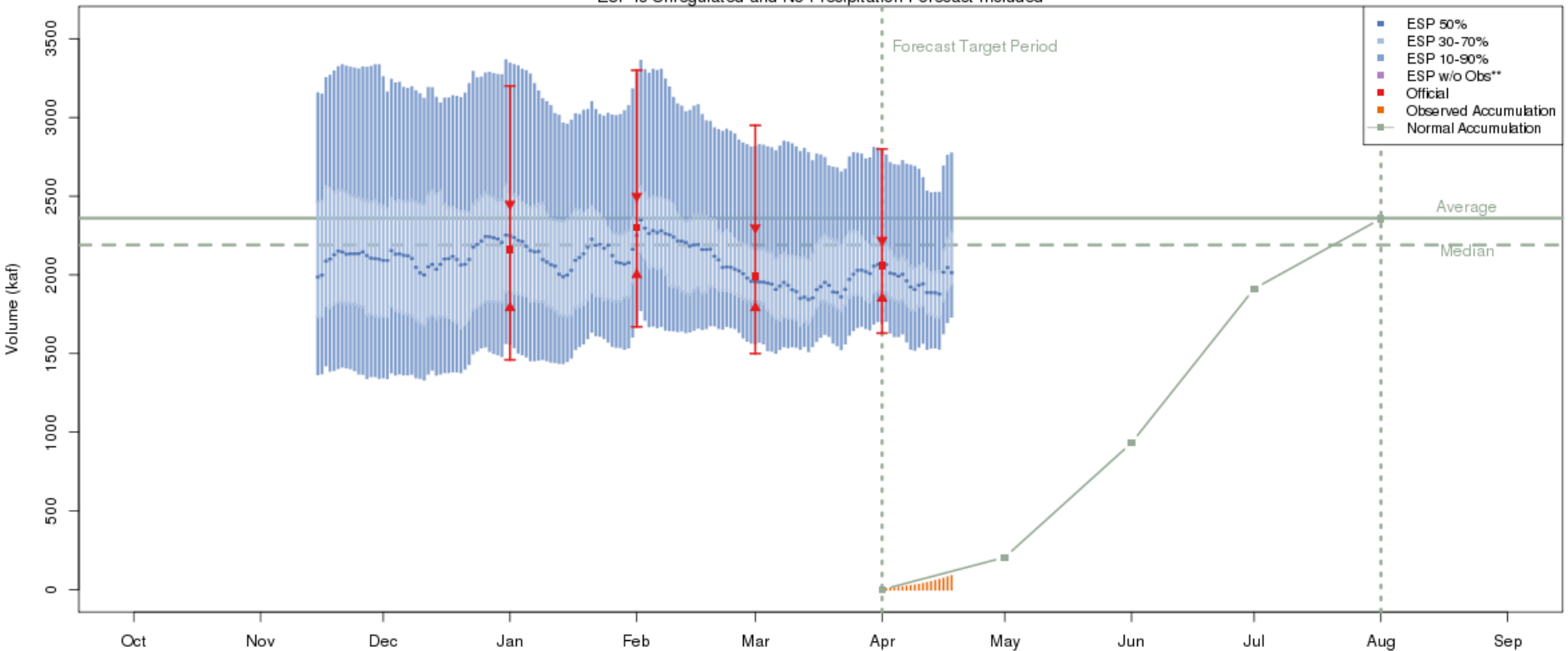
The latest (2016-04-18) 50% ESP forecast is 765 kaf.
 Plot Created 2016-04-18 14:49:44, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.



Colorado River near Cameo

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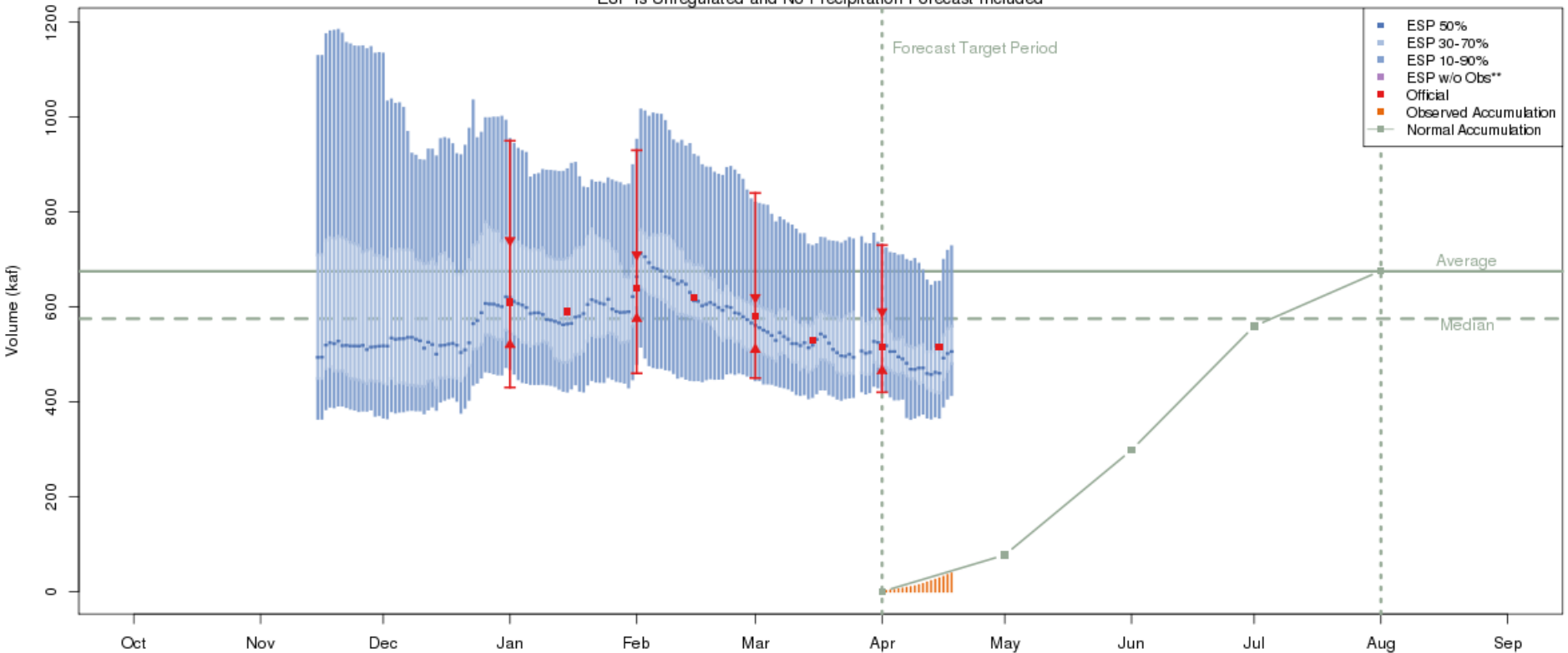
Colorado - Cameo- Nr (CAMC2)
2016-04-01 Apr-Jul Official 50% Forecast: 2060 kaf (87% of average)
ESP is Unregulated and No Precipitation Forecast Included



The latest (2016-04-18) 50% ESP forecast is 2014 kaf.
Plot Created 2016-04-18 14:35:13, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.

Blue Mesa Reservoir

Gunnison - Blue Mesa Res (BMDC2)
2016-04-15 Apr-Jul Official 50% Forecast: 515 kaf (76% of average)
 ESP is Unregulated and No Precipitation Forecast Included

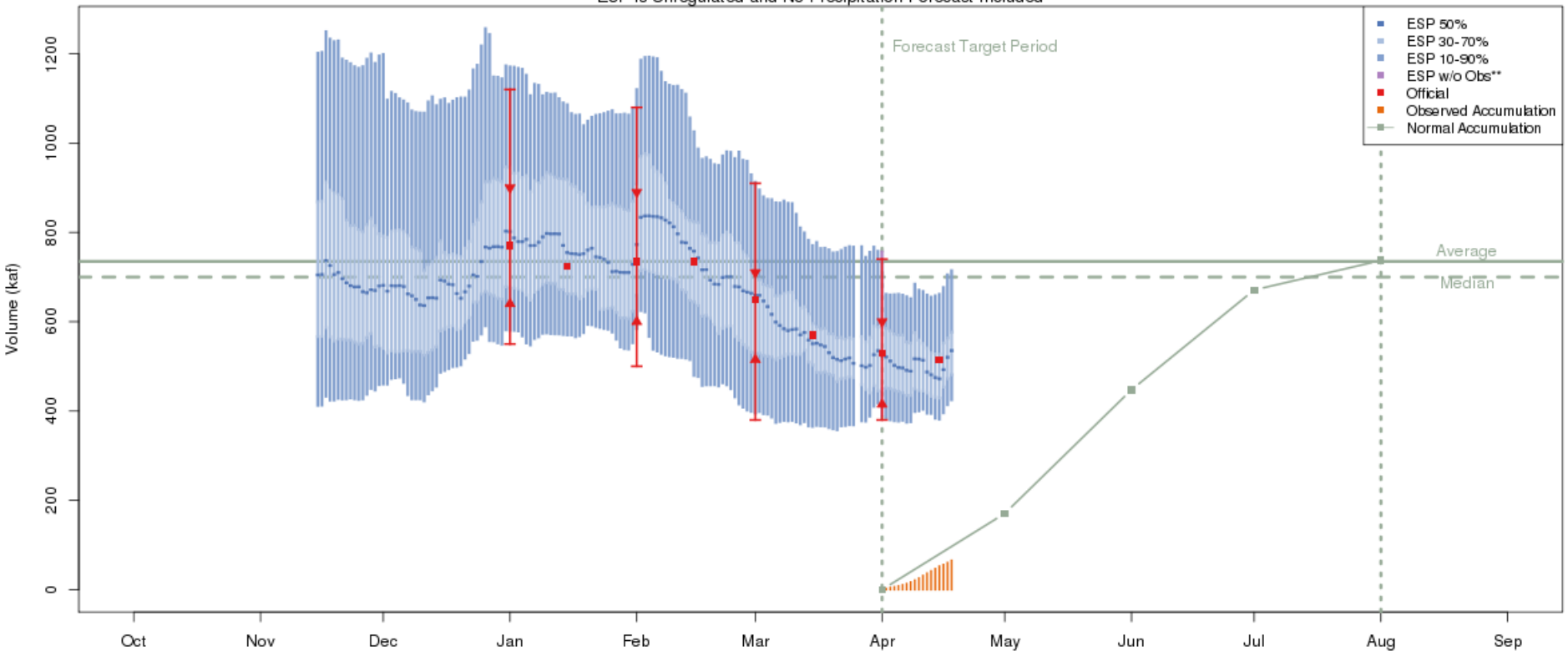


The latest (2016-04-18) 50% ESP forecast is 506 kaf.
 Plot Created 2016-04-18 14:33:17, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.



Navajo Reservoir

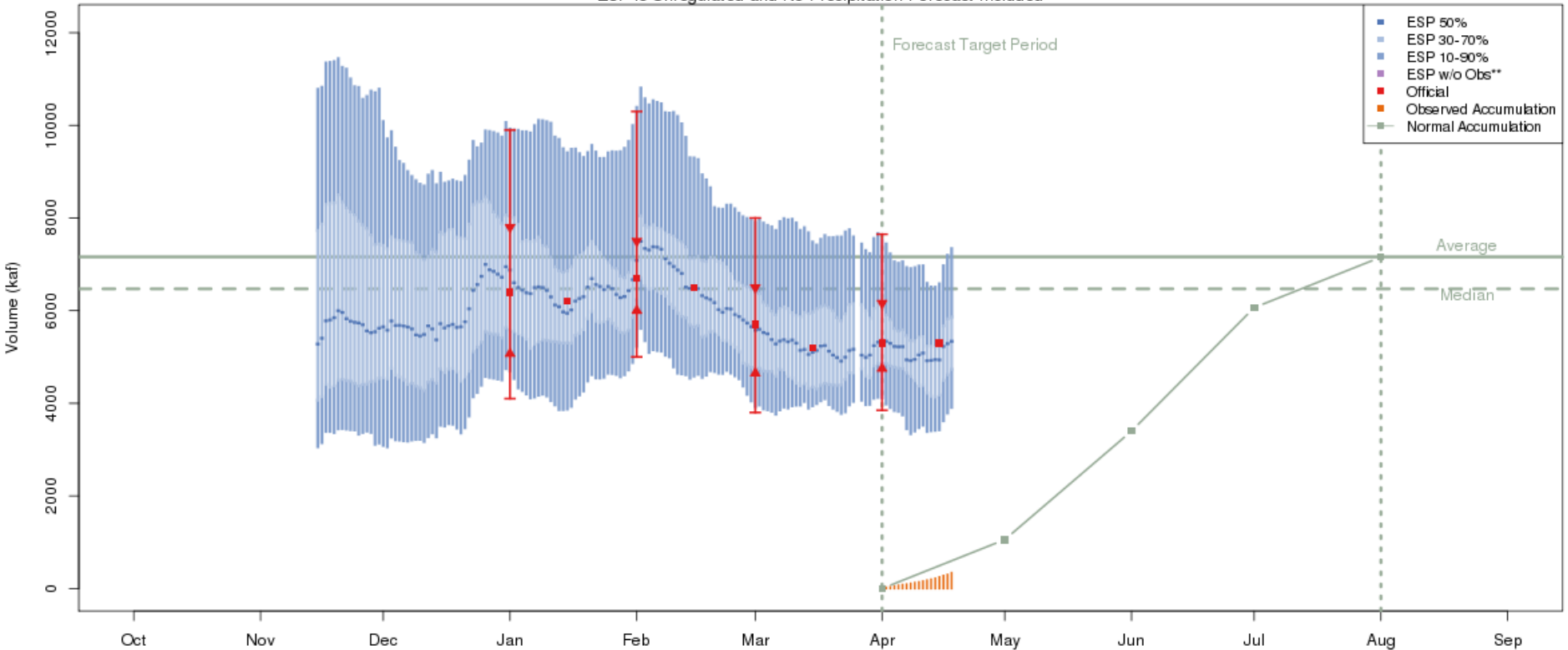
San Juan - Navajo Res- Archuleta- Nr (NVRN5)
2016-04-15 Apr-Jul Official 50% Forecast: 515 kaf (70% of average)
 ESP is Unregulated and No Precipitation Forecast Included



The latest (2016-04-18) 50% ESP forecast is 535 kaf.
 Plot Created 2016-04-18 15:00:51, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.

Lake Powell

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
2016-04-15 Apr-Jul Official 50% Forecast: 5300 kaf (74% of average)
 ESP is Unregulated and No Precipitation Forecast Included

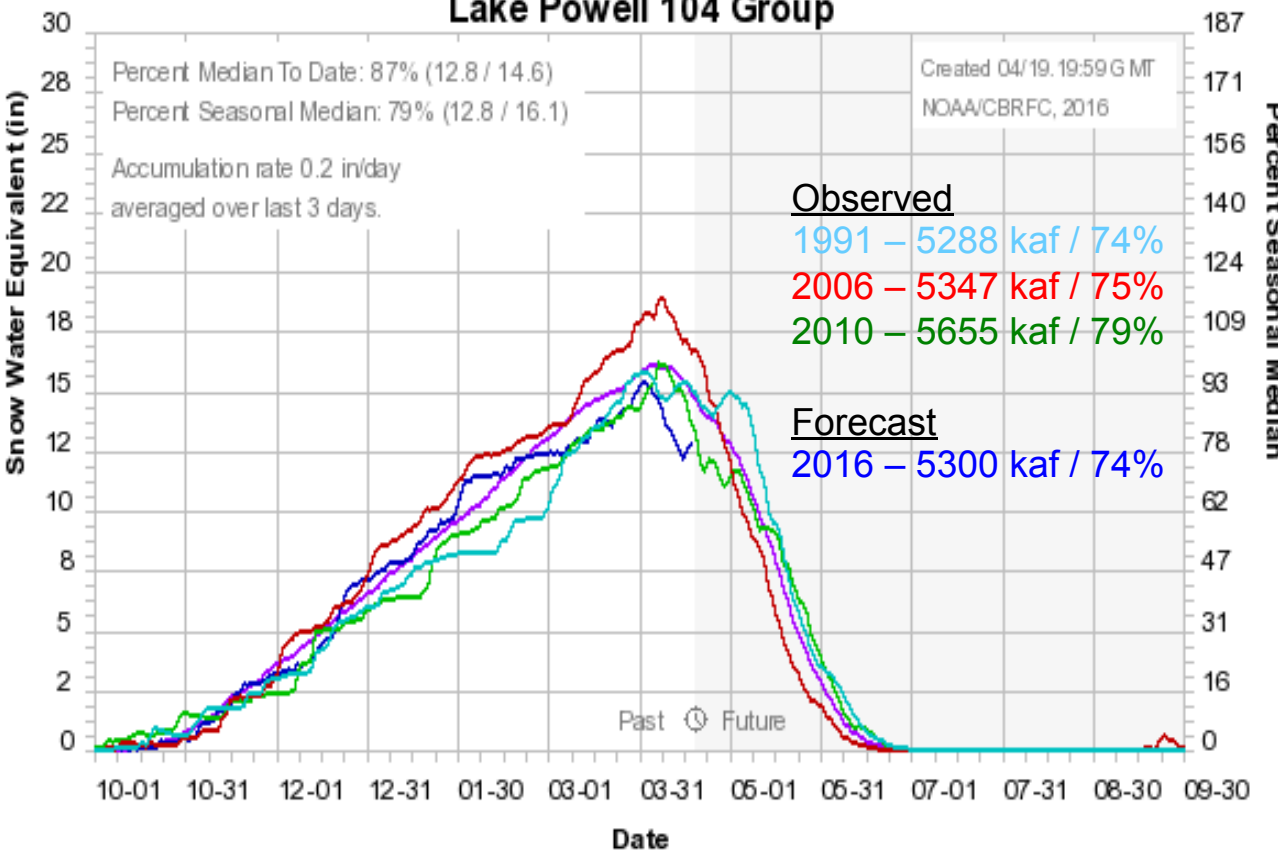


The latest (2016-04-18) 50% ESP forecast is 5337 kaf.
 Plot Created 2016-04-18 14:48:27, NOAA / NWS / CBRFC
 Forecasts in the forecast target period include observed values.



SNOTEL Index SWE vs. Runoff

Colorado Basin River Forecast Center Lake Powell 104 Group

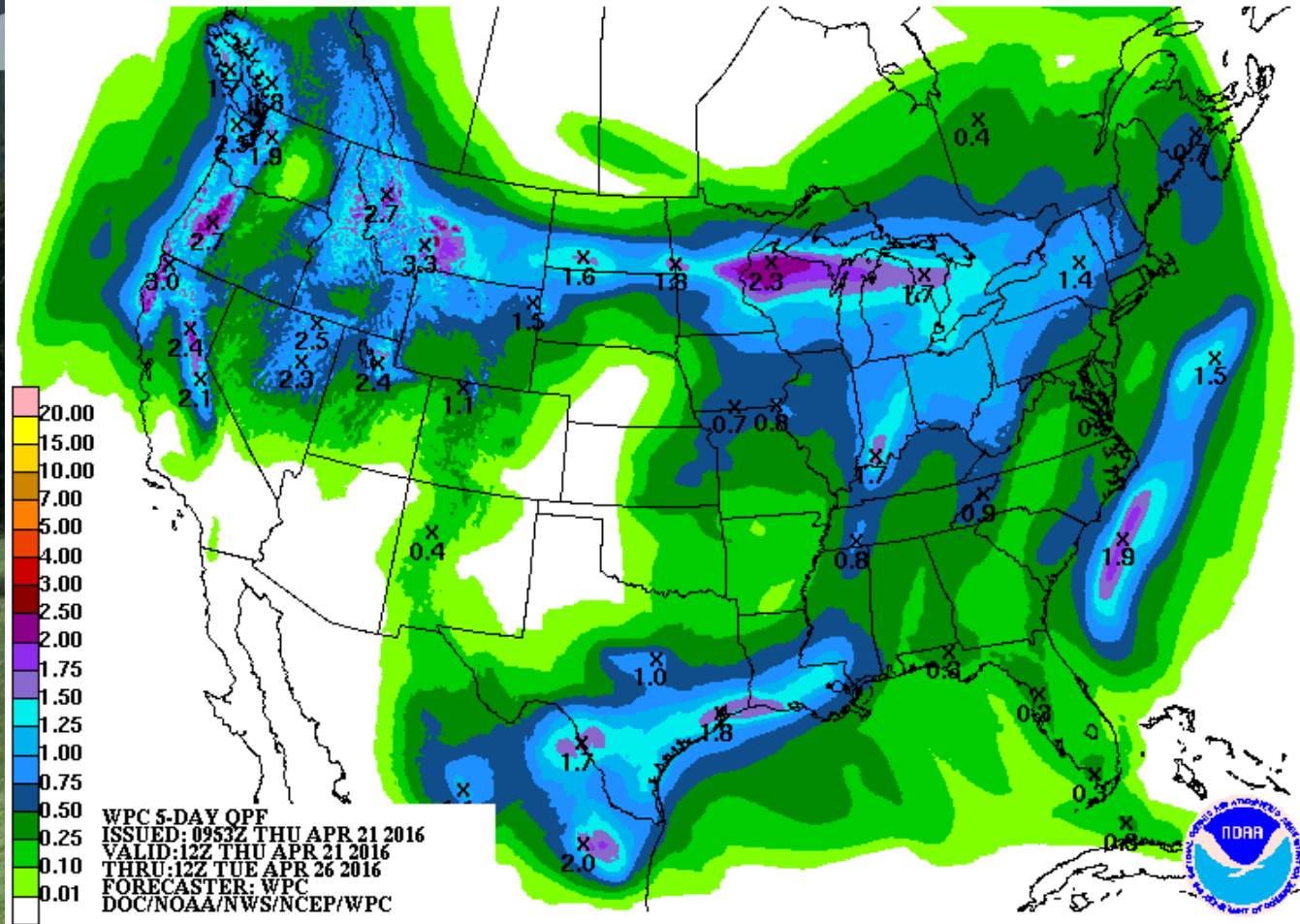


Other factors:

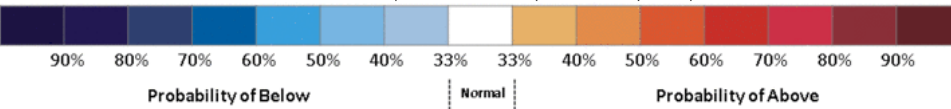
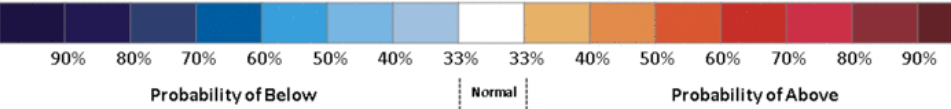
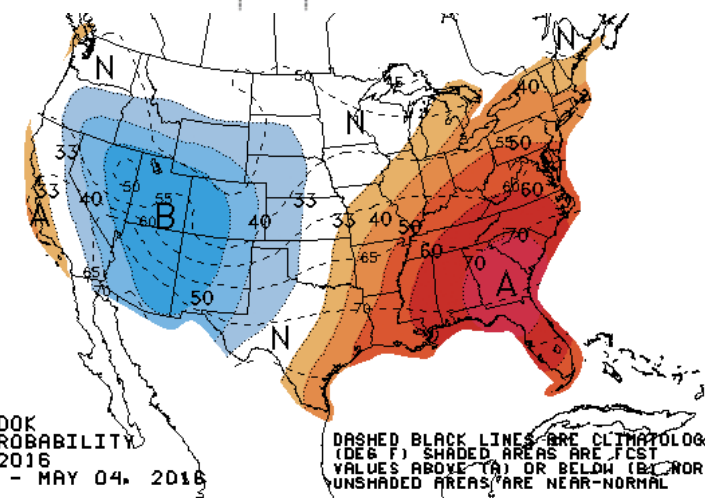
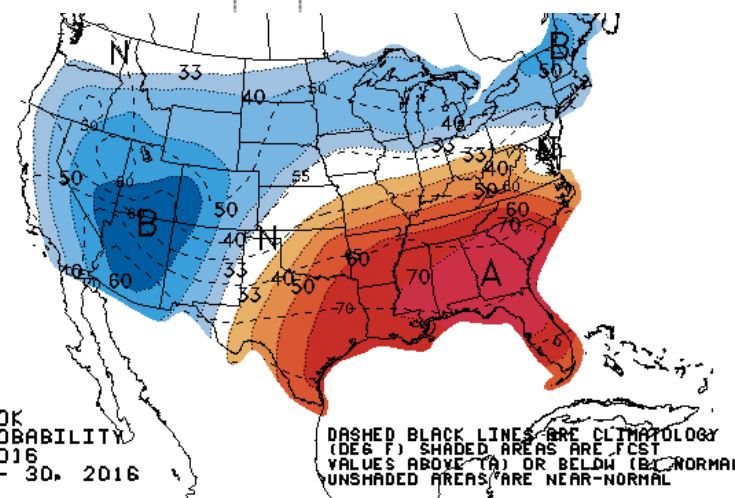
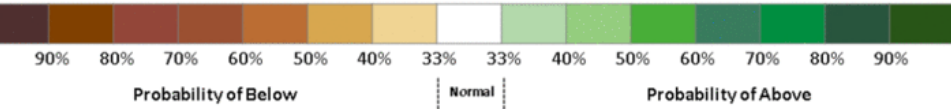
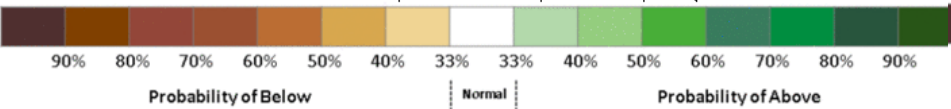
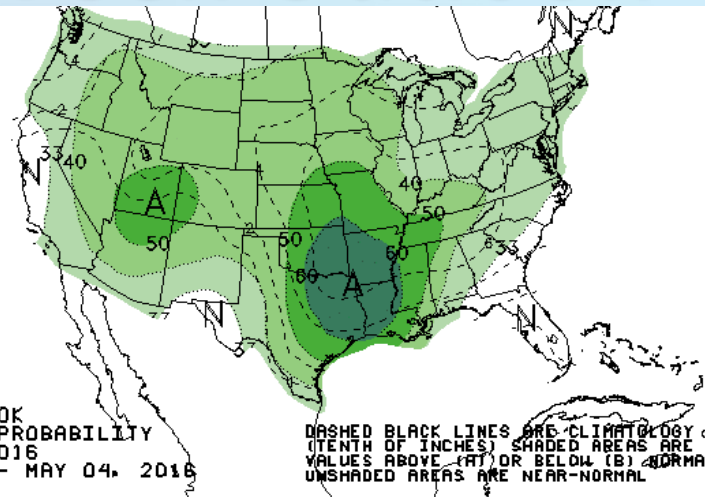
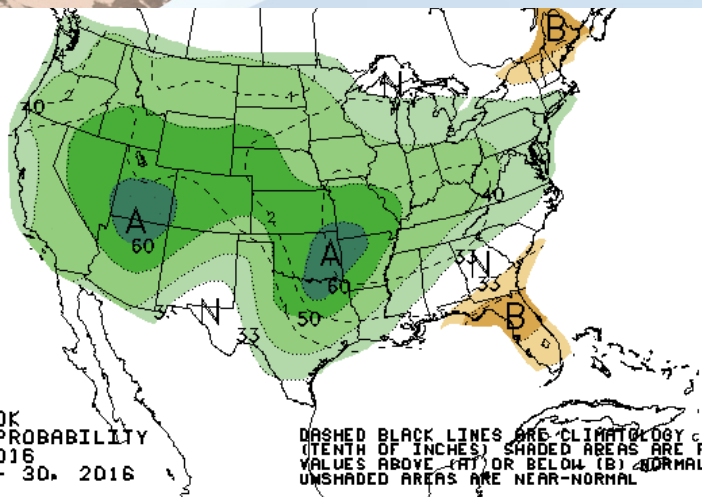
- SNOTEL station distribution
 - no station weighting on index
 - point measurement to areal representation
 - highest elevations not represented
- Antecedent conditions
 - soil moisture
- Spring weather
 - temperature
 - precipitation

Looking Ahead...

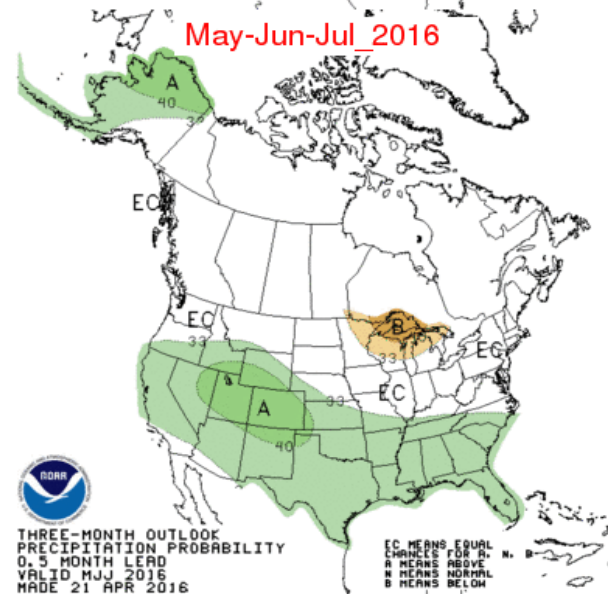
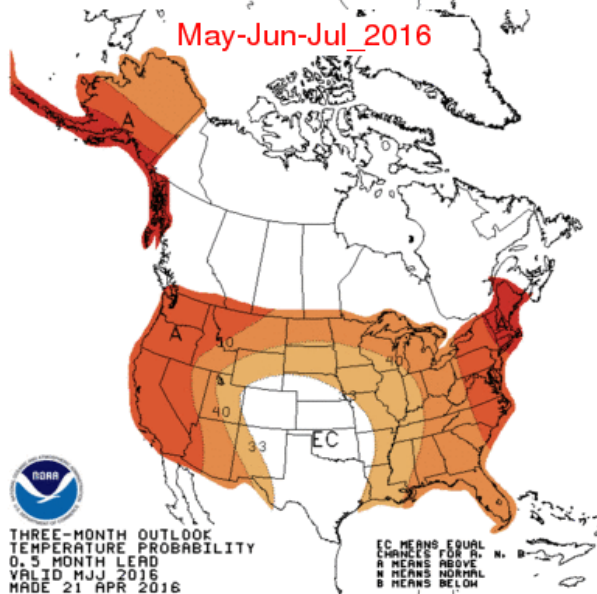
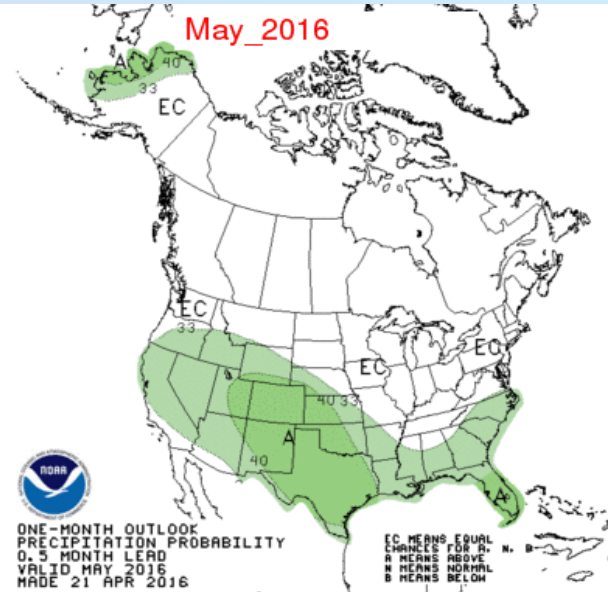
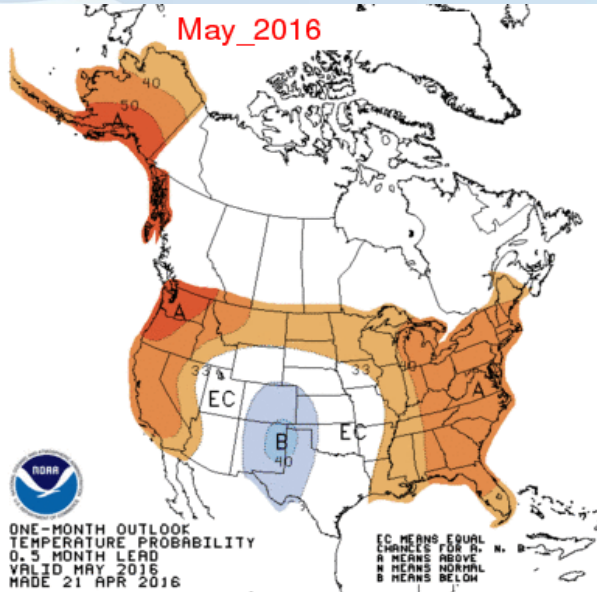
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2 Week Outlook



1 and 3 Month Outlooks



IRI/CPC Probabilistic ENSO Outlook

Updated 14 April 2016

The chance of El Niño gradually decreases during the spring and ENSO-neutral is favored during May-June-July (MJJ) 2016. The chance of La Niña increases to more than 50% in July-August-September (JAS) 2016.

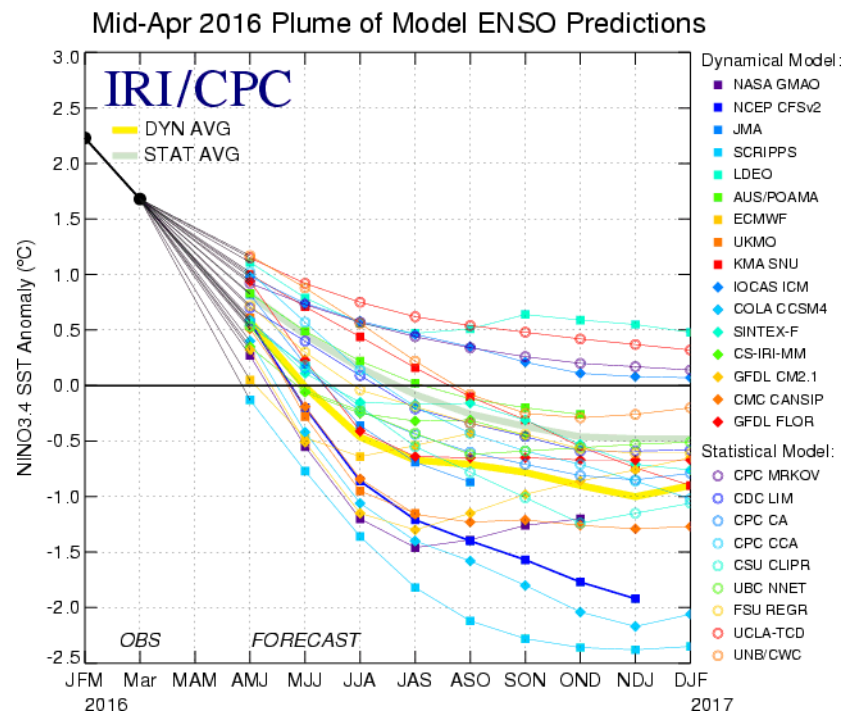
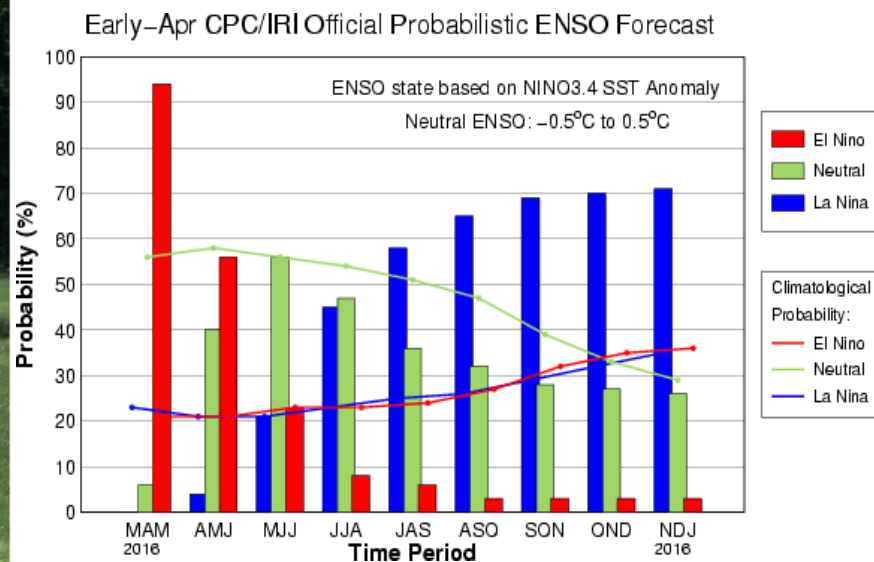
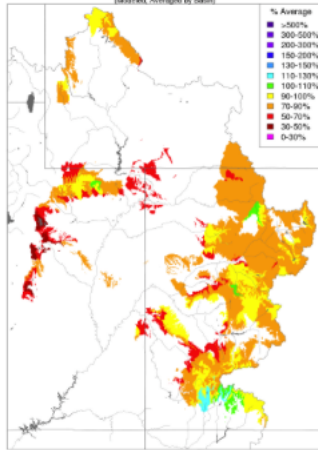


Figure provided by the International Research Institute (IRI) for Climate and Society

Upper Colorado Situational Awareness

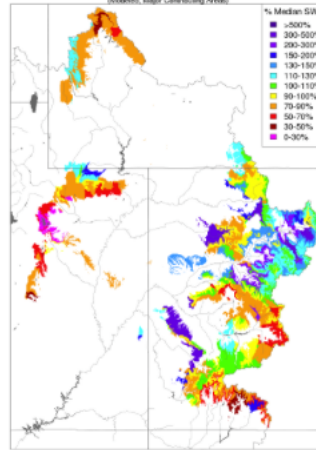
Soil Moisture

Soil Moisture - Fall - 2015 (November 01)
(Model, Averaged by Basin)



Snow Conditions

Snow Conditions - April 19 2016
(Model, Major Contributing Areas)



Lake Powell Unregulated Inflow (kaf) Water Year 2016 Forecasts as of 2016-04-01

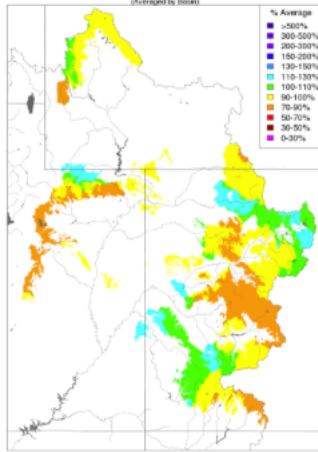
Period	Obs to Date	Full Fcst	%Avg
Apr-Jul	0	5300	74%
Water Year	2472	8442	78%

Lake Powell %Average Precipitation Water Year 2016

Area	Oct	Nov	Dec	Jan	Feb	Mar	Water Year
UC-Powell	89	100	127	108	51	97	96

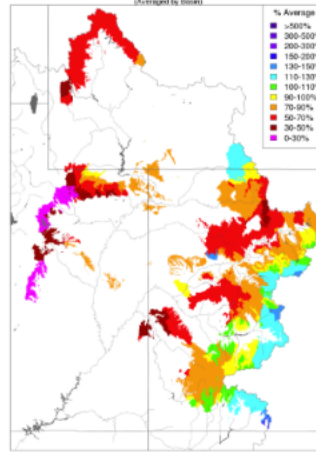
Water Year Precipitation

Water Year Precipitation, October 2015 - March 2016
(Averaged by Basins)

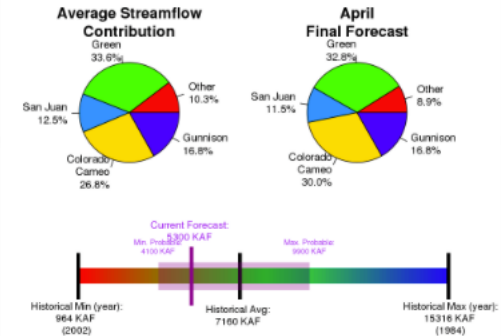


Month to Date Precipitation

Month to Date Precipitation - April 19 2016
(Averaged by Basins)



April - July Unregulated Inflow into Lake Powell As of 2016-04-01



More Information

- Lake Powell Forecast Evolution Plot
- Apr-July Text Forecast Product
- Water Year Text Forecast Product
- Snotel Group Plot
- Snotel Group Data
- USBR 24 Month Study

Quick look at conditions that affect the water supply forecasts for Lake Powell unregulated inflow:
<http://www.cbrfc.noaa.gov/dash/lp.php>
 Under 'Water Supply' Menu

CBRFC Contacts

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