CBRFC
June 2014
Water Supply Webinar

June 5, 2014

Paul Miller

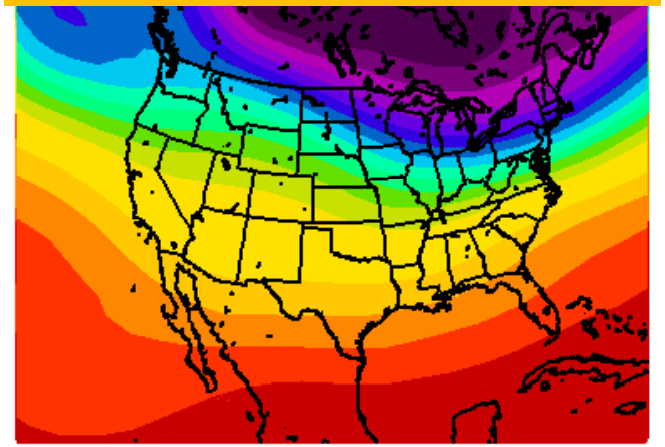
These slides: www.cbrfc.noaa.gov/present/present.php

June Water Supply Webinar

- May Weather & Streamflow
- Snow Situation
- Water supply forecasts
- Upcoming weather and climate

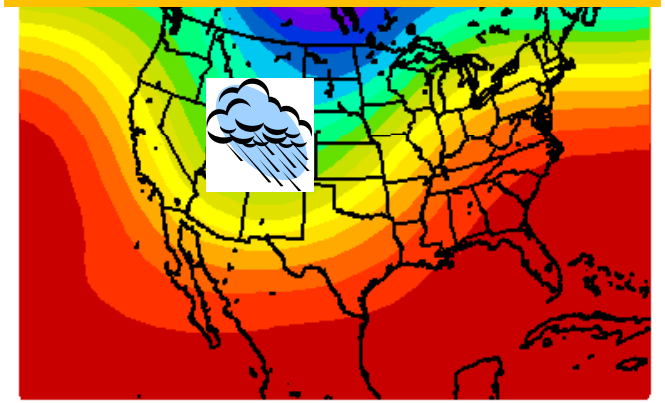
May 2014 Upper Air Pattern

WEEK-1: Calm weather and near average temps



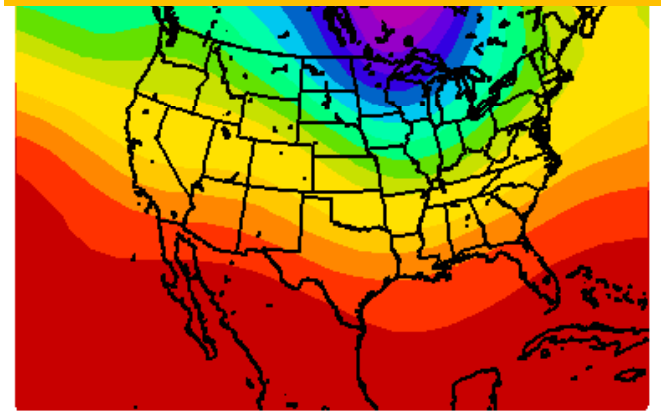
500mb Geopotential Height (m) Composite Mean
5/1/14 to 5/7/14
NCEP/NCAR Reanalysis

WEEK-2: Colder weather and storm activity, particularly in GB and UC regions



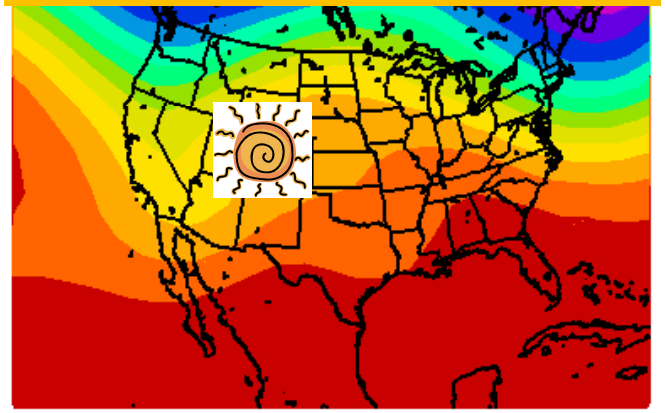
500mb Geopotential Height (m) Composite Mean
5/7/14 to 5/14/14
NCEP/NCAR Reanalysis

WEEK-3: Warming temps in the north and less storm activity



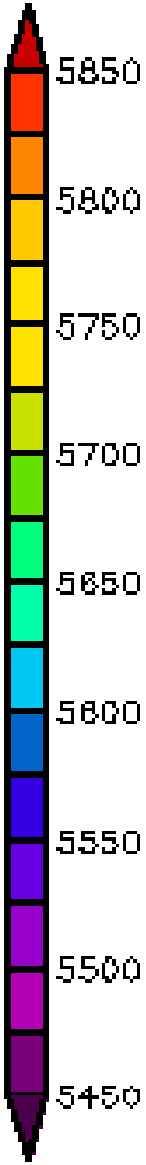
500mb Geopotential Height (m) Composite Mean
5/14/14 to 5/21/14
NCEP/NCAR Reanalysis

WEEK-4: Well-above average temps drove increases to streamflow rates



500mb Geopotential Height (m) Composite Mean
5/21/14 to 5/31/14
NCEP/NCAR Reanalysis

Inconsistent geopotential heights across latitudes can mean:

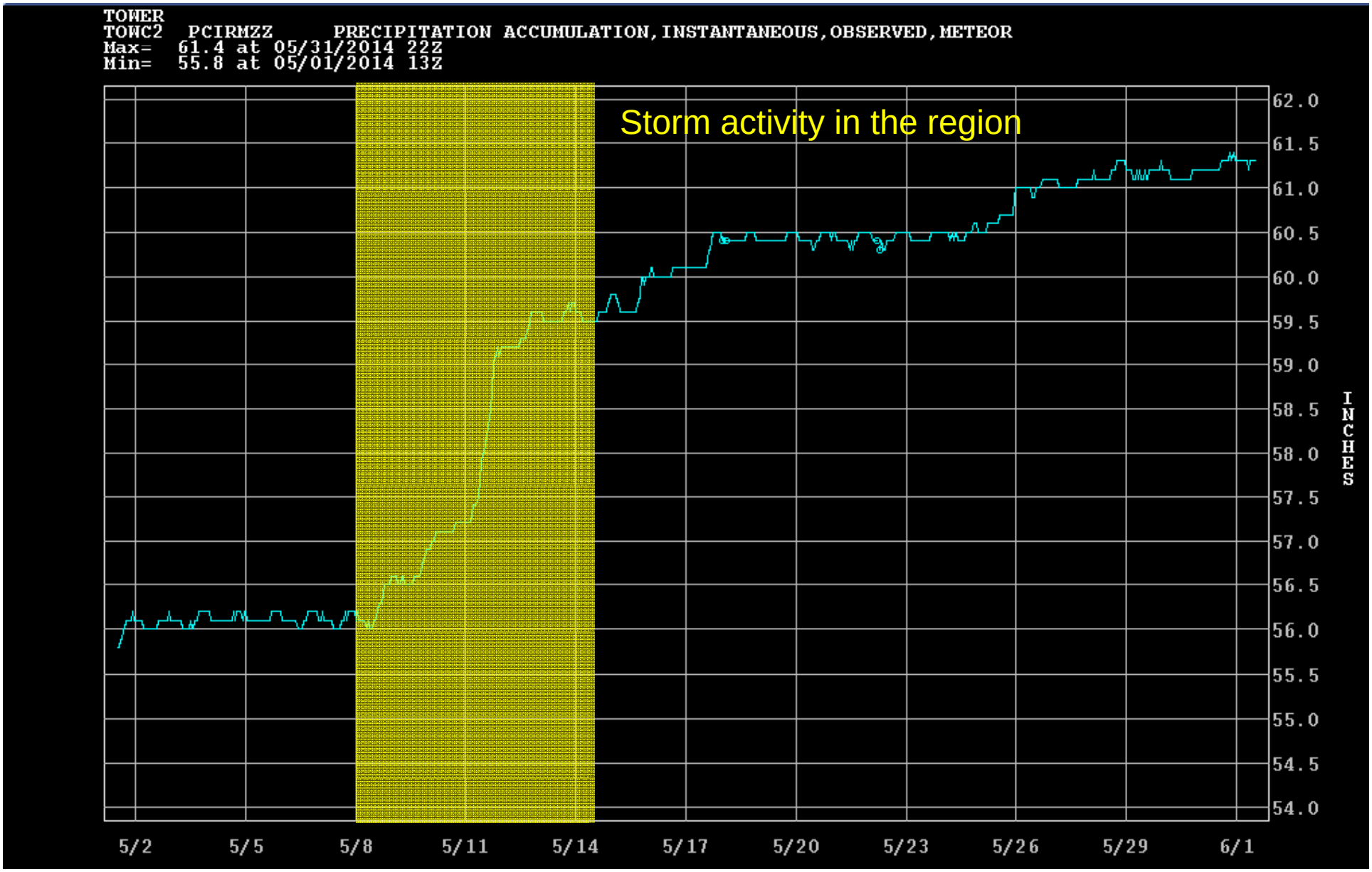


Generally warmer and less stormy

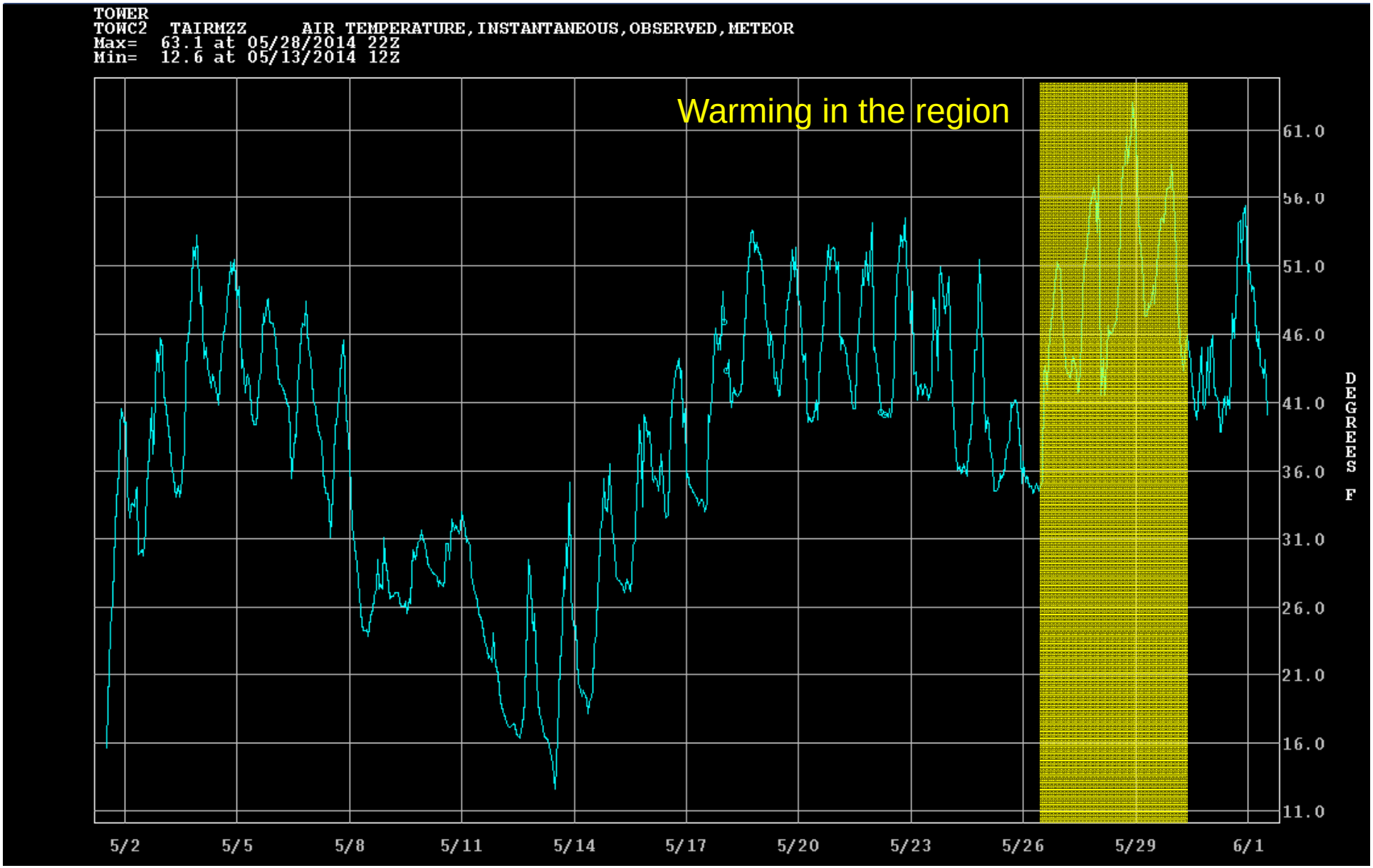
Generally cooler and more stormy

Plots available via:
http://www.esrl.noaa.gov/psd/data/composites/day/

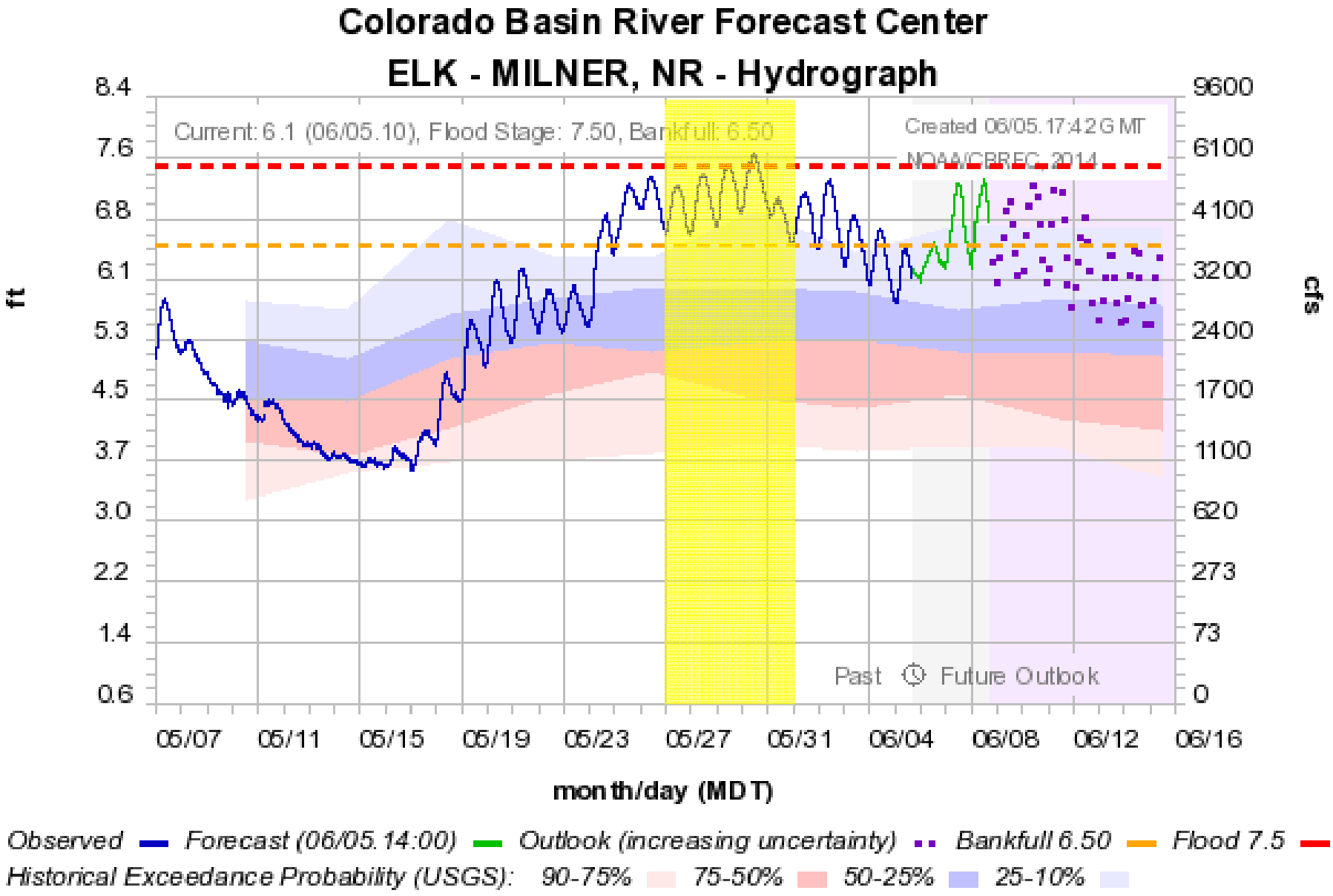
Tower SNOTEL – May Accumulated Precipitation



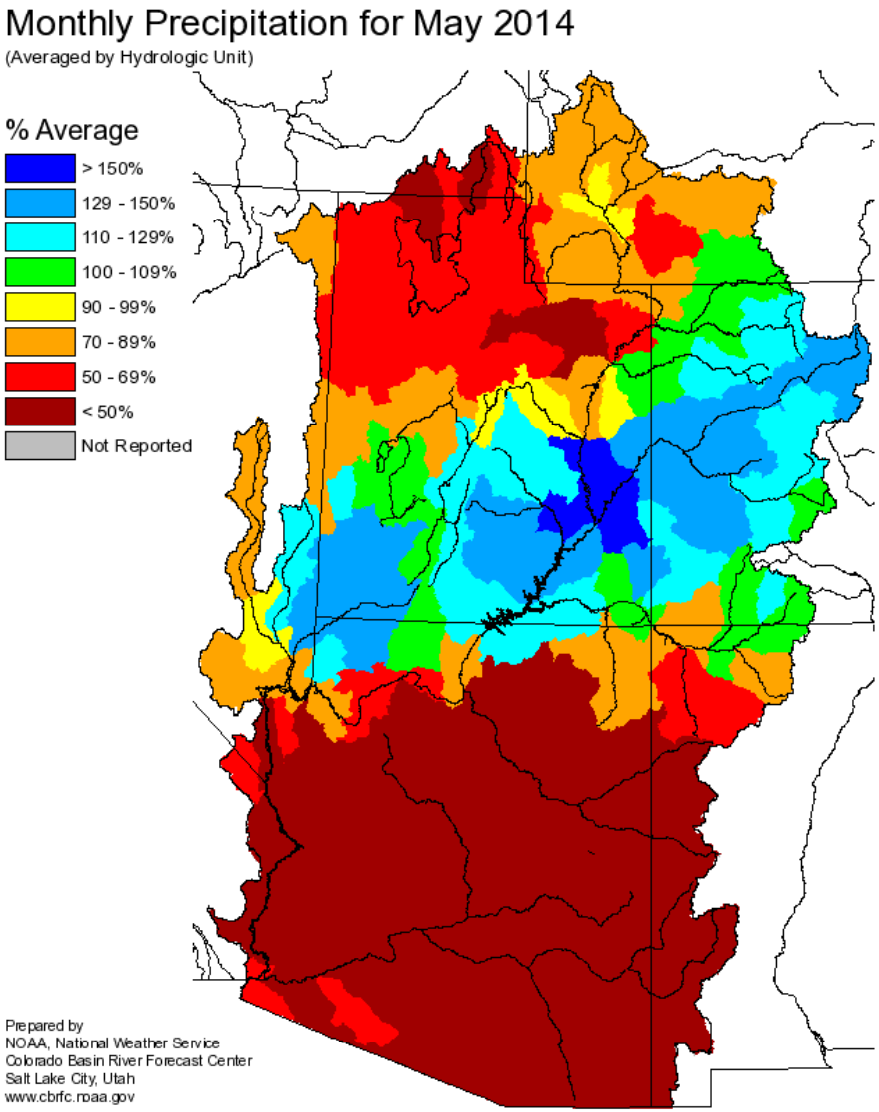
Tower SNOTEL – May Temperature

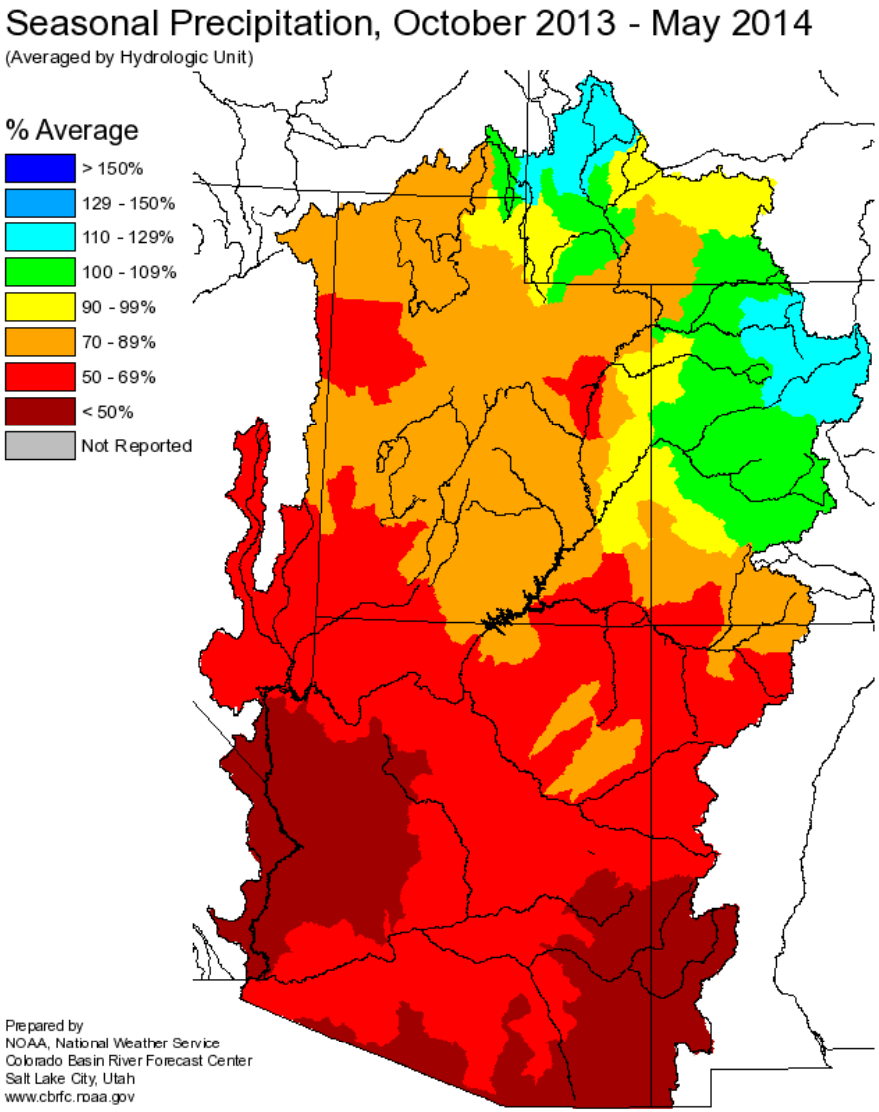


May Streamflow

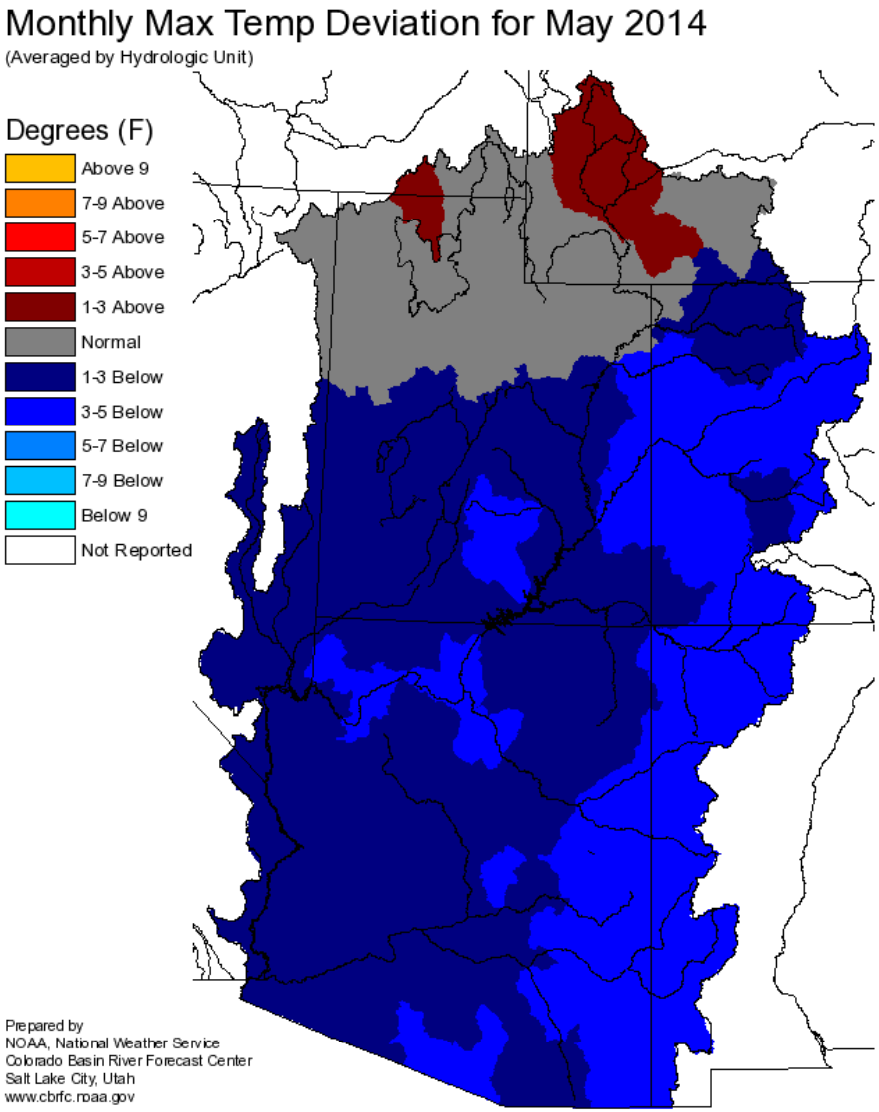


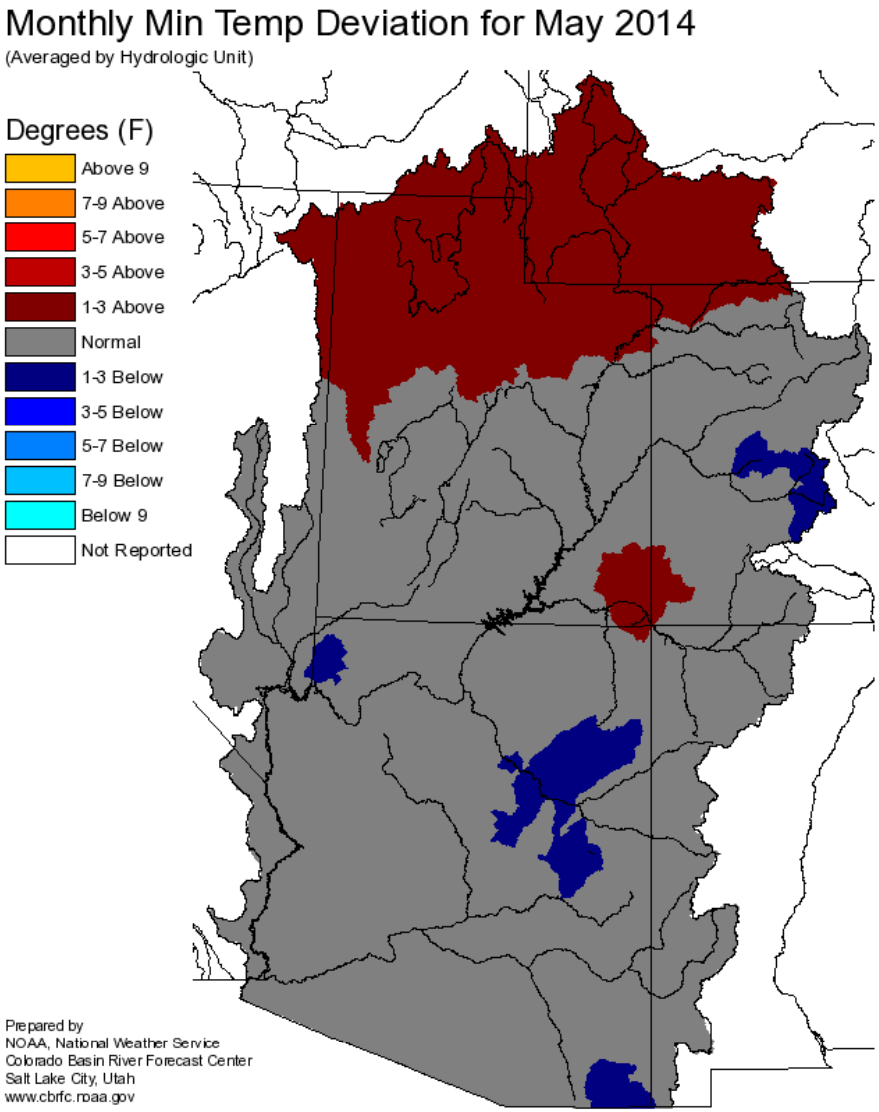
Precipitation



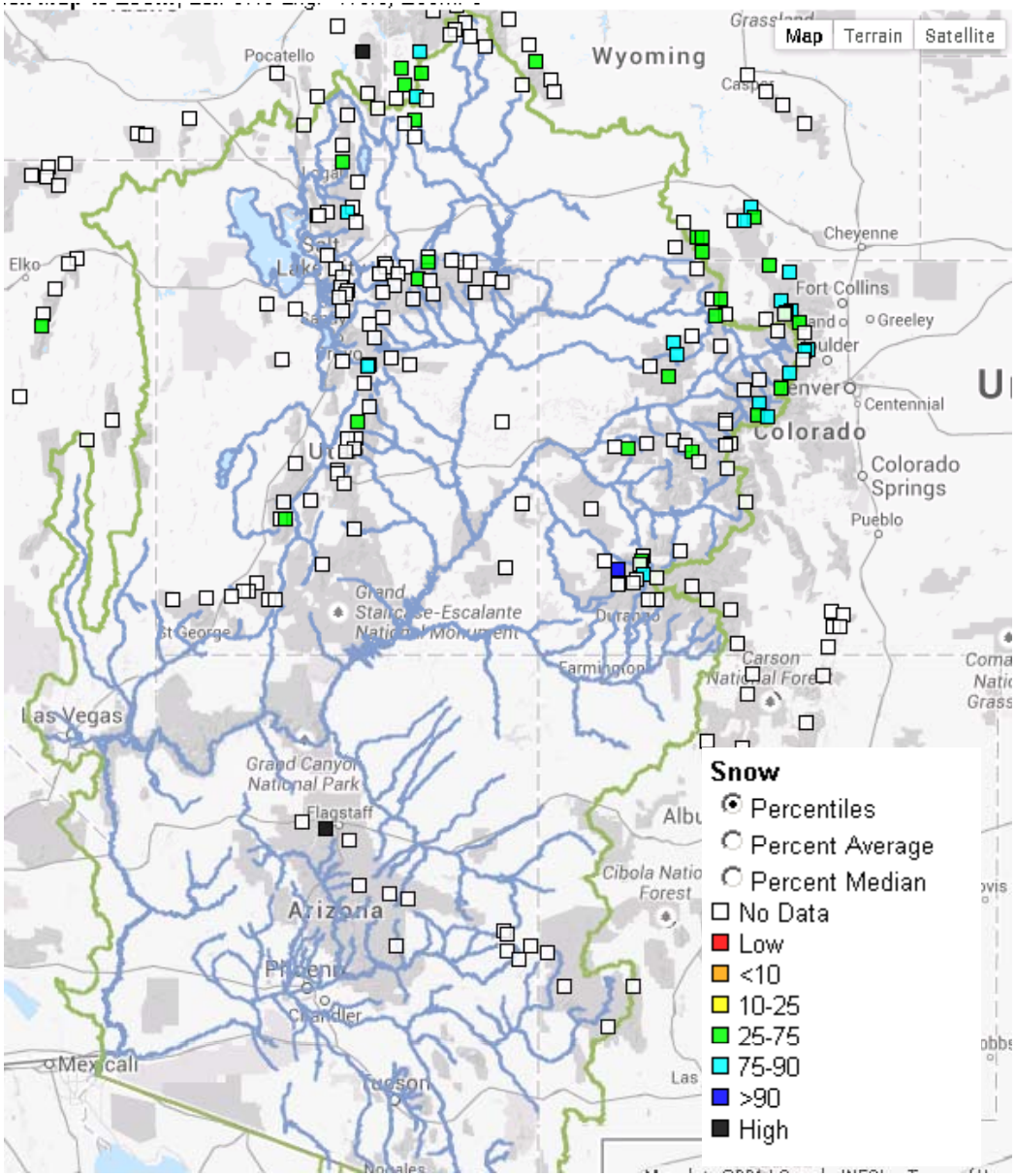


Temperatures





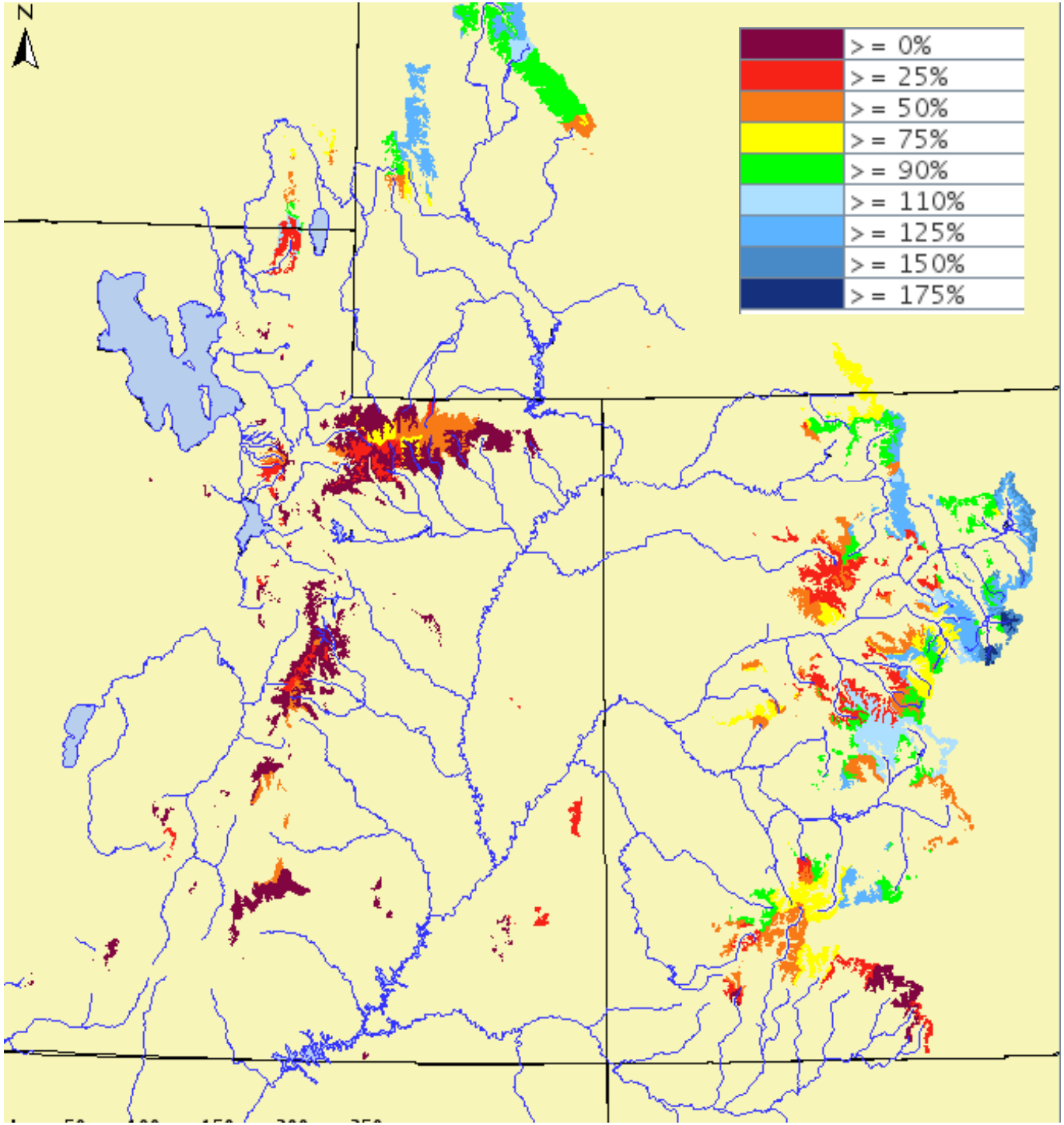
June 3rd Snow



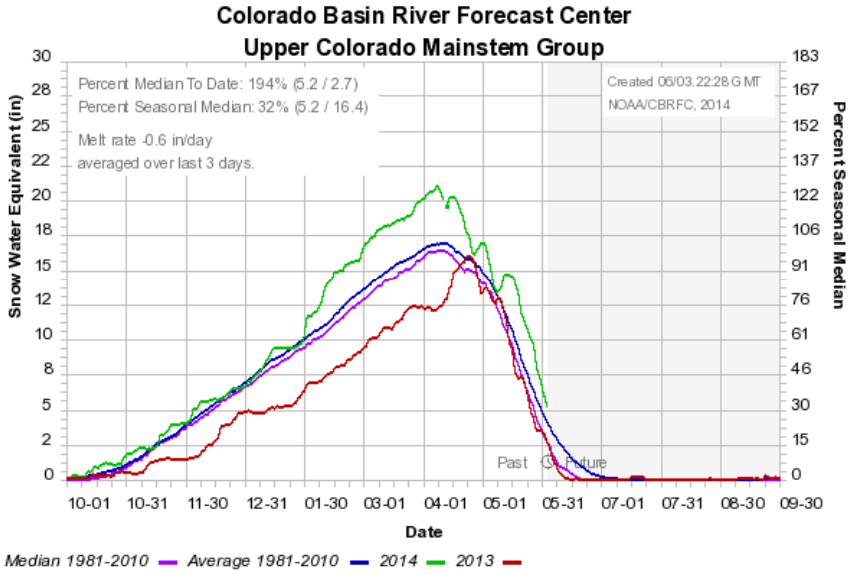
- Snow still prevalent in the Upper Colorado Headwater and Green River Basins
- Not much snow left in Eastern Great Basin or San Juan regions.

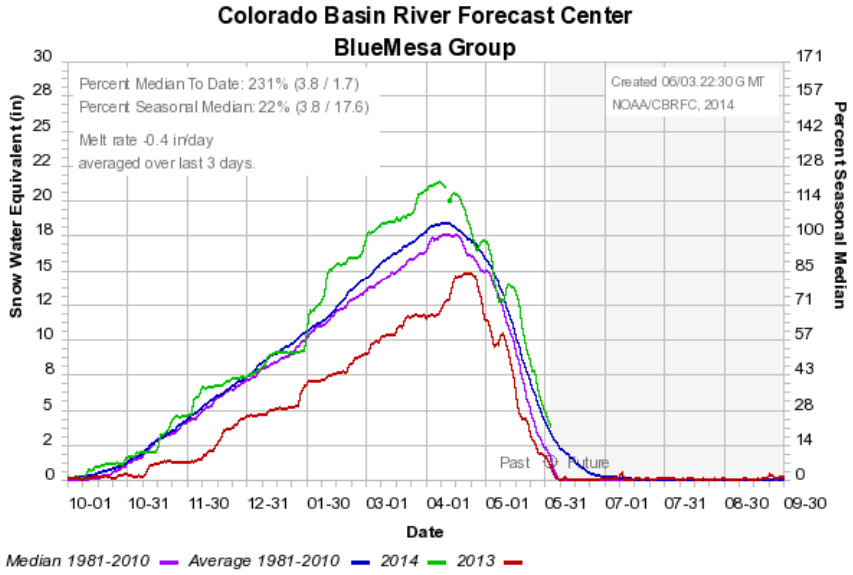
Snow in the CBRFC Hydrologic Model

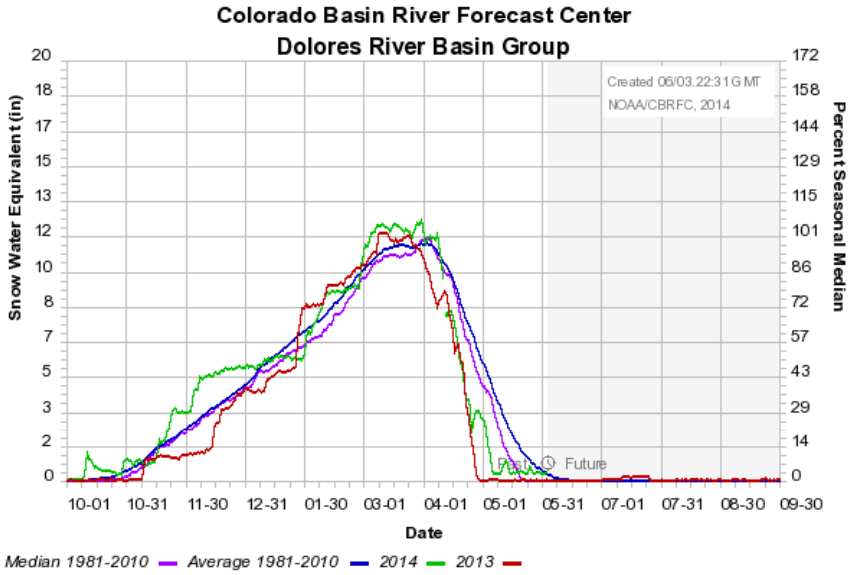
SWE as a percent of the model average

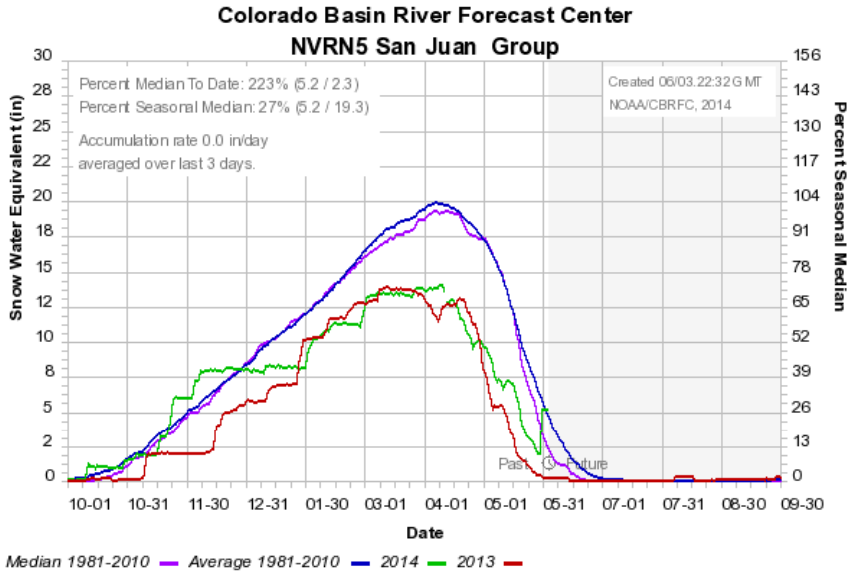


Basin Snow Groups:

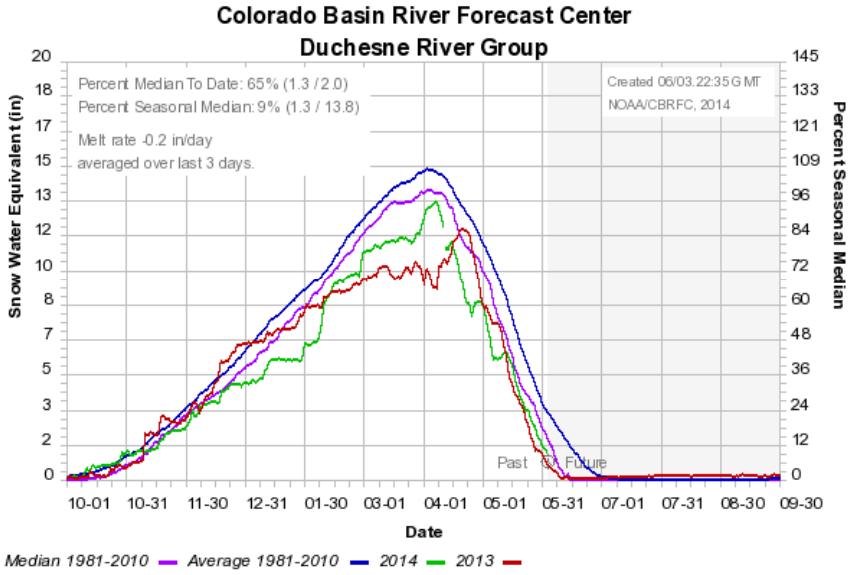


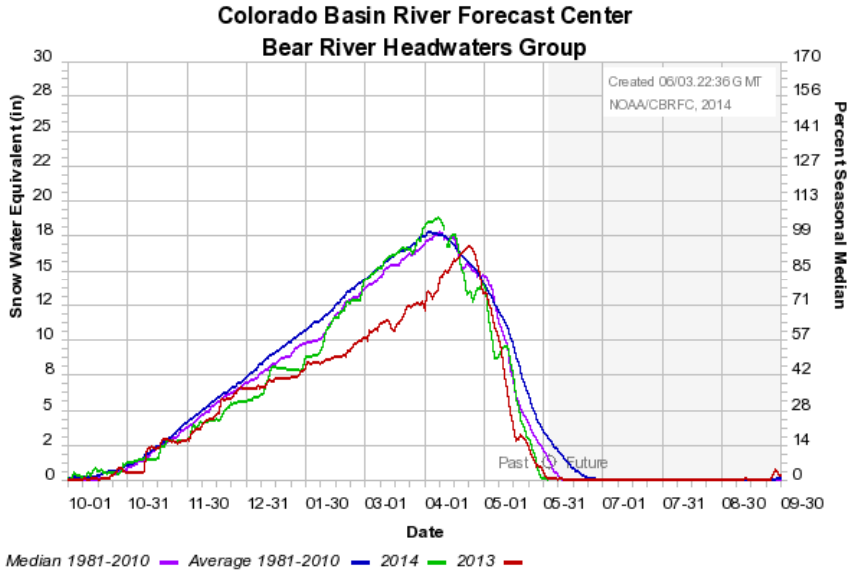


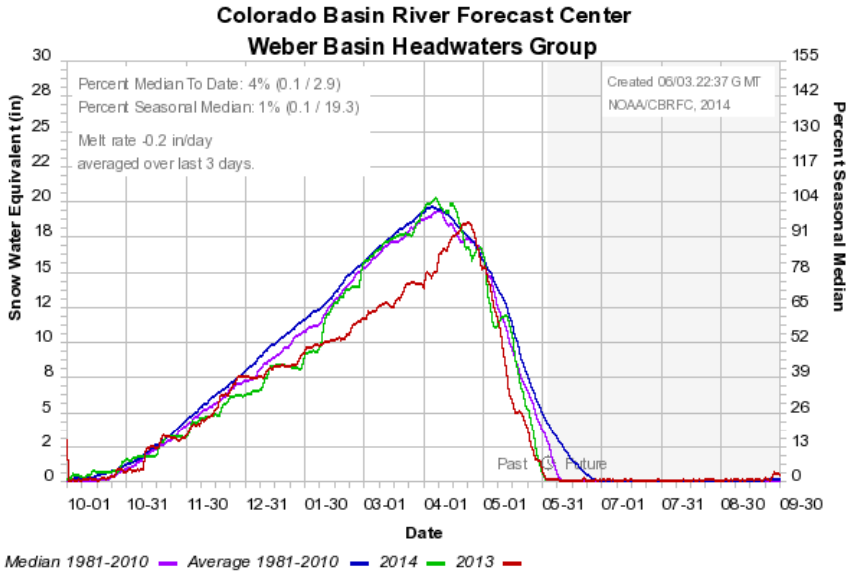


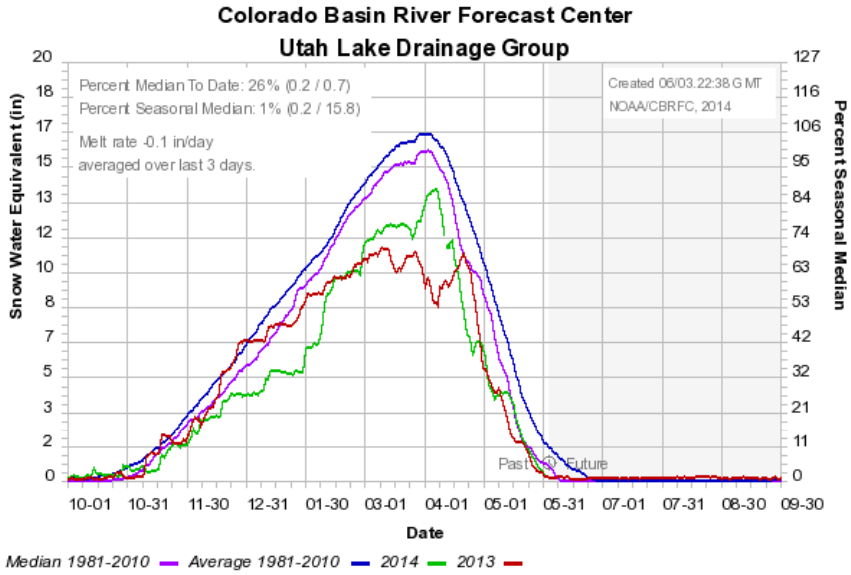


Basin Snow Groups:



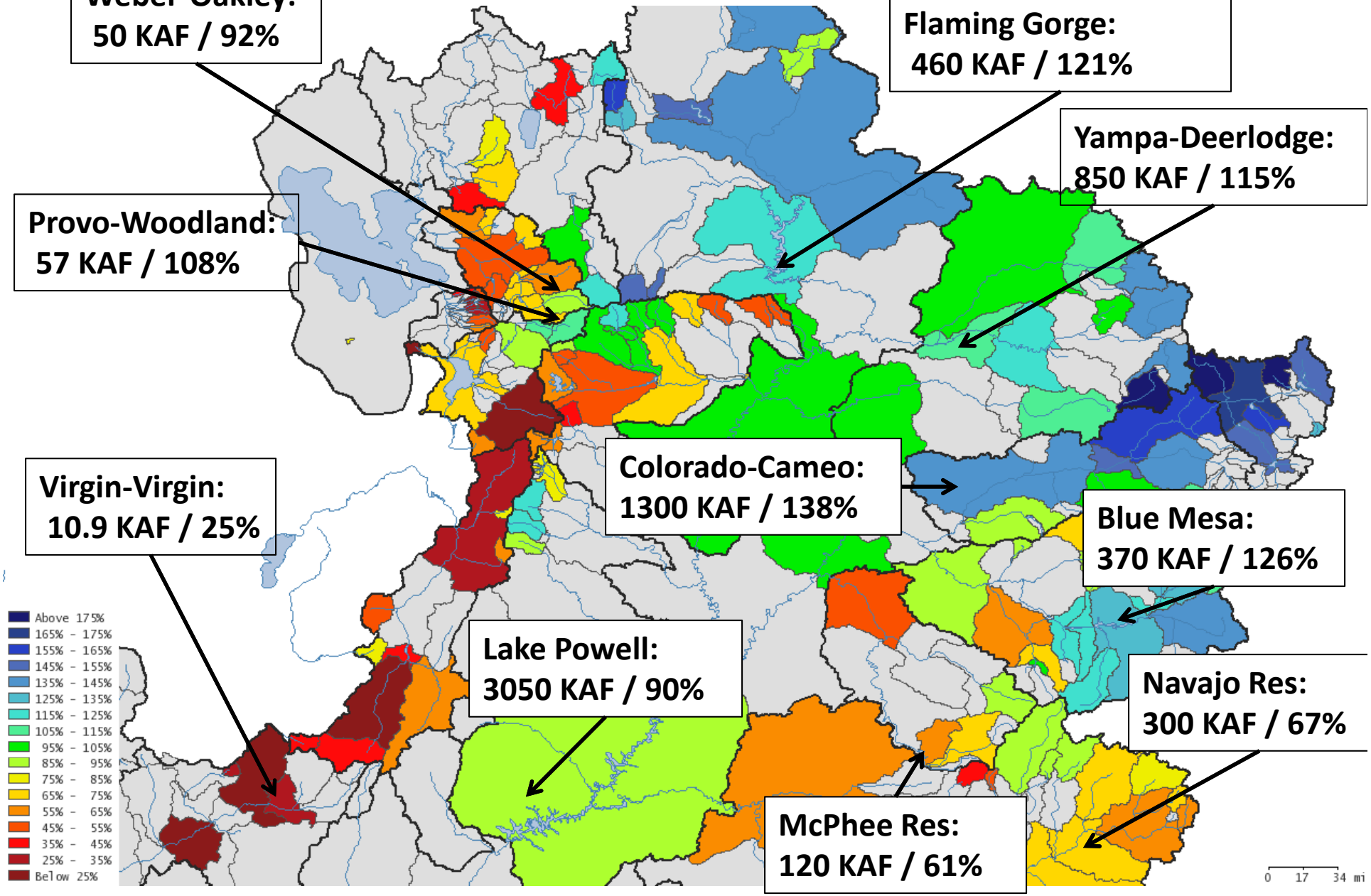






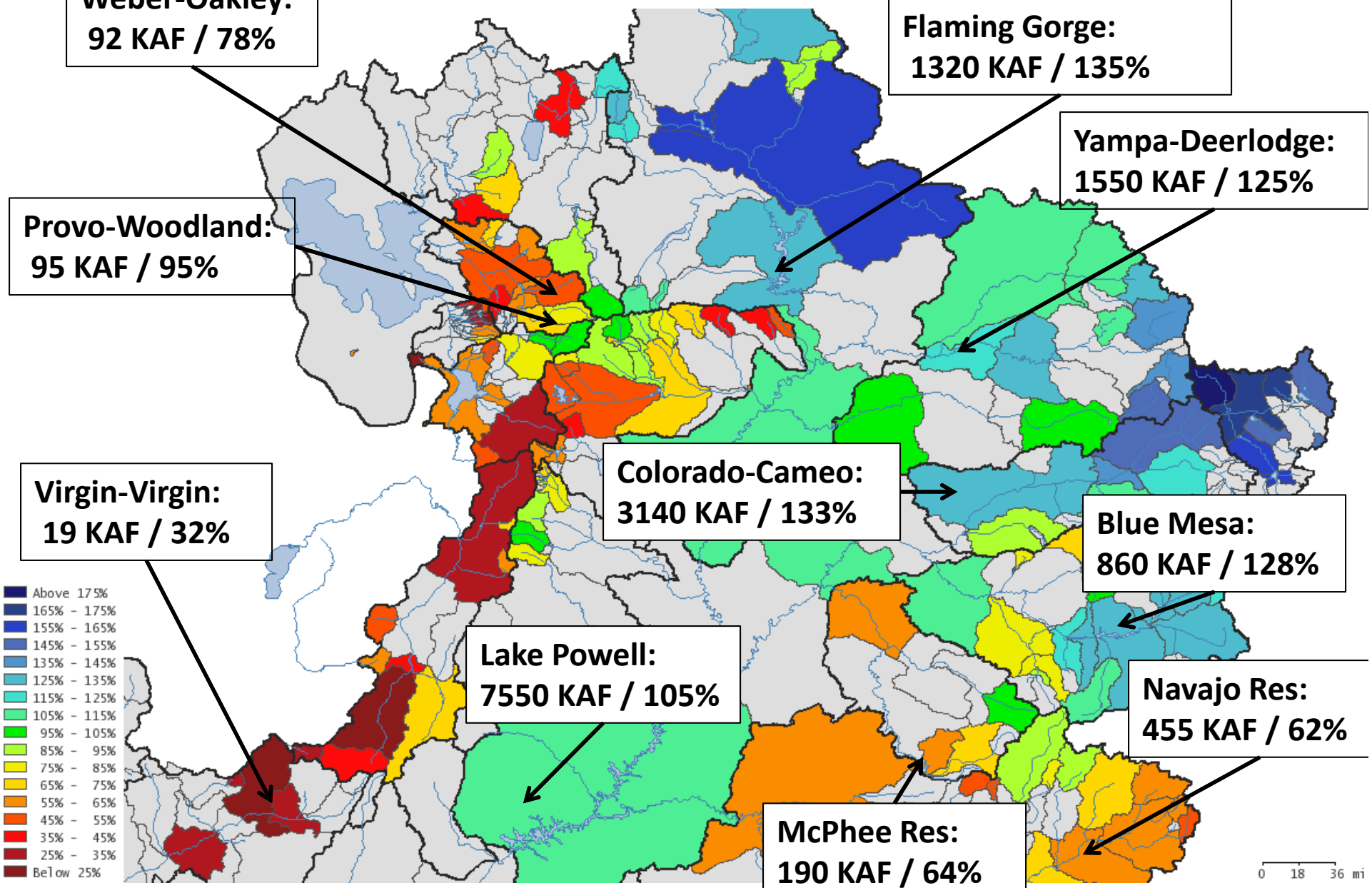
April – May Observations

Apr-May Volumes / % Average



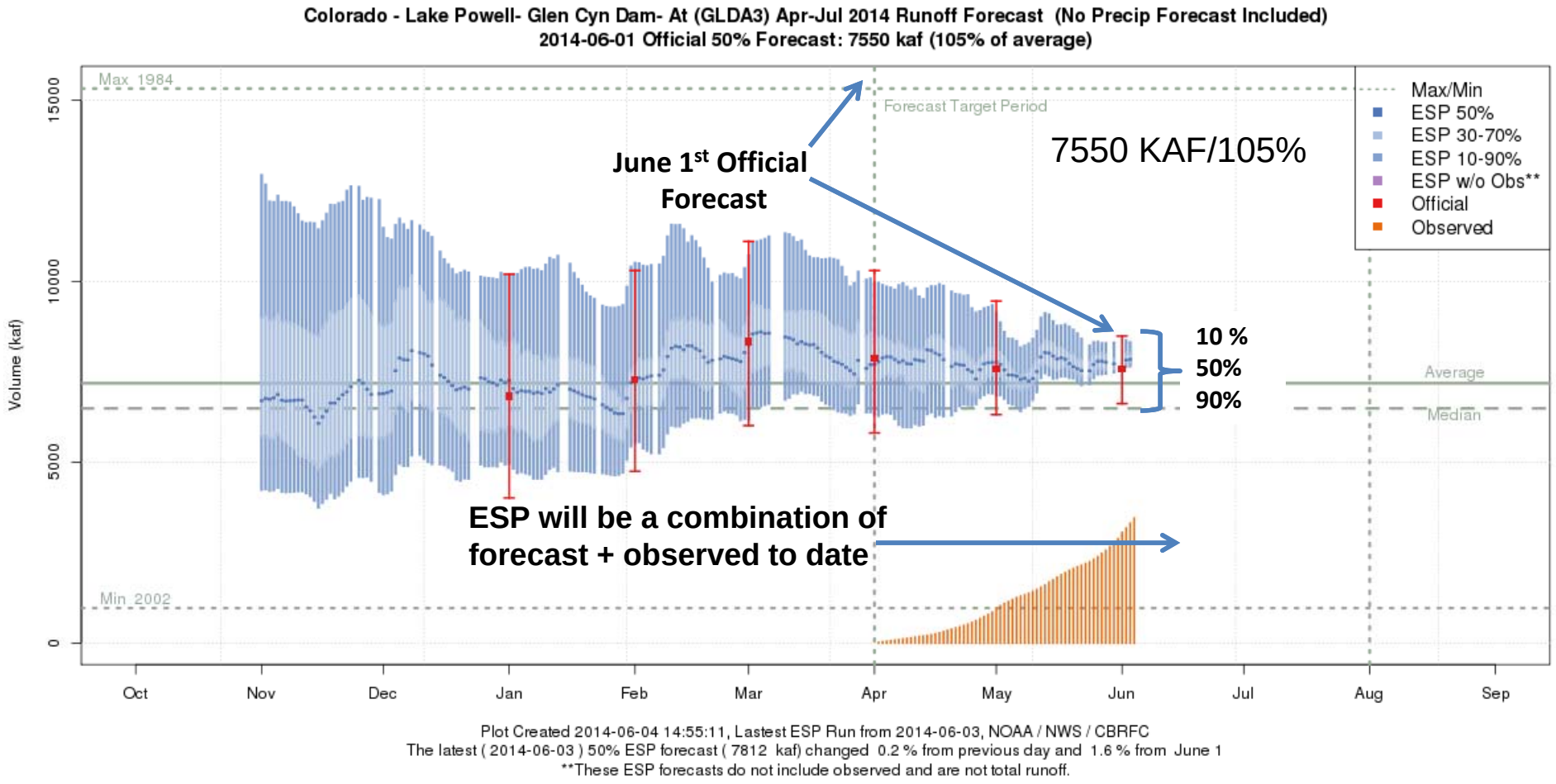
April – July Forecasts

Apr-July Volumes / % Average



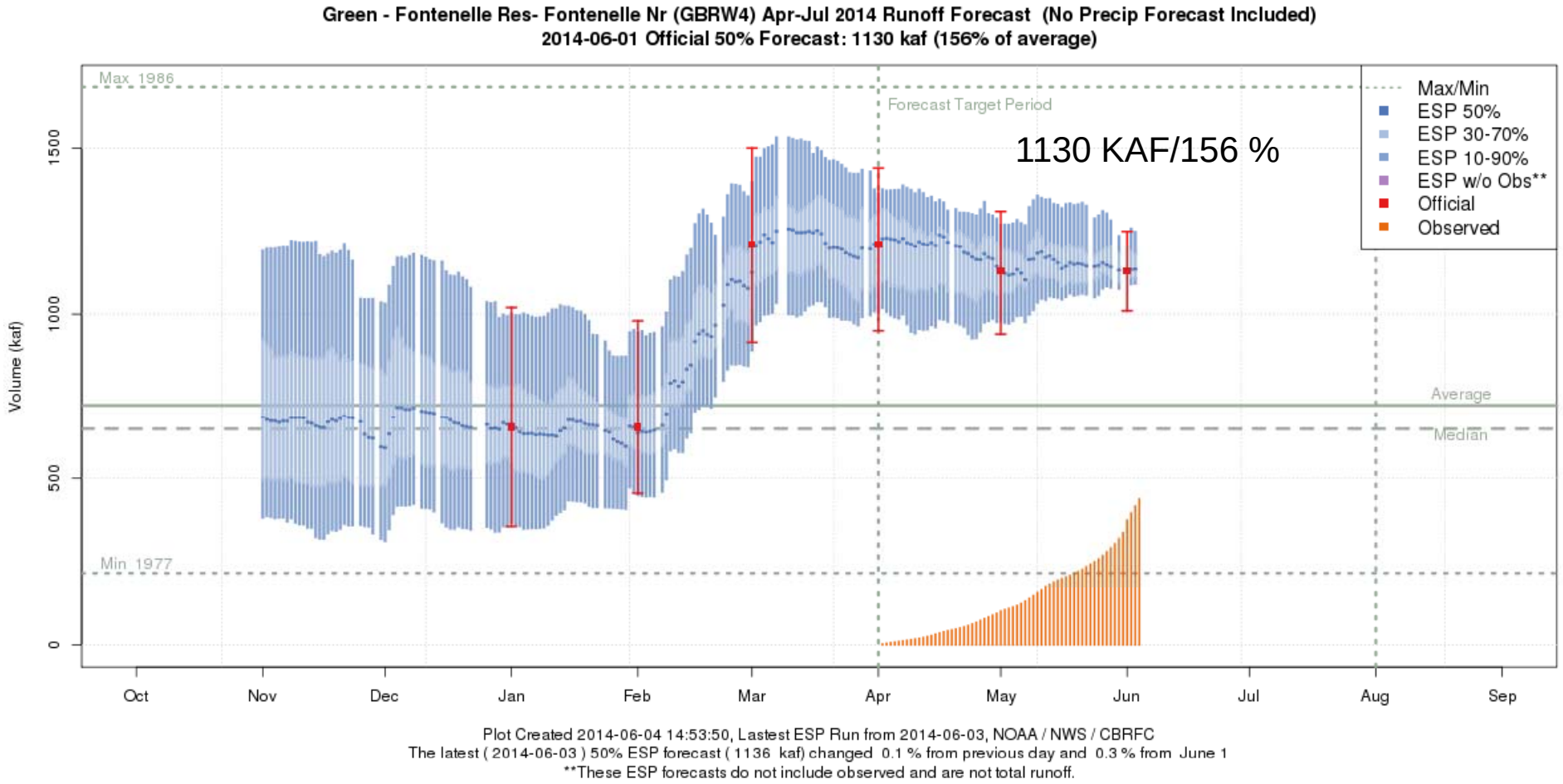
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



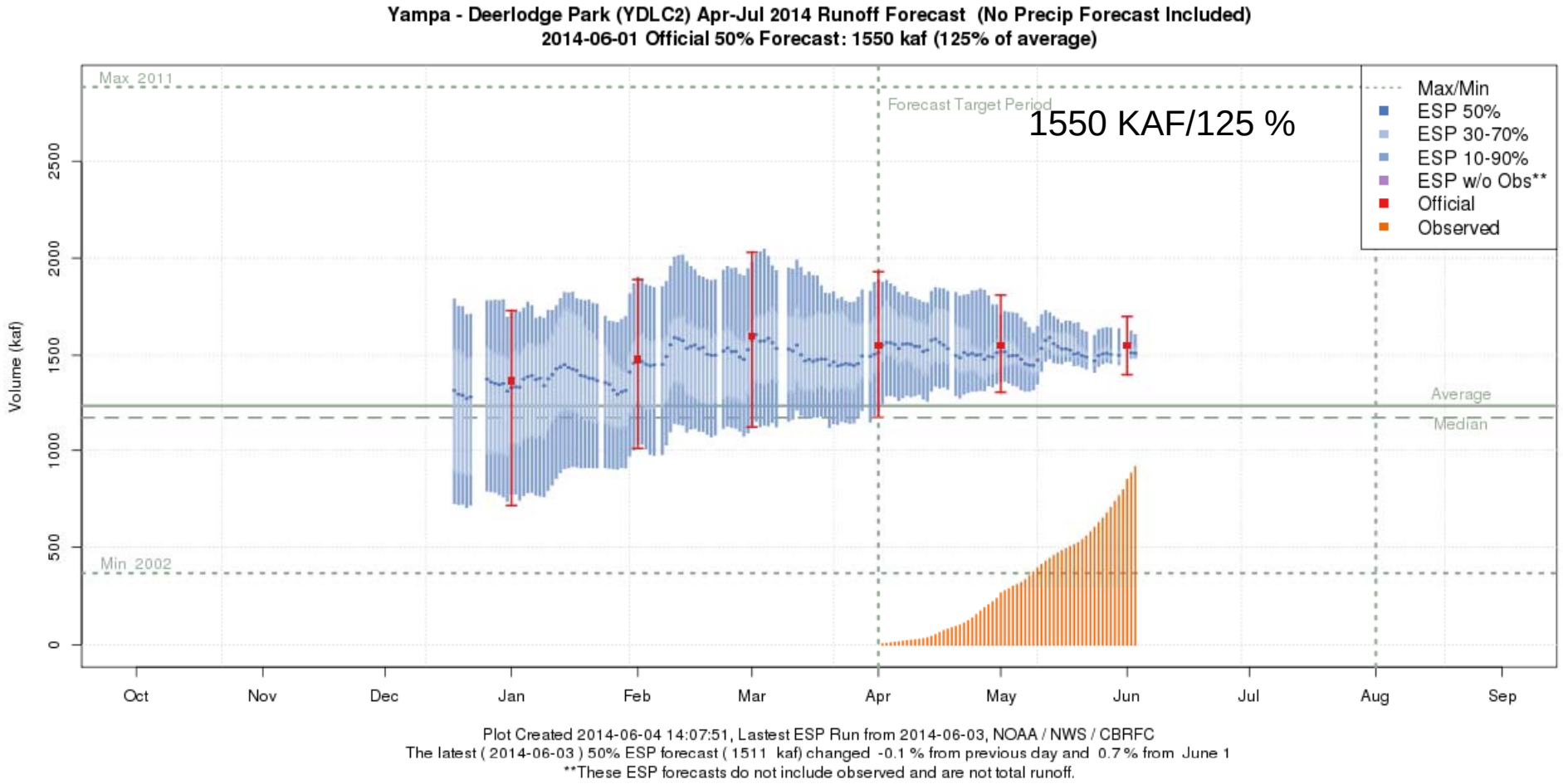
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



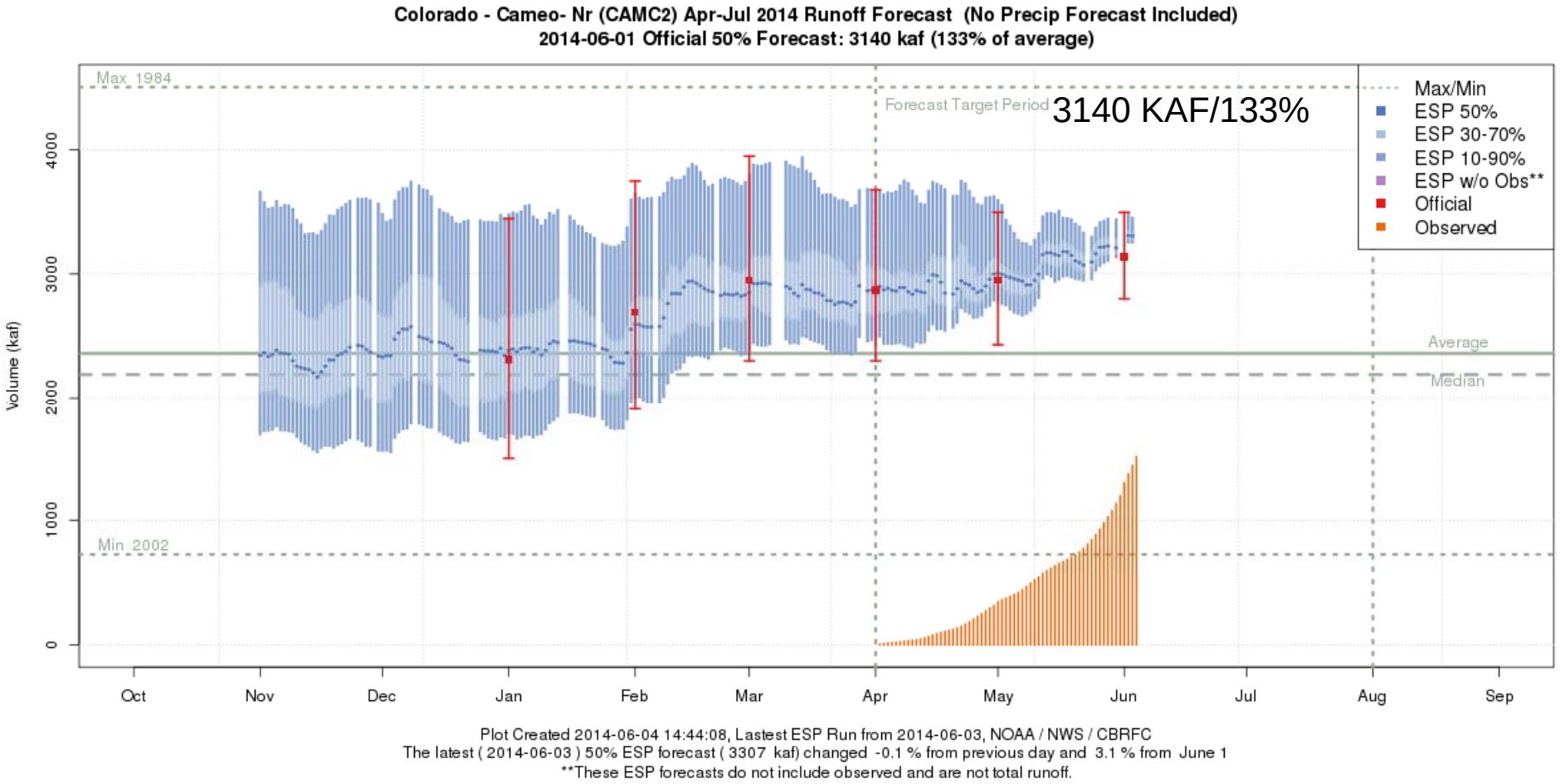
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



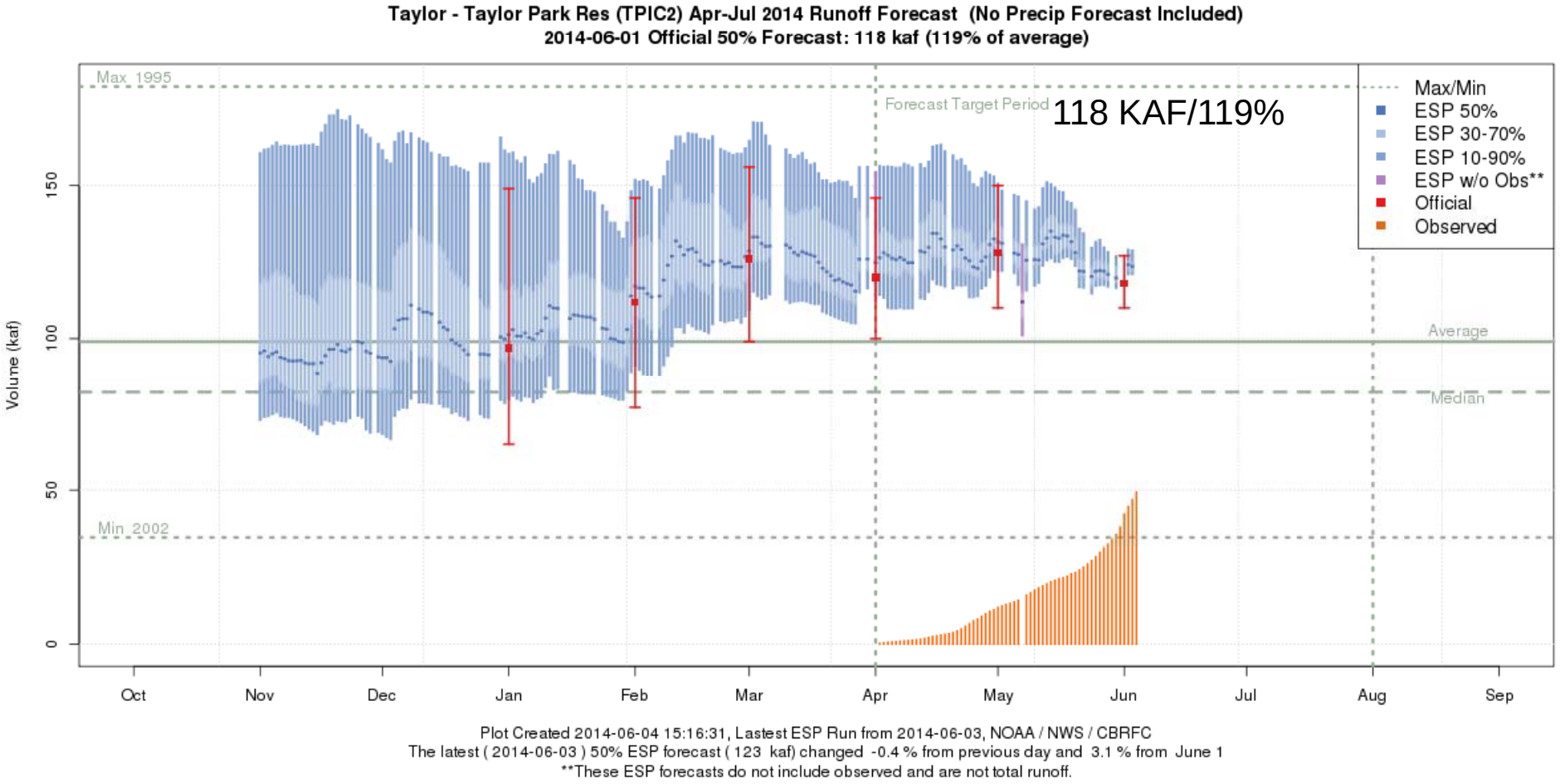
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



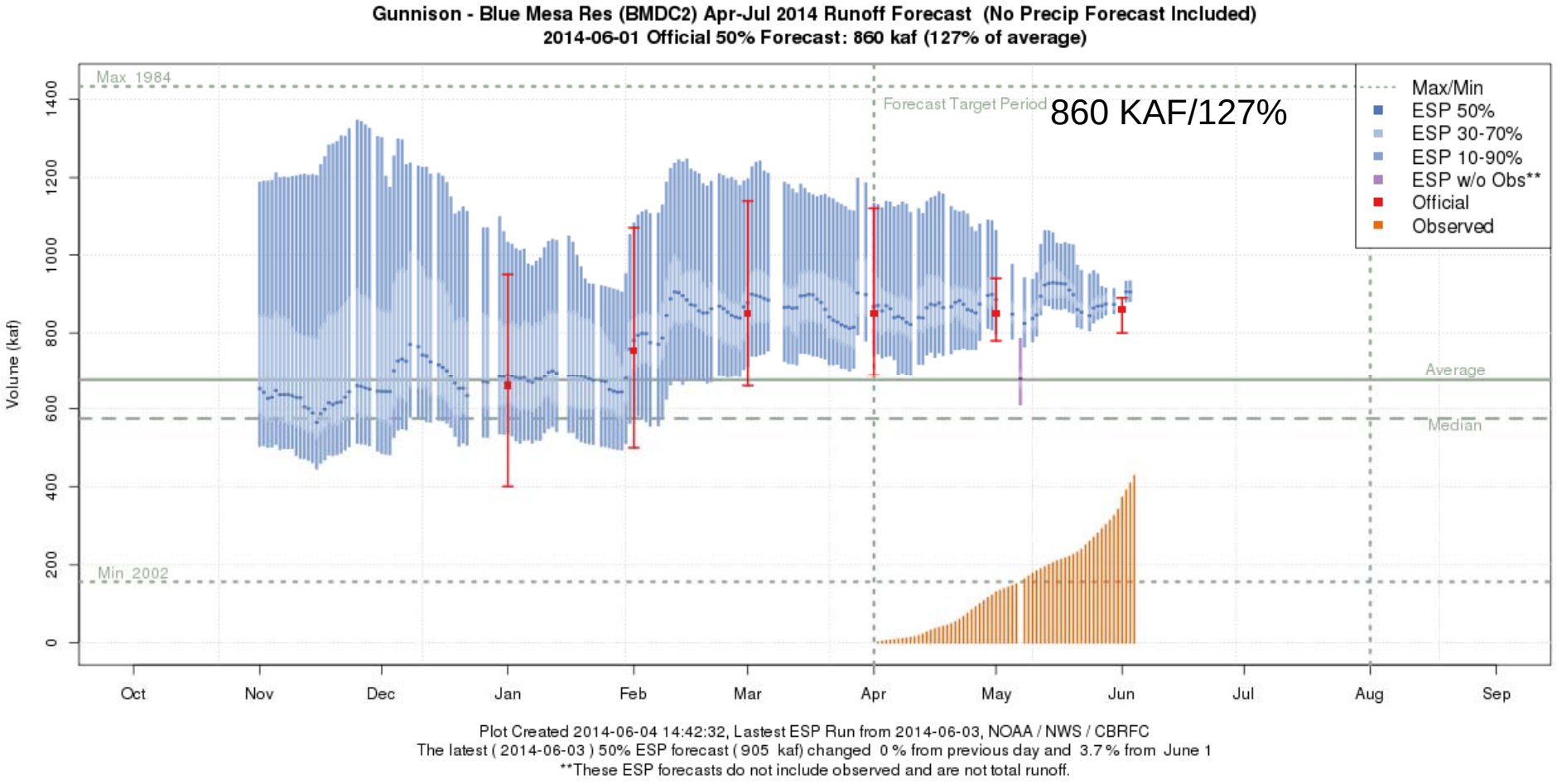
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



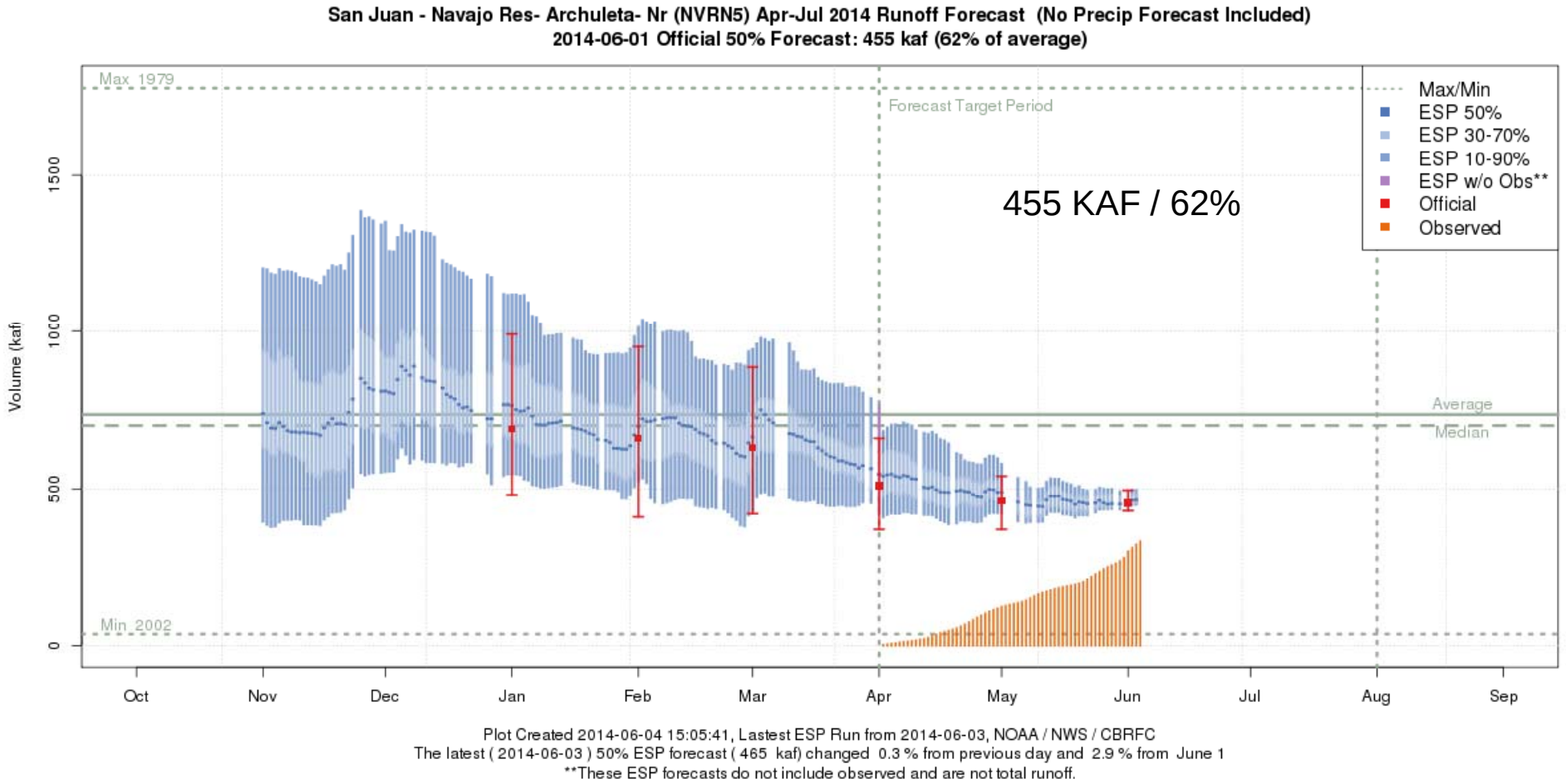
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



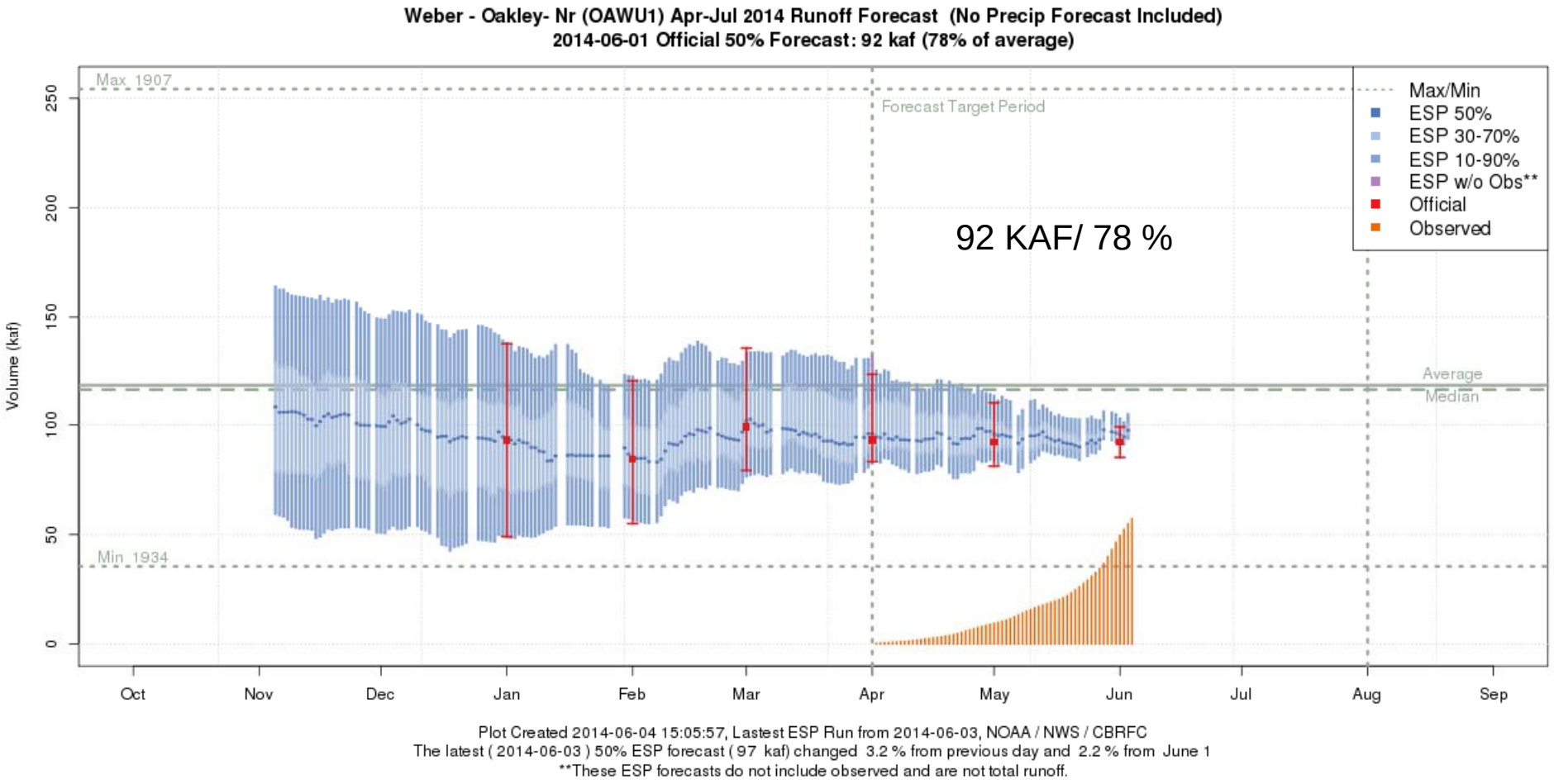
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



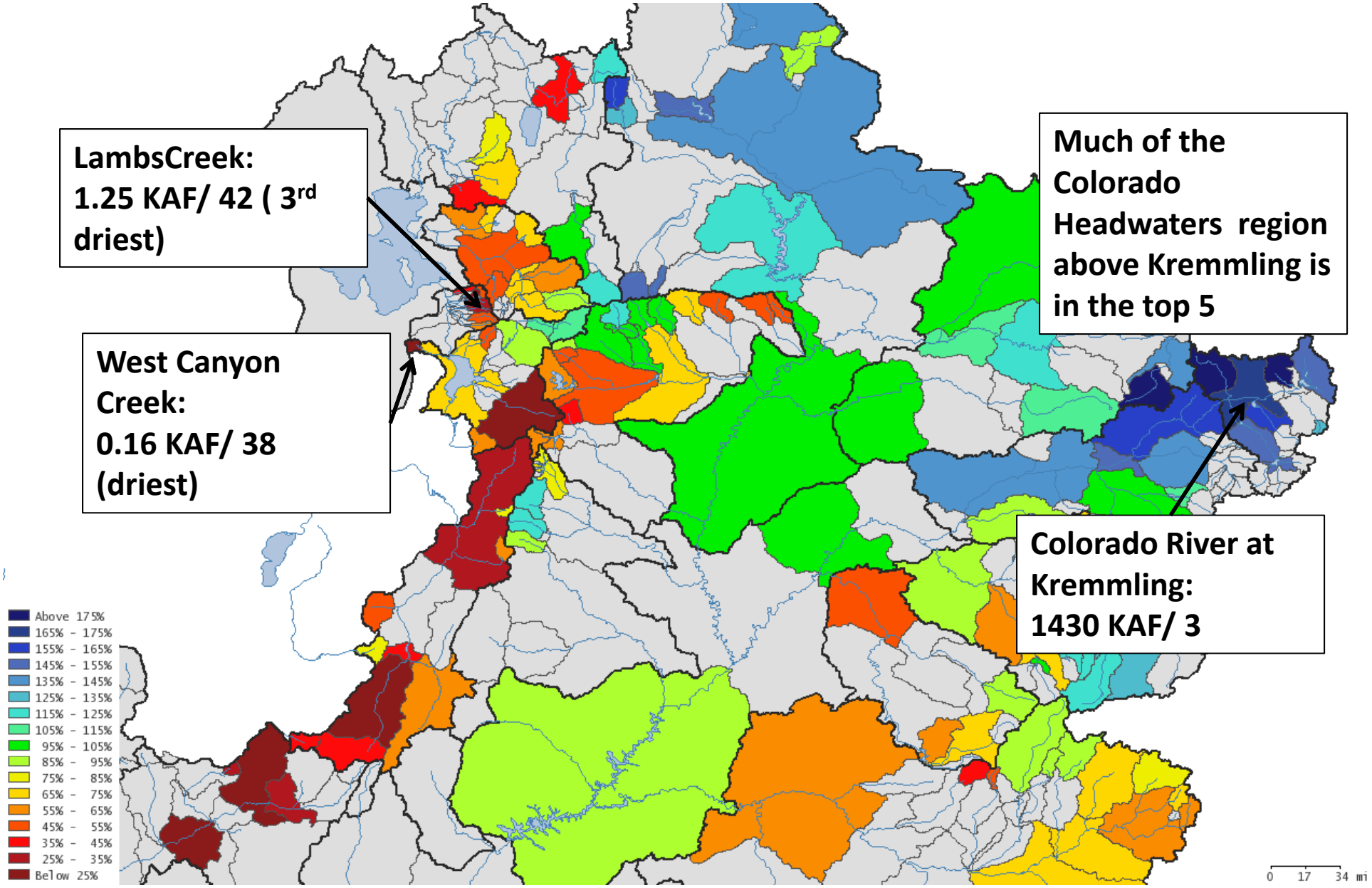
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply Click: Point of Interest



April – July Rankings

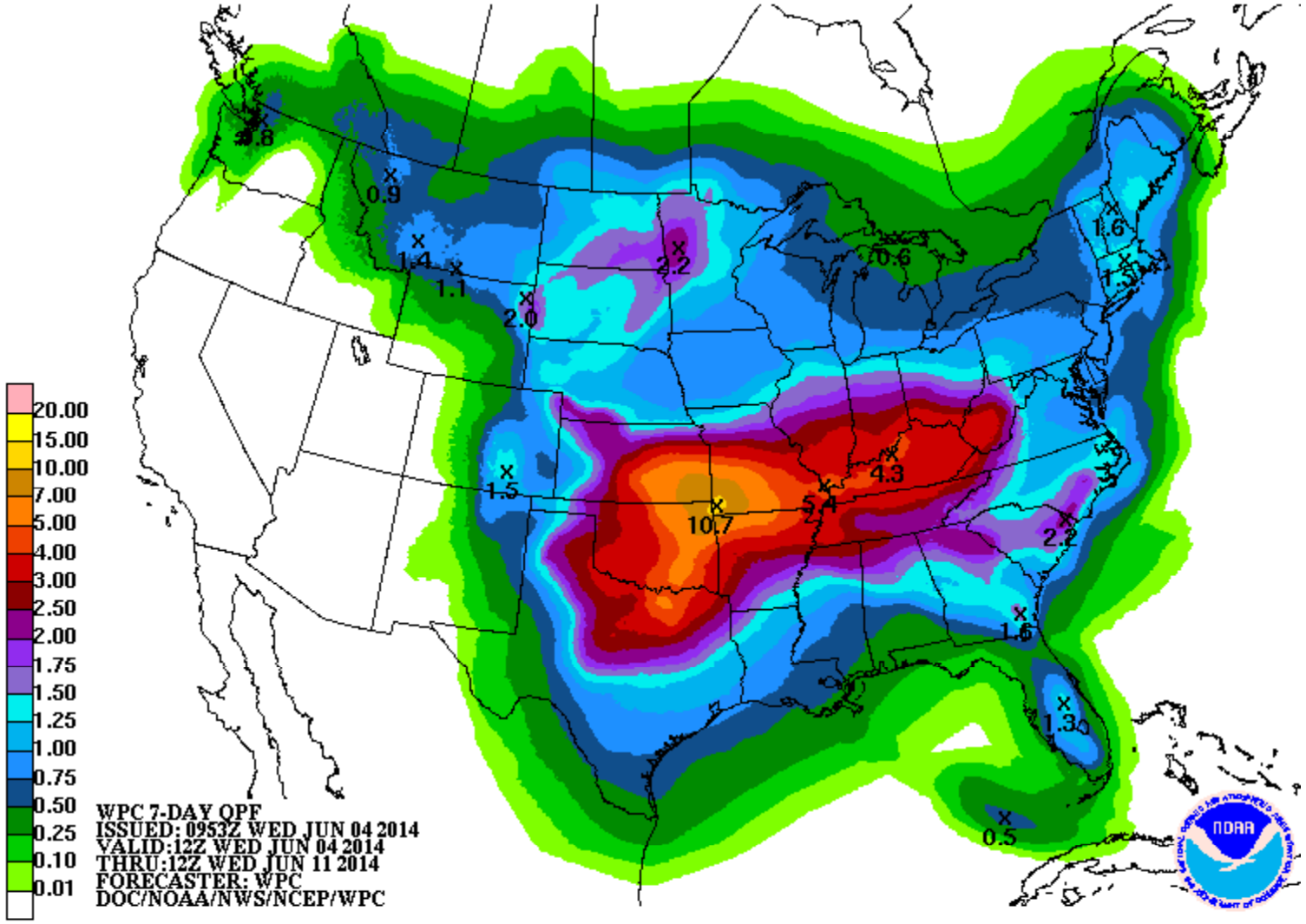
Projected Apr-Jul Volumes / Rank (1-Wettest)



Quantitative Precipitation Forecast

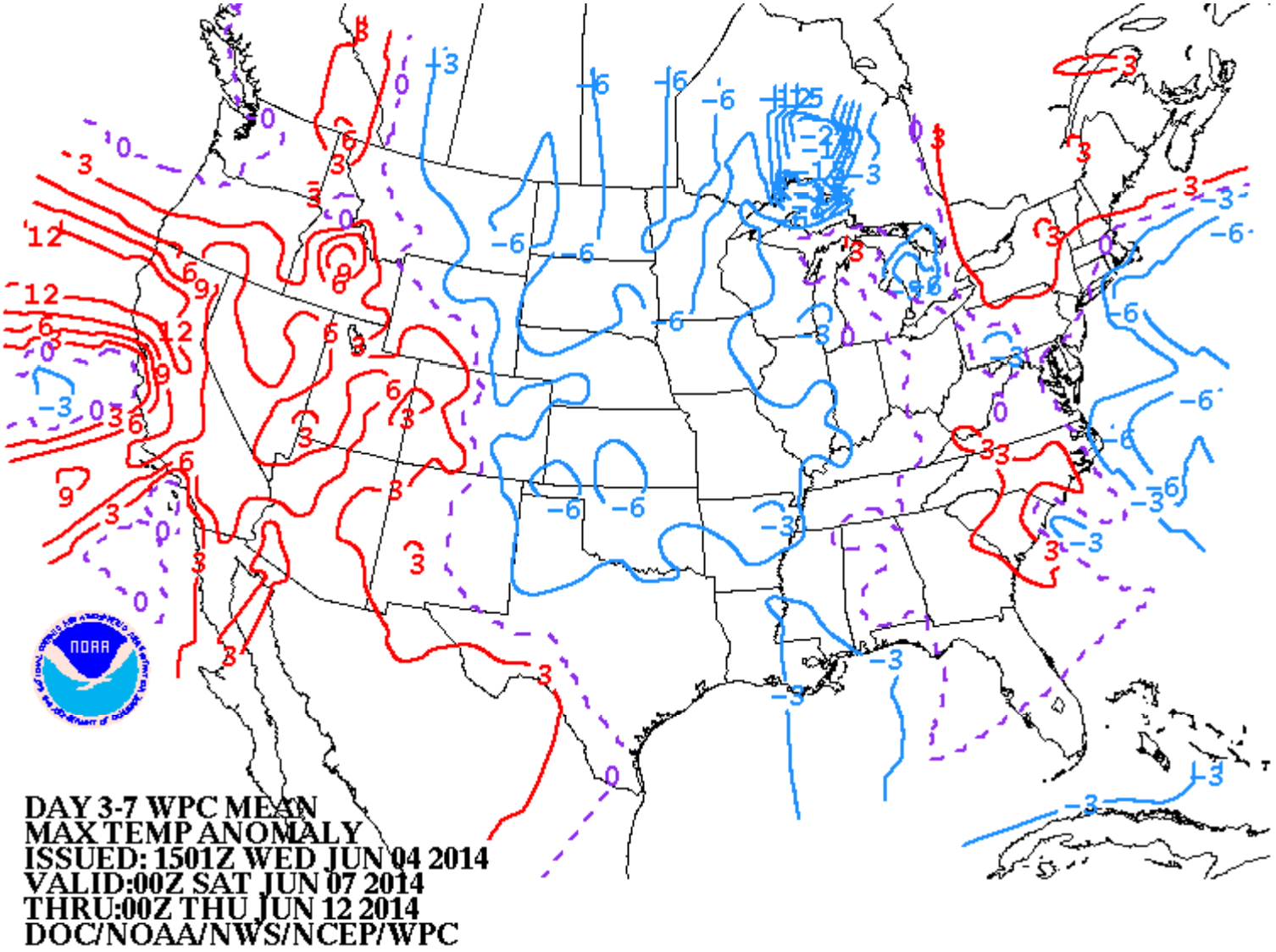
Weather Prediction Center

June 4 – 11



www.npc.ncep.noaa.gov

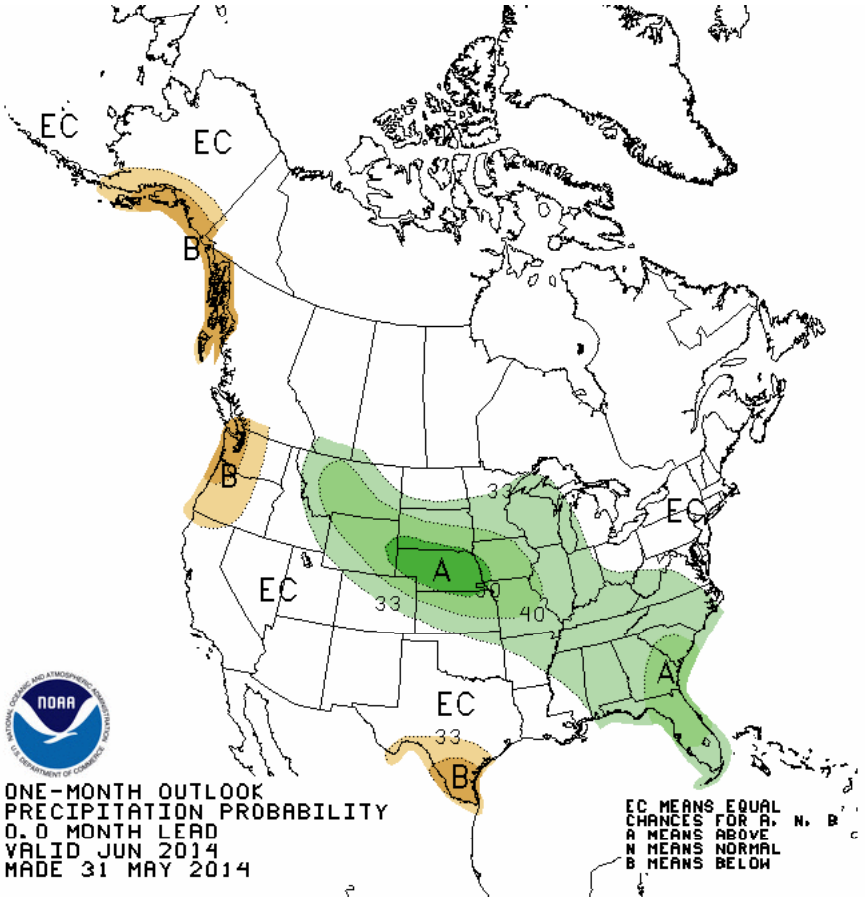
Maximum Temperature Anomaly: June 7 – 11



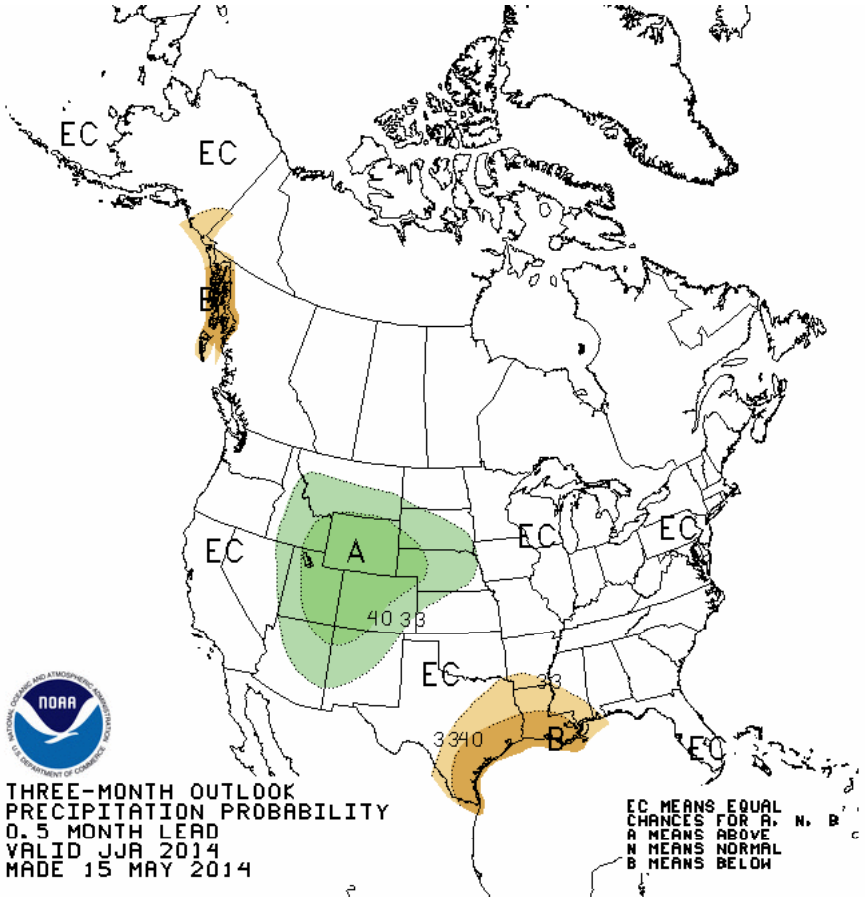
Long Term Precipitation Outlook

Climate Prediction Center

Jun 2014



Jun – Aug 2014

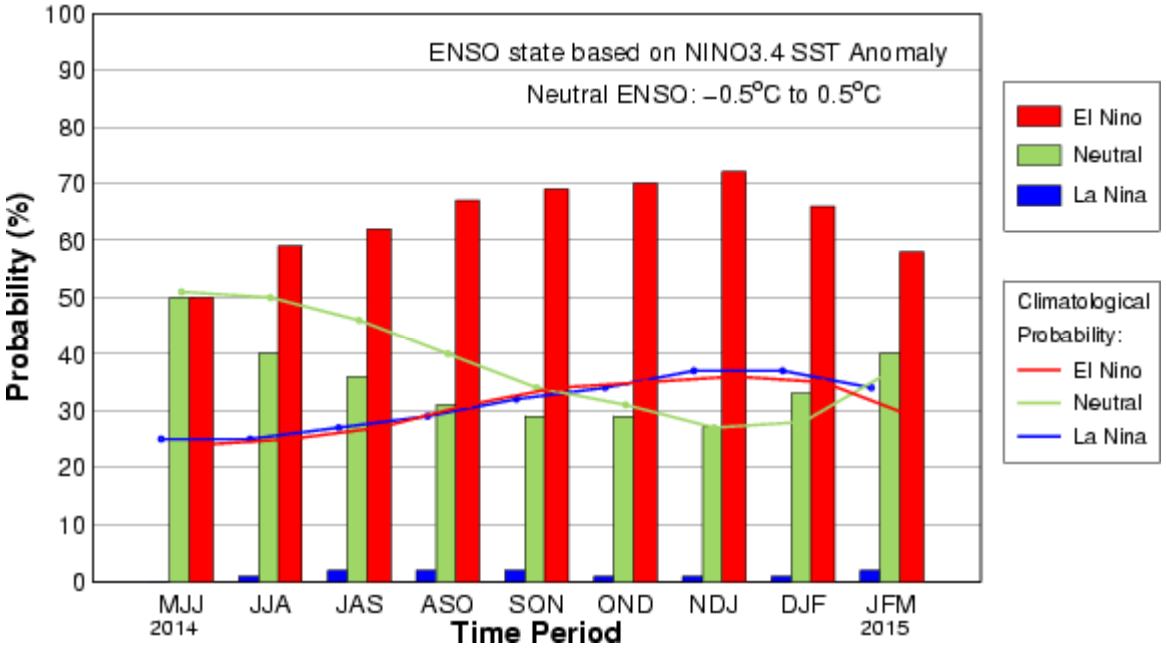


www.cpc.ncep.noaa.gov

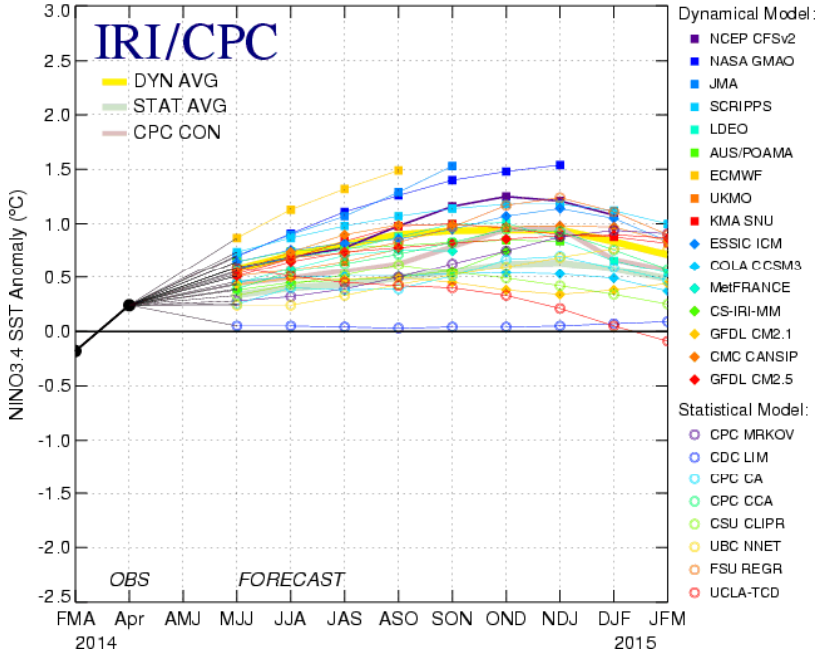
Looking ahead

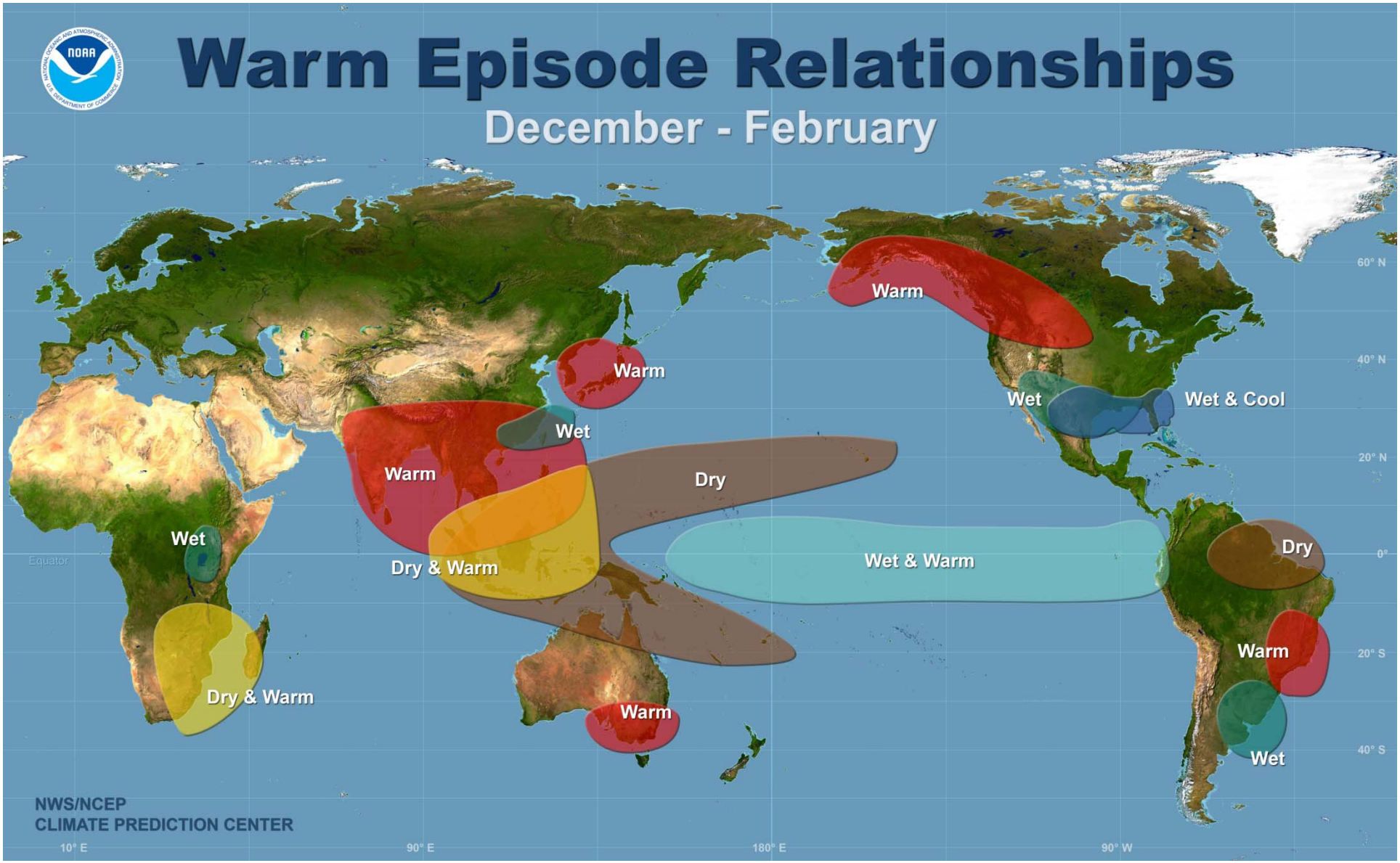
- El Niño conditions expected to develop by summer
  - Correlation is not particularly strong over the Upper Colorado River Basin
  - Correlation is with precipitation and temperatures, which is not always directly reflected in streamflows
- Climate in our region is influenced by other teleconnections
- http://www.climate.gov/news-features/department/8443/all

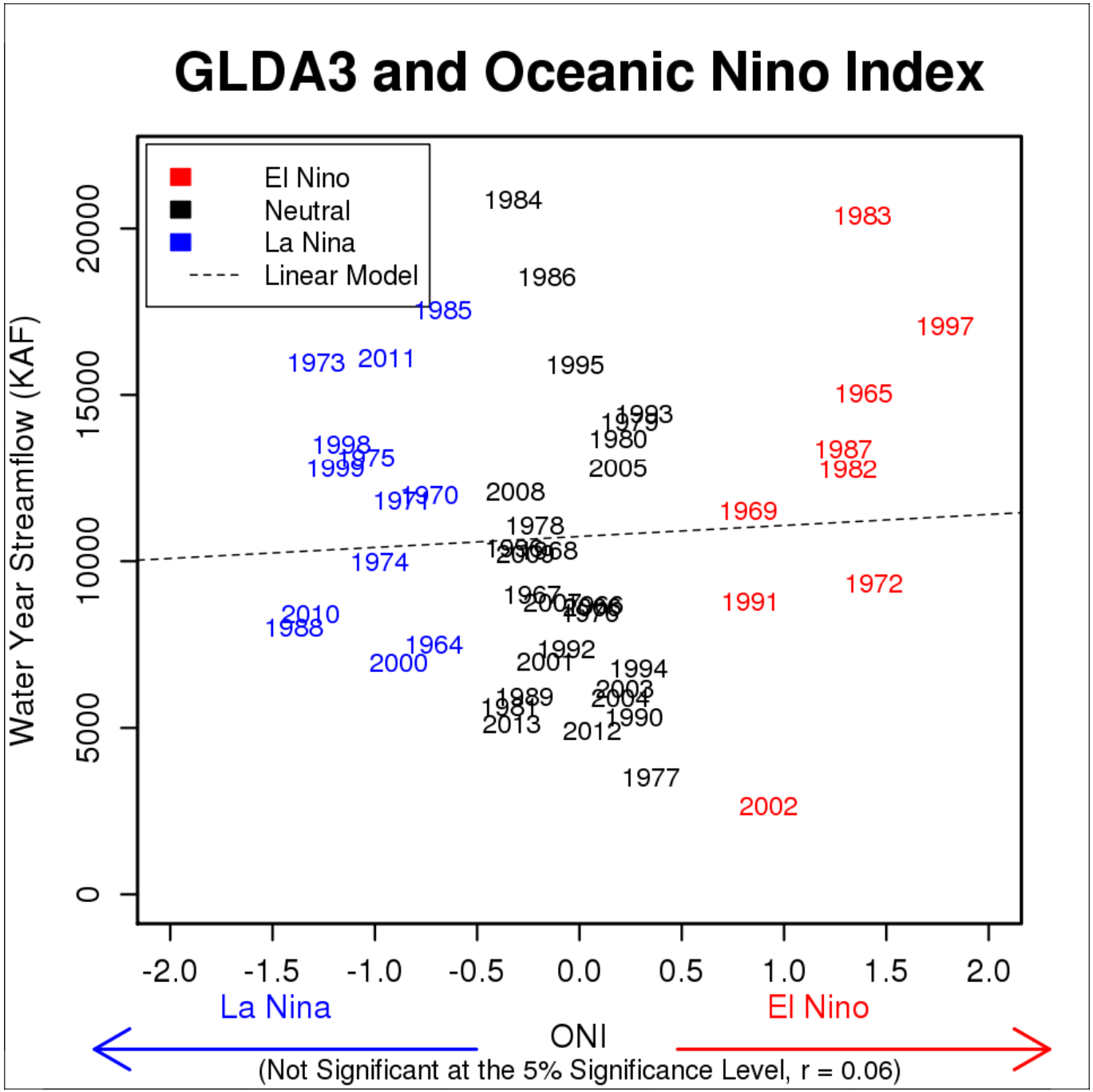
Mid–May IRI/CPC Plume–Based Probabilistic ENSO Forecast



Mid-May 2014 Plume of Model ENSO Predictions

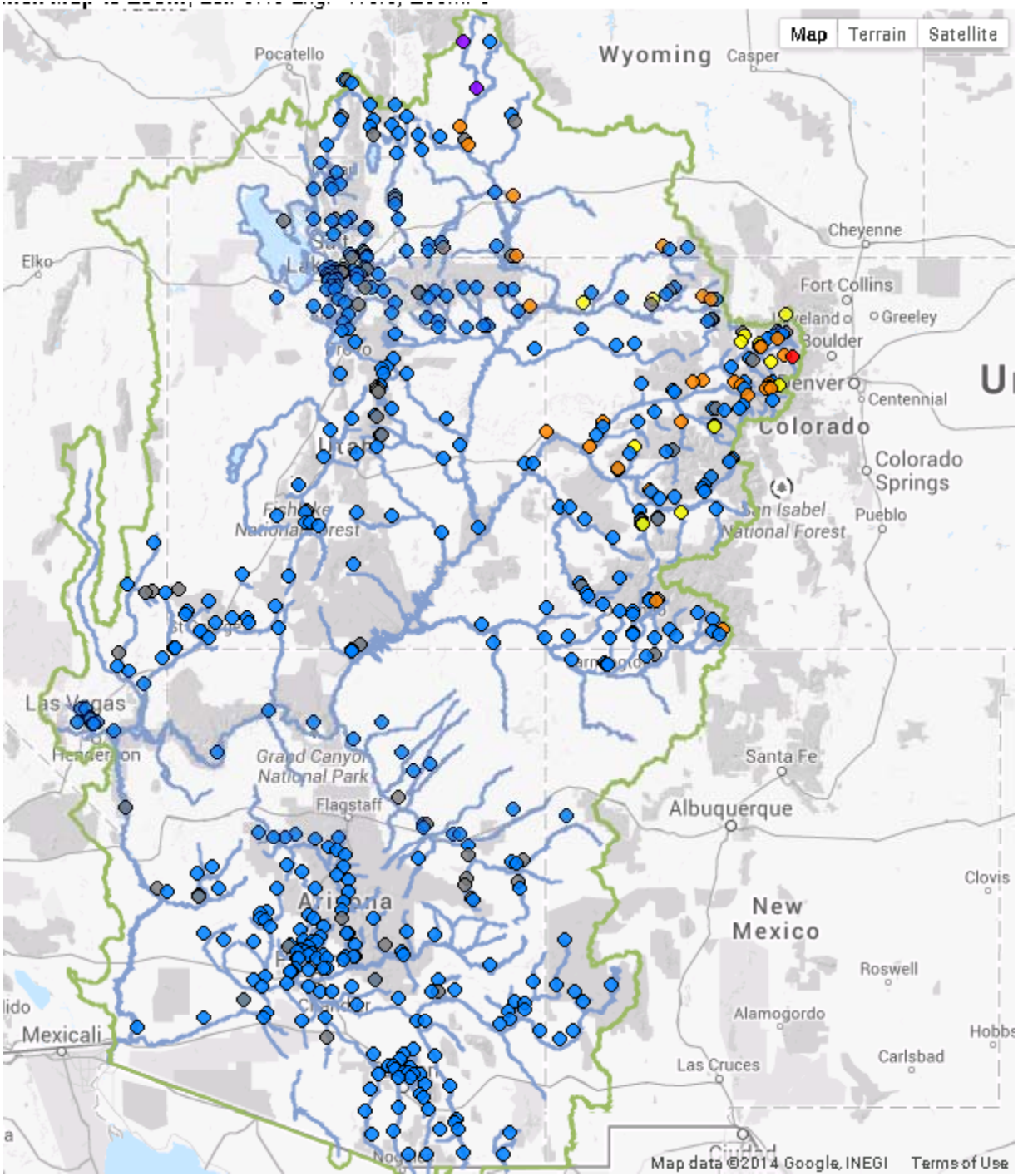



Warm Episode Relationships
December - February
Warm
Warm
Wet
Wet & Cool
Wet
Warm
Dry
Dry & Warm
Wet & Warm
Wet
Dry & Warm
Dry
Warm
Warm
Wet
60° N
40° N
20° N
0°
20° S
40° S
Equator
NWS/NCEP
CLIMATE PREDICTION CENTER
10° E
90° E
180° E
90° W


GLDA3 and Oceanic Nino Index
El Nino
Neutral
La Nina
Linear Model
Water Year Streamflow (KAF)
0
5000
10000
15000
20000
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
La Nina
El Nino
ONI
(Not Significant at the 5% Significance Level, r = 0.06)
1984
1983
1986
1985
1997
1973
2011
1995
1965
1993
1980
1998
1975
1999
2005
1987
1982
1970
2008
1969
1978
1974
1972
1967
1991
2010
1988
1964
1992
2000
2001
1994
1989
2003
2004
1981
1990
2013
2012
1977
2002

Peak Flows

- Many sites are peaking this time of year
- When sites are near peak do NOT check the peak flow page
  - Daily forecasts updated more frequently
  - More responsive to changes in regulation and weather conditions
  - Peak forecast page will not be updated again this year



River

- No Data
- Normal
- Significant Rise
- Near Bankfull
- Above Bankfull
- Above Flood Stage
- Outlook (> 3 days)

Snow

- Percentiles
- Percent Average
- Percent Median

- No Data
- < 25%
- 25-50%
- 50-75%
- 75-90%
- 90-110%
- 110-125%
- 125-150%
- 150-175%
- >175%

Please contact us with any specific questions

- Key Water Supply Contacts:
  - Michelle Stokes (michelle.stokes@noaa.gov) (Hydrologist in Charge)
  - Brenda Alcorn (brenda.alcorn@noaa.gov) (Upper Colorado)
  - Ashley Nielson (ashley.nielson@noaa.gov) (Green + Yampa / White)
  - Greg Smith (greg.smith@noaa.gov) (San Juan + Gunnison + Dolores)
  - Paul Miller (paul.miller@noaa.gov) (Great Basin)
  - Tracy Cox (tracy.cox@noaa.gov) (Lower Colorado + Virgin + Sevier)