

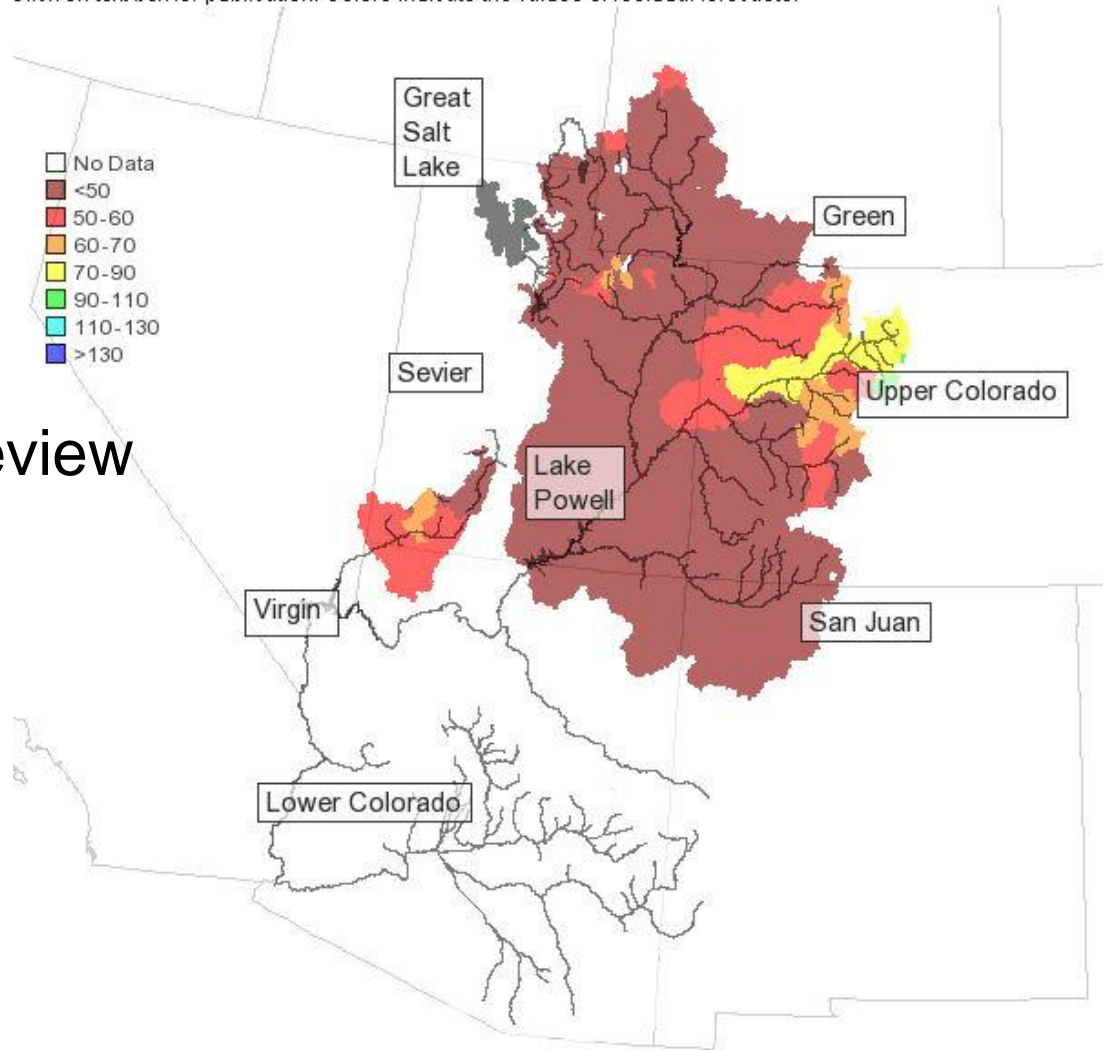
CBRFC
June 2013
Water Supply Webinar

June 6, 2013

Greg Smith

Water Supply Outlook, June 1, 2013

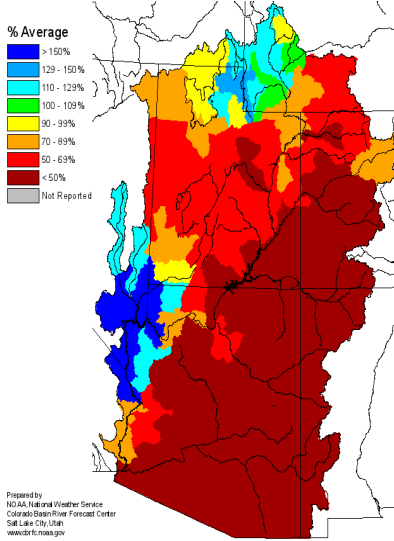
Click on text box for publication. Colors indicate the values of residual forecasts.



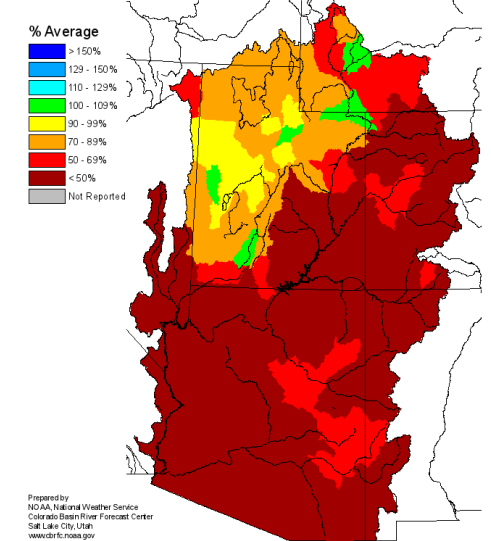
Today's Presentation

- Weather Review
- Current Snow States/Review
- Water Supply Forecasts
- Future Weather
- Peak Flows

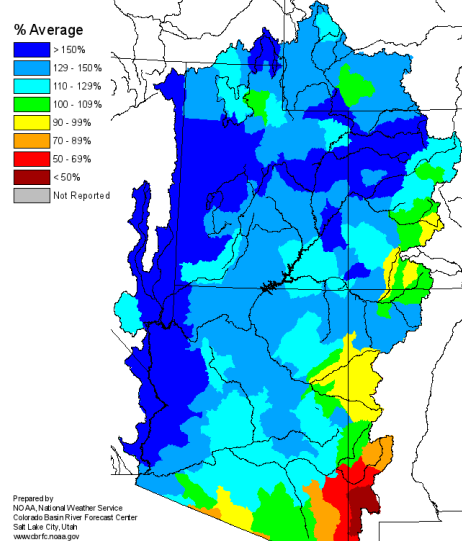
Monthly Precipitation for October 2012
(Averaged by Hydrologic Unit)



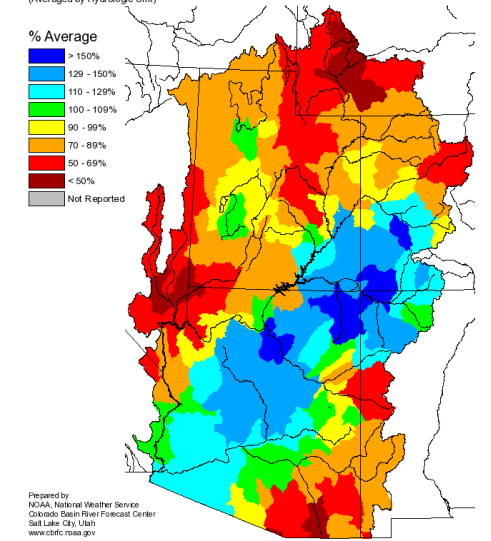
Monthly Precipitation for November 2012
(Averaged by Hydrologic Unit)



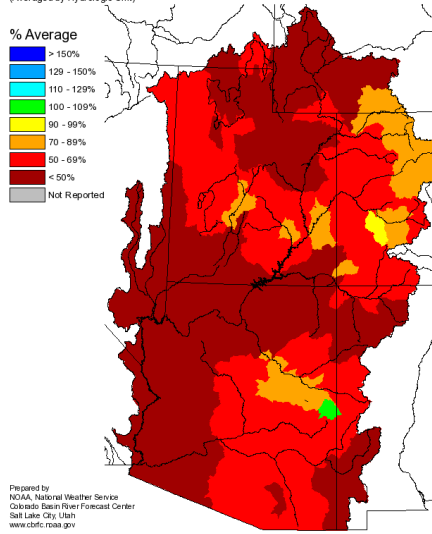
Monthly Precipitation for December 2012
(Averaged by Hydrologic Unit)



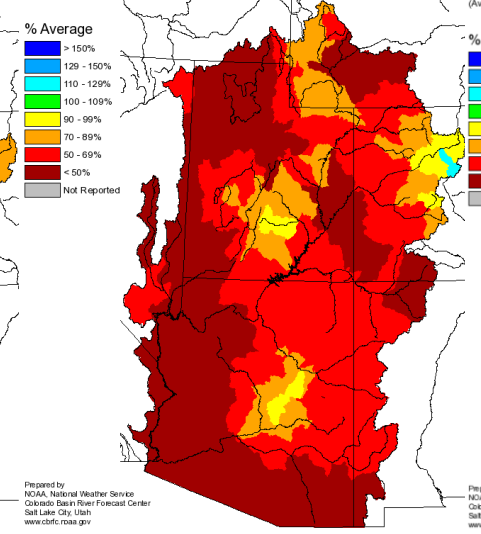
Monthly Precipitation for January 2013
(Averaged by Hydrologic Unit)



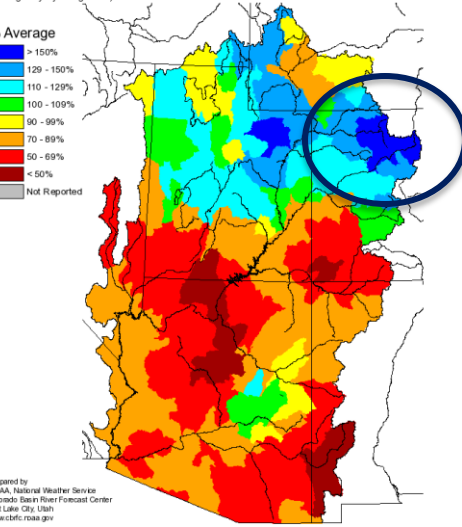
Monthly Precipitation for February 2013
(Averaged by Hydrologic Unit)



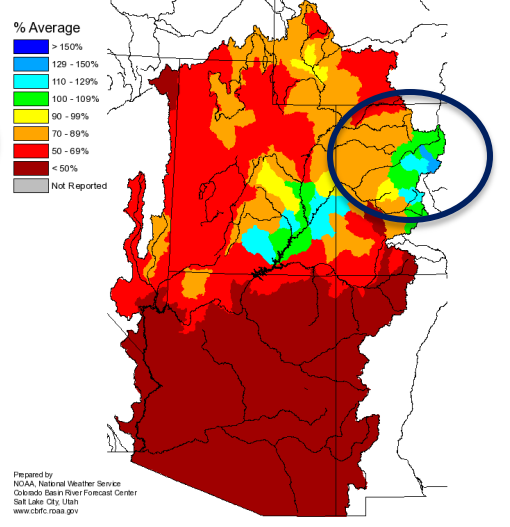
Monthly Precipitation for March 2013
(Averaged by Hydrologic Unit)



Monthly Precipitation for April 2013
(Averaged by Hydrologic Unit)



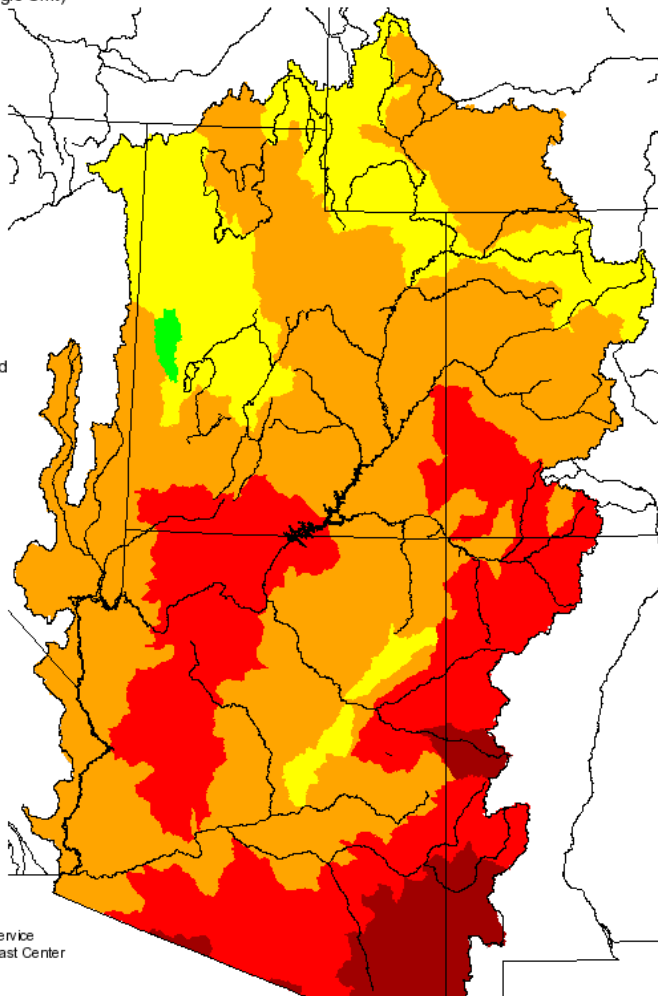
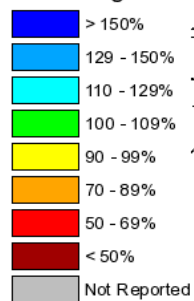
Monthly Precipitation for May 2013
(Averaged by Hydrologic Unit)



Seasonal Precipitation, October 2012 - April 2013

(Averaged by Hydrologic Unit)

% Average

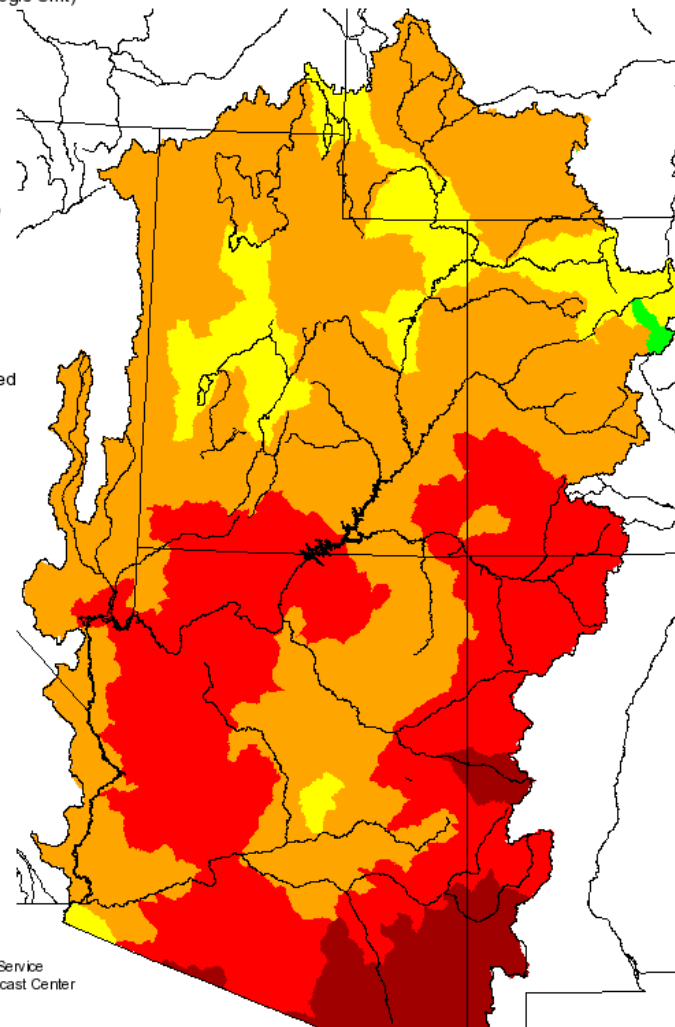
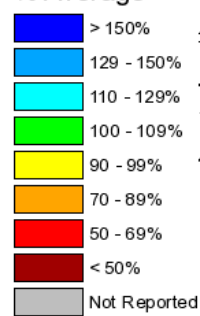


Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Seasonal Precipitation, October 2012 - May 2013

(Averaged by Hydrologic Unit)

% Average



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Temperatures:

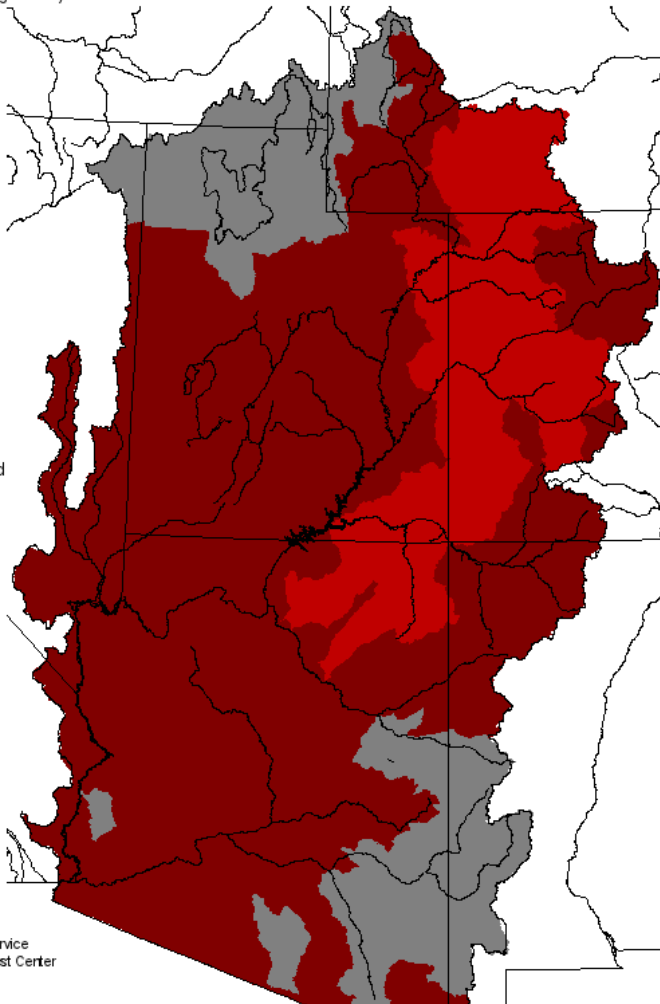
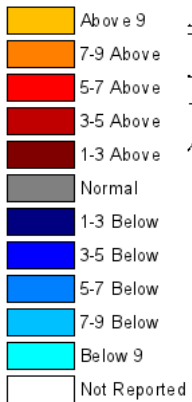
May 2012 and May 2013

Temps 10-20 degrees above average May 10-16 2013

Monthly Max Temp Deviation for May 2012

(Averaged by Hydrologic Unit)

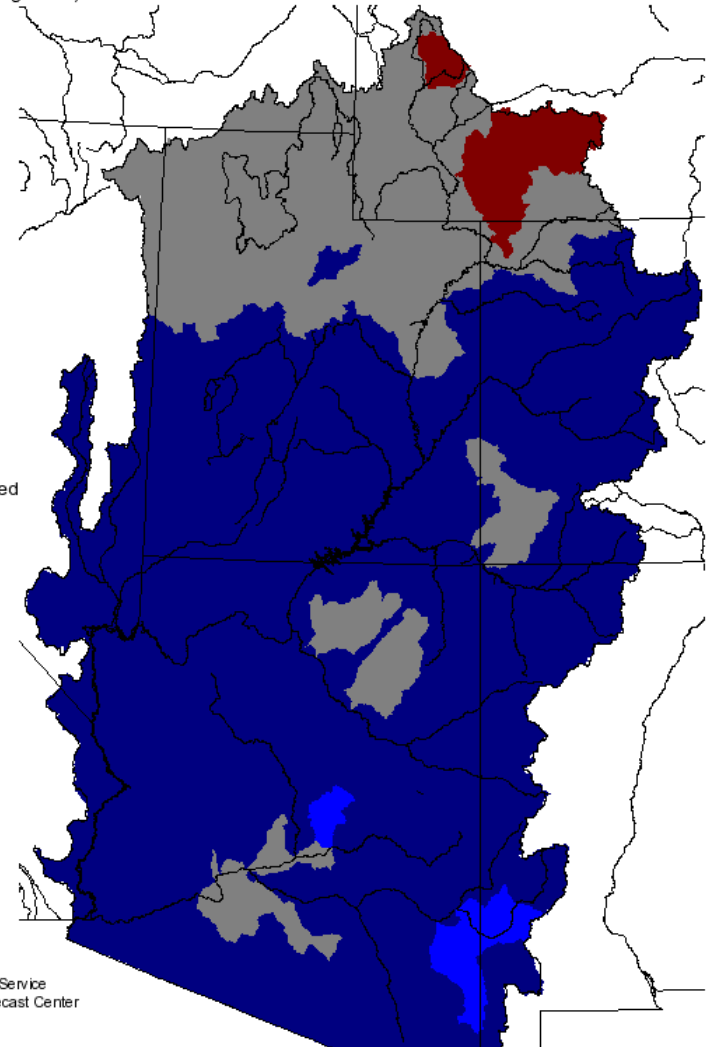
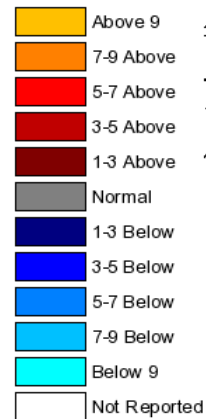
Degrees (F)



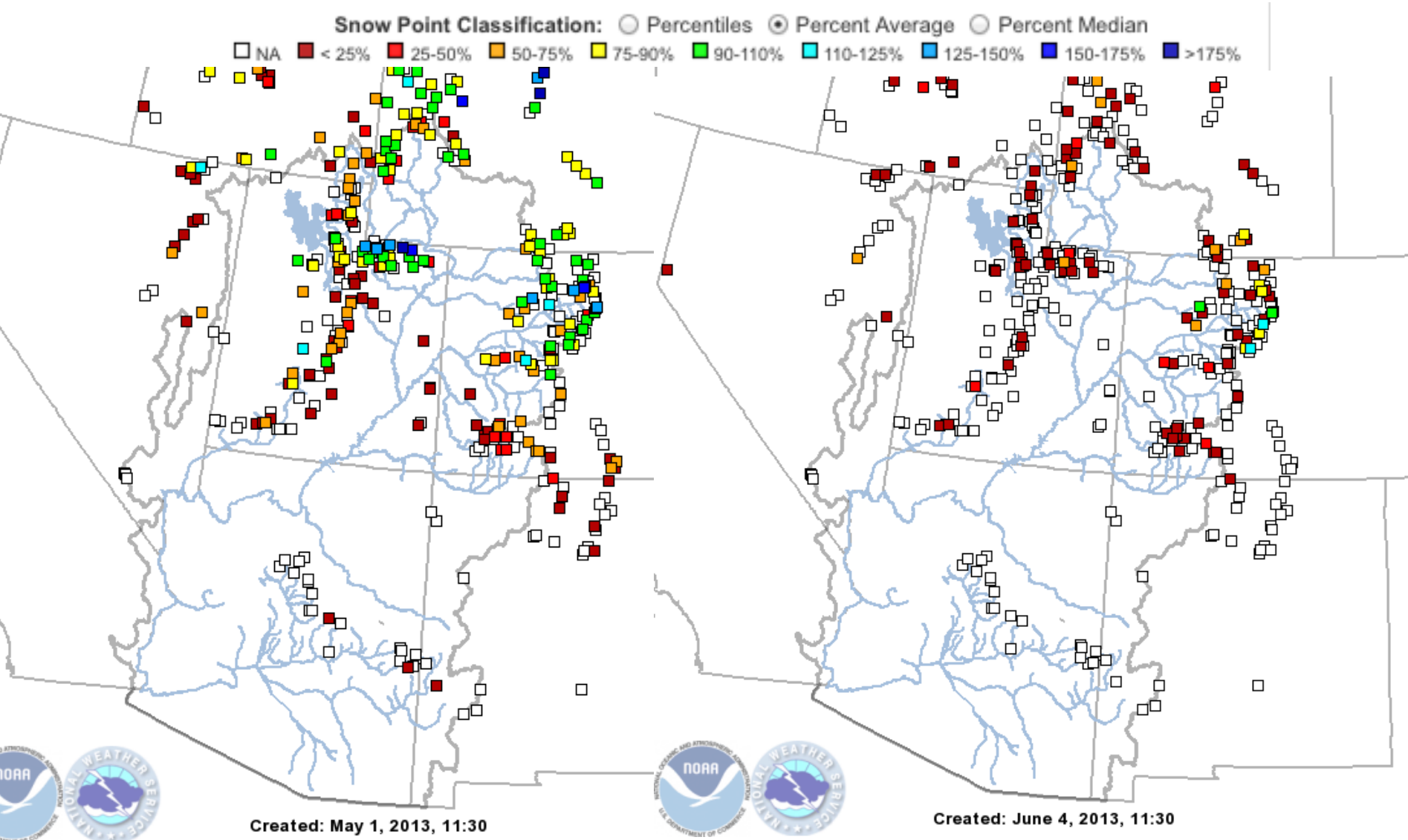
Monthly Max Temp Deviation for May 2013

(Averaged by Hydrologic Unit)

Degrees (F)

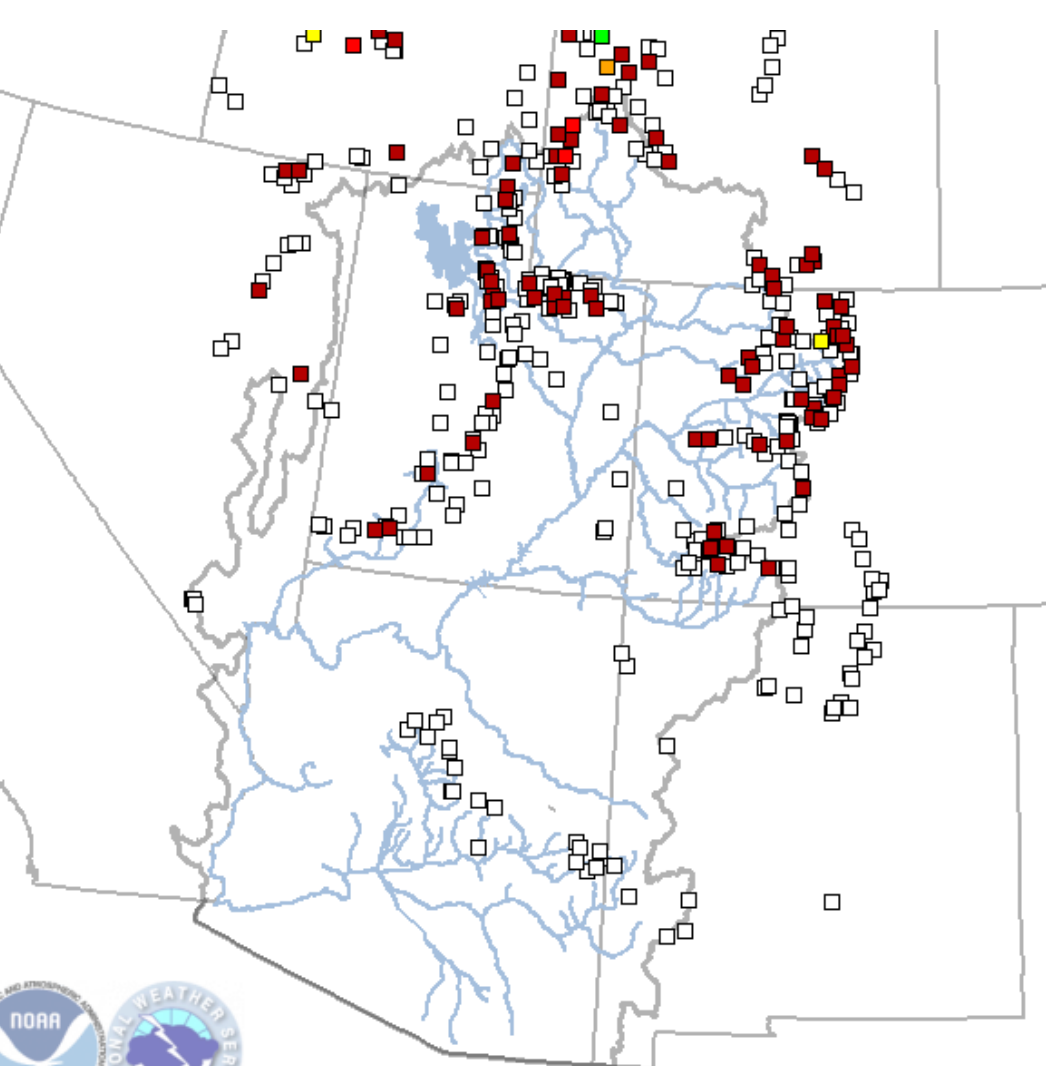


Snow compared to April 2013

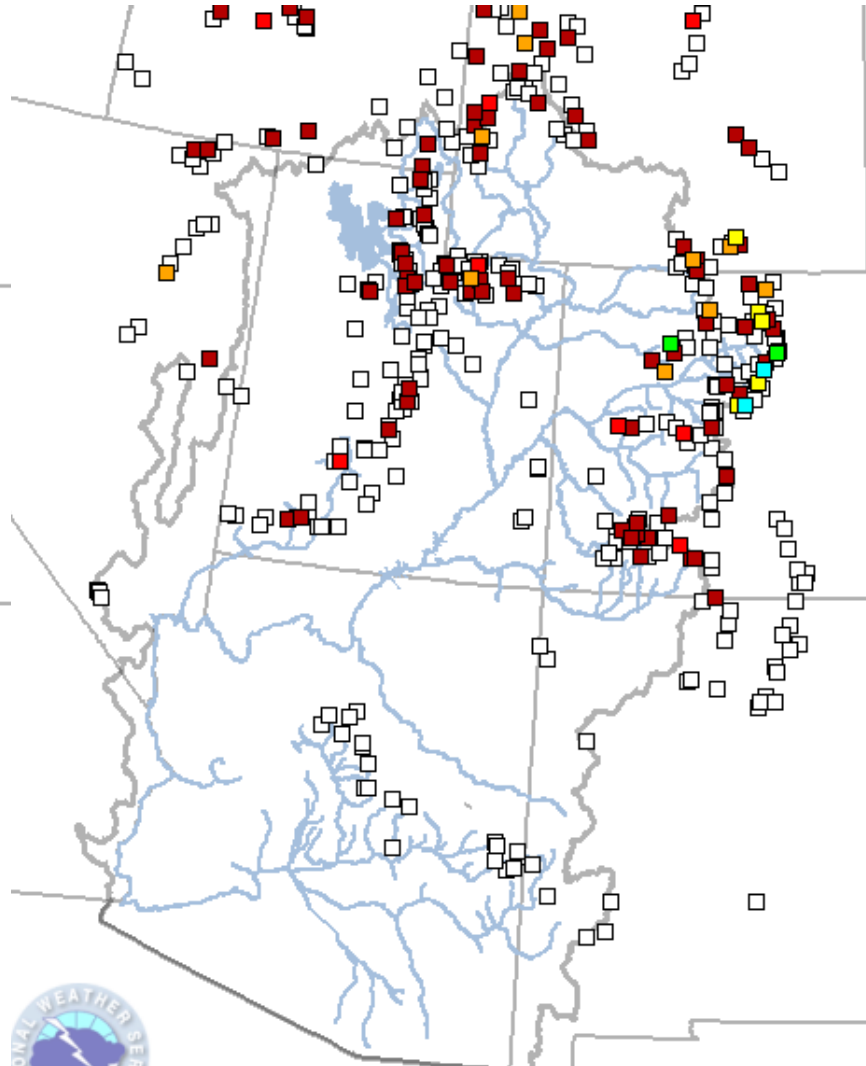


Snow compared to last year

Snow Point Classification: ○ Percentiles ⊙ Percent Average ○ Percent Median
□ NA ■ < 25% ■ 25-50% ■ 50-75% ■ 75-90% ■ 90-110% ■ 110-125% ■ 125-150% ■ 150-175% ■ >175%



Created: June 5, 2012, 9:45



Created: June 4, 2013, 11:30

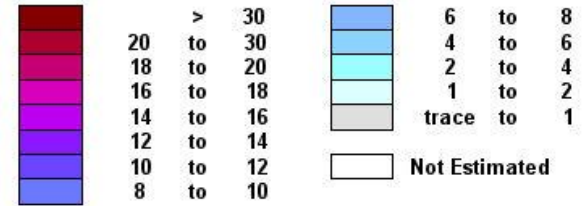


Web Reference: <http://www.cbrfc.noaa.gov/gmap/gmapm.php?scon=checked>

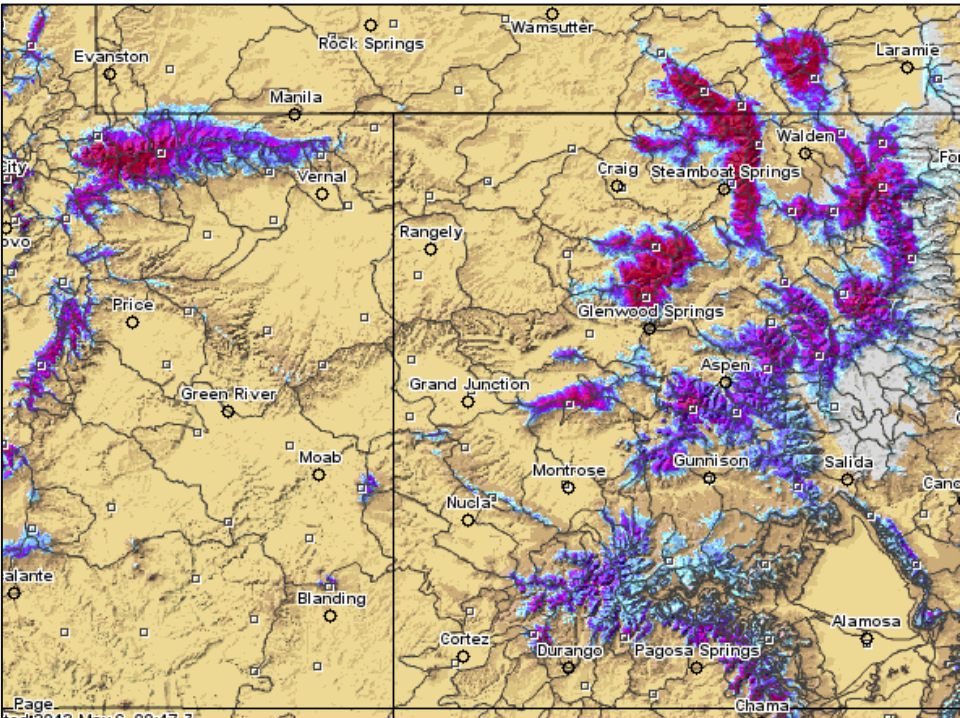
Snow

Snow remains in only highest elevations / Colorado River Headwaters

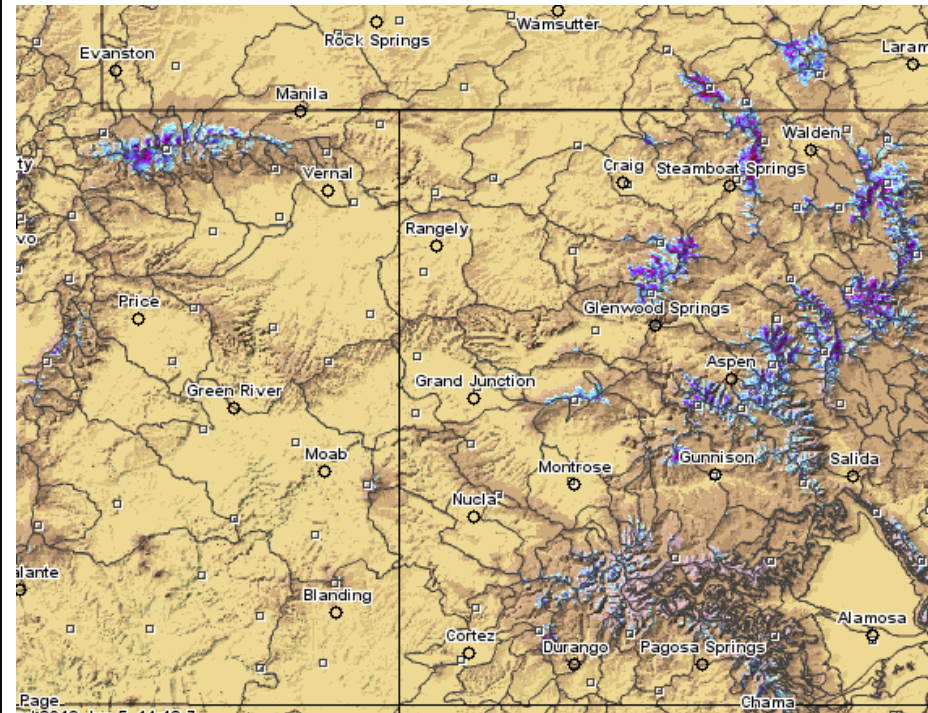
Inches of water equivalent



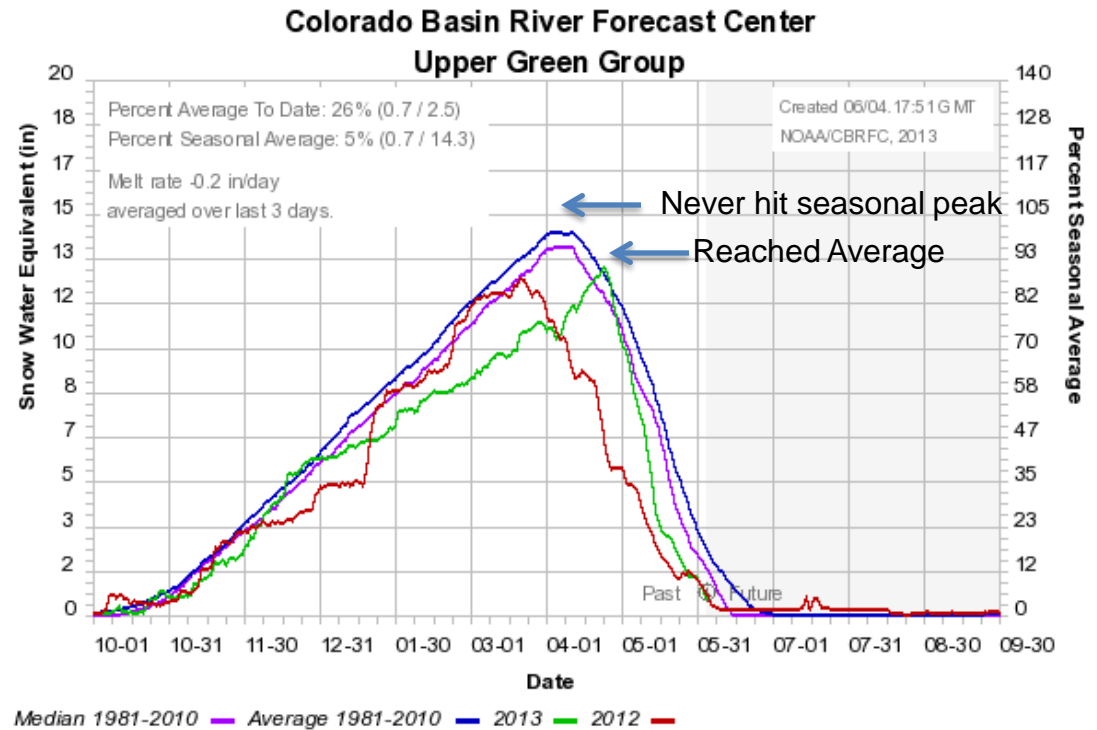
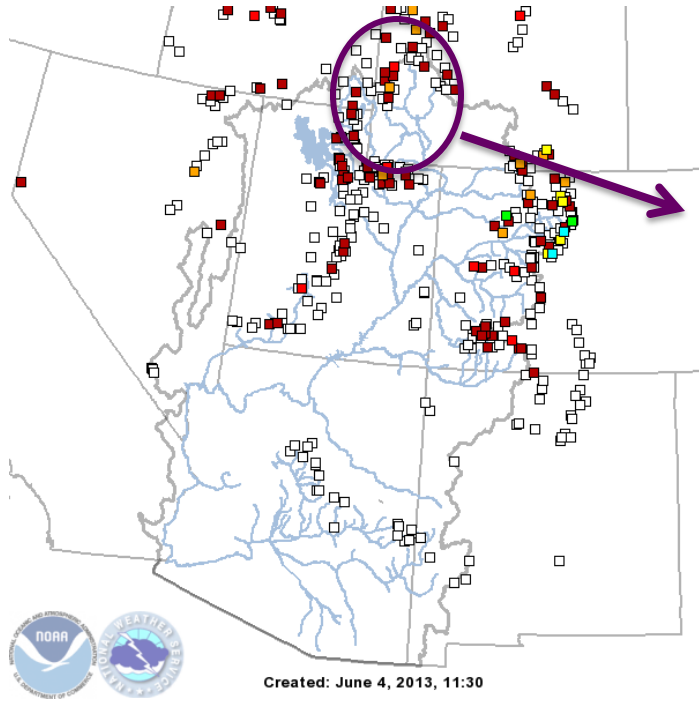
May 5 2013



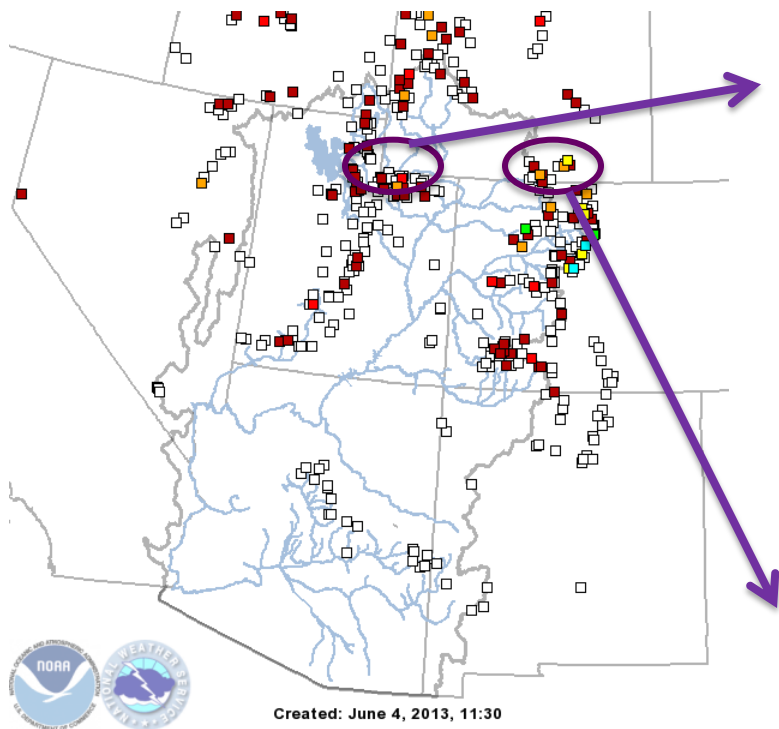
June 5 2013



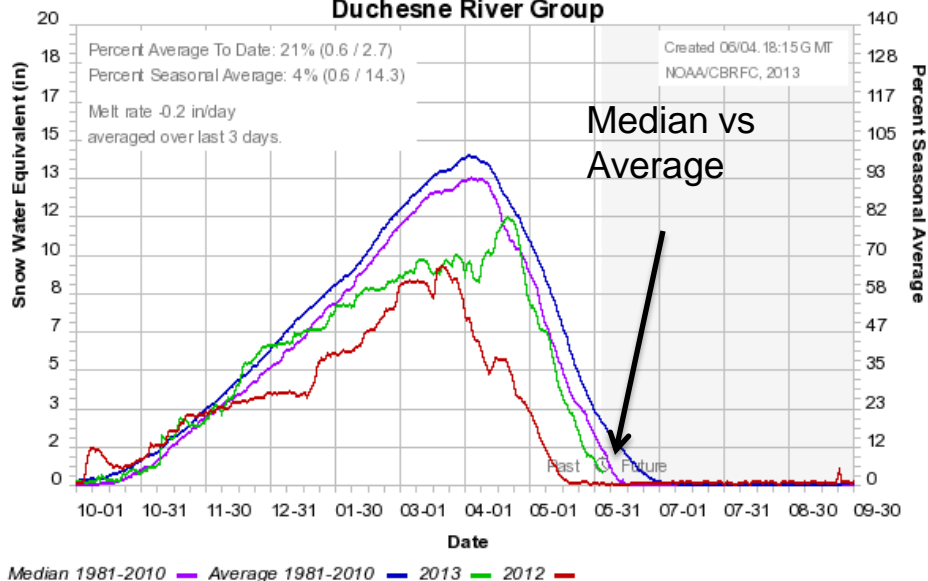
Snow: Upper Green Basin (above Flaming Gorge)



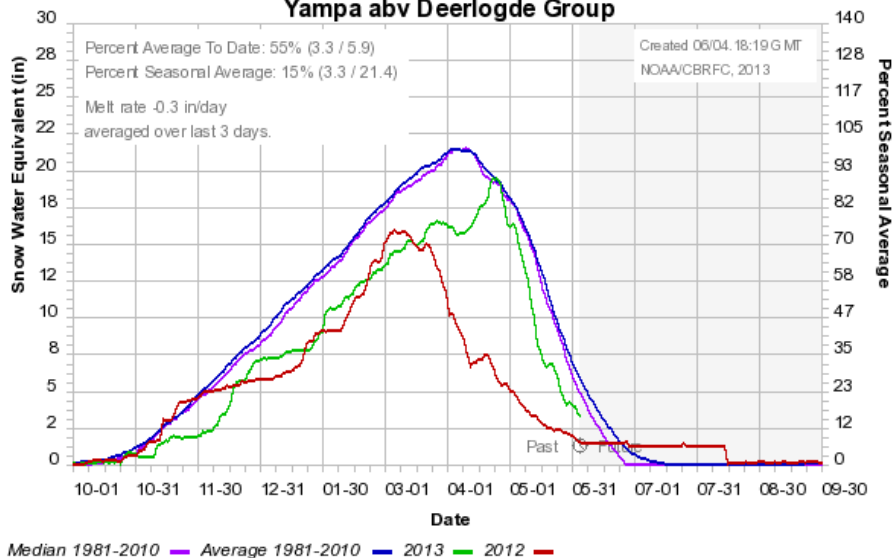
Snow: Duchesne River Basin



Colorado Basin River Forecast Center
Duchesne River Group

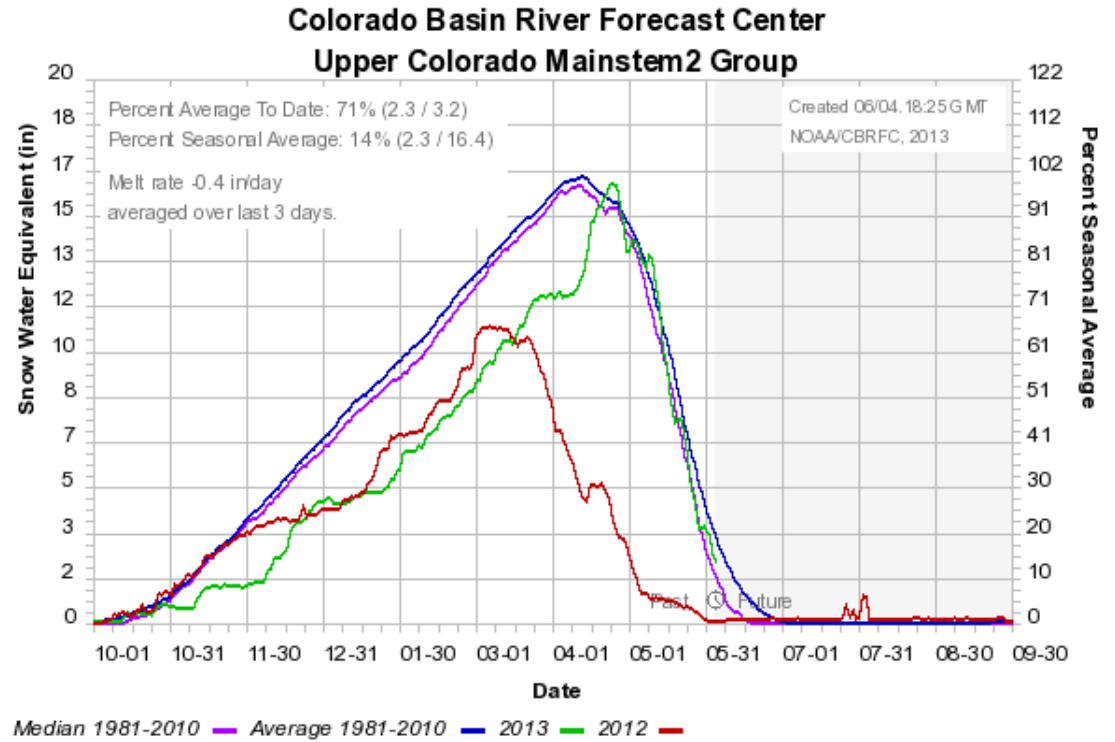
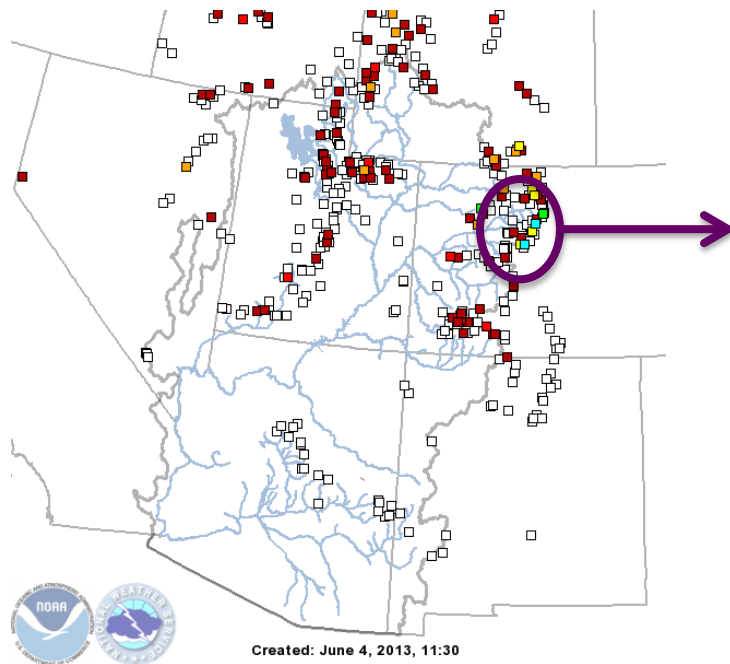


Colorado Basin River Forecast Center
Yampa abv Deerlogde Group



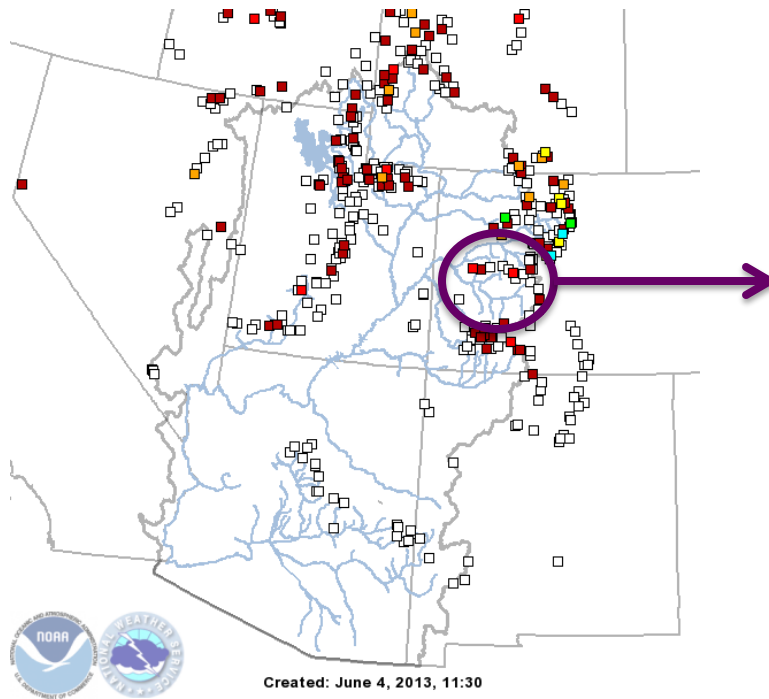
Snow: Yampa River Basin

Snow: Colorado River Mainstem (above Cameo)

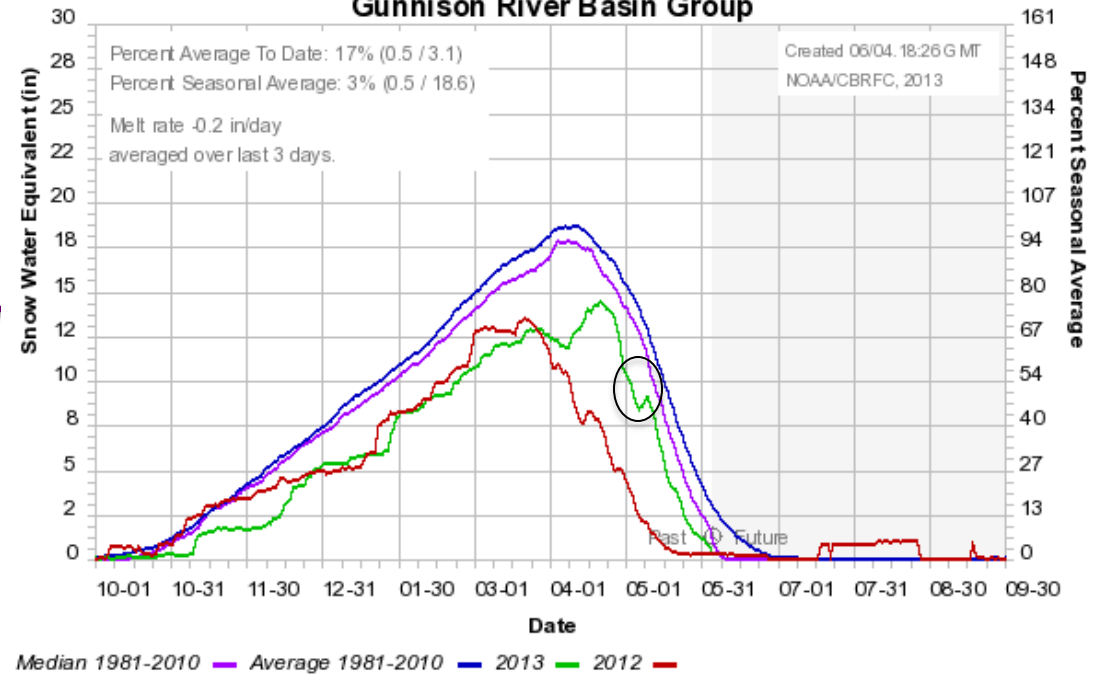


Web Reference: <http://www.cbrfc.noaa.gov/station/sweplot/snowgroup.php>

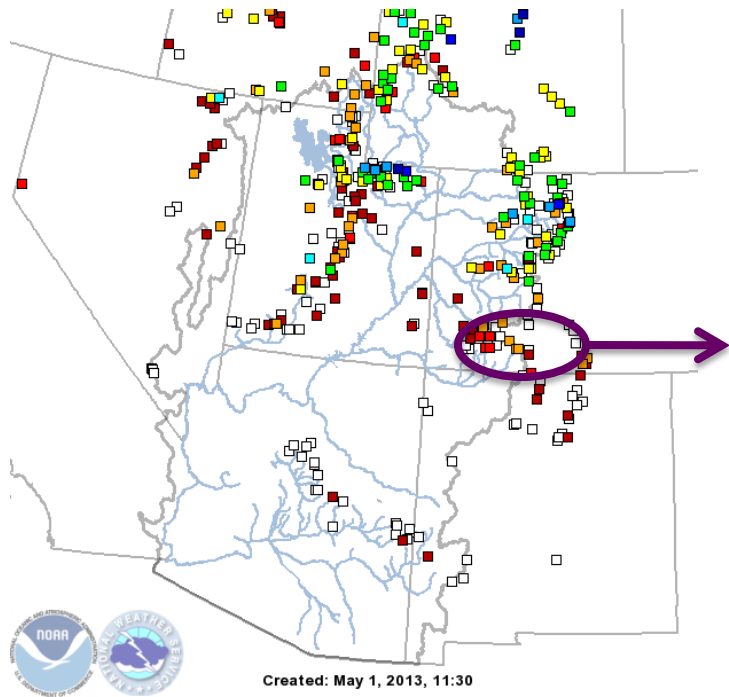
Snow: Gunnison River Basin



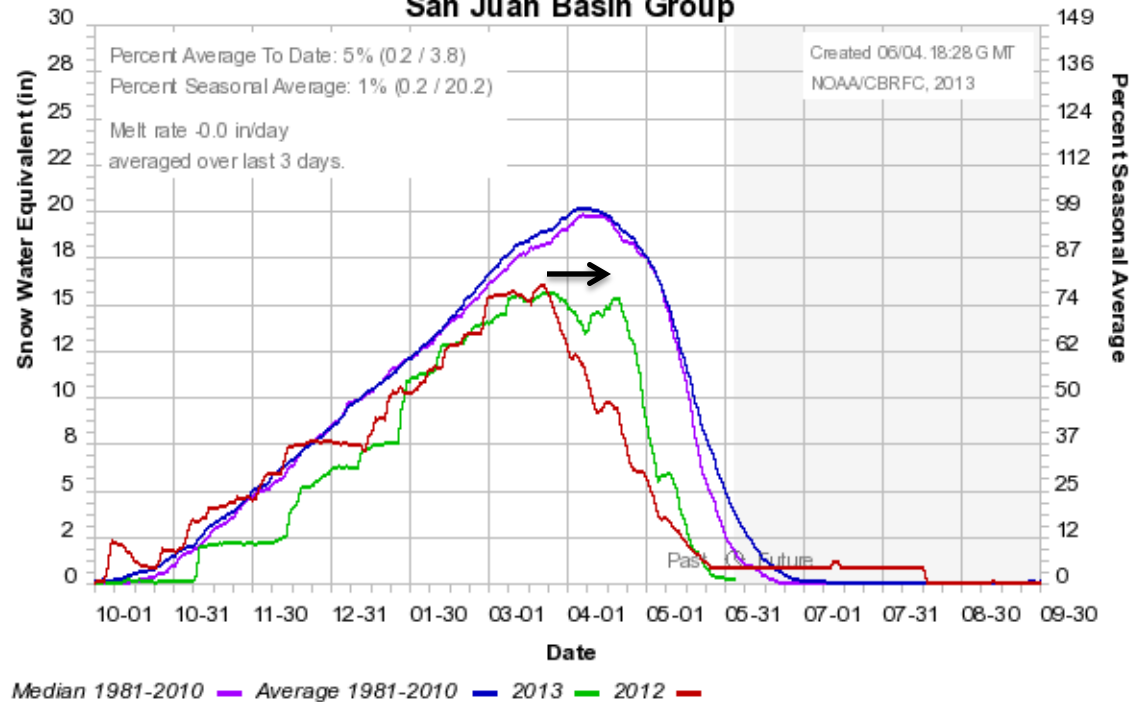
Colorado Basin River Forecast Center
Gunnison River Basin Group



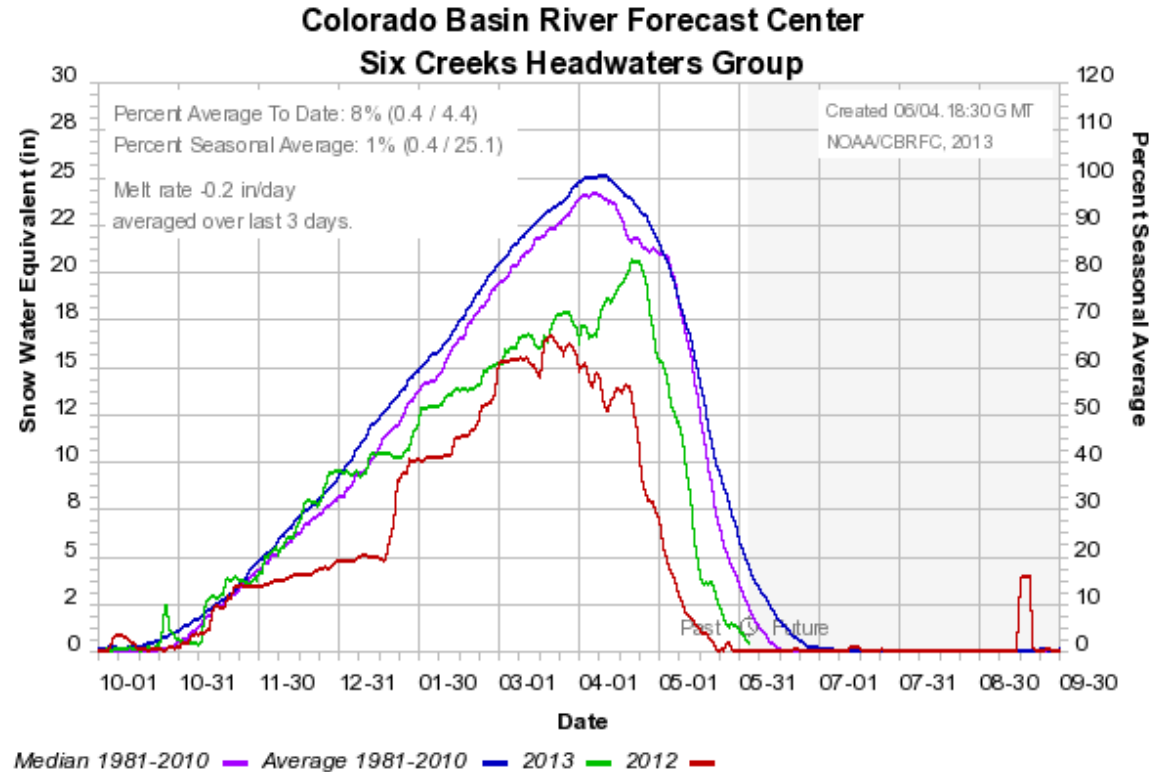
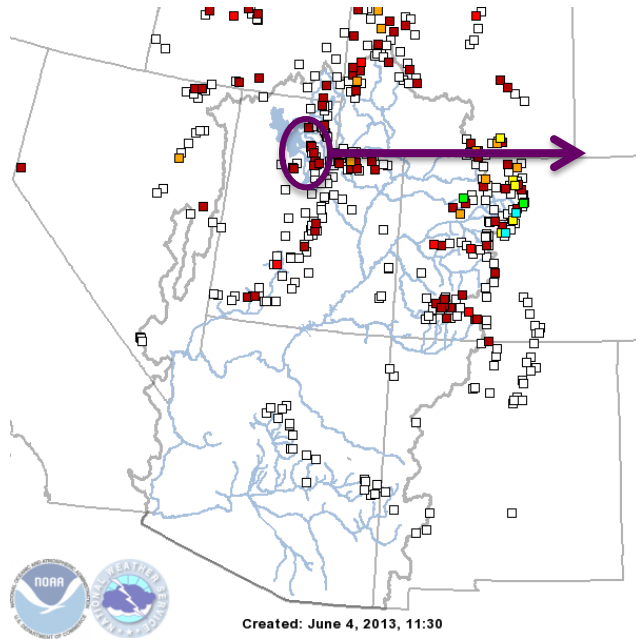
Snow: San Juan River Basin



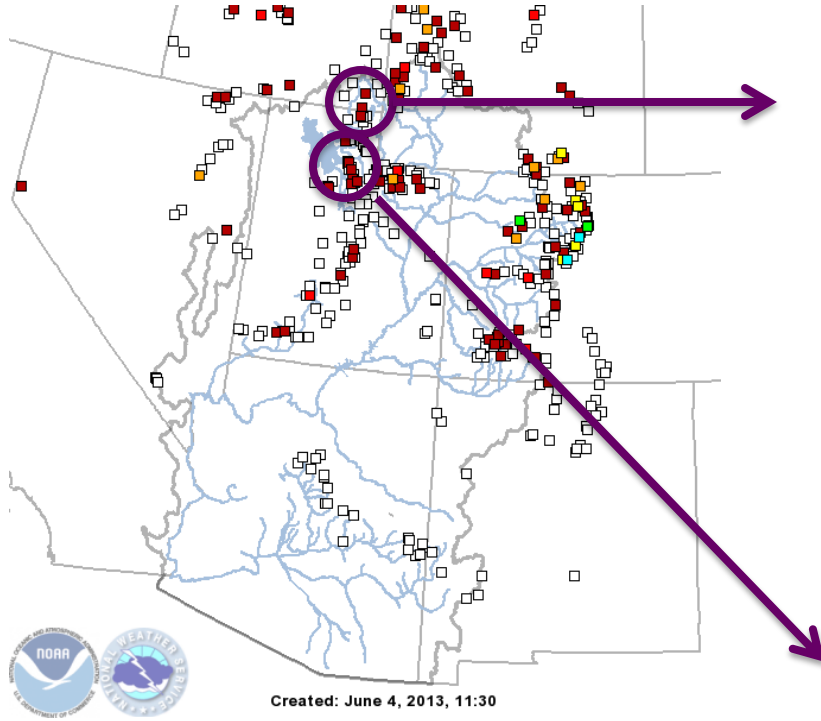
Colorado Basin River Forecast Center
San Juan Basin Group



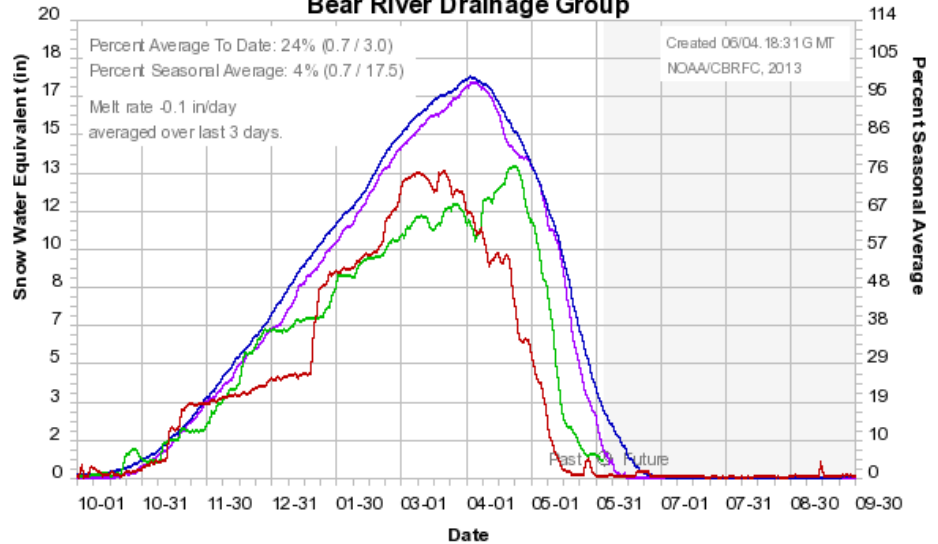
Snow: Six Creeks Basins (Salt Lake County)



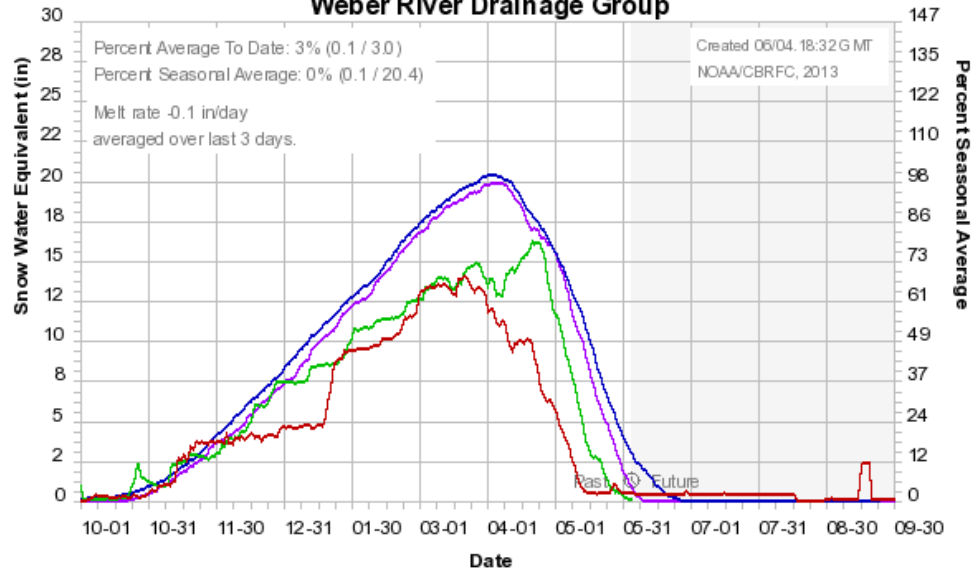
Snow: Bear River Basin



Colorado Basin River Forecast Center
Bear River Drainage Group



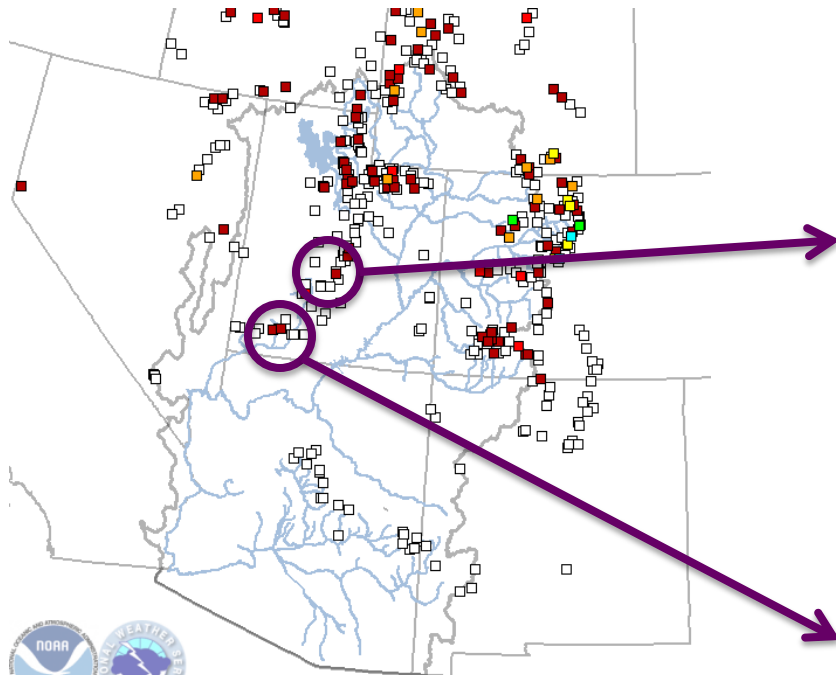
Colorado Basin River Forecast Center
Weber River Drainage Group



Median 1981-2010 — Average 1981-2010 — 2013 — 2012 —

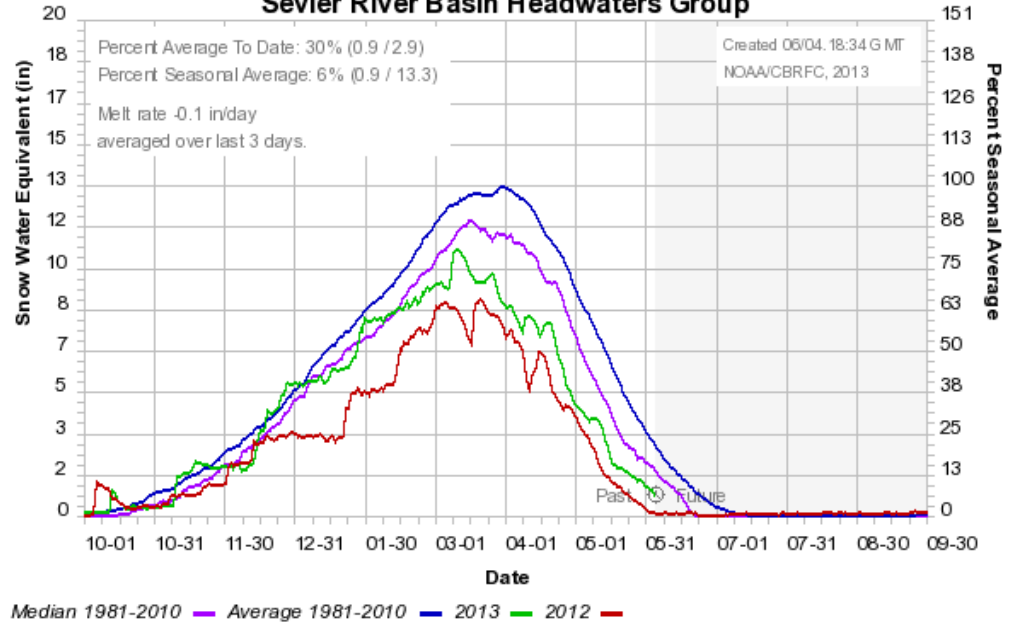
Snow: Weber River Basin

Snow: Sevier River Basin



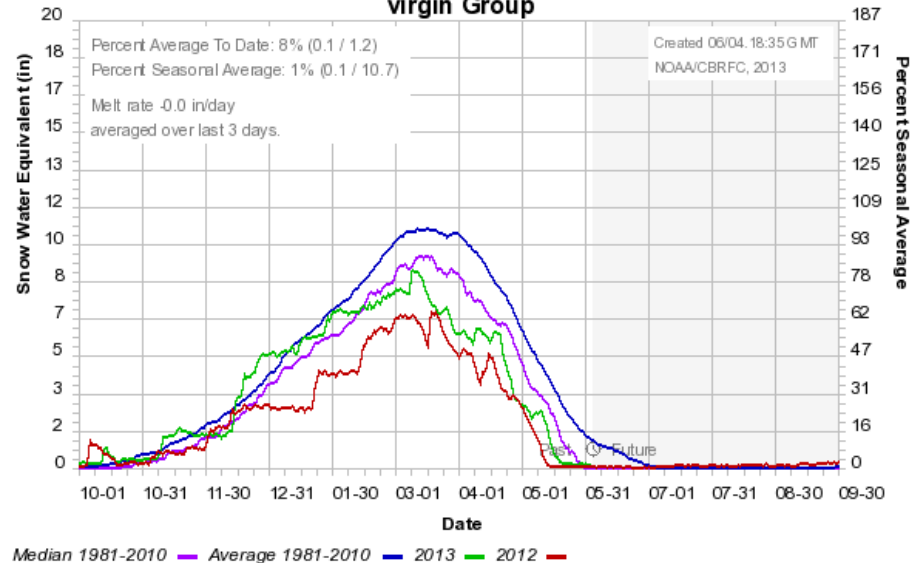
Created: June 4, 2013, 11:30

Colorado Basin River Forecast Center Sevier River Basin Headwaters Group



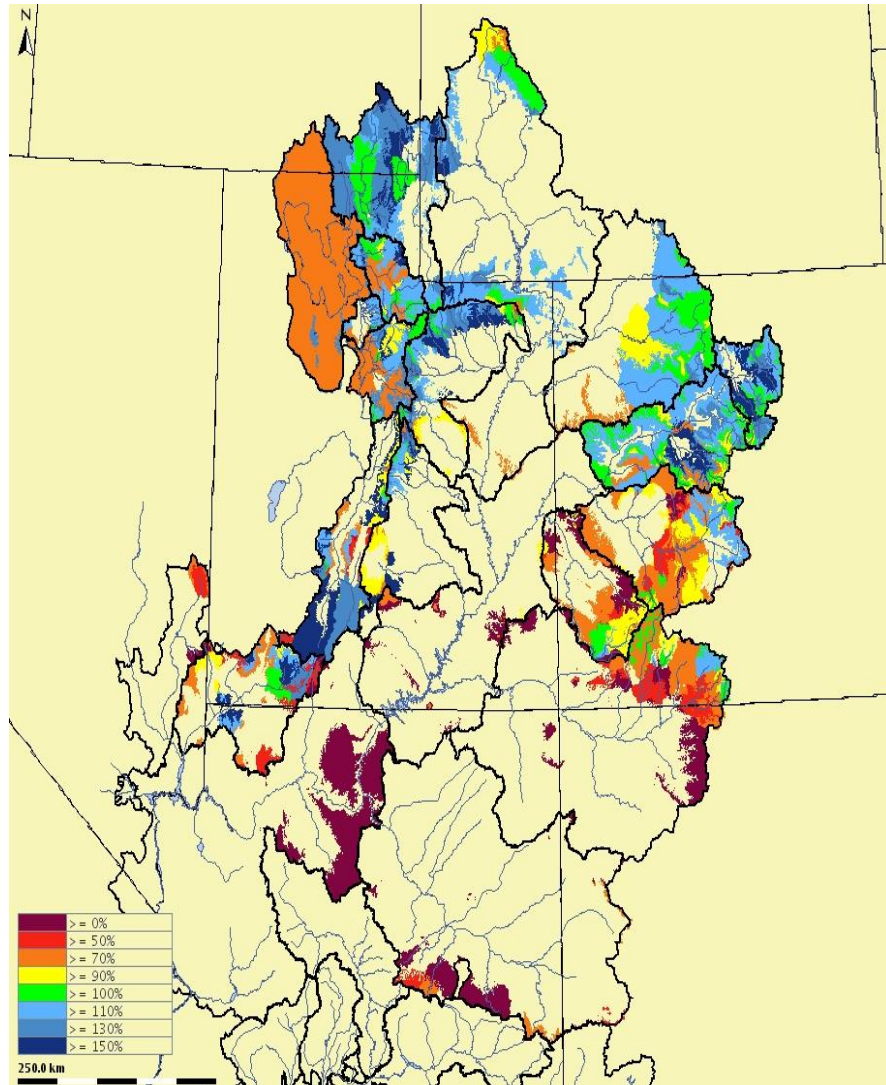
Snow: Virgin River Basin

Colorado Basin River Forecast Center virgin Group

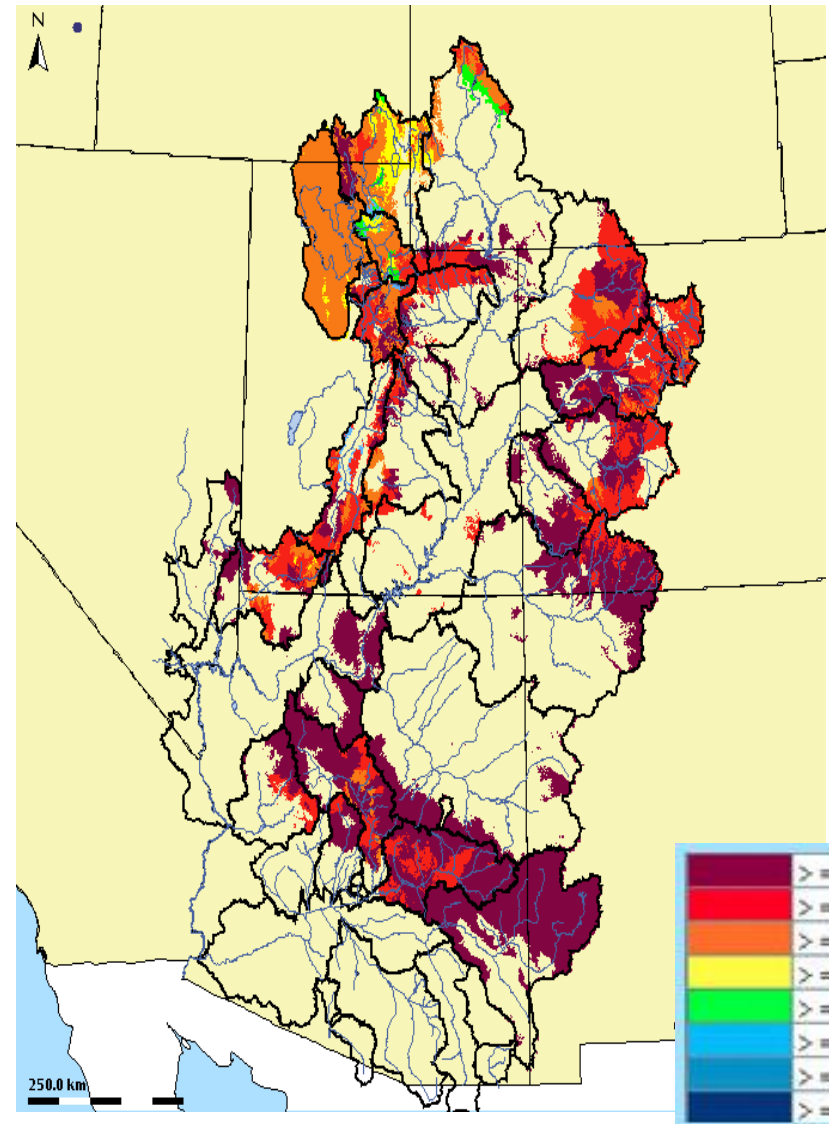


Modeled Soil Moisture

December 2011



December 2012



June, 2013

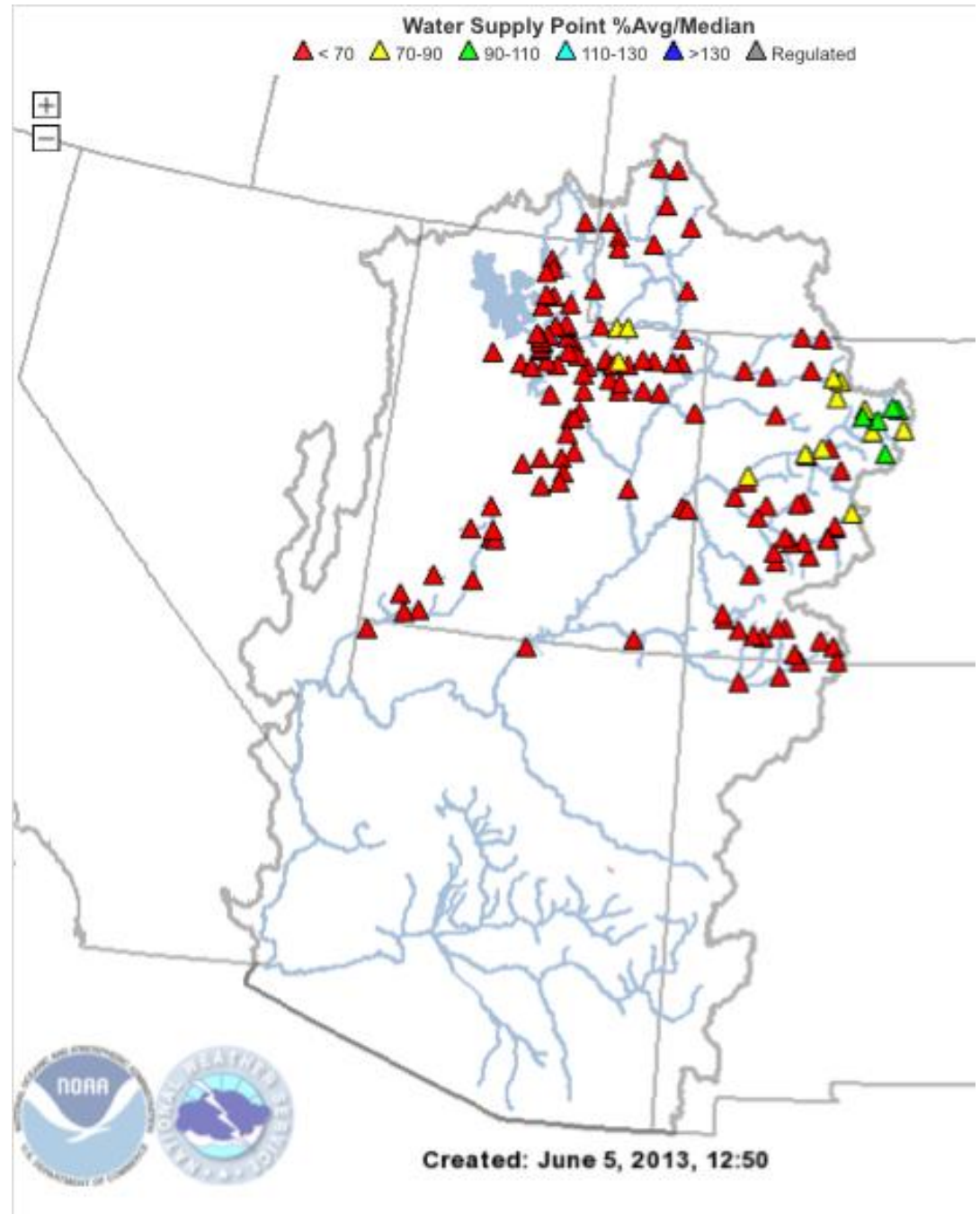
Water Supply Forecasts

Highlights:

- Much below average forecasts widespread. Increased to near average Colorado River headwaters.

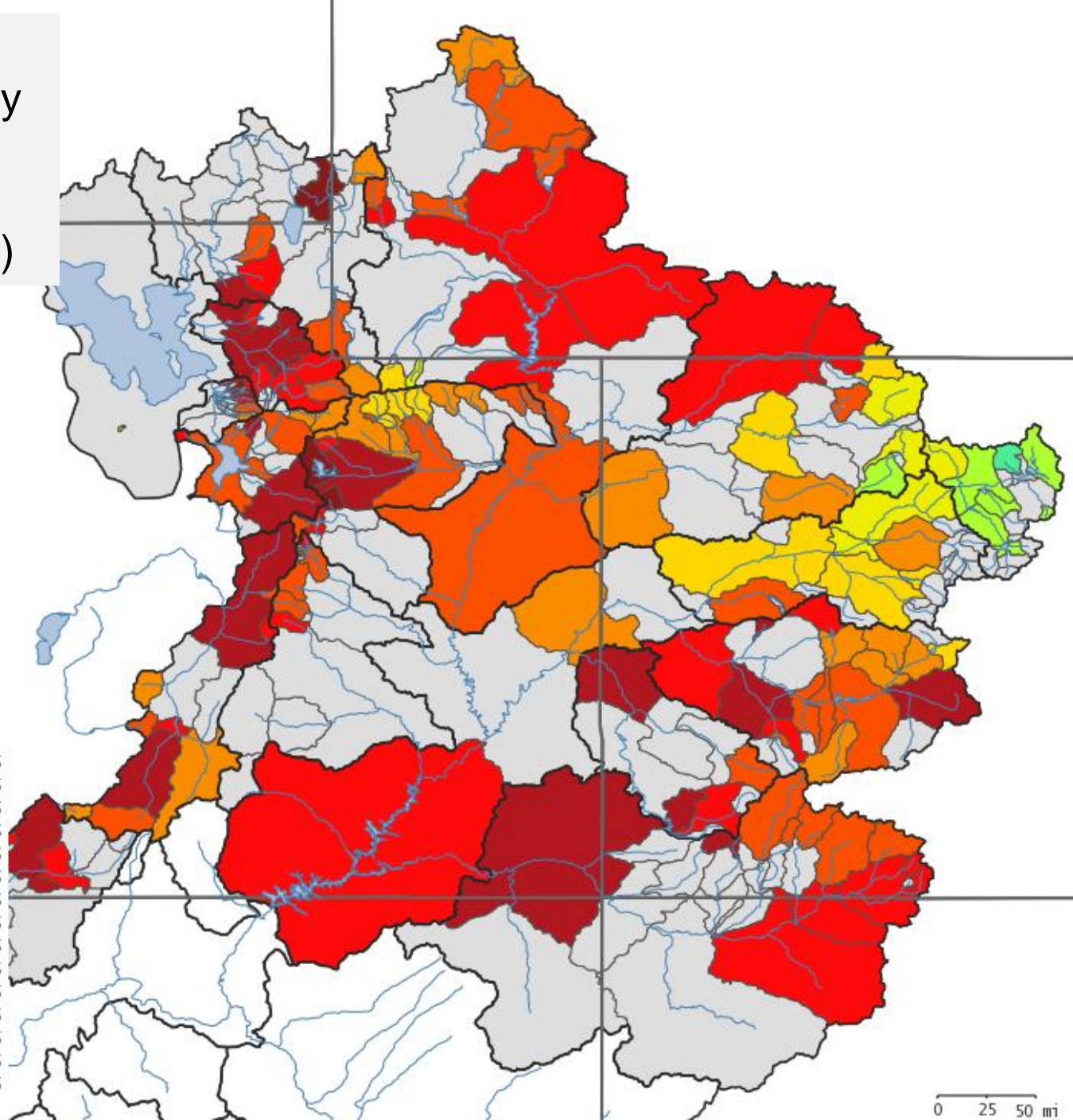
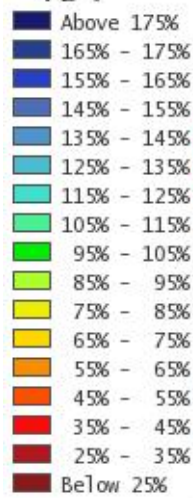
• Major factors:

- Dry antecedent soil moisture conditions
- Dry: Oct – Nov, Feb-Mar, April (San Juan), May
- Dismal snowpack most areas



June 1st April-July Volume Forecasts by River Basin

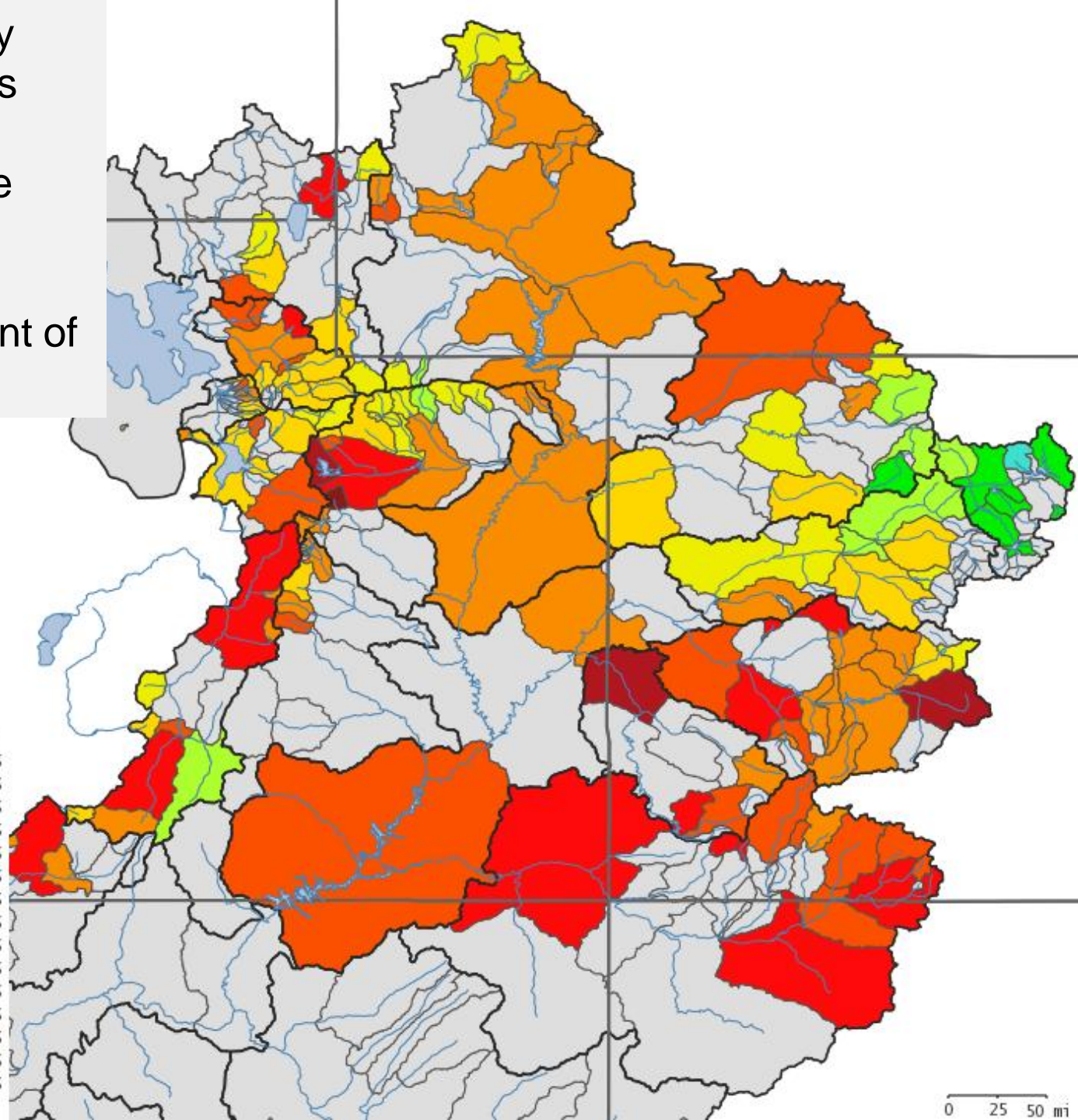
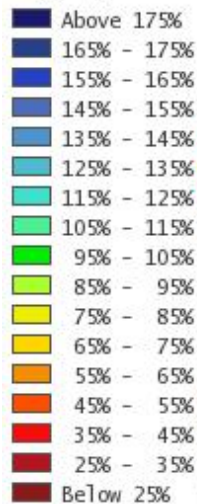
(percent of average)



June 1st April-July Volume Forecasts

10% Exceedance
Probability

(volumes as a percent of
average)



Forecast : Upper Green Basin

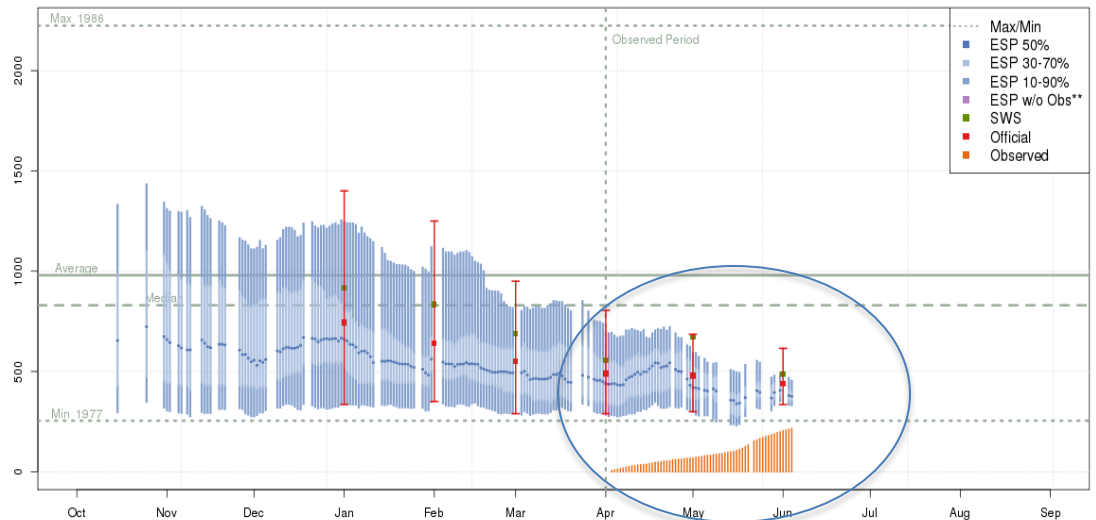
What's on the Map?

NWS Site ID

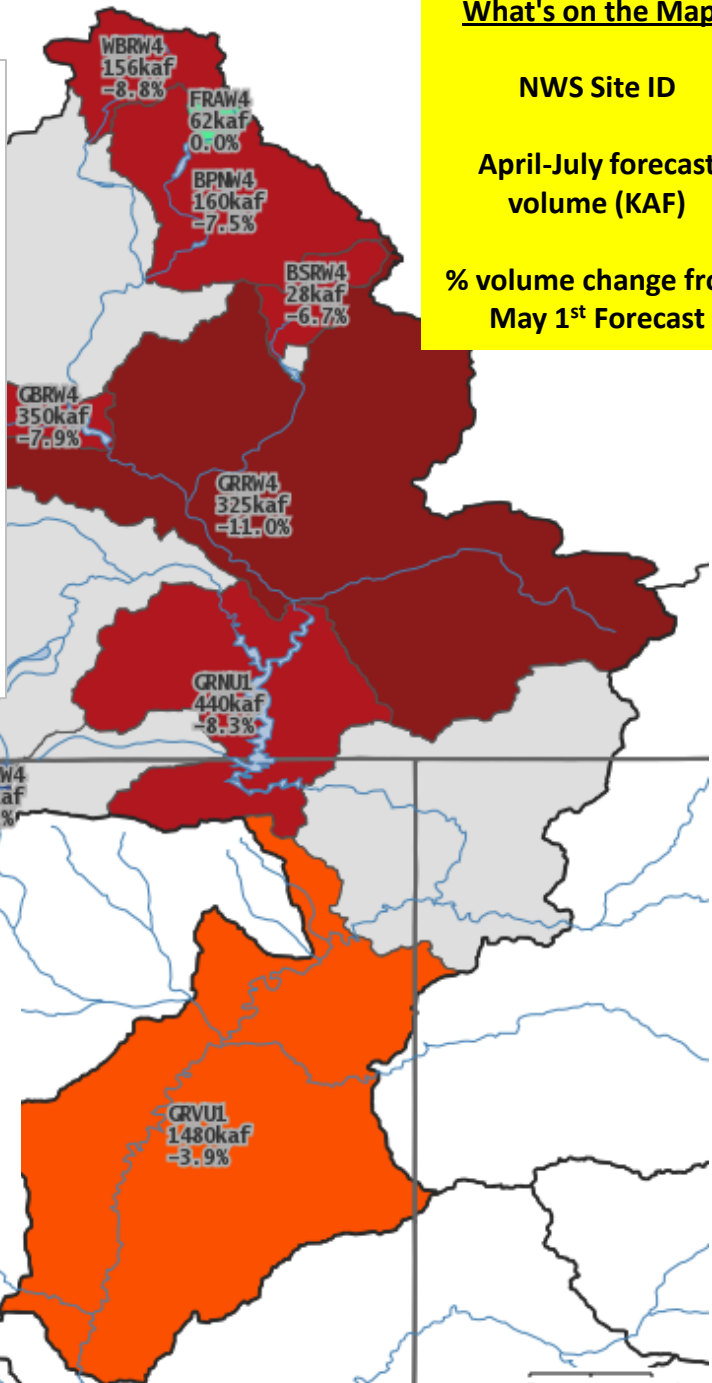
April-July forecast volume (KAF)

% volume change from May 1st Forecast

2013 Runoff Forecast Apr-Jul
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1)



Plot Created 2013-06-05 12:31:22, Lastest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
Maximum of 2224.3 in 1986, Minimum of 254.3 in 1977, Average/Median for 1981-2010.
**These ESP forecasts do not include observed and are not total runoff.



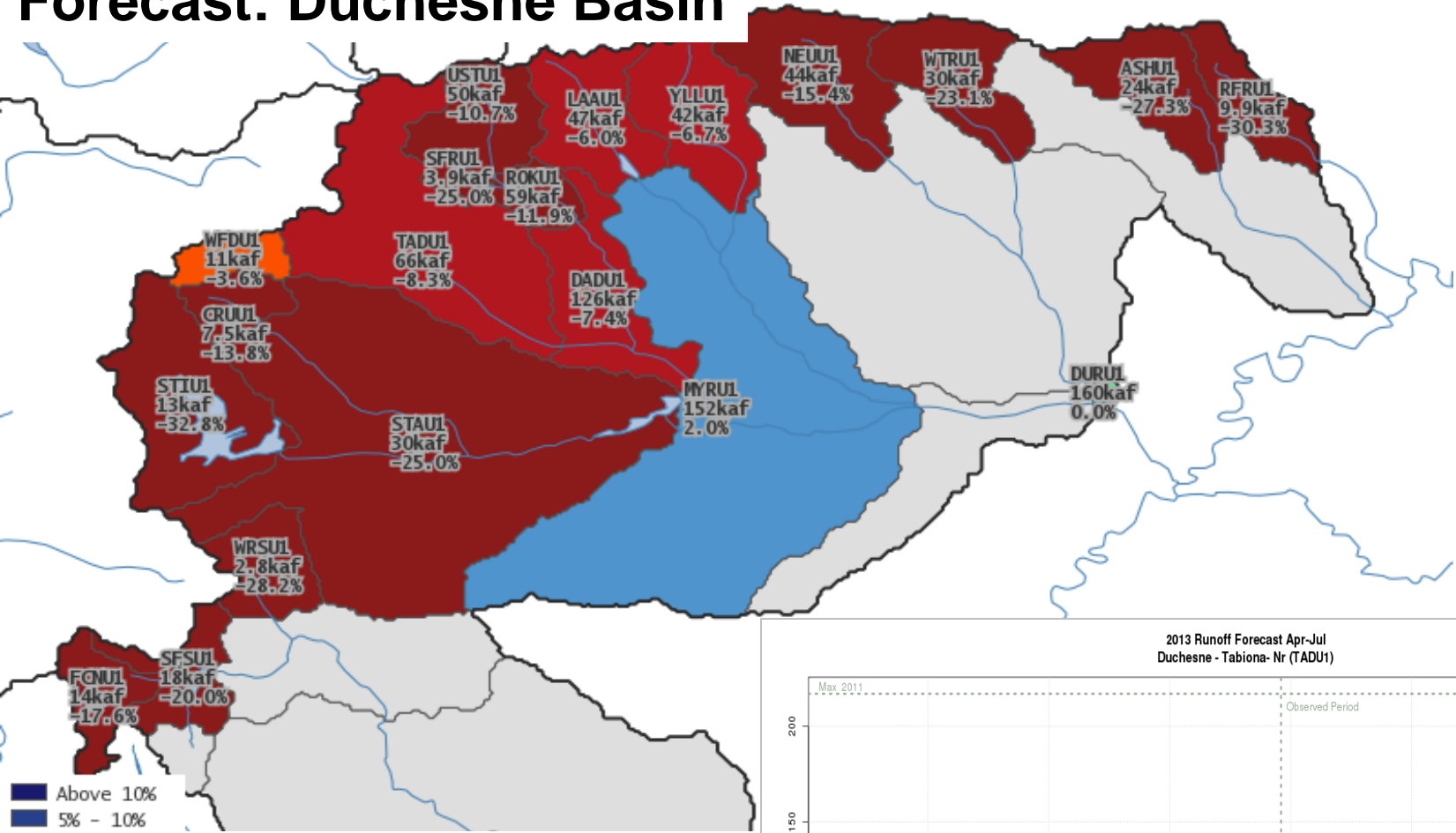
- Above 10%
- 5% - 10%
- 4% - 5%
- 3% - 4%
- 2% - 3%
- 1% - 2%
- 0.5% - 1%
- 0% - 0.5%
- 0.5% - 0%
- 1% - -0.5%
- 2% - -1%
- 3% - -2%
- 4% - -3%
- 5% - -4%
- 10% - -5%
- Below -10%
- NA

Flaming Gorge:

MIN (90%) 335 KAF
MP (50%) 440 KAF 45% avg
MAX (10%) 615 KAF

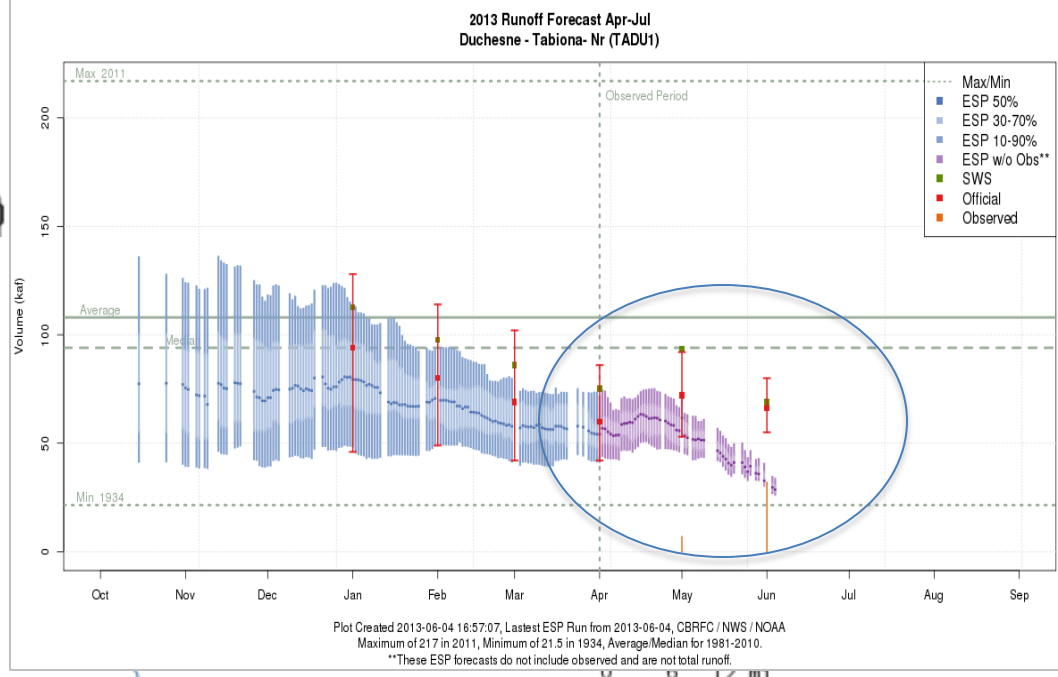
0 14 28 mi

Forecast: Duchesne Basin



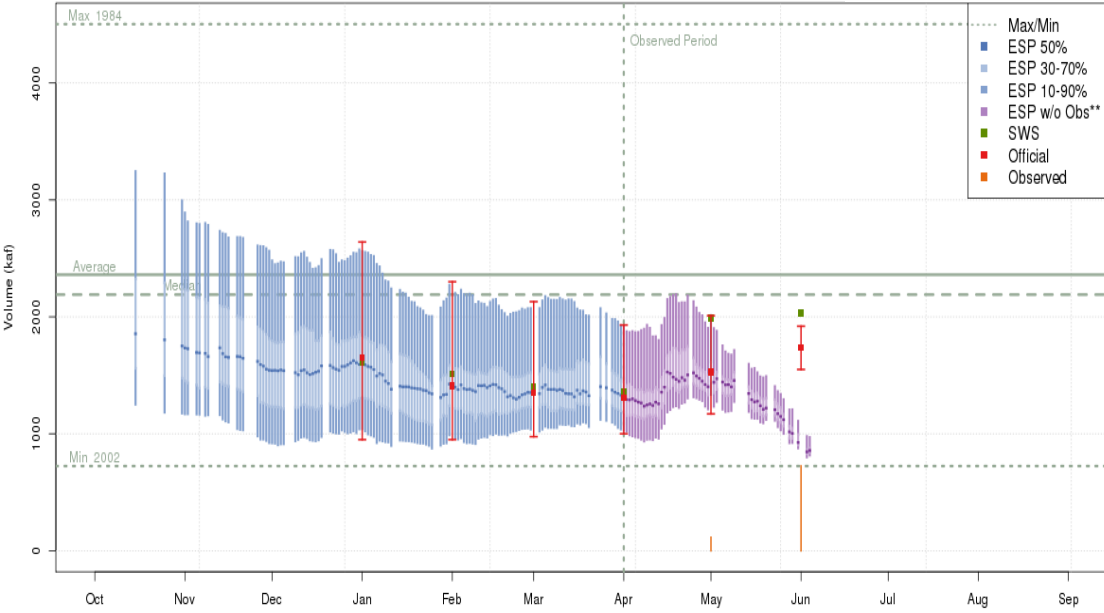
Duchesne – Tabiona:

MIN (90%) 55 KAF
MP (50%) 66 KAF 61% avg
MAX (10%) 80 KAF



Forecast: Colorado Mainstem

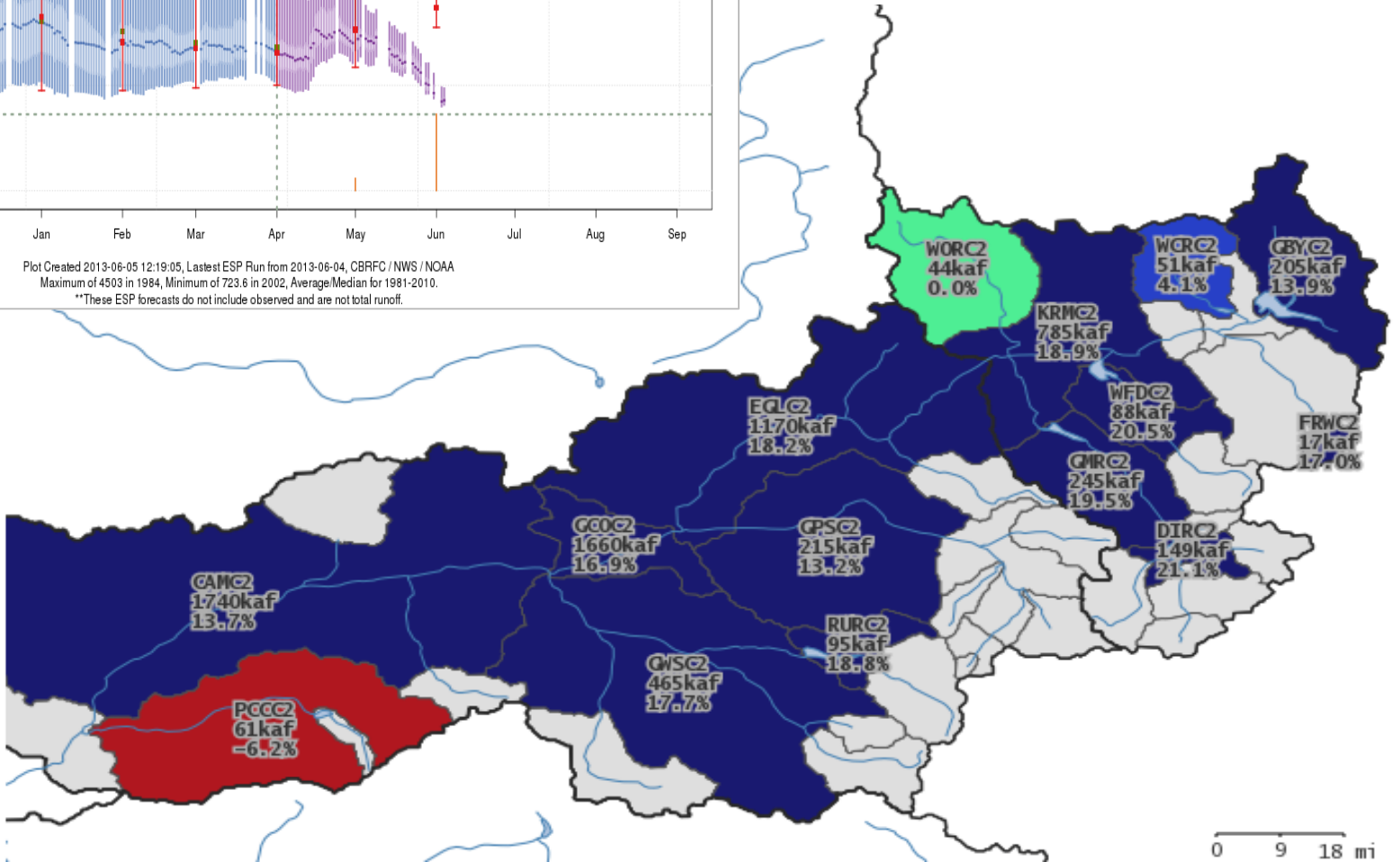
2013 Runoff Forecast Apr-Jul
Colorado - Cameo- Nr (CAMC2)



Plot Created 2013-06-05 12:19:05, Latest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
Maximum of 4503 in 1984, Minimum of 723.6 in 2002, Average/Median for 1981-2010.
**These ESP forecasts do not include observed and are not total runoff.

Colorado - Cameo:

MIN (90%) 1550 KAF
MP (50%) 1740 KAF 74% avg
MAX (10%) 1920 KAF



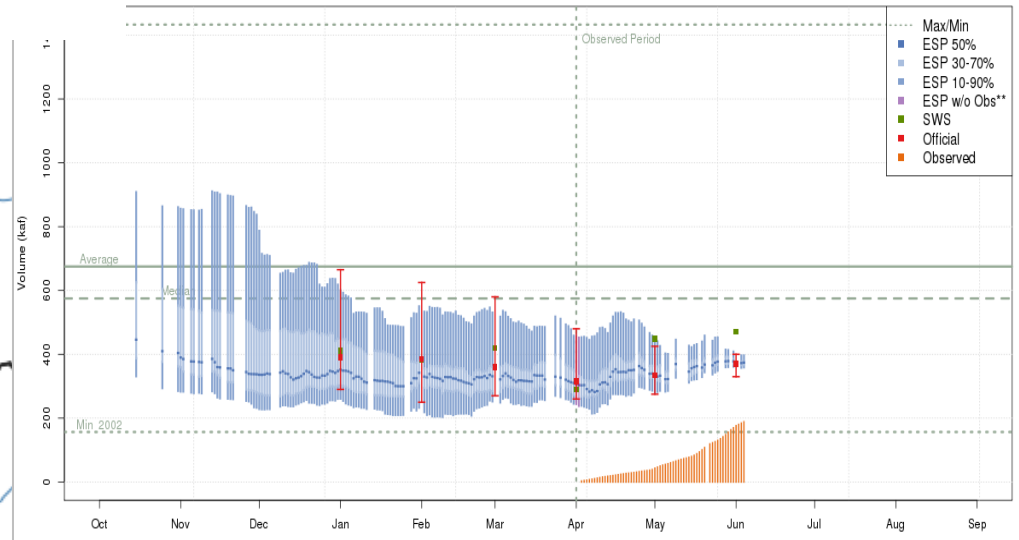
0 9 18 mi

Forecast: Gunnison/Dolores

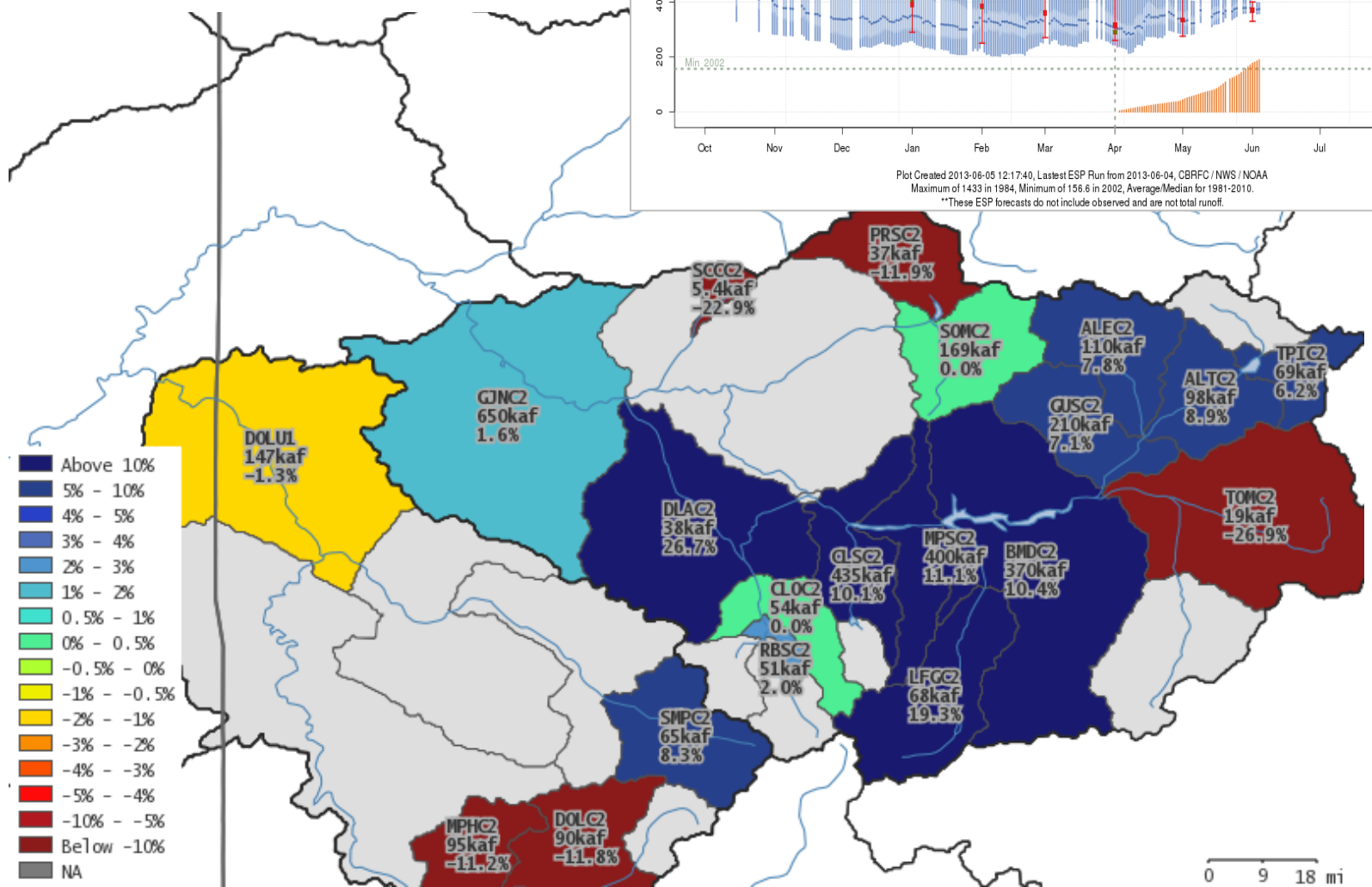
Gunnison – Blue Mesa:

MIN (90%) 330 KAF
MP (50%) 370 KAF 55% avg
MAX (10%) 400 KAF

2013 Runoff Forecast Apr-Jul
Gunnison - Blue Mesa Res (BMD2)



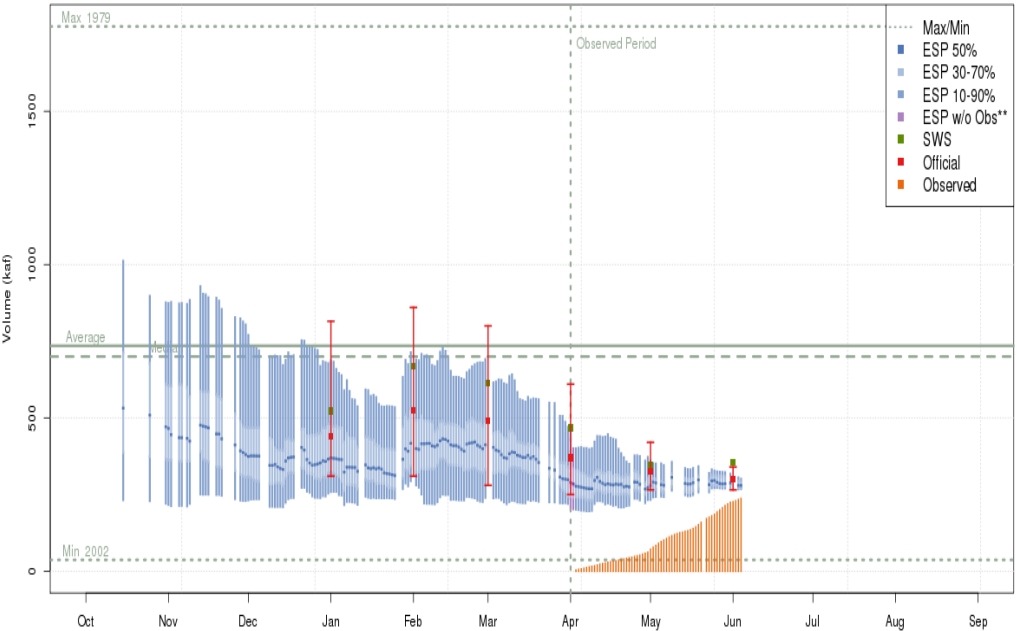
Plot Created 2013-06-05 12:17:40, Latest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
Maximum of 1433 in 1984, Minimum of 156.6 in 2002, Average/Median for 1981-2010.
**These ESP forecasts do not include observed and are not total runoff.



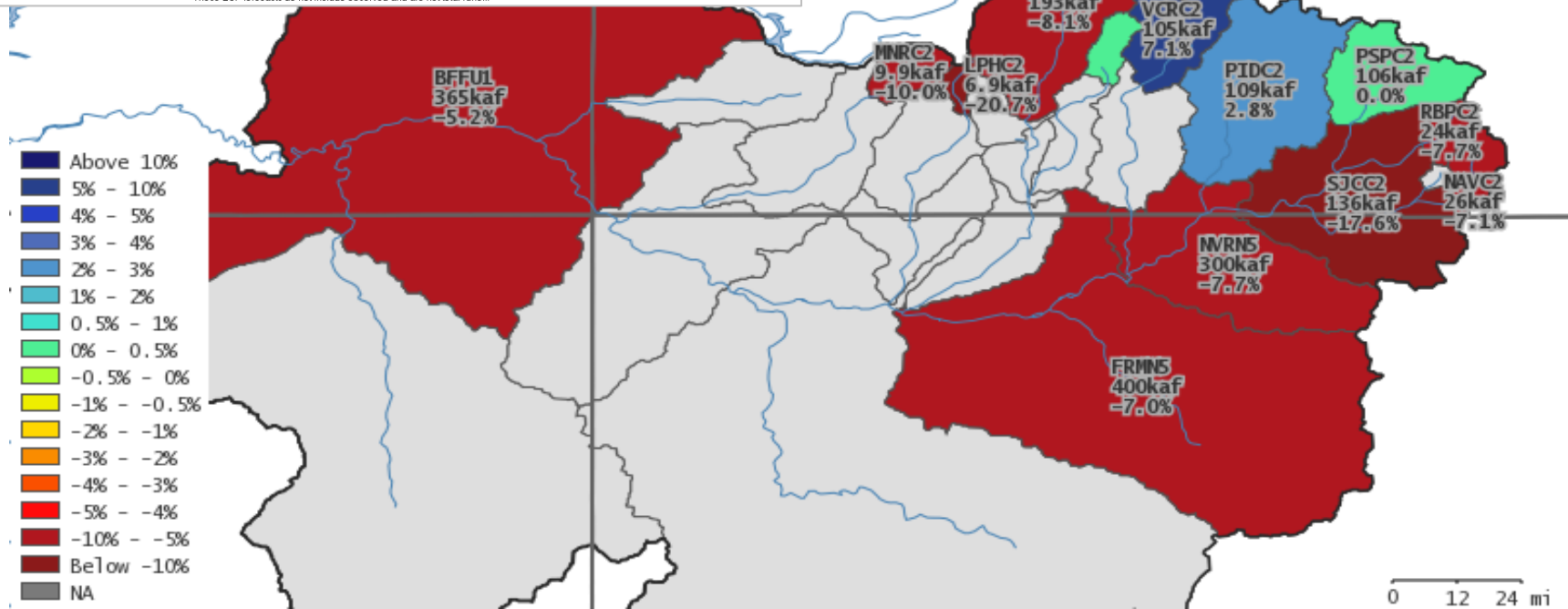
Forecast: San Juan Basin

Navajo Reservoir:

MIN (90%) 265 KAF
MP (50%) 300 KAF 41% avg
MAX (10%) 340 KAF

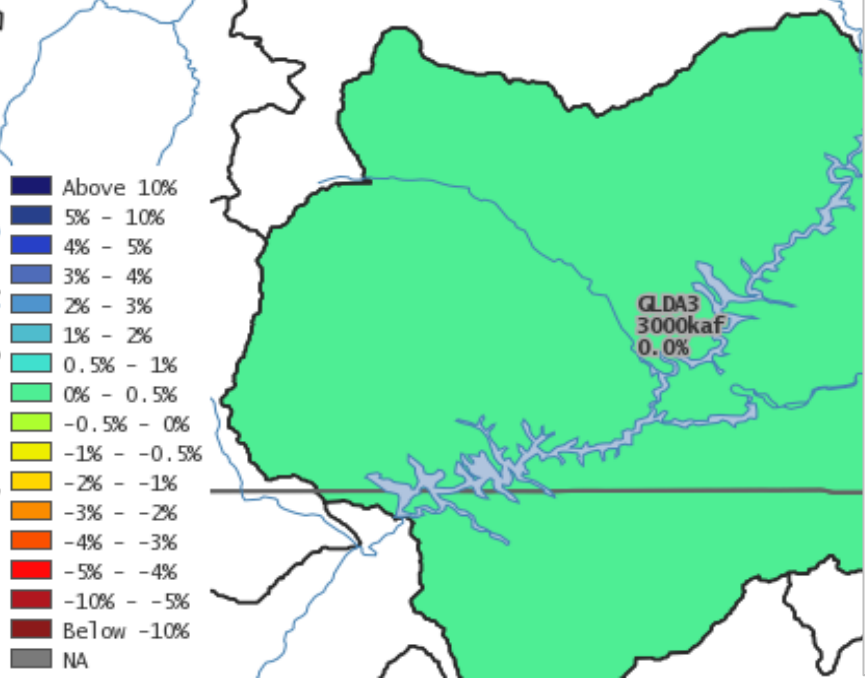
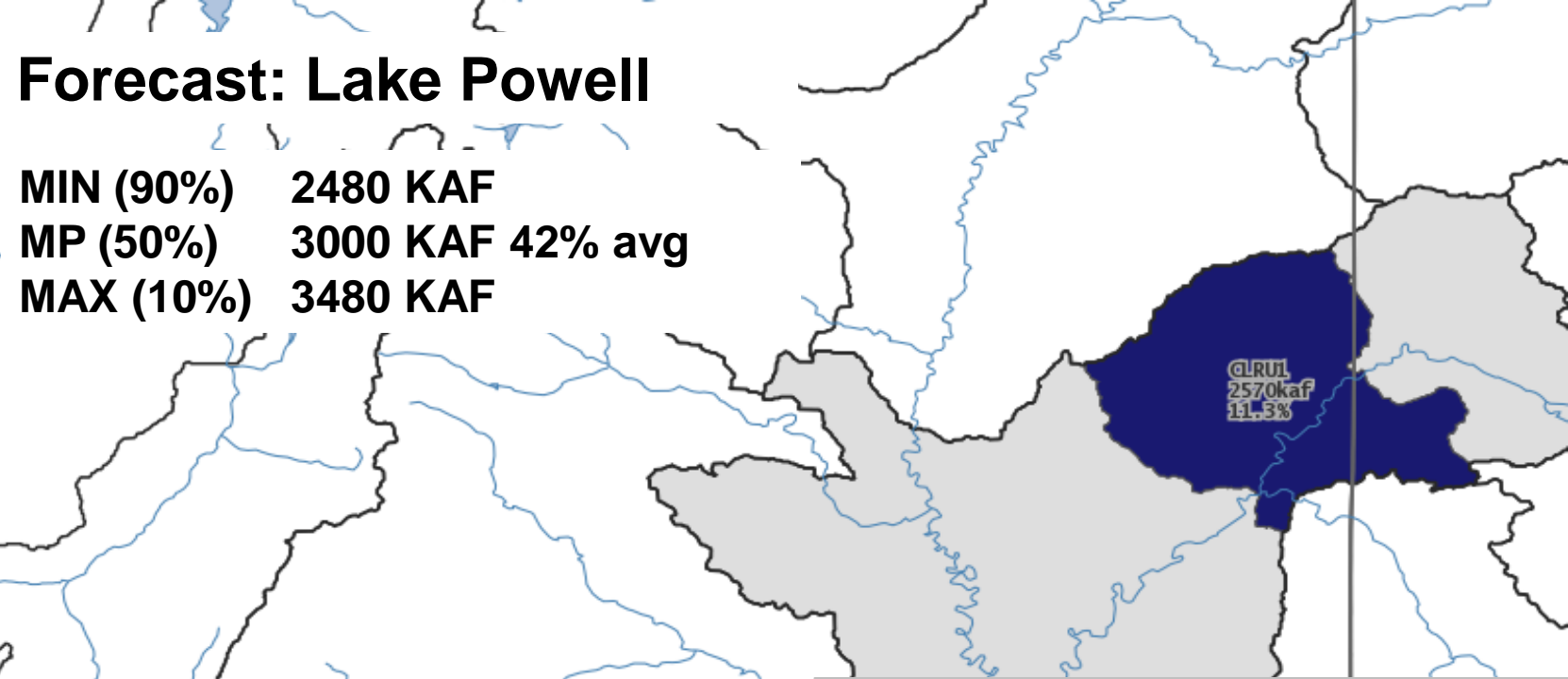


Plot Created 2013-06-05 12:40:40, Latest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
 Maximum of 1776.8 in 1979, Minimum of 36.7 in 2002, Average/Median for 1981-2010.
 **These ESP forecasts do not include observed and are not total runoff.

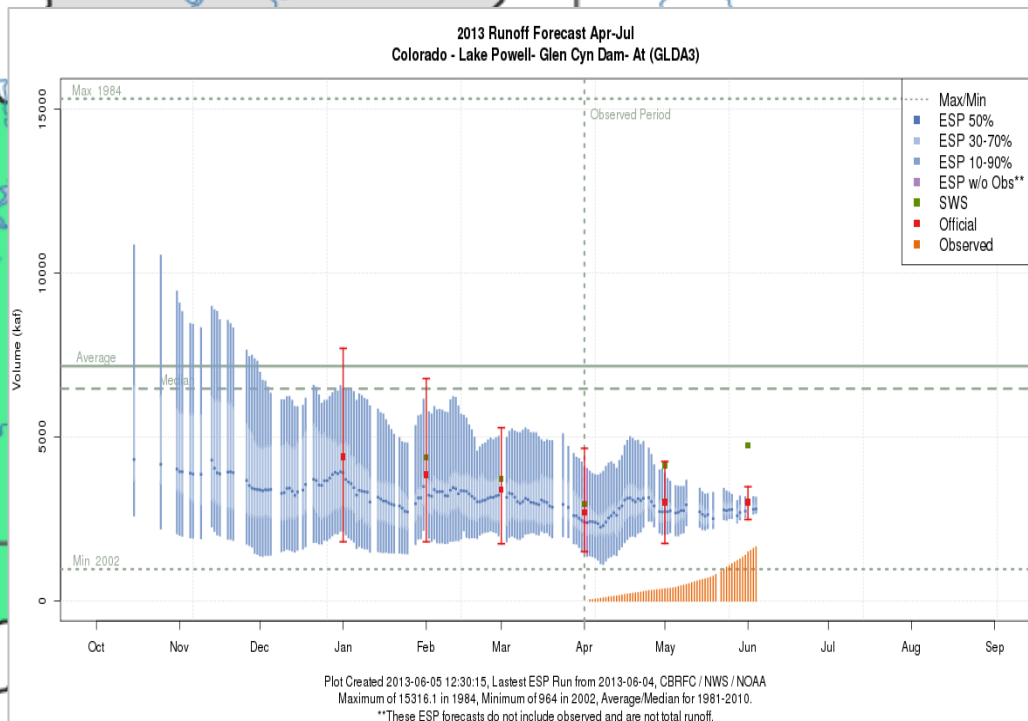


Forecast: Lake Powell

MIN (90%) 2480 KAF
MP (50%) 3000 KAF 42% avg
MAX (10%) 3480 KAF



- Above 10%
- 5% - 10%
- 4% - 5%
- 3% - 4%
- 2% - 3%
- 1% - 2%
- 0.5% - 1%
- 0% - 0.5%
- -0.5% - 0%
- -1% - -0.5%
- -2% - -1%
- -3% - -2%
- -4% - -3%
- -5% - -4%
- -10% - -5%
- Below -10%
- NA



LAKE POWELL

If...

The current Apr-Jul forecast of 3 MAF occurs:

- Would be 4th driest Apr-Jul on record
- 2012-2013 would be the 2nd lowest consecutive Apr-Jul periods at 5.1 MAF

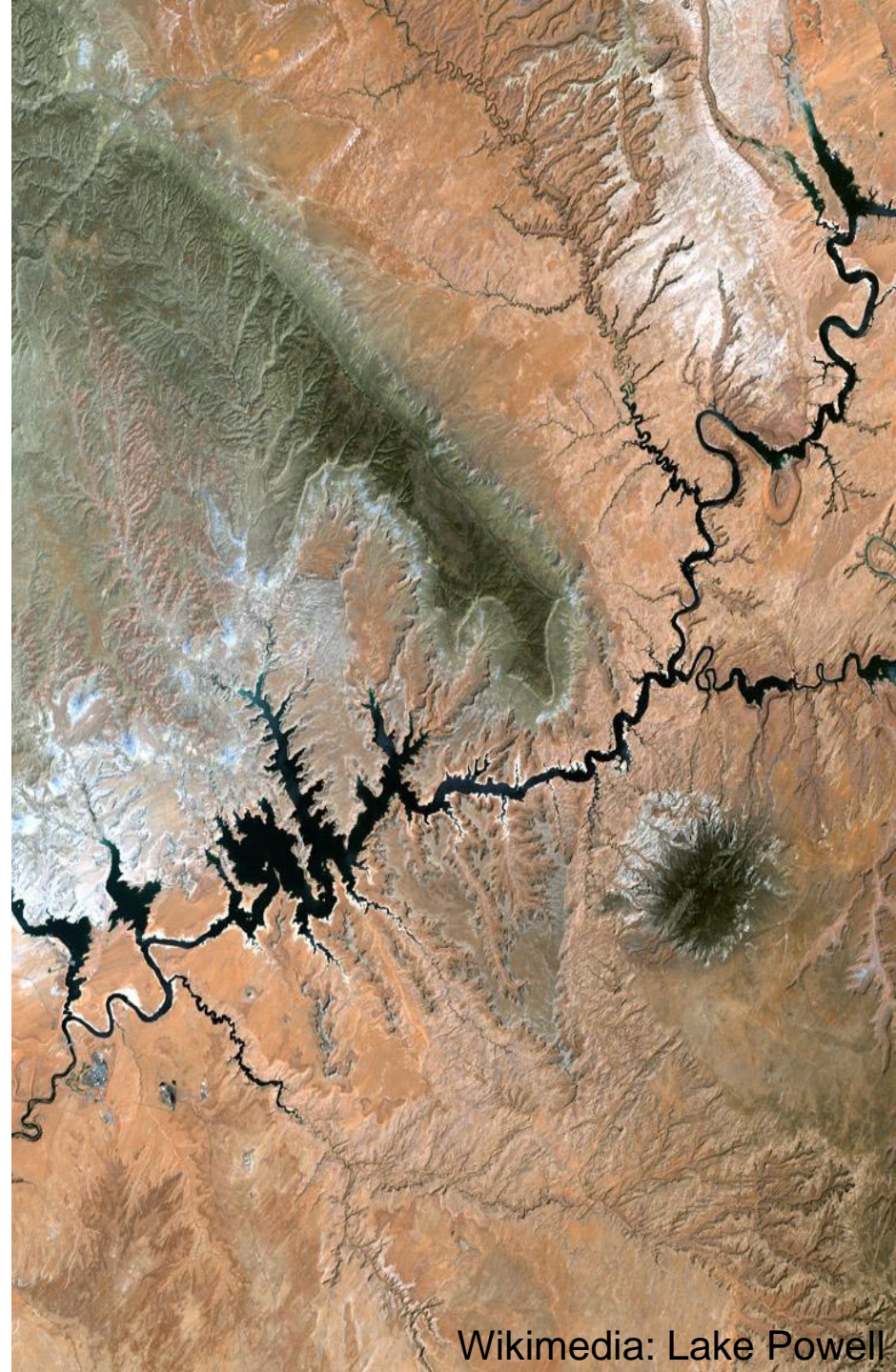
(2002-2003 had 4.9 MAF)

The current Oct-Sep forecast of 4.8 MAF occurs:

- Would be 3rd driest Oct-Sep on record (just above 2012)
- 2012-2013 would be the 3rd driest 2-year period on record at 9.7 MAF

(2002-2003 had 8.8 MAF)

(2001-2002 had 9.6 MAF)

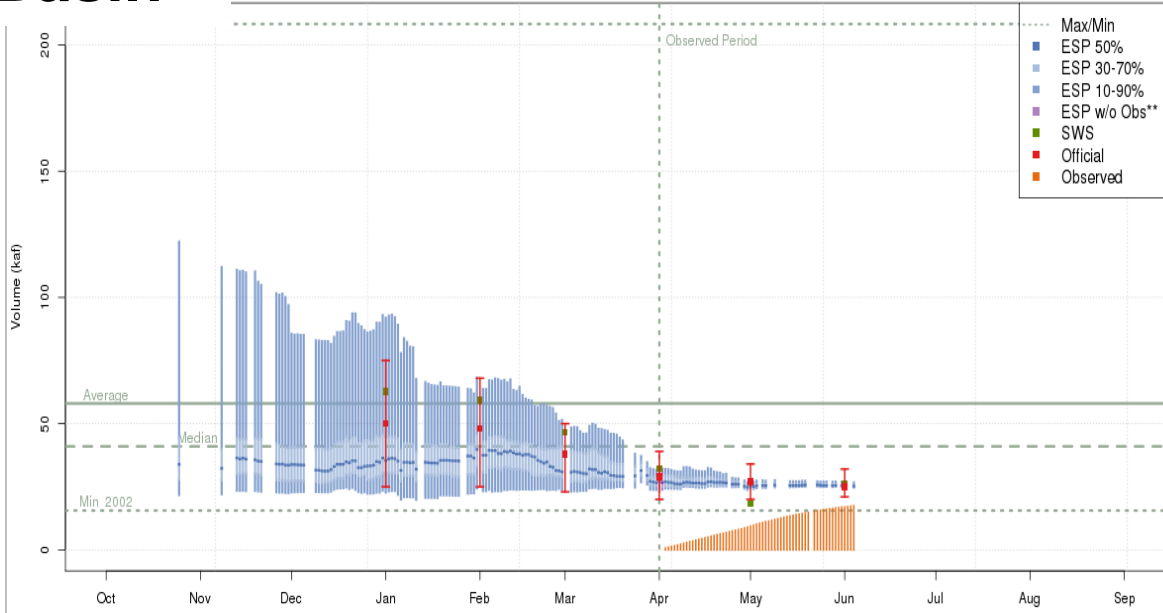


Forecast : Virgin River Basin

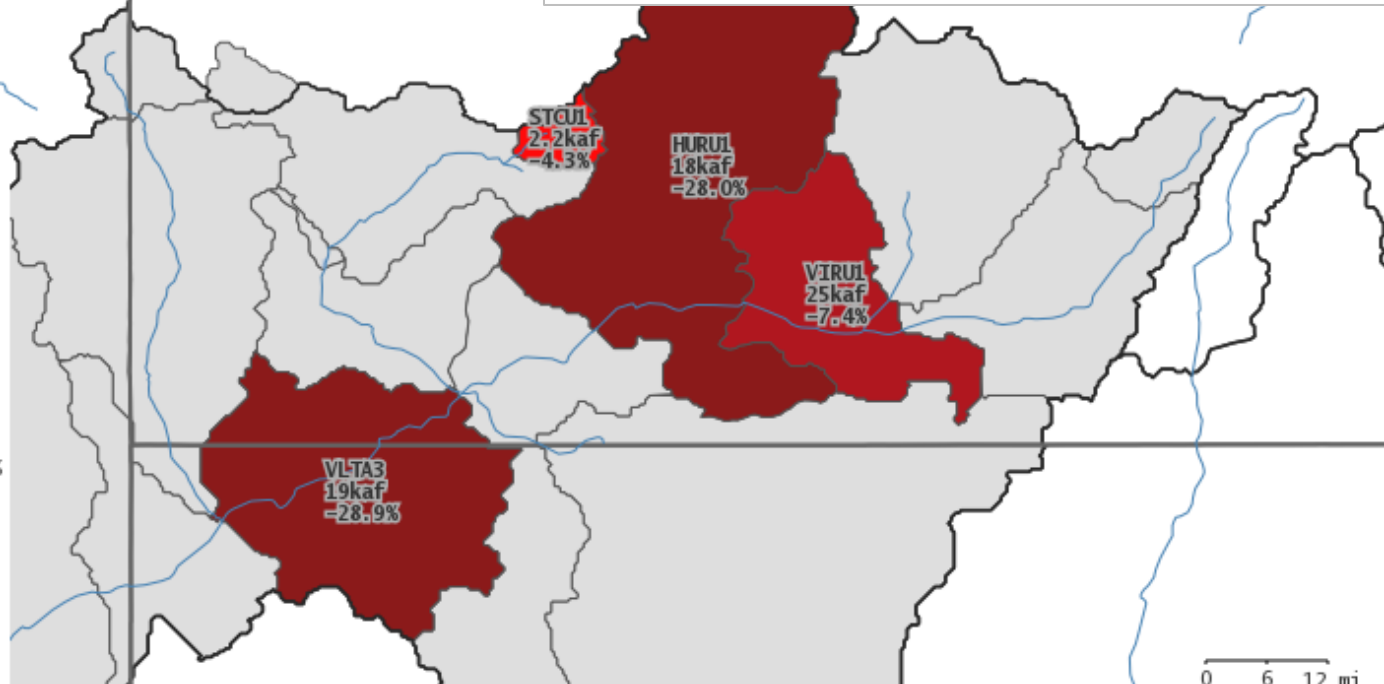
2013 Runoff Forecast Apr-Jul
Virgin - Virgin (VIRU1)

Virgin - Virgin:

MIN (90%) 21 KAF
MP (50%) 25 KAF 43% avg
MAX (10%) 32 KAF



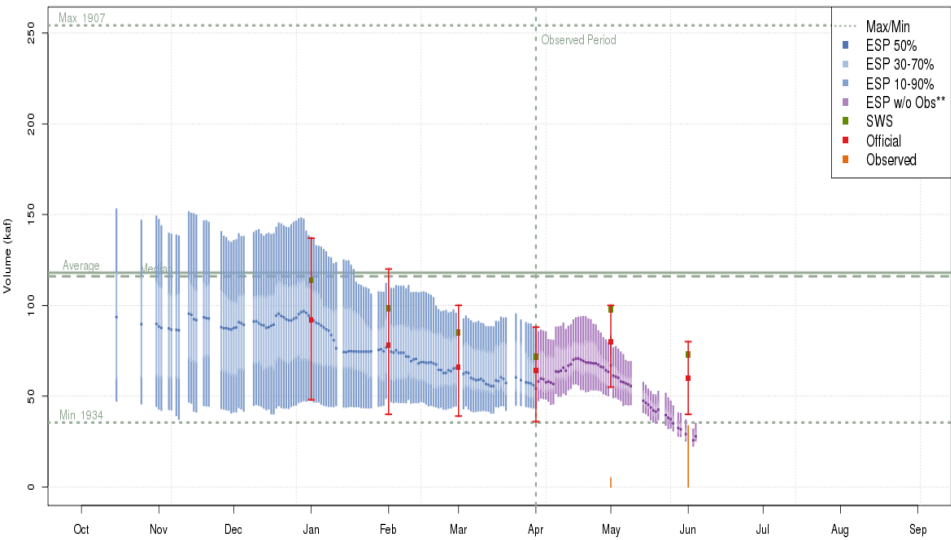
Plot Created 2013-06-04 16:59:16, Lastest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
 Maximum of 208.3 in 2005, Minimum of 15.6 in 2002, Average/Median for 1981-2010.
 **These ESP forecasts do not include observed and are not total runoff.



0 6 12 mi

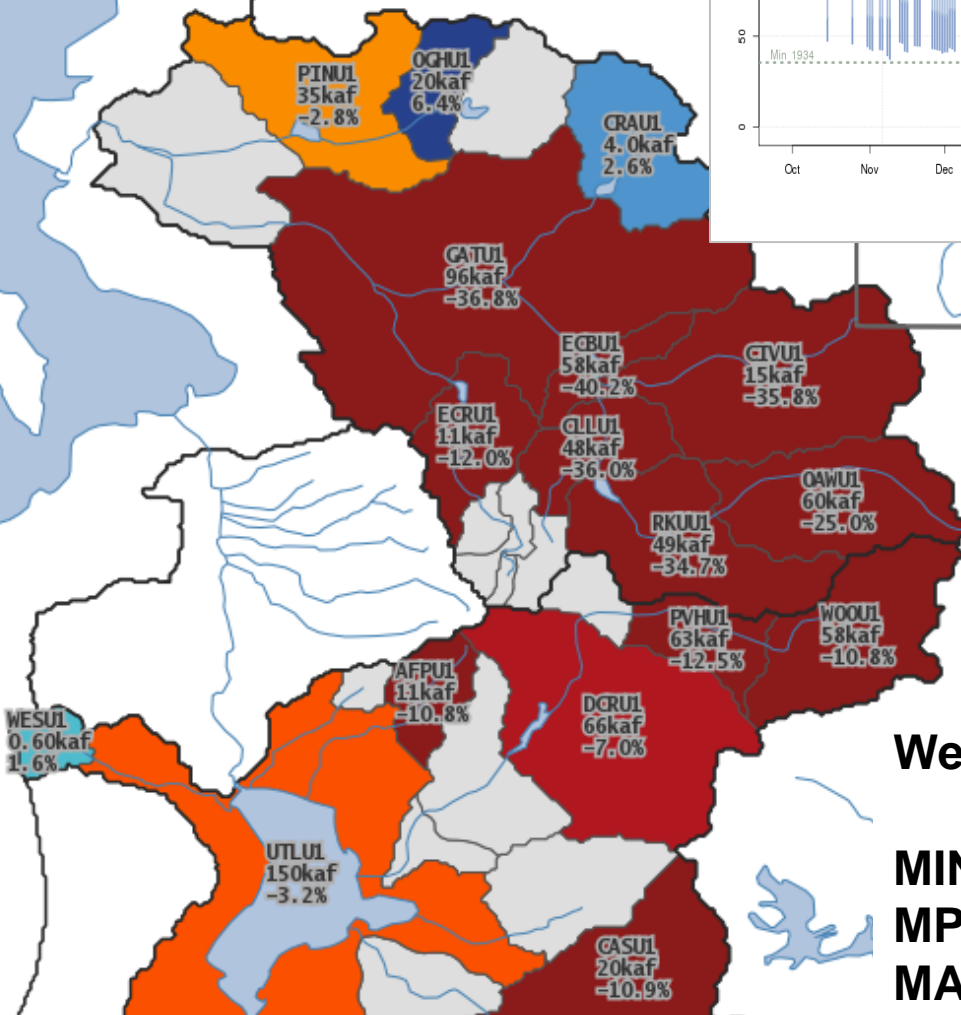
Forecast: Weber / Provo

2013 Runoff Forecast Apr-Jul
Weber - Oakley- Nr (OAWU1)



Plot Created 2013-06-05 12:40:55, Lastest ESP Run from 2013-06-04, CBRFC / NWS / NOAA
Maximum of 254.2 in 1907, Minimum of 35.5 in 1934, Average/Median for 1981-2010.
**These ESP forecasts do not include observed and are not total runoff.

- Above 10%
- 5% - 10%
- 4% - 5%
- 3% - 4%
- 2% - 3%
- 1% - 2%
- 0.5% - 1%
- 0% - 0.5%
- 0.5% - 0%
- 1% - -0.5%
- 2% - -1%
- 3% - -2%
- 4% - -3%
- 5% - -4%
- 10% - -5%
- Below -10%
- NA



Weber - Oakley:

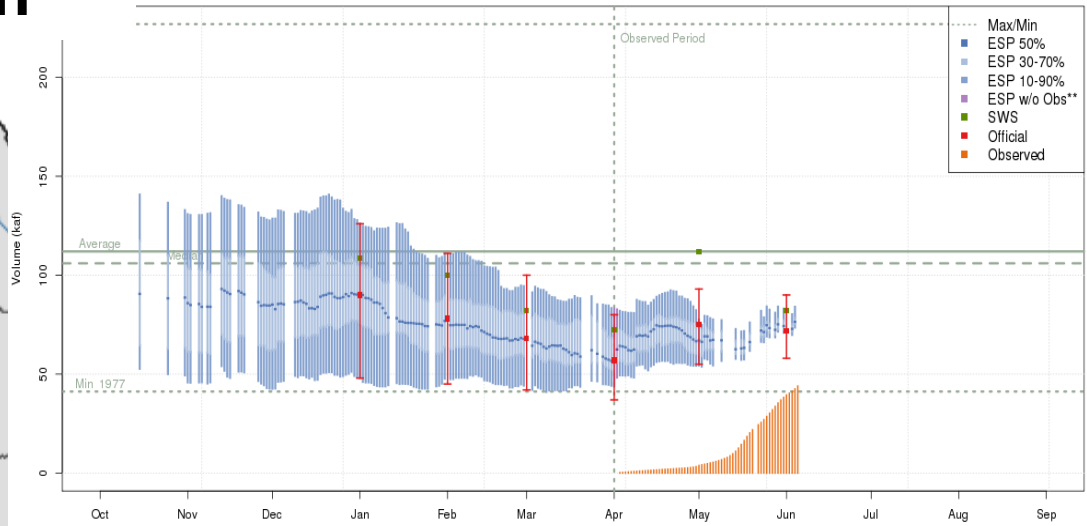
MIN (90%) 40 KAF
MP (50%) 60 KAF 51% avg
MAX (10%) 80 KAF

Forecast : Bear River Basin

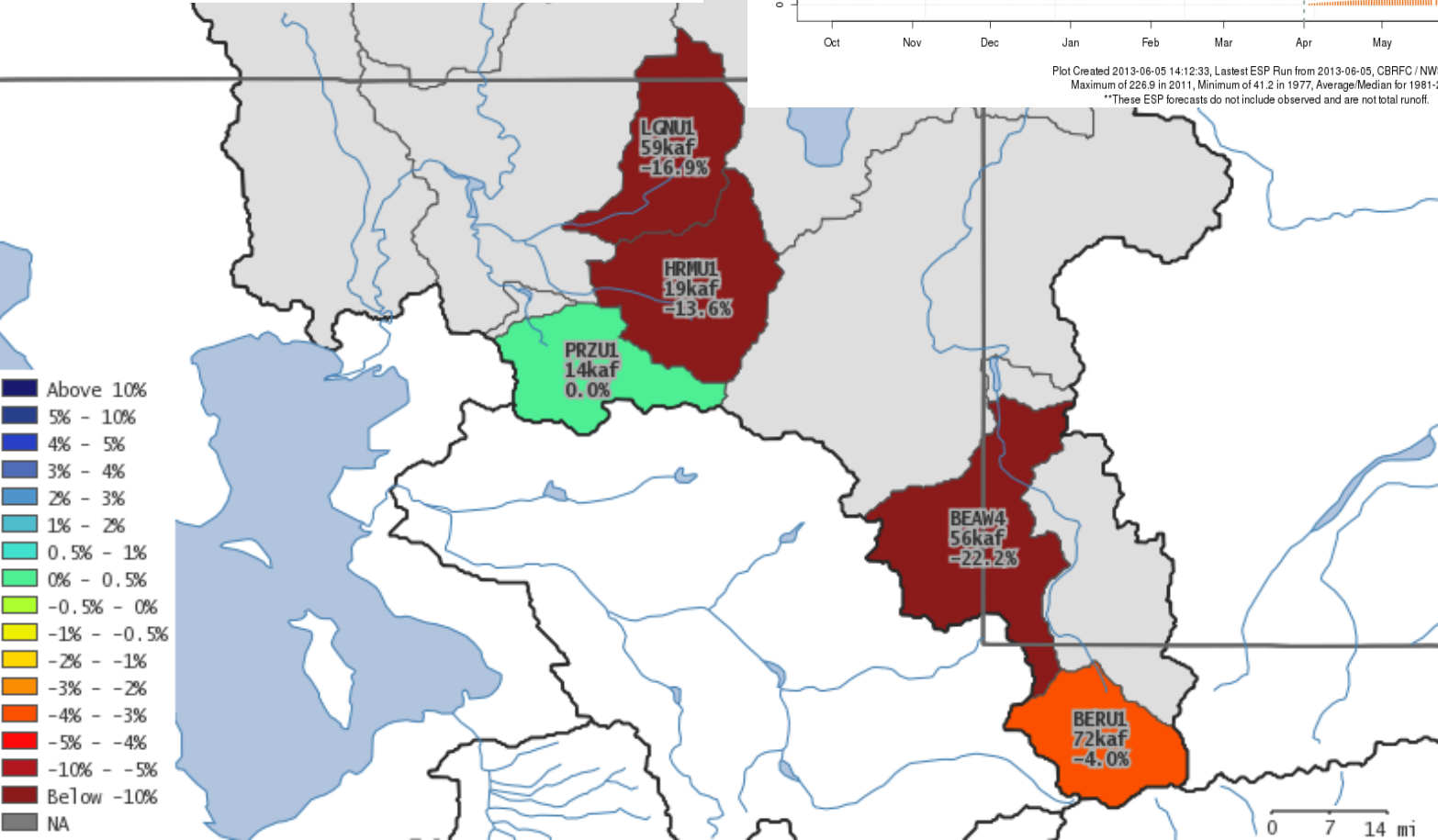
2013 Runoff Forecast Apr-Jul
Bear - Utah-wyoming State Line- Nr (BERU1)

Bear – UT/WY Stateline:

MIN (90%) 58 KAF
MP (50%) 72 KAF 64% avg
MAX (10%) 90 KAF



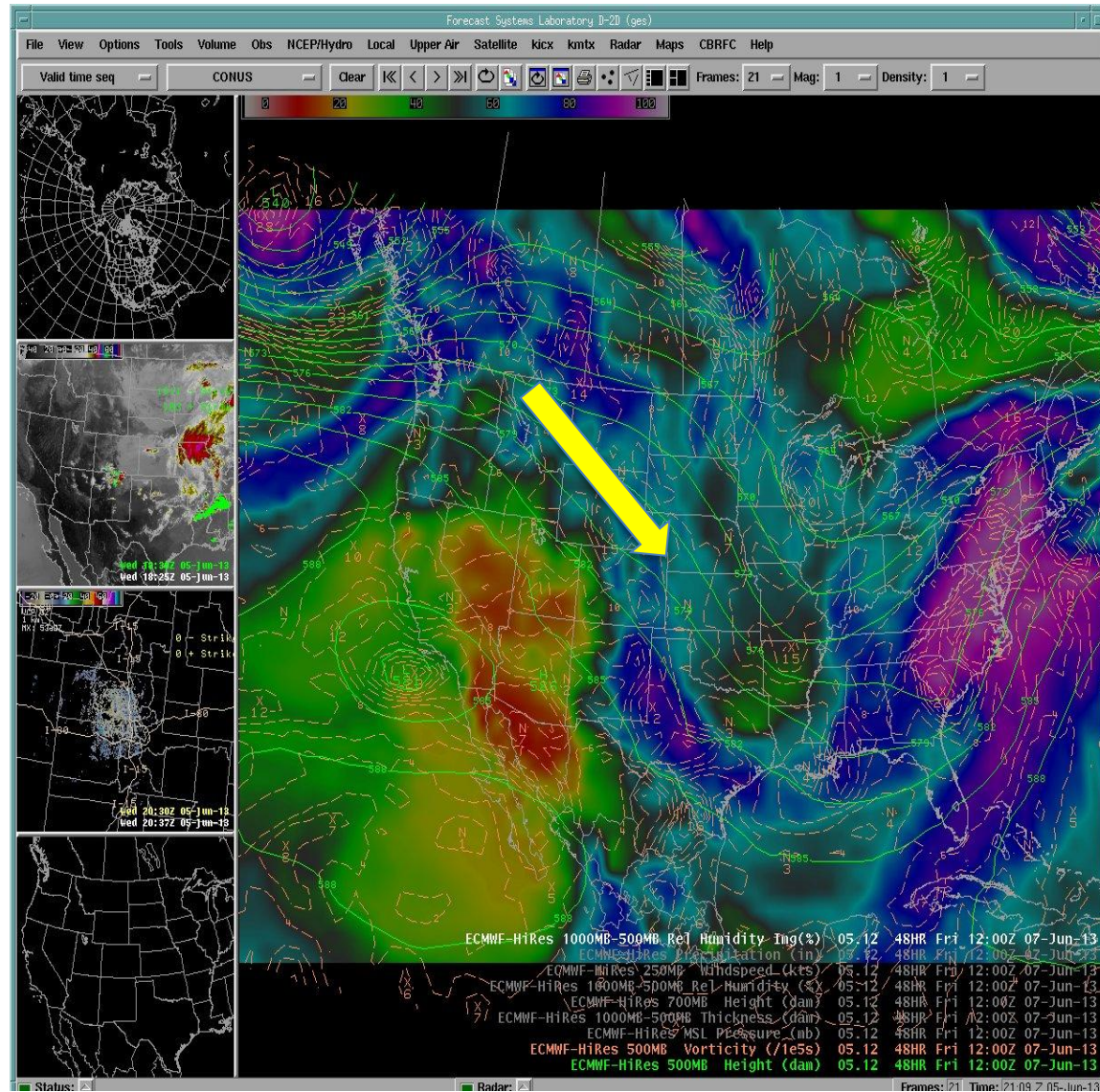
Plot Created 2013-06-05 14:12:33, Lastest ESP Run from 2013-06-05, CBRFC / NWS / NOAA
 Maximum of 226.9 in 2011, Minimum of 41.2 in 1977, Average/Median for 1981-2010.
 **These ESP forecasts do not include observed and are not total runoff.



- Above 10%
- 5% - 10%
- 4% - 5%
- 3% - 4%
- 2% - 3%
- 1% - 2%
- 0.5% - 1%
- 0% - 0.5%
- 0.5% - 0%
- 1% - -0.5%
- 2% - -1%
- 3% - -2%
- 4% - -3%
- 5% - -4%
- 10% - -5%
- Below -10%
- NA

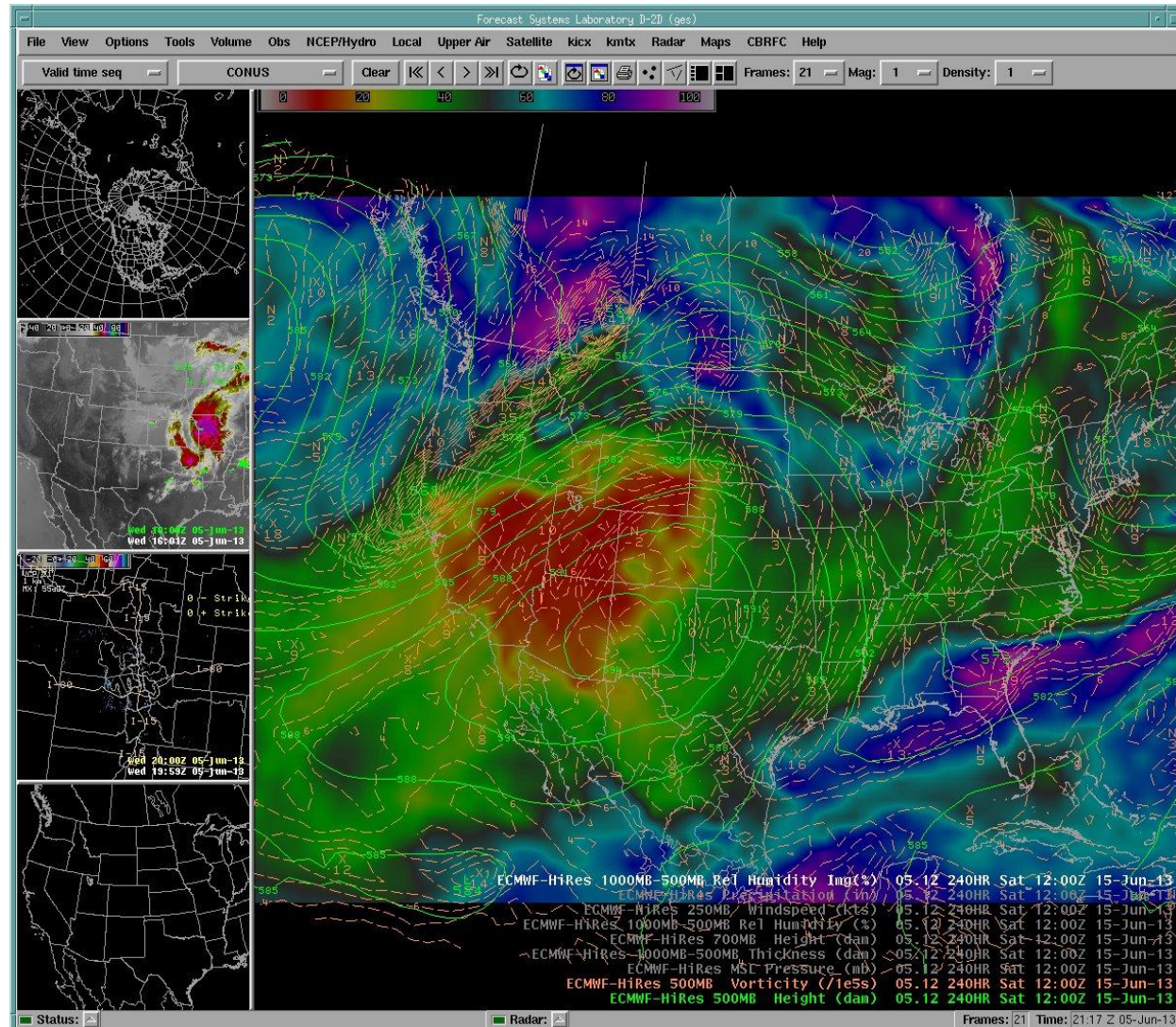
Upcoming Weather – Short Term

- Northwest flow over Wyoming and Colorado. Some instability exists but limited moisture.
- A few mountain thunderstorms may kick off during the afternoon and evening hours in these areas..
- Not much precipitation expected. Dry with warming conditions over Utah.



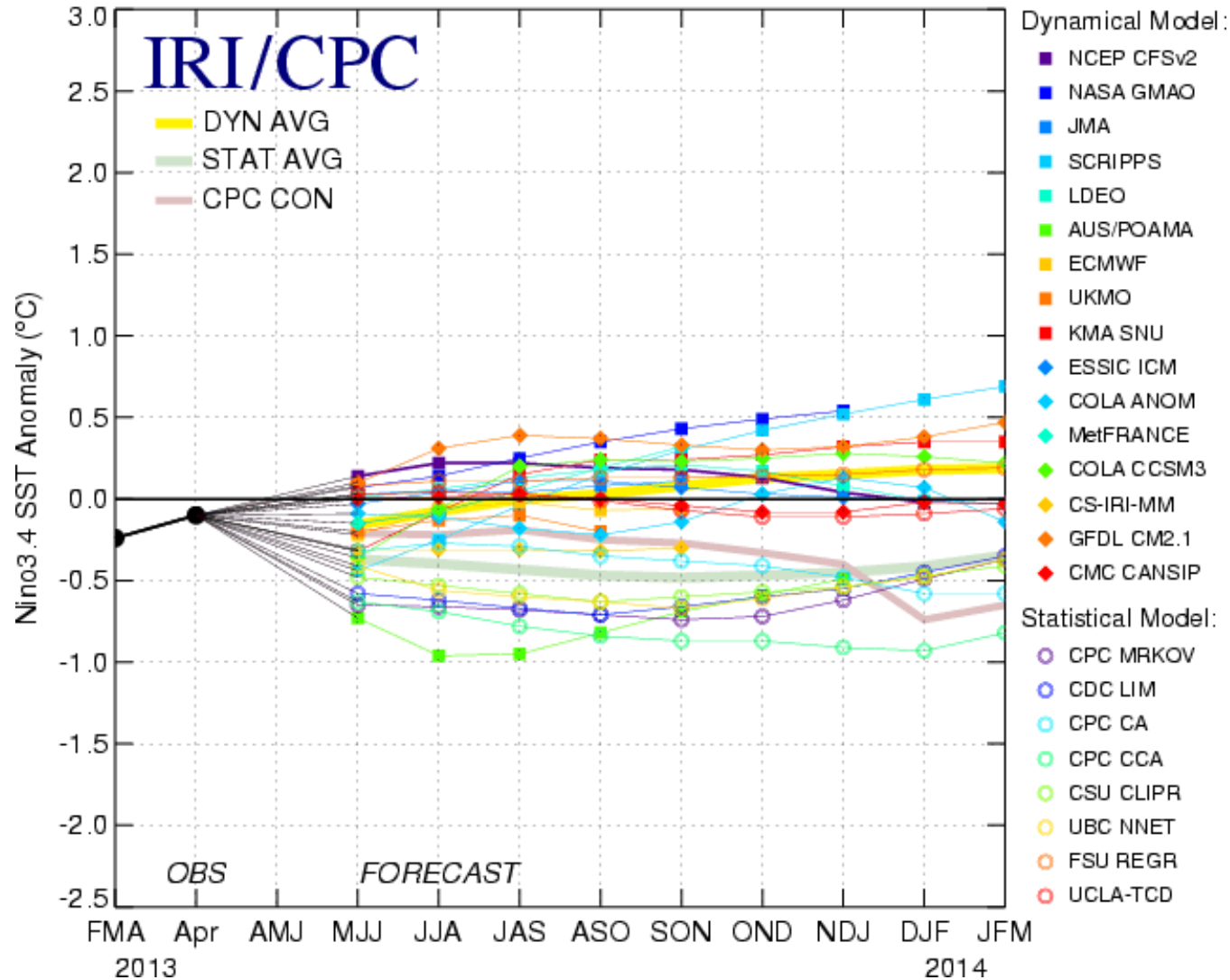
Upcoming Weather – Extended

- Ridge builds into the area this weekend.
- Above average temperatures, breezy, hot. Summer is here.
- Disturbance next week might bring a chance for afternoon thunderstorms, but limited moisture.

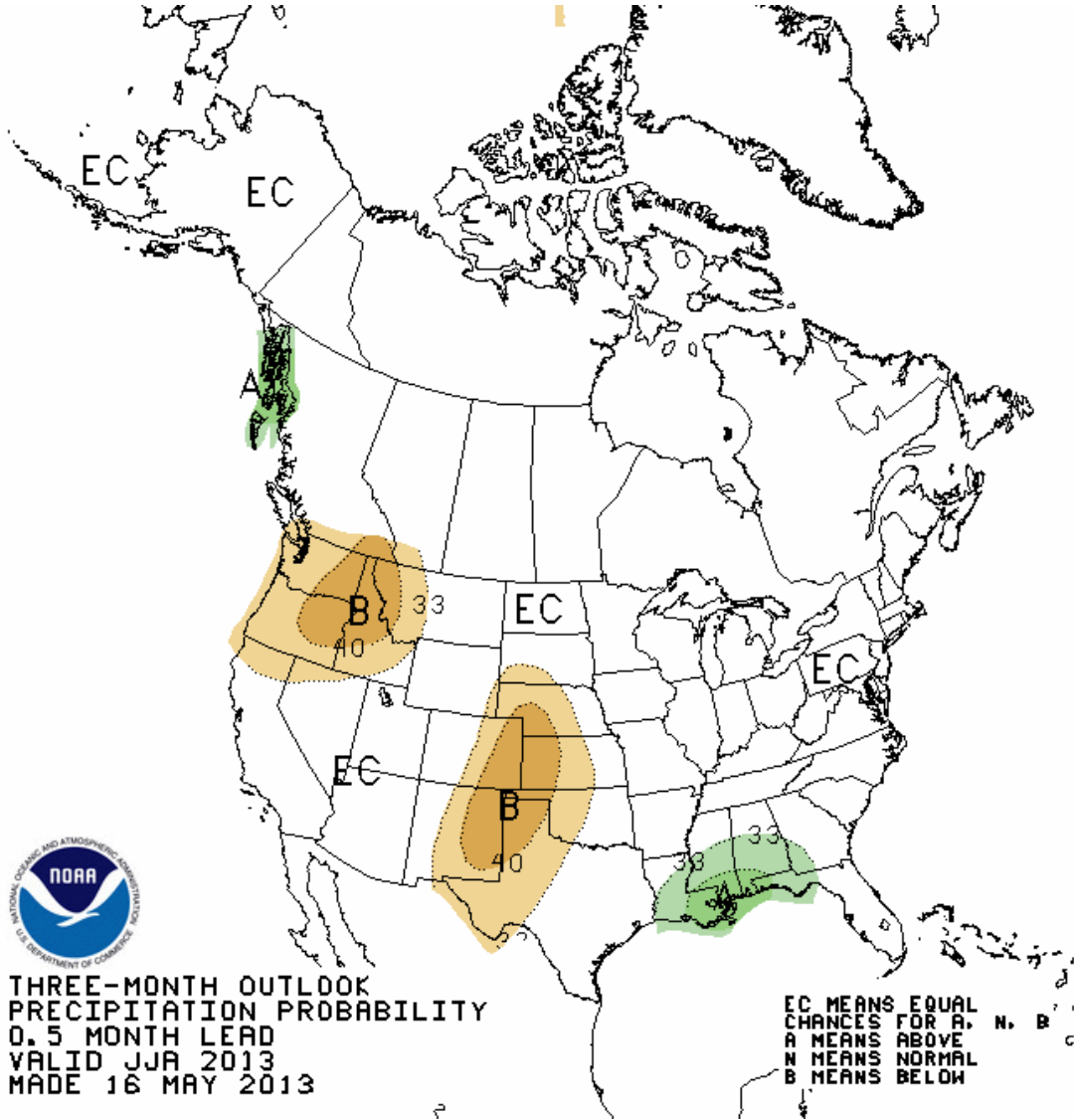


ENSO Update: Neutral Conditions through summer

Mid-May 2013 Plume of Model ENSO Predictions



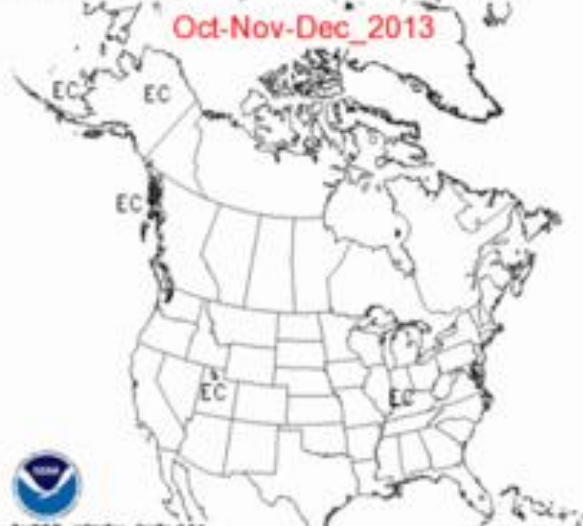
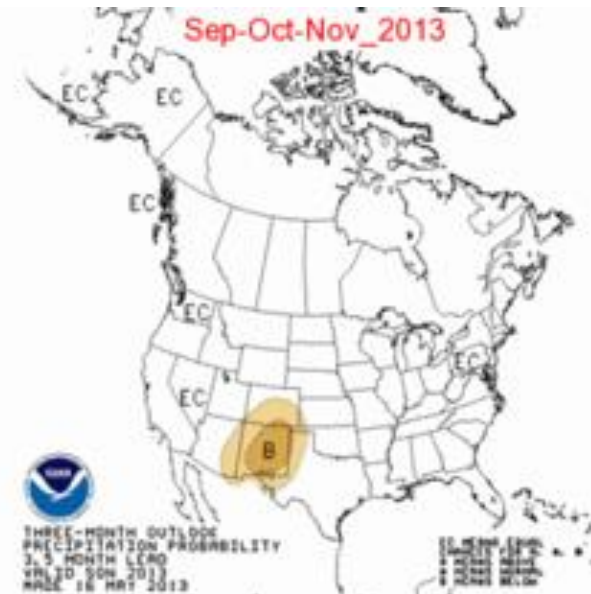
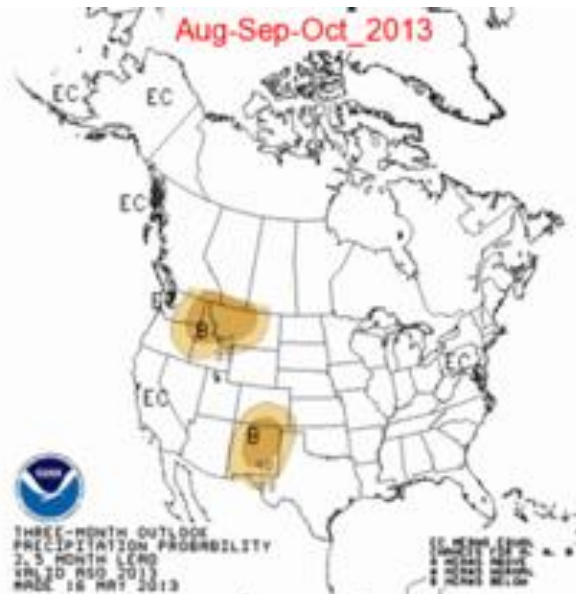
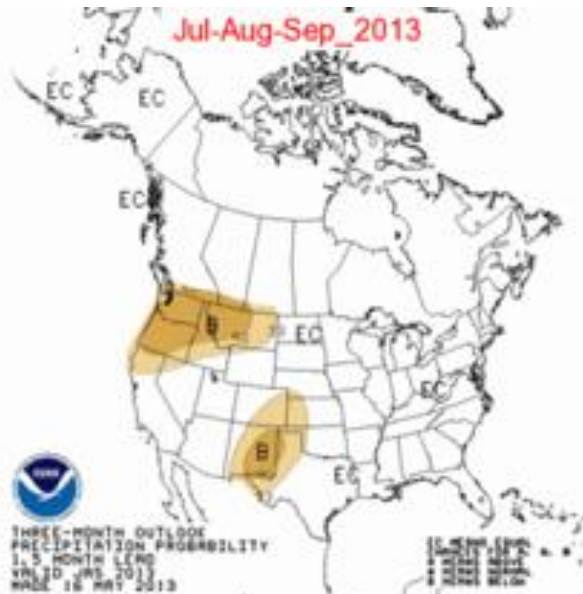
Seasonal Outlook: June – August 2013



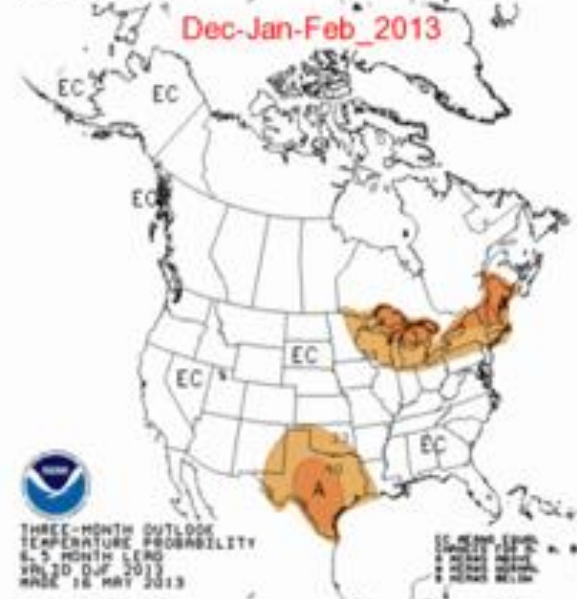
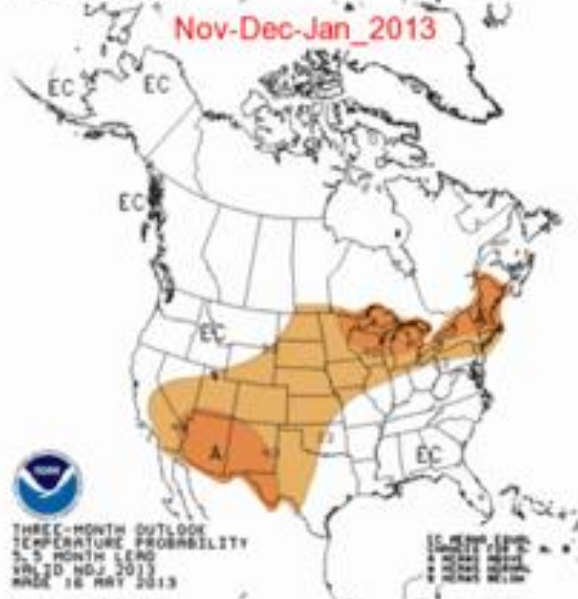
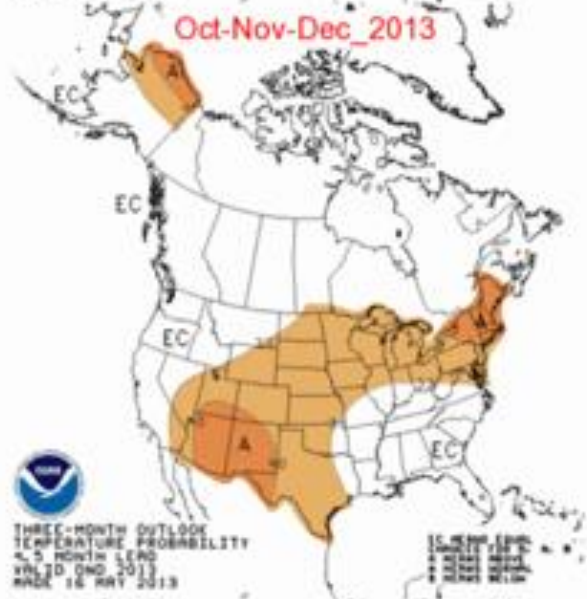
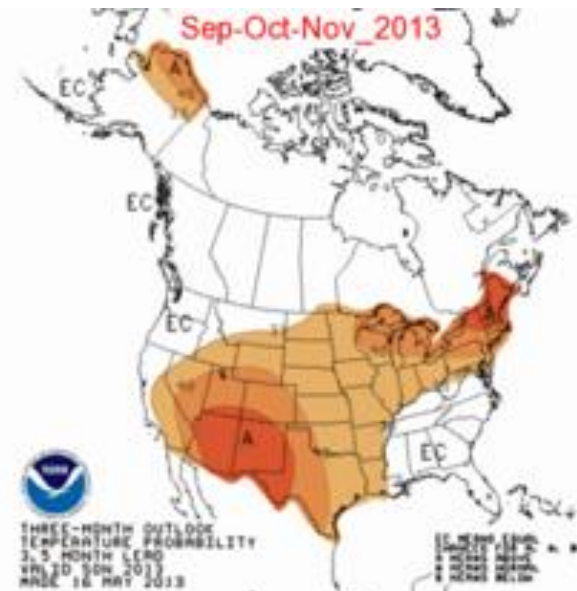
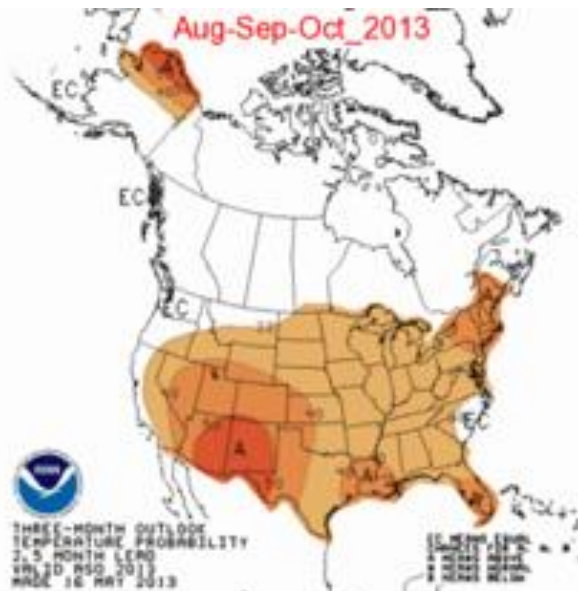
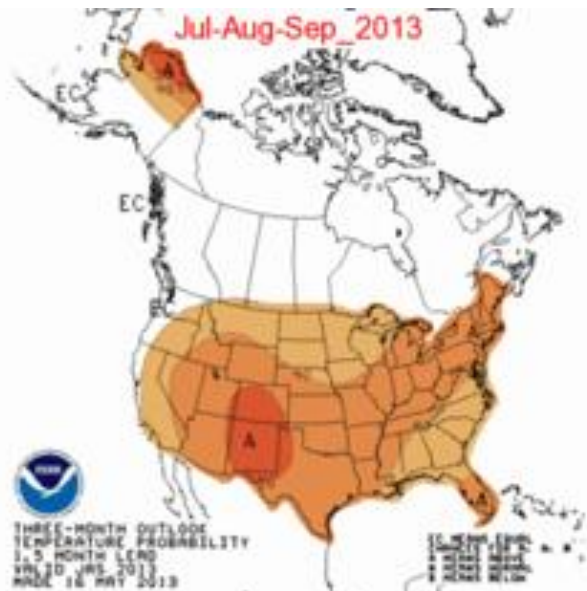
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID JJA 2013
MADE 16 MAY 2013

EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

Climate Prediction Center – Long Range Precipitation Outlook



Climate Prediction Center – Long Range Temperature Outlook



Peak Flood Probability Legend

◇ No Forecast ◇ No Flood Stage ◇ <10 ◇ >10 ◇ >25 ◇ >50

Options (on/off): [Plot](#)

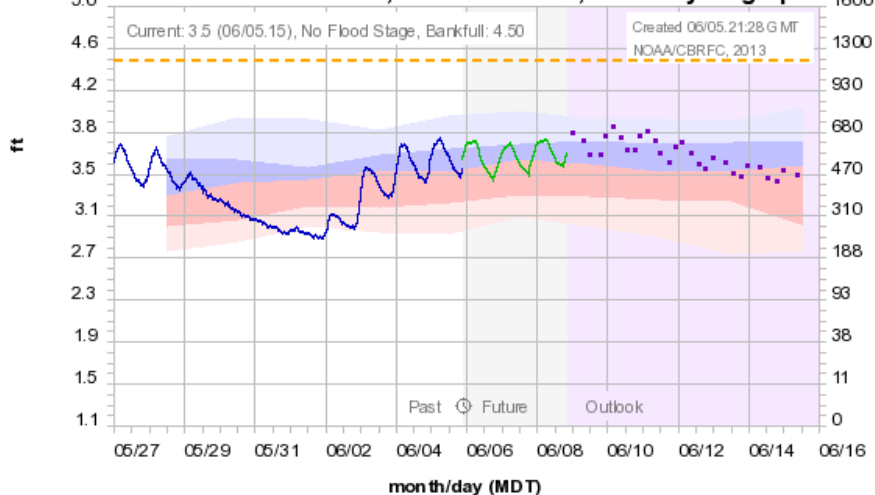
Area: [CBRFC](#) [Green](#) [Colorado](#) [San Juan](#) [L Powell](#) [Great](#) [Sevier](#) [Virgin](#) [Low Col](#)

Click column heading to sort by that data. Click ID to view point info.

	Area	Sub Area	NWS ID	DS	Note	River	Location	Flood Probability	Mean Daily 90	MD 75	MD 50	MD 25	MD 10	Instantaneous 90	I 75	I 50	I 25	I 10	Issue Date	Observed Peak to Date	Observed Date	
1	Colorado	Mainstem	EGLC2	1		Colorado	Dotsero- Nr	◇	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2013-06-01	5620	2013-05-18	
<p>Peak has already occurred, see Current Hydrograph of EGLC2 for Forecast.</p>																						
2	Colorado	Mainstem	SKEC2	2		Snake	Montezuma- Nr	◇	NA	NA	NA	375	450	NA	NA	NA	490	580	2013-06-01	230	2013-05-27	
<p>Peaking soon, see Current Hydrograph of SKEC2 for Forecast.</p>																						
3	Colorado	Mainstem	TCFC2	3		Tenmile CK	Frisco- N Tenmile Ck- Blo	◇	NA	NA	NA	700	850	NA	NA	NA	890	1100	2013-06-01	495	2013-05-27	
<p>Peaking soon, see Current Hydrograph of TCFC2 for Forecast.</p>																						

Colorado Basin River Forecast Center

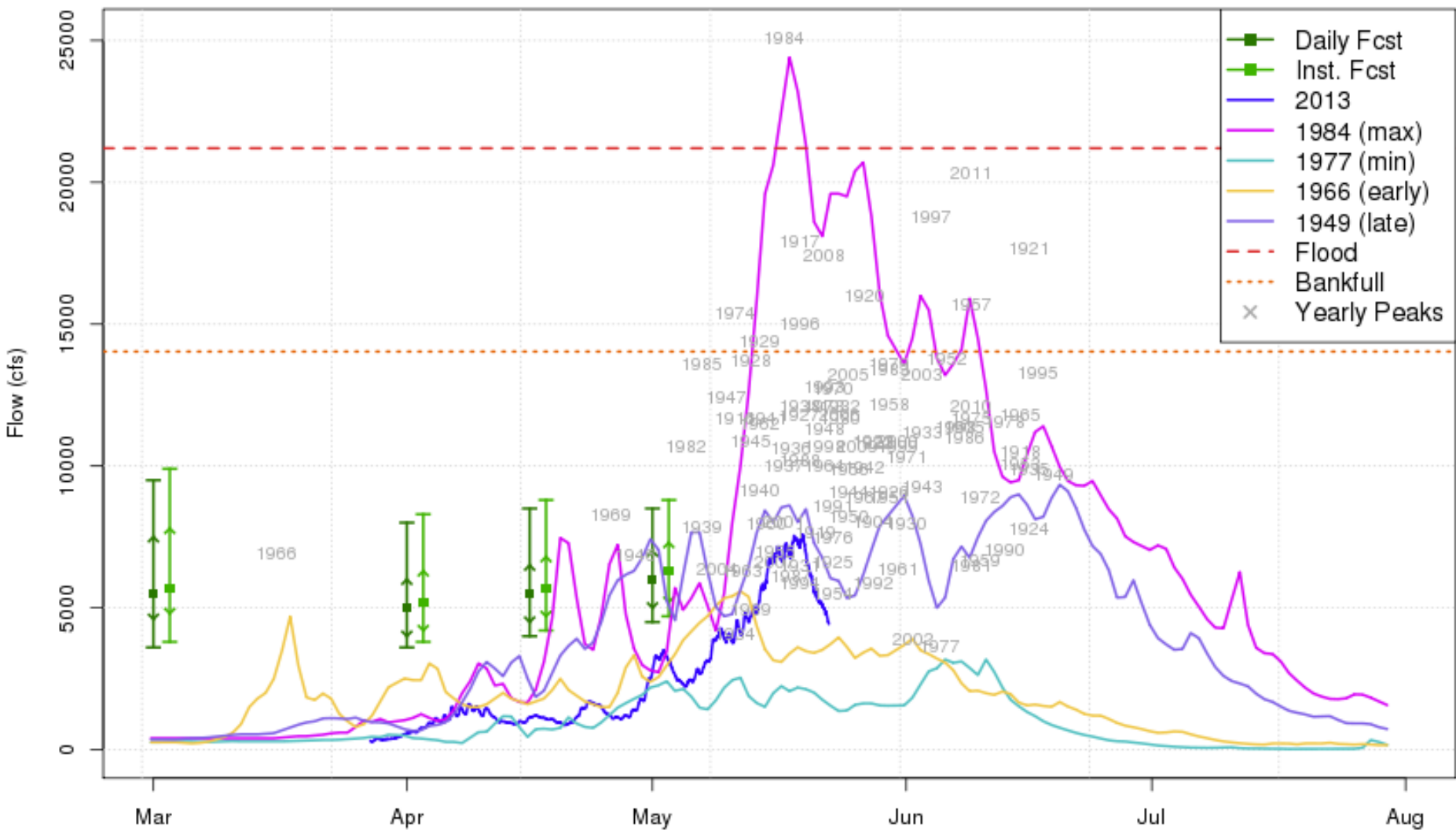
TENMILE CK - FRISCO, N TENMILE CK, BLO - Hydrograph



Observed **Forecast** (06/05.14:00) **Outlook** (increasing uncertainty) **Bankfull 4.50**

Historical Exceedance Probability (USGS): 90-75% 75-50% 50-25% 25-10%

2013 Peak Flow Forecast Yampa - Maybell- Nr (MBLC2)



Plot Created 2013-05-22 08:05:59, CBRFC / NWS / NOAA
 Maximum peak of 25100 on 1984-05-17, Minimum peak of 3620 on 1977-06-05
 Earliest peak of 6900 on 1966-03-16, Latest peak of 9730 on 1949-06-19
 Yearly Peaks are Instantaneous (Inst). Previous year data are Mean Daily (Daily).

Water Supply - Online



Click on WATER SUPPLY

Select feature of interest

Select area of interest

Forecast points are clickable

News: [Water Supply Forecast Publications for March](#)

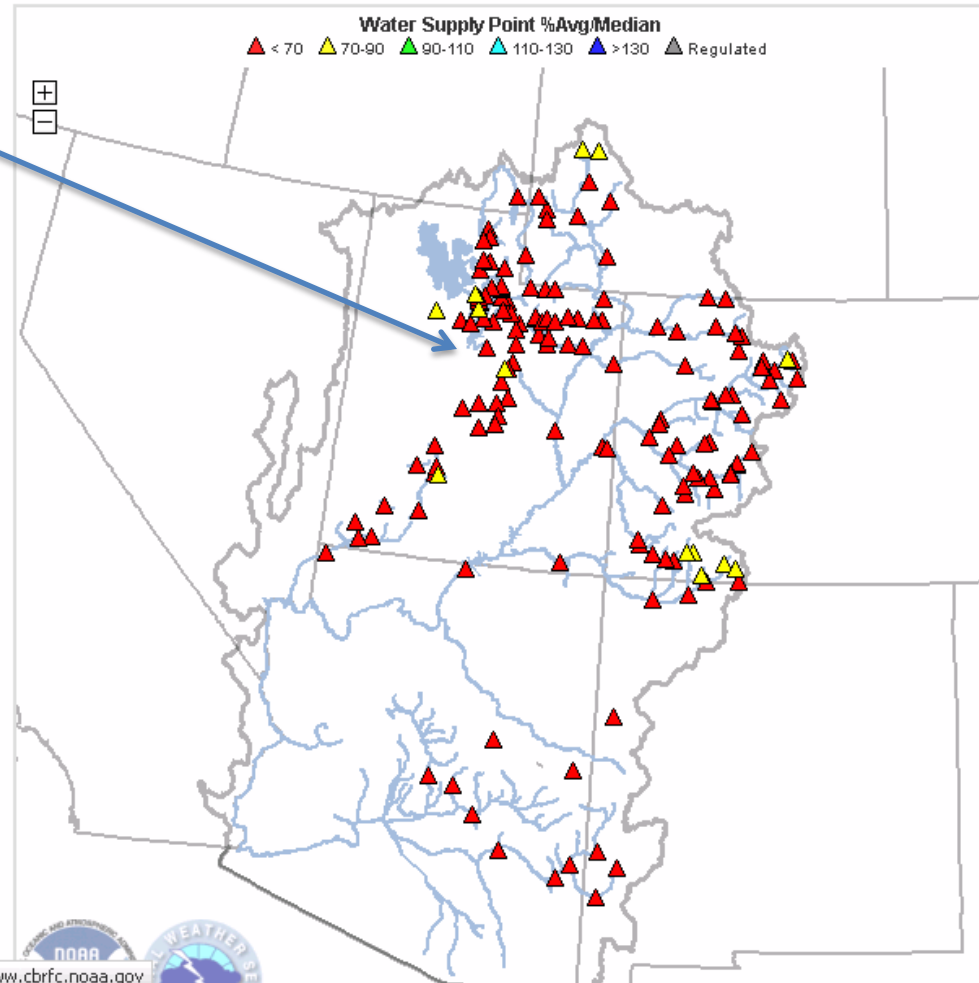
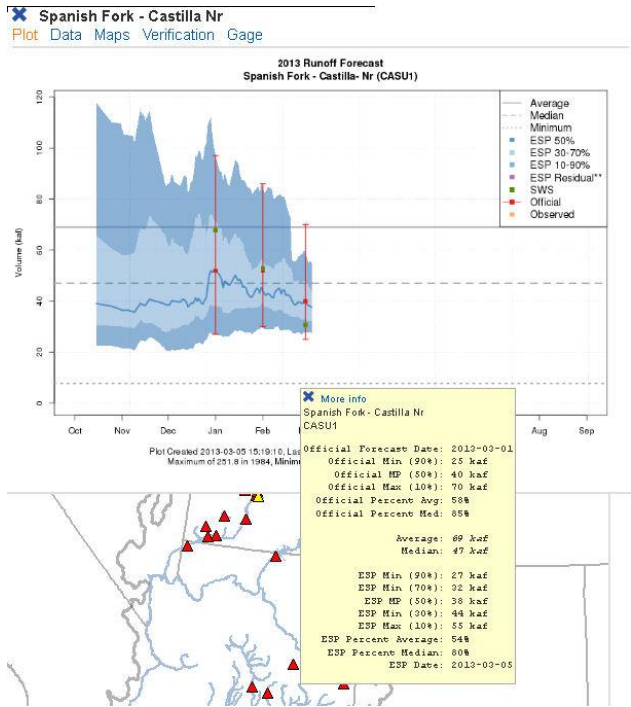
[RIVERS](#) [SNOW](#) [WATER SUPPLY](#) [RESERVOIRS](#) [WEATHER](#)

[Forecast Map](#) [Forecast List](#) [Discussion](#) [Publication](#) [Archive](#) [Daily ESP](#)

Areas: [CBRFC](#) [Upper Colorado](#) [Green](#) [San Juan](#) [Great](#) [Sevier](#) [Virgin](#) [Lower Colorado](#)

SEARCH POINTS

****Changes:** Click Point for Name then Choose Option for Details, Click Map to Zoom. Hover has been removed for touch screen compatibility.



CBRFC News

- Basin Focal Points (Available to discuss forecasts: 801.524.5130 or email)
 - Upper Colorado: Brenda Alcorn (brenda.alcorn@noaa.gov)
 - Green: Ashley Nielson (ashley.nielson@noaa.gov)
 - San Juan / Gunnison: Greg Smith (greg.smith@noaa.gov)
 - Dolores: John Lhotak (john.lhotak@noaa.gov)
 - Great Basin: Brent Bernard (brent.bernard@noaa.gov)
 - Sevier / Virgin: Stacie Bender (stacie.bender@noaa.gov)
 - Lower Colorado (below Lake Powell): Tracy Cox (tracy.cox@noaa.gov)
- Misc:
 - New water supply email notification list – are you on it ??
 - Send a request to greg.smith@noaa.gov
 - Stakeholder forum this fall at the CBRFC
 - Verification Webinar in the fall
 - Forecast Methods Webinar (Ensemble Streamflow Prediction-ESP) next winter

Feedback, Questions, Concerns always welcome....



Greg Smith

CBRFC Senior Hydrologist

Phone: 801.524.5130

Email: greg.smith@noaa.gov

