

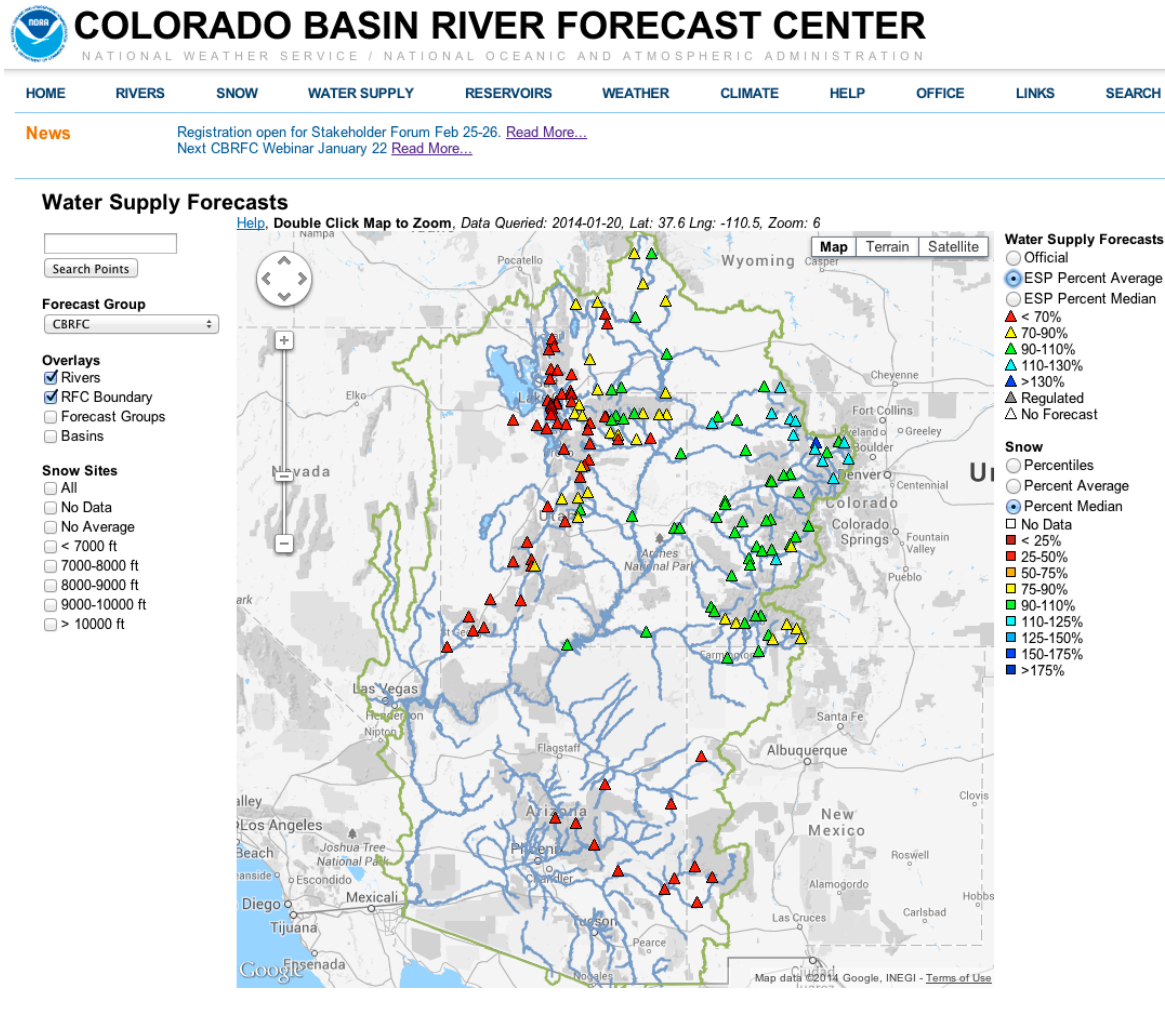
CBRFC
January 2014
Mid-month Update Webinar

1pm, January 22, 2014

Kevin Werner

Outline

- Weather and snow update
- Daily ESP forecasts described
- CBRFC webpage tour





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Major Categories – also on the bottom of the page with more information

Water Supply Forecasts

Help, Double Click Map to Zoom, Data Queried: 2014-01-20, Lat: 37.6 Lng: -110.5, Zoom: 6

Search Points

Forecast Group

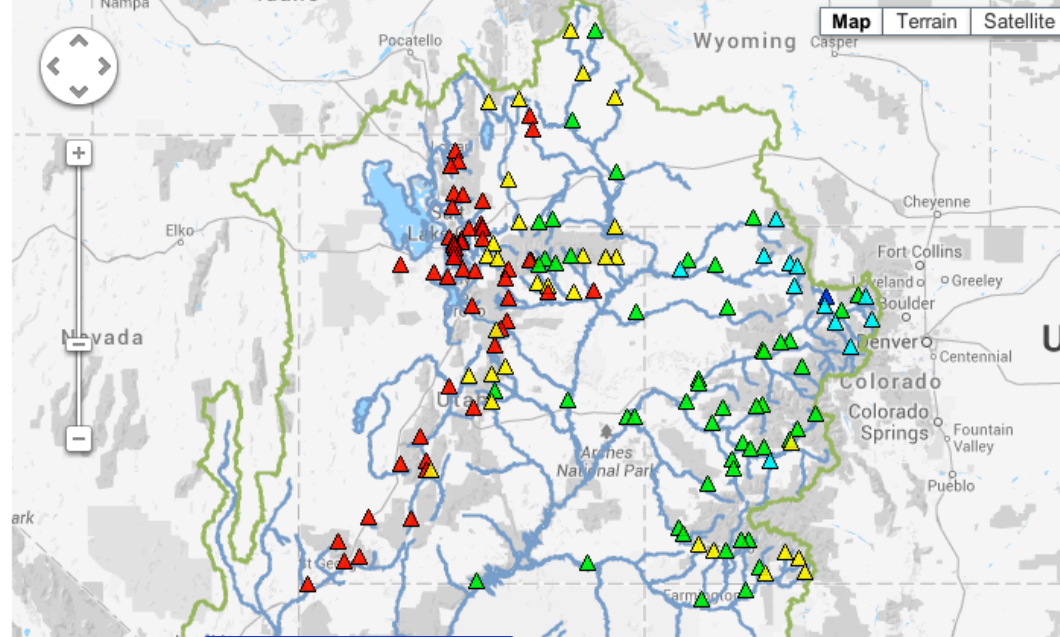
CBRFC

Overlays

- Rivers
- RFC Boundary
- Forecast Groups
- Basins

Snow Sites

- All
- No Data
- No Average
- < 7000 ft
- 7000-8000 ft
- 8000-9000 ft
- 9000-10000 ft
- > 10000 ft



Map Terrain Satellite

Water Supply Forecasts

- Official
- ESP Percent Average
- ESP Percent Median
- < 70%
- 70-90%
- 90-110%
- 110-130%
- >130%
- Regulated
- No Forecast

Snow

- Percentiles
- Percent Average
- Percent Median
- No Data
- < 25%
- 25-50%
- 50-75%
- 75-90%
- 90-110%
- 110-125%
- 125-150%
- 150-175%
- >175%

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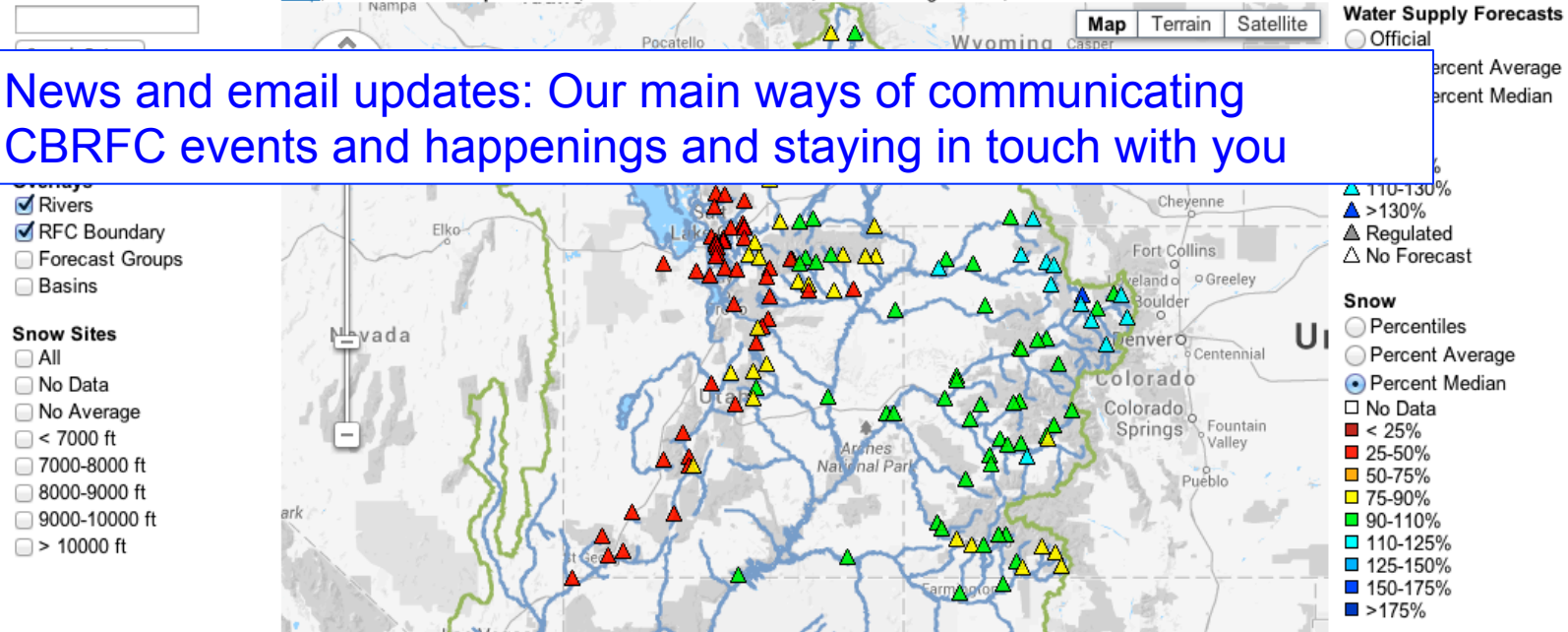
News

Registration open for Stakeholder Forum Feb 25-26. [Read More...](#)
Next CBRFC Webinar January 22 [Read More...](#)

Water Supply Forecasts

[Help](#), [Double Click Map to Zoom](#), Data Queried: 2014-01-20, Lat: 37.6 Lng: -110.5, Zoom: 6

News and email updates: Our main ways of communicating CBRFC events and happenings and staying in touch with you



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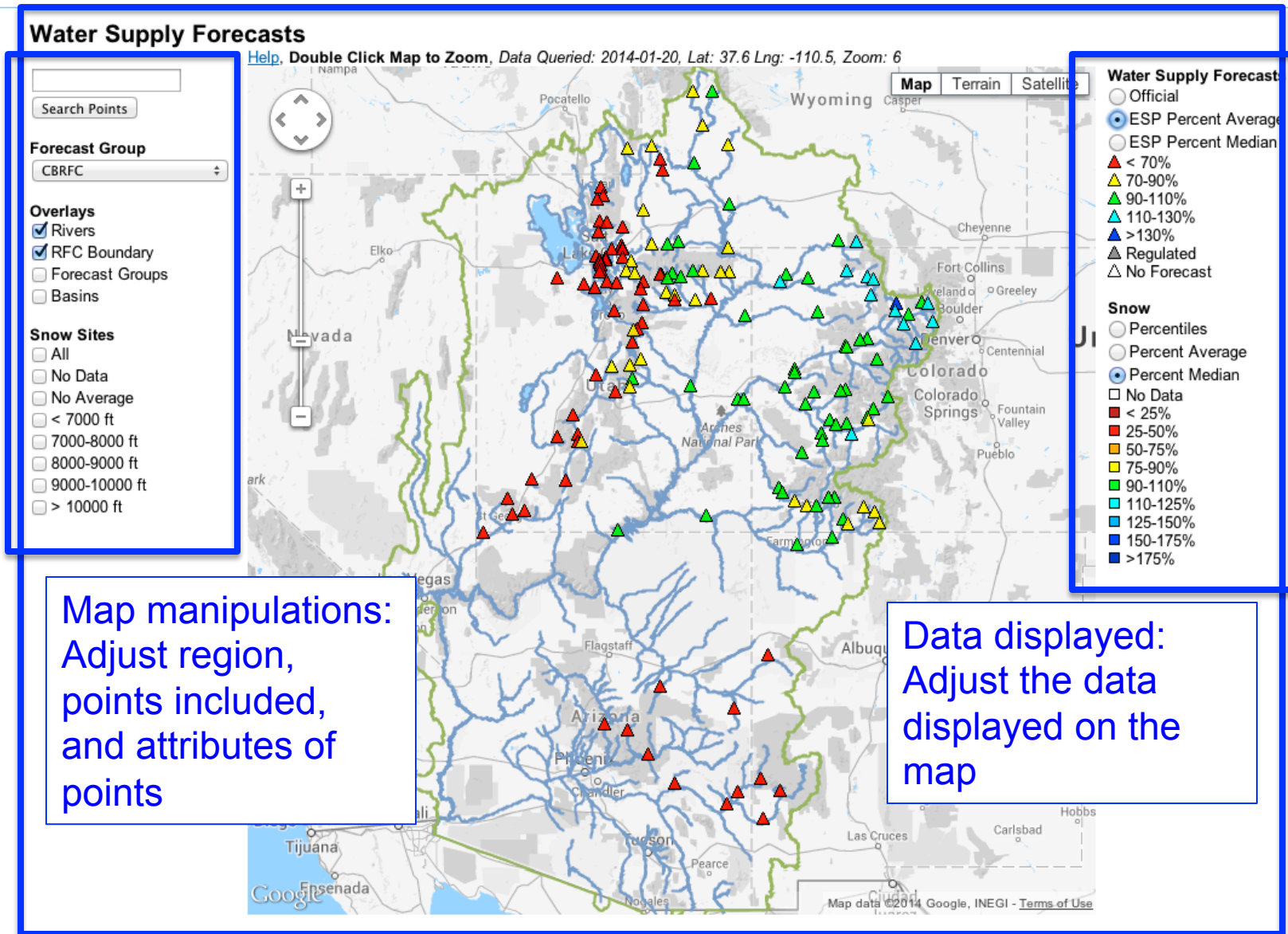
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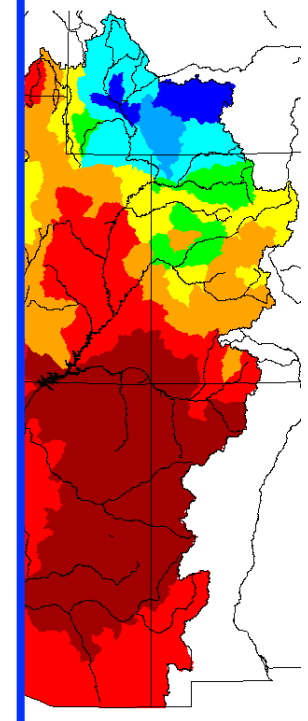
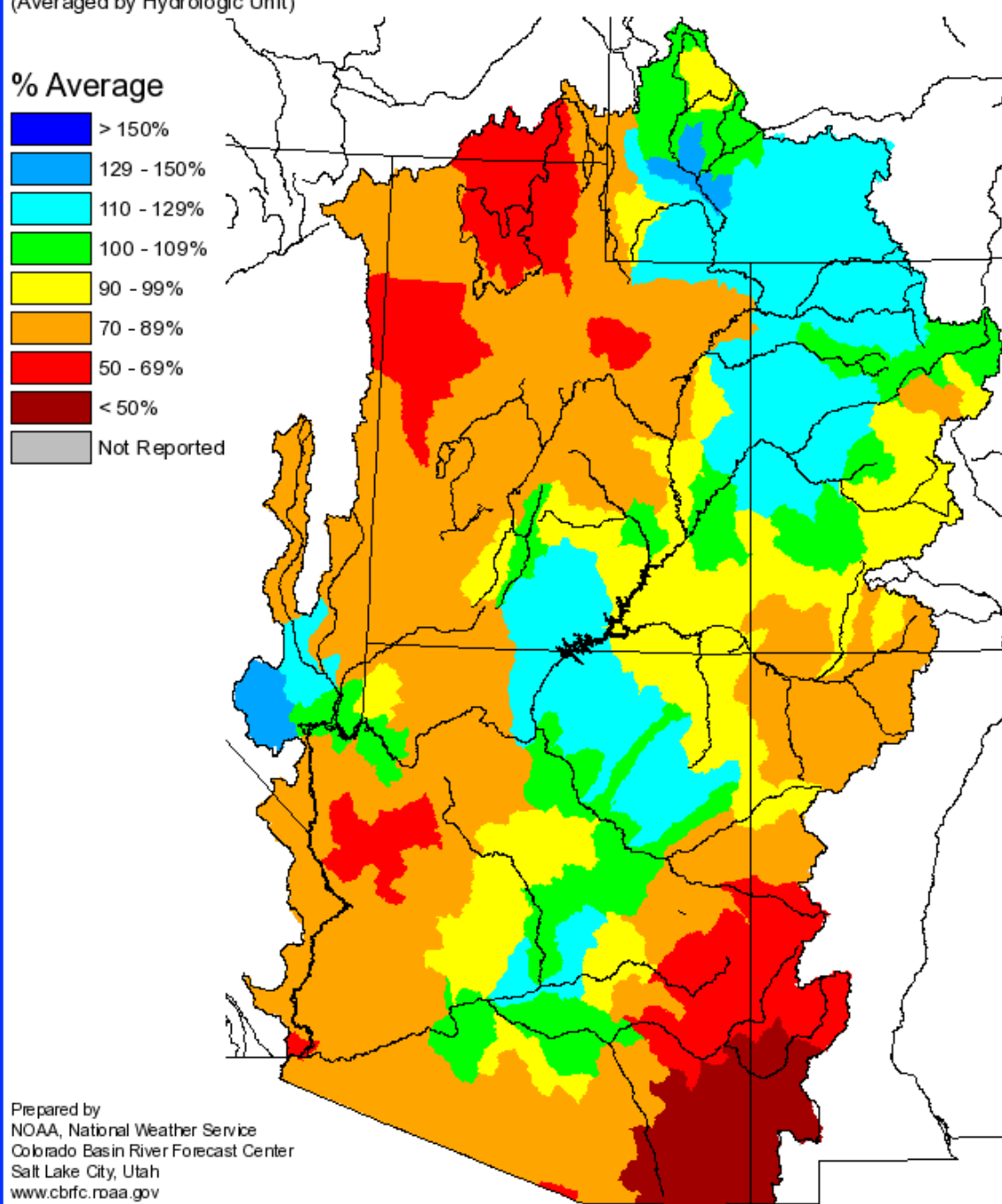
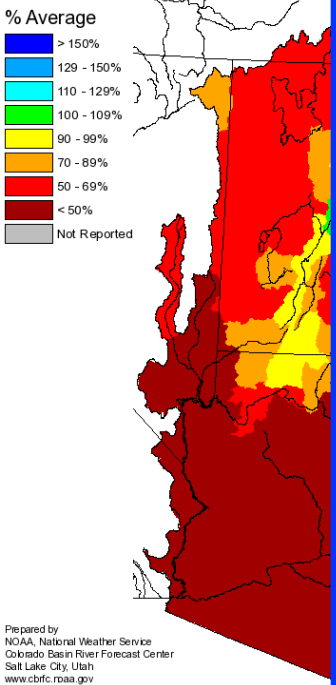
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Maps: Major piece of website revamp was to integrate snow, short lead river, and long lead water supply forecasts. Eventually we hope to integrate other pieces including long lead peak forecasts and reservoirs.

Webpage 101





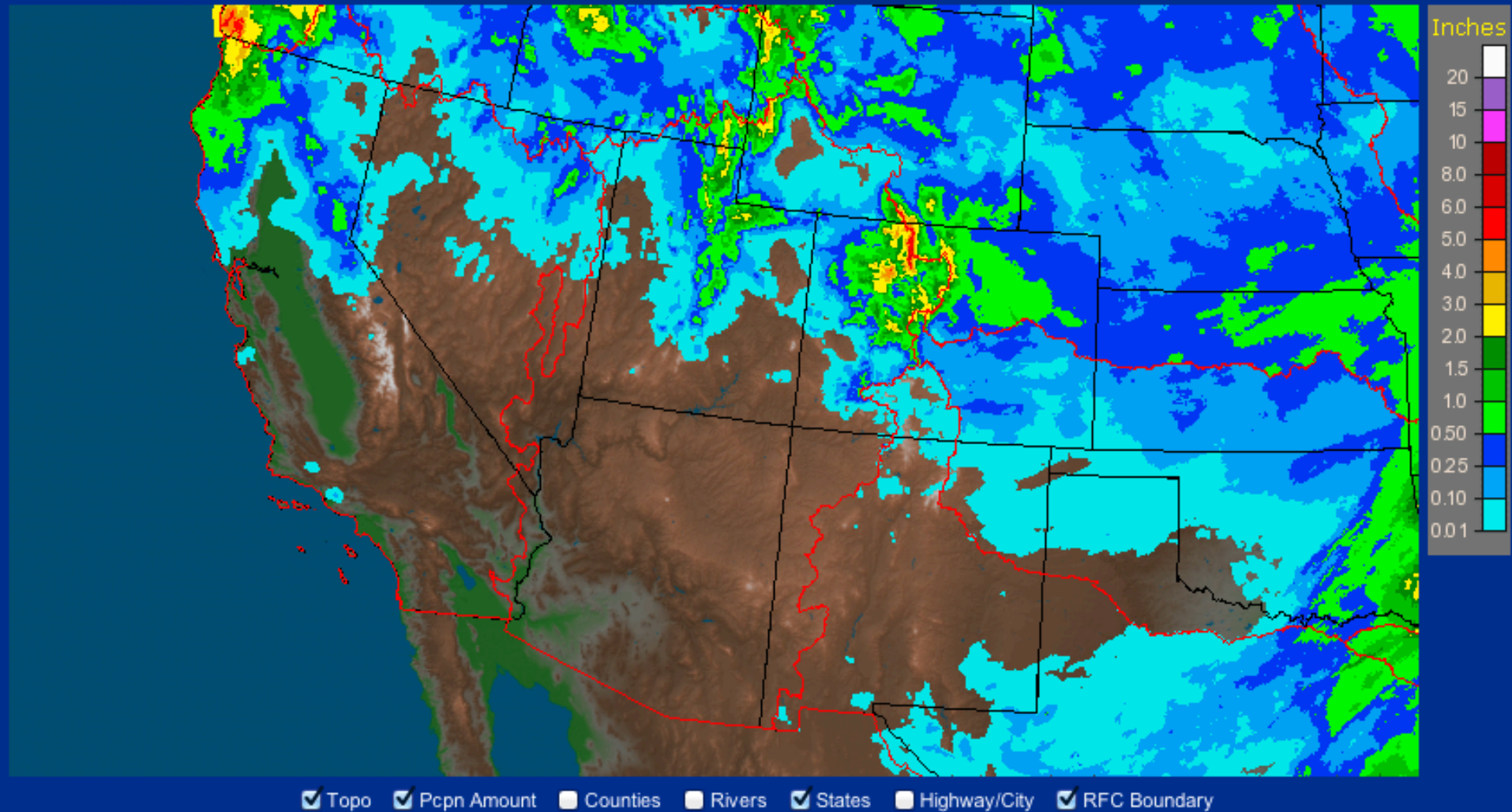
Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

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



Since January 1

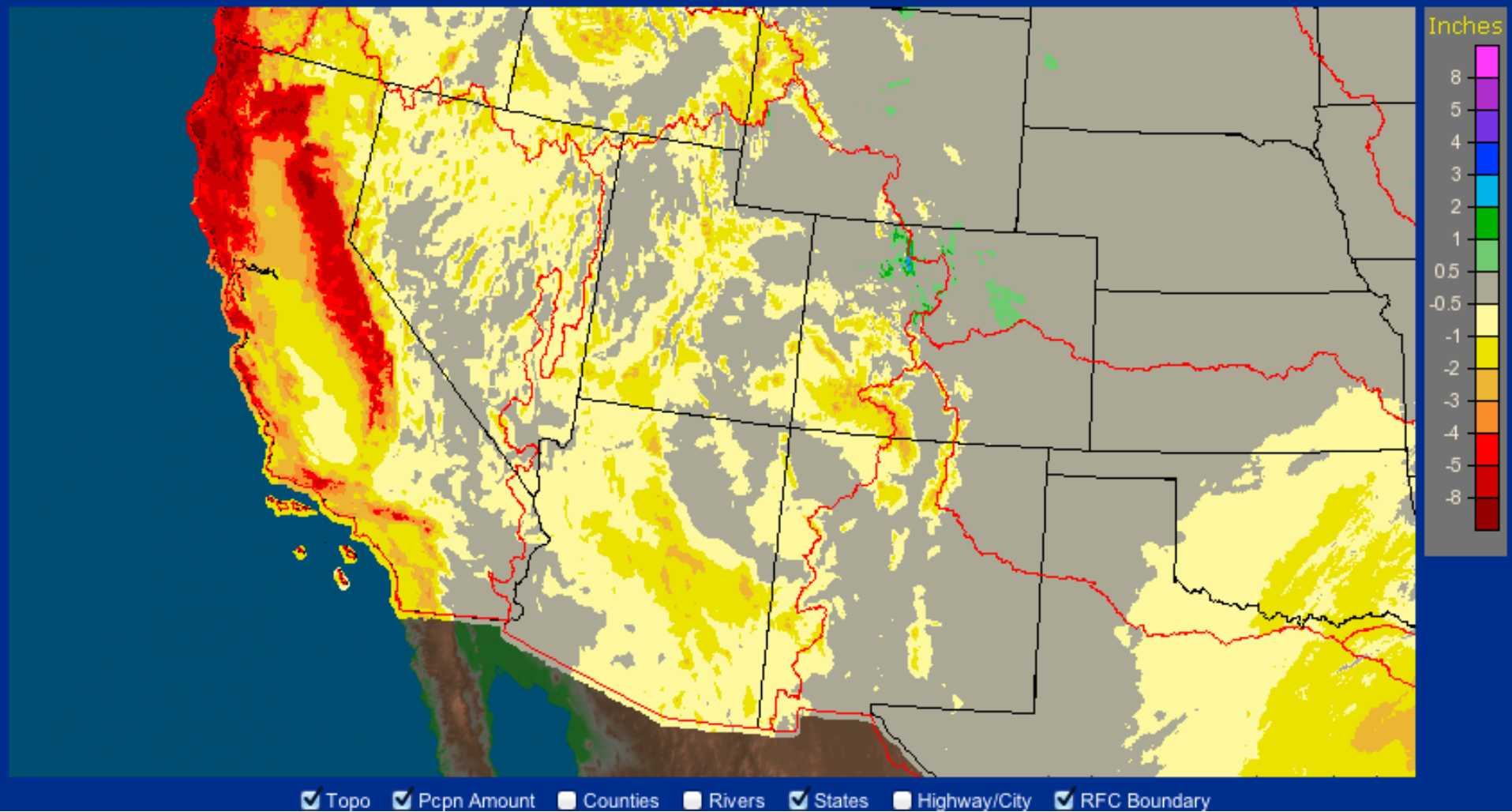
Colorado Basin RFC Salt Lake City, UT: Current Month to Date Observed Precipitation
Valid at 1/21/2014 1200 UTC - Created 1/21/14 15:41 UTC



Web Reference: water.weather.gov/precip

Since January 1

Colorado Basin RFC Salt Lake City, UT: Current Month to Date Departure from Normal Precipitation
Valid at 1/21/2014 1200 UTC - Created 1/21/14 15:43 UTC



Web Reference: water.weather.gov/precip



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Registration open for...
Next CBRFC Webi...

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Water Supply Forecasts

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Search Points

Forecast Group

CBRFC

Overlays

- Rivers
- RFC Boundary
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- Basins

Snow Sites

- All
- No Data
- No Average
- < 7000 ft
- 7000-8000 ft
- 8000-9000 ft
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- > 10000 ft



Data Queried: 2014-01-20, Lat: 37.6 Lng: -110.5, Zoom: 6



Map Terrain Satellite

Water Supply Forecasts

- Official
- ESP Percent Average
- ESP Percent Median

Groups

SNOTEL data from NRCS.

- Bear River Drainage (bulu1 fbni1 hfku1 kllw4 llku1 lbnu1 ltbu1 mcru1 tglu1 oxsi1 sepi1 dpbu1)
- Bear River Headwaters (hfku1 llku1 chcu1)
- Bear River below Woodruff (dbpu1 mcru1 bulu1 kllw4 givi1 fbni1)
- Beaver Minersville (bgfu1 mvyu1)
- Clear Creek Sevier (kmnu1)
- Cottonwood Canyons (mldu1 briu1 sbdu1)
- Logan BlacksFork Little Bear Basins (bulu1 tglu1 fbni1)
- Ogden River Drainage (blpu1 bltu1 dbpu1 hrgu1 ltbu1 mcru1)
- Provo River Basin (trlu1 dstu1 nwyu1 stdu1 timu1)
- Sevier River Basin Blo Piute (mcd1 rpru1 seeu1 bvdu1 pkl1)
- Sevier River Basin Headwaters (wflu1 mdvu1 cvyu1 lvju1 hrsu1 wstu1 bgfu1)
- Sevier River Drainage (mdvu1 bxcu1 frlu1 pkl1 cvyu1 wstu1 kmnu1 pcku1 mcd1 bvdu1 hrsu1 lvju1)
- Six Creeks Headwaters (lopu1 psuu1 ml1du1 briu1 sbdu1 thcu1 timu1 rbsu1)
- Smith Fork Bear Basin (cllw4 sltw4 kllw4 incw4)
- Spanish Fork Drainage (clcu1 crku1 pysu1 wrvu1 stdu1)
- Utah Lake Drainage (clcu1 crku1 cucu1 dstu1 nwyu1 pysu1 rbsu1 timu1 trlu1 wrvu1)
- Weber Basin Headwaters (smmu1 trlu1 ccku1 chcu1)
- Weber River Drainage (blpu1 bltu1 ccku1 chcu1 dbpu1 hrgu1 fmnu1 mcru1 trlu1 thcu1 nwyu1 smmu1 psuu1 haru1)

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Webpage 101

Snow Conditions

Help, Double Click Map to Zoom, Data Queried: Tue, 21 Jan 2014 09:30:01 -0700, Lat: 37.6 Lng: -110.5, Zoom: 6

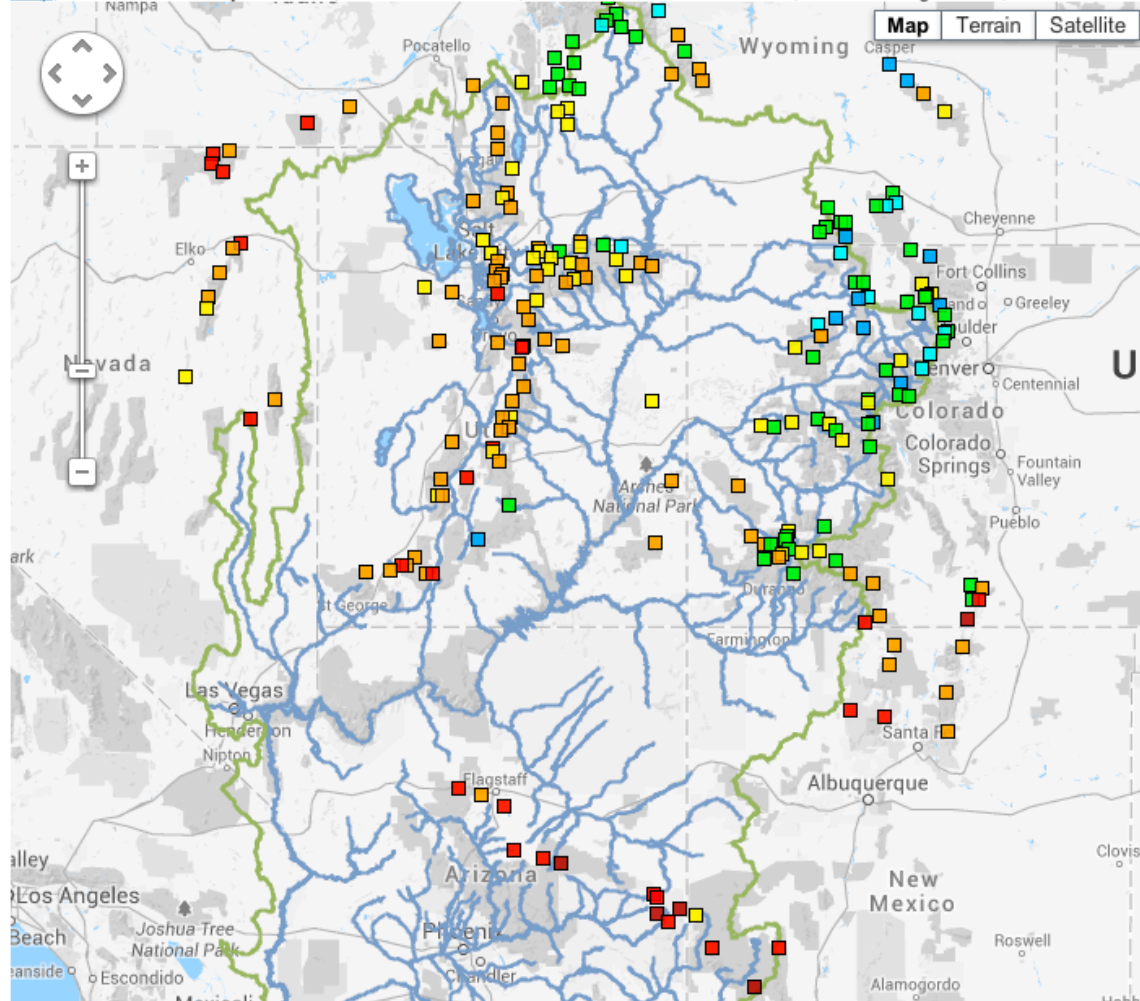
SNOW

Search Points

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CBRFC

Overlays
 Rivers
 RFC Boundary
 Forecast Groups
 Basins

Snow Sites
 All
 No Data
 No Average
 < 7000 ft
 7000-8000 ft
 8000-9000 ft
 9000-10000 ft
 > 10000 ft



Snow

- Percentiles
- Percent Average
- Percent Median
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- < 25%
- 25-50%
- 50-75%
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- 90-110%
- 110-125%
- 125-150%
- 150-175%
- >175%

January 21, 2014

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

SNOW

Snow Conditions

Forecast Group

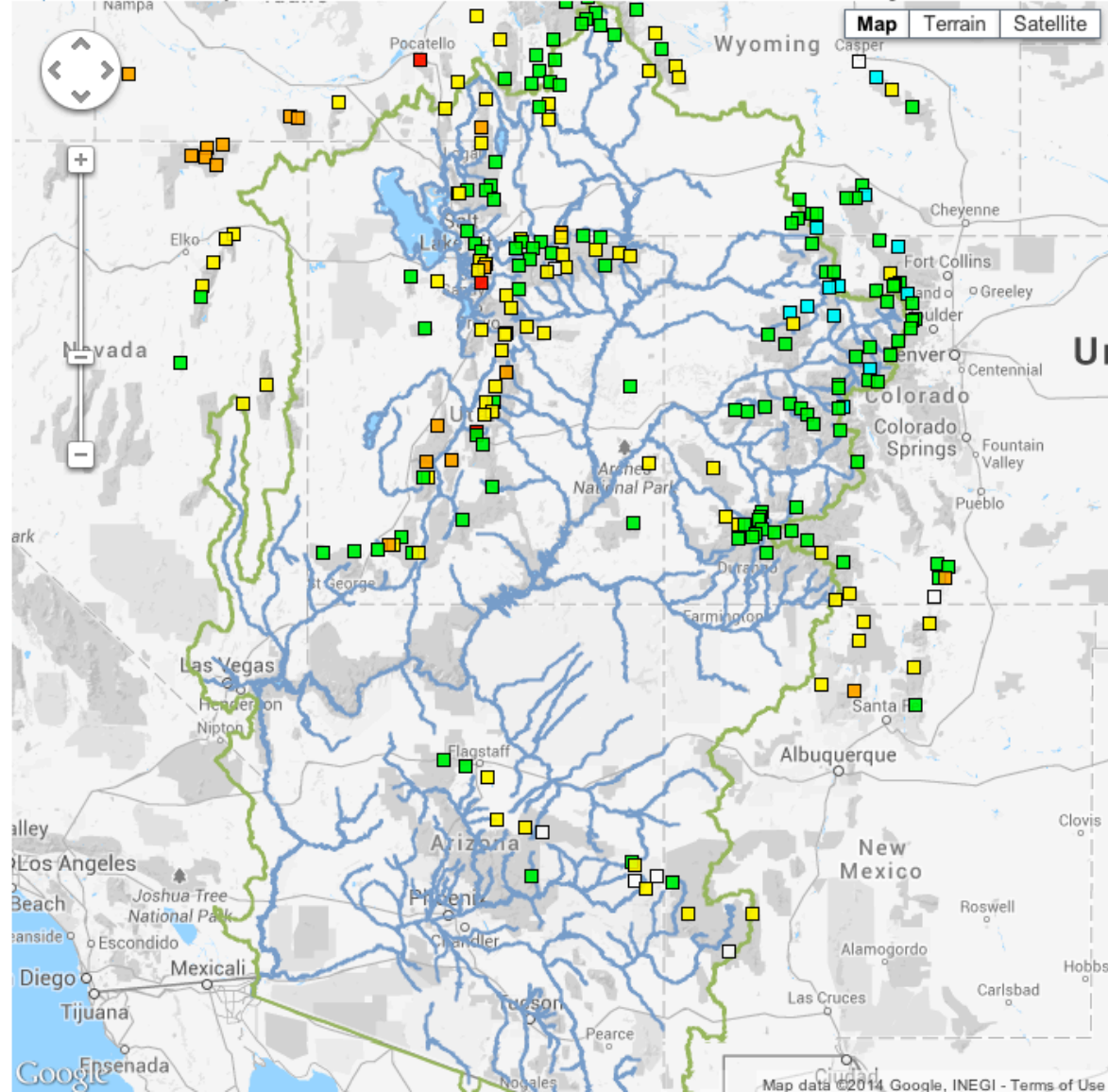
Overlays

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Snow Sites

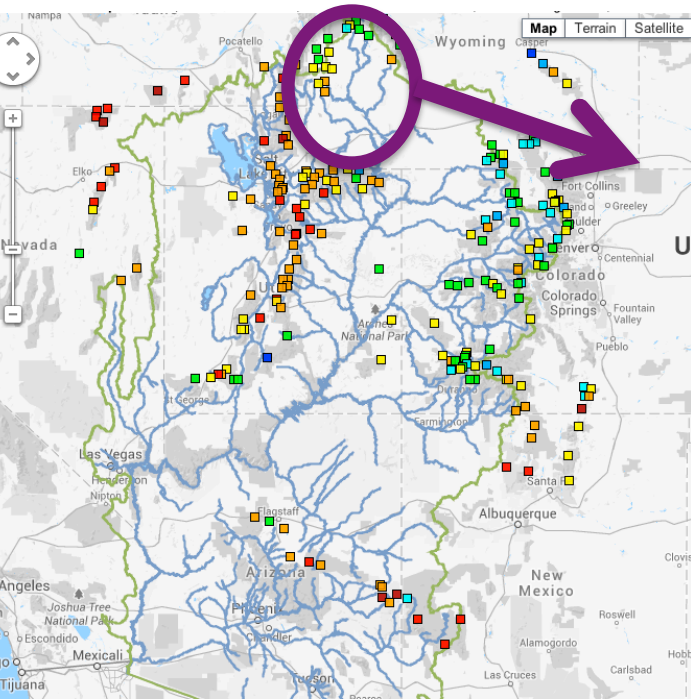
- All
- No Data
- No Average
- < 7000 ft
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Help. Double Click Map to Zoom, Data Queried: Tue, 21 Jan 2014 09:30:01 -0700, Lat: 37.6 Lng: -110.5, Zoom: 6

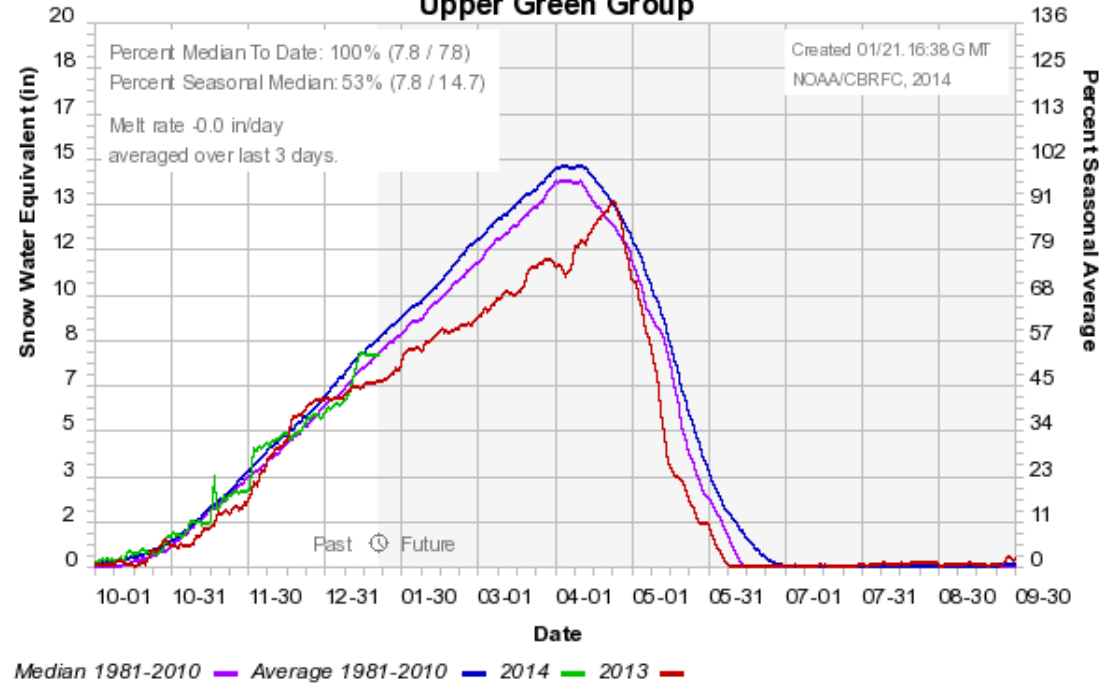


- ### Snow
- Percentiles
 - Percent Average
 - Percent Median
 - No Data
 - Low
 - <10
 - 10-25
 - 25-75
 - 75-90
 - >90
 - High

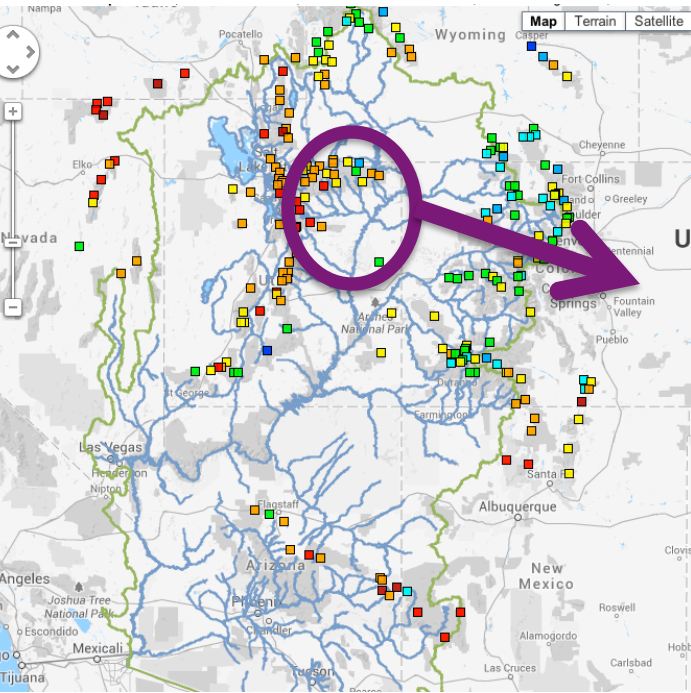
Snow: Upper Green Basin (above Flaming Gorge)



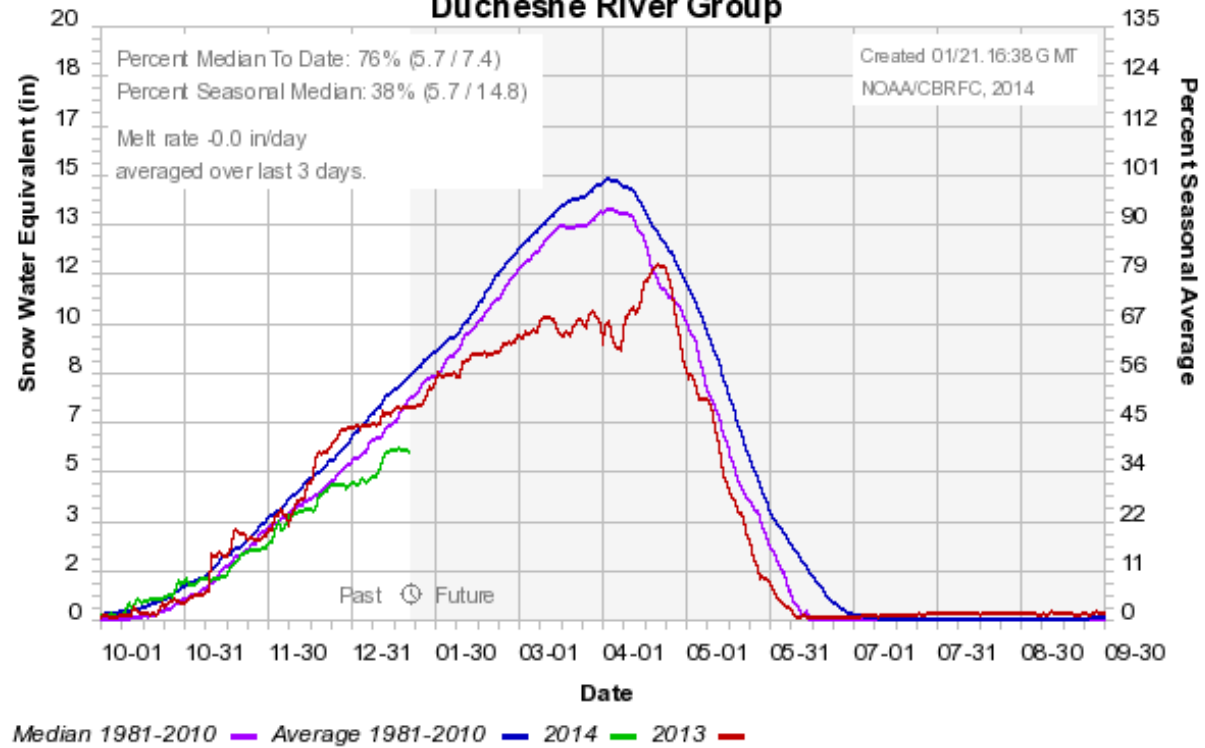
Colorado Basin River Forecast Center
Upper Green Group



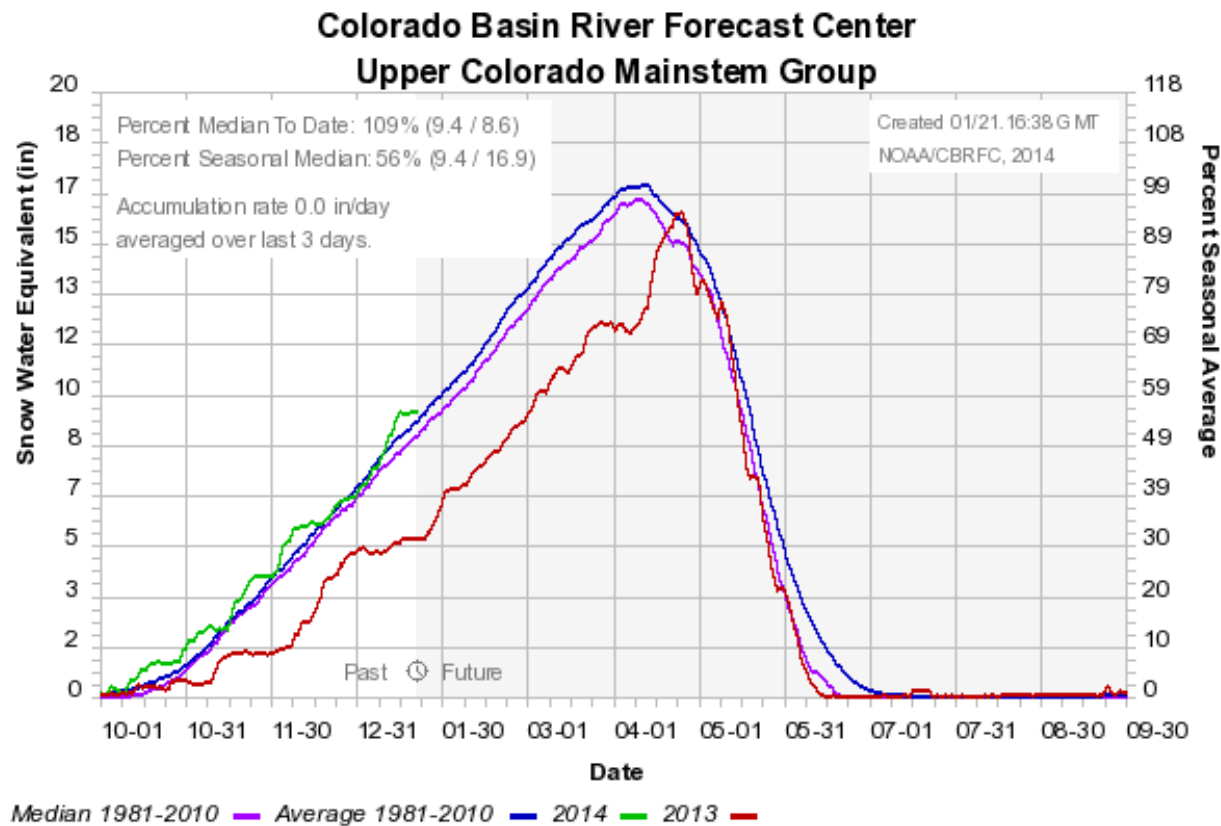
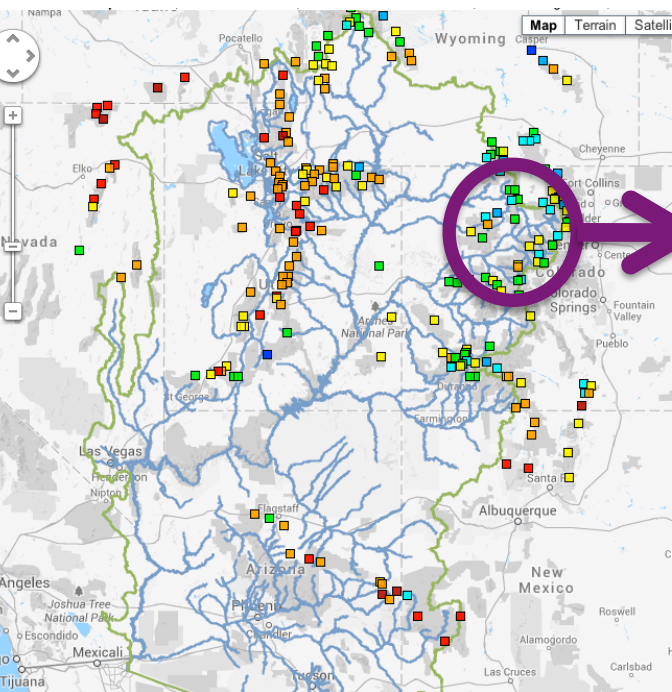
Snow: Duchesne Basin



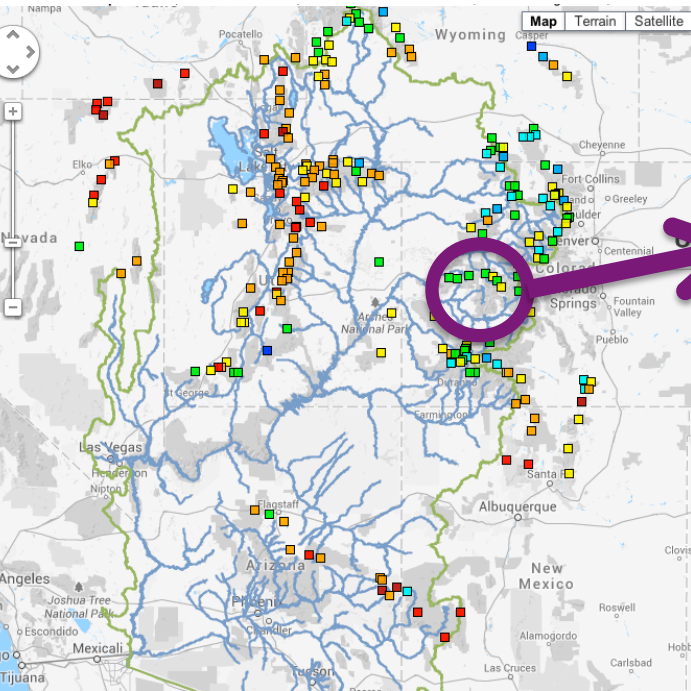
Colorado Basin River Forecast Center
Duchesne River Group



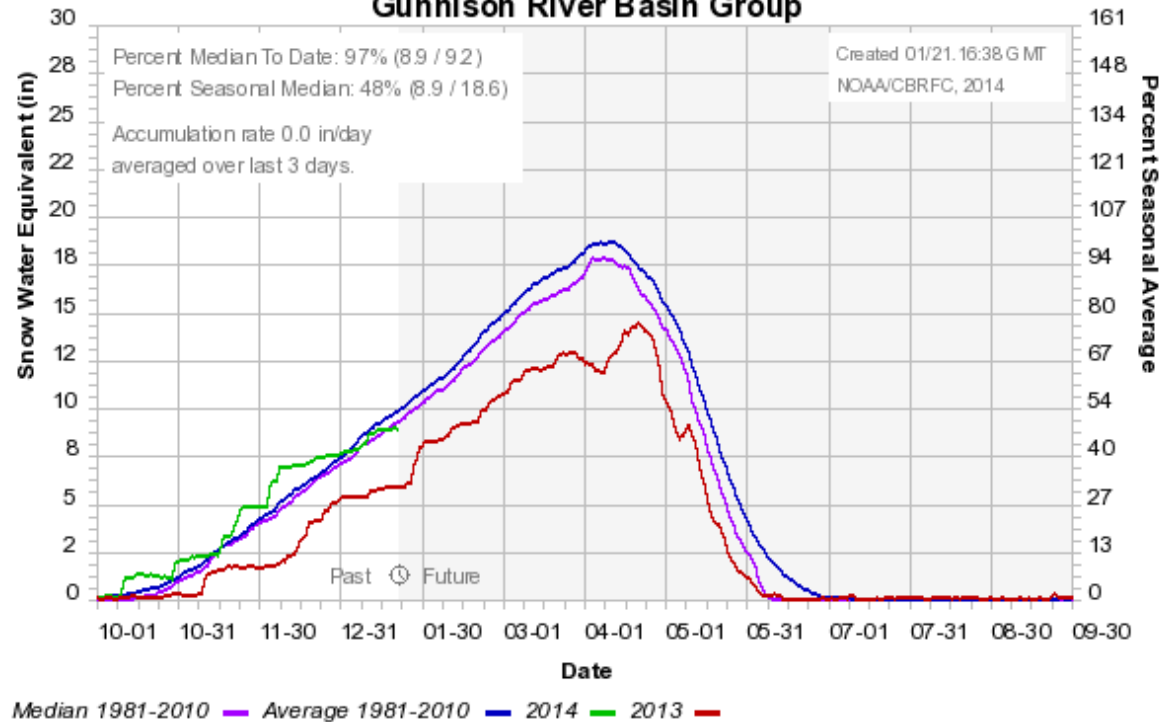
Snow: Colorado Mainstem (above Cameo)



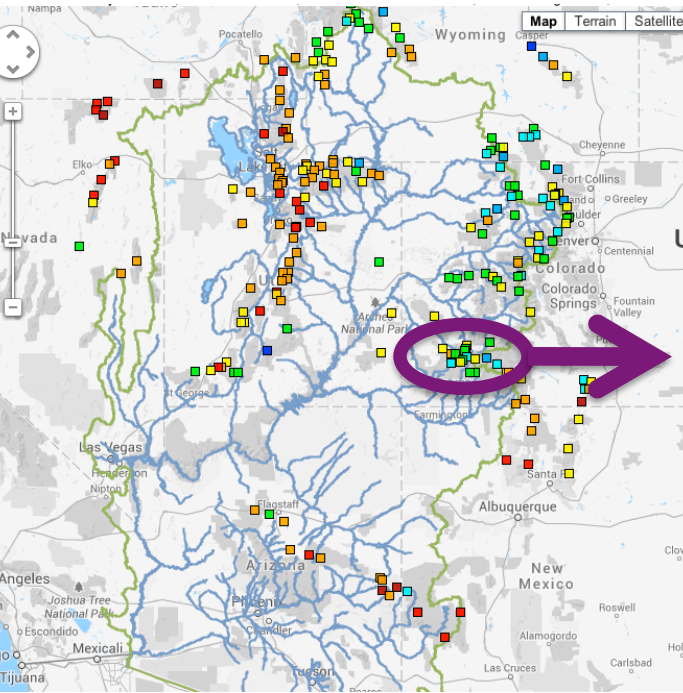
Snow: Gunnison Basin



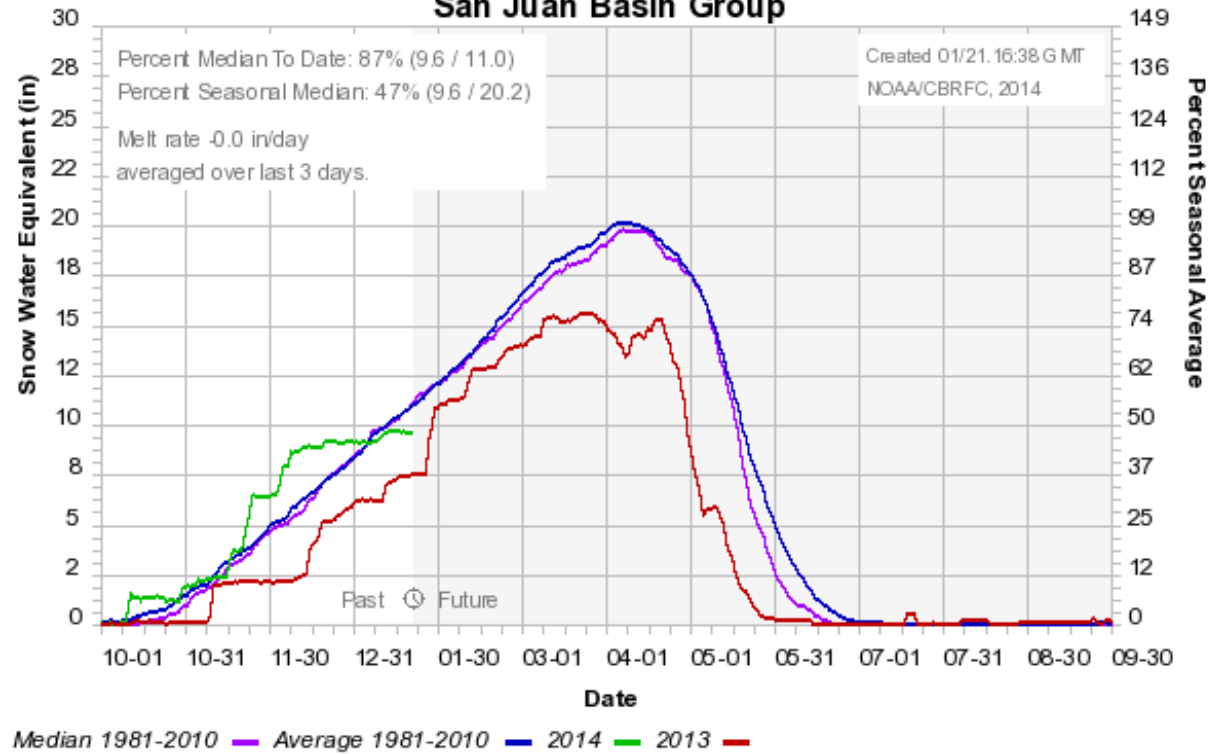
Colorado Basin River Forecast Center
Gunnison River Basin Group



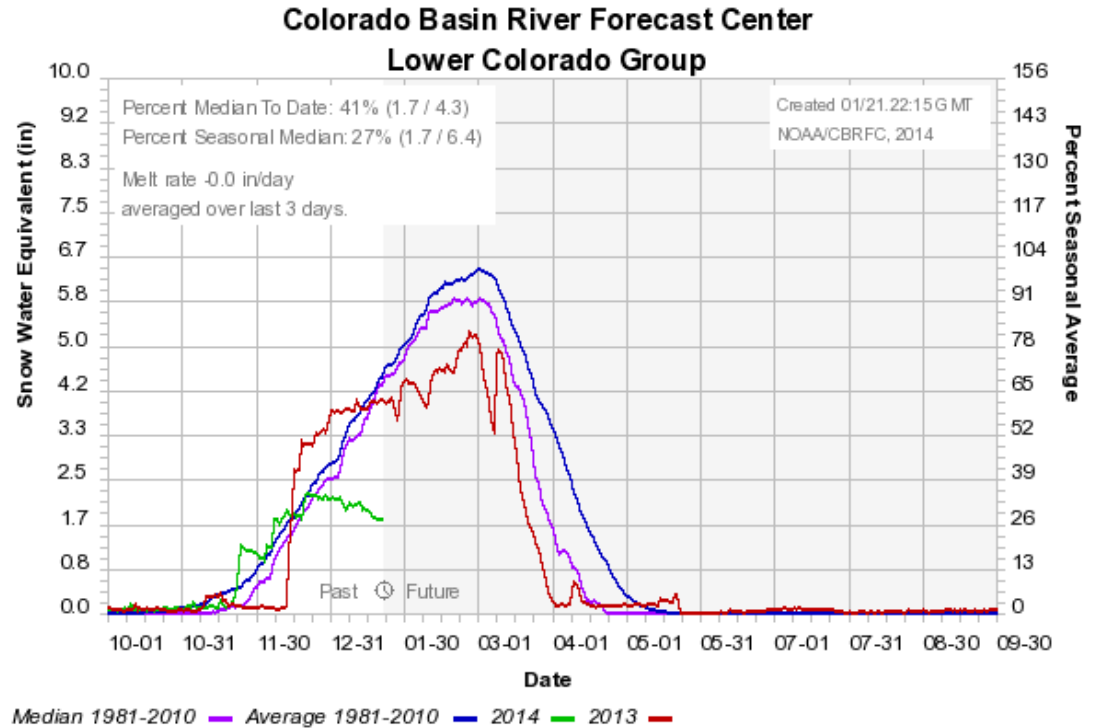
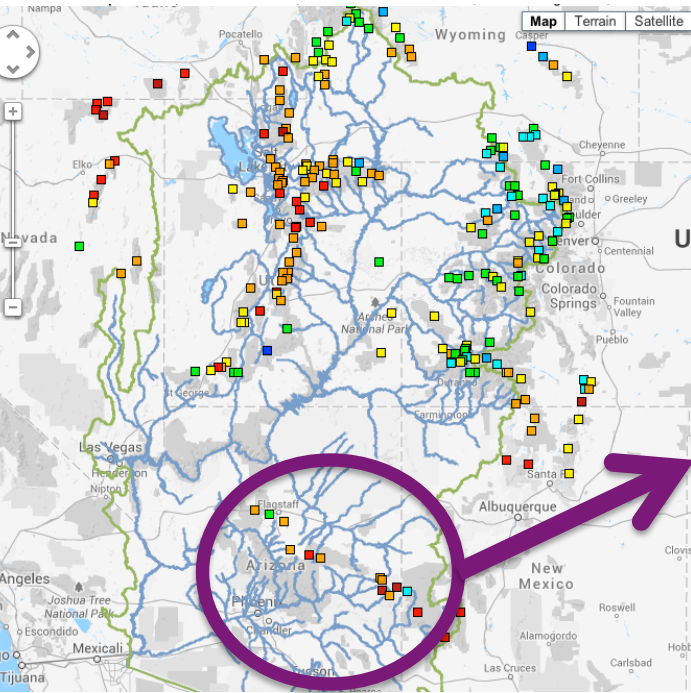
Snow: San Juan Basin



Colorado Basin River Forecast Center
San Juan Basin Group

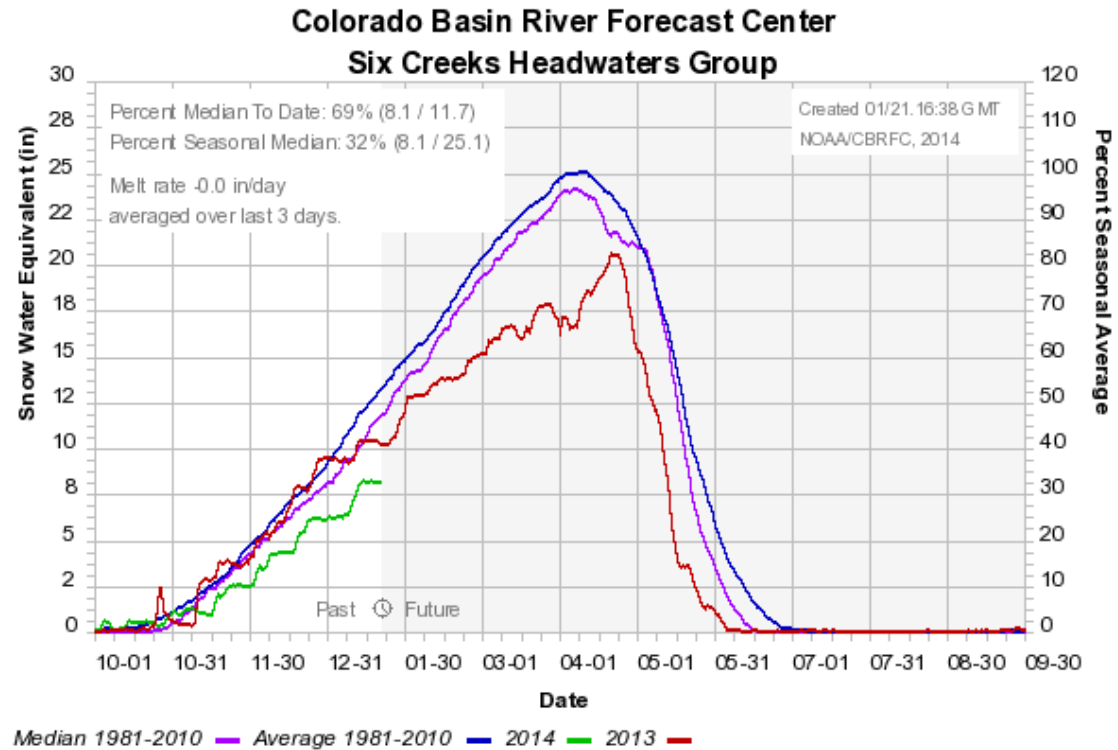
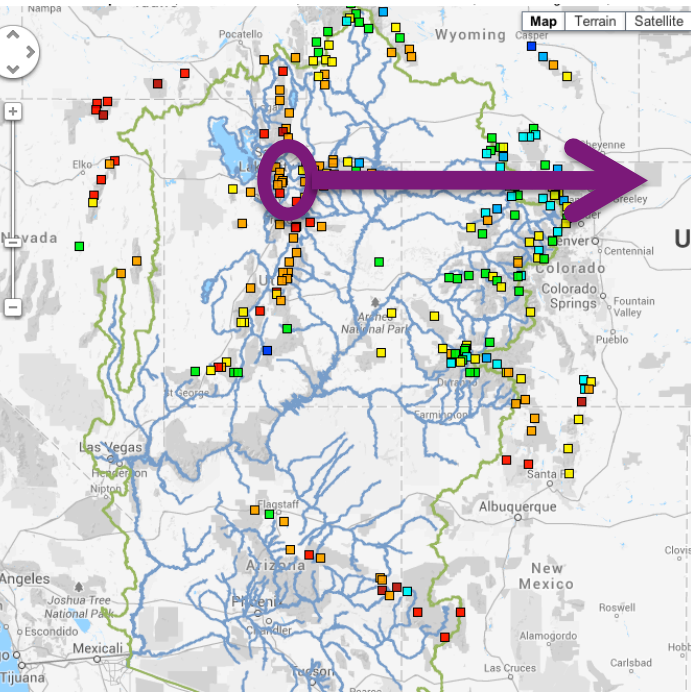


Snow: Lower Colorado

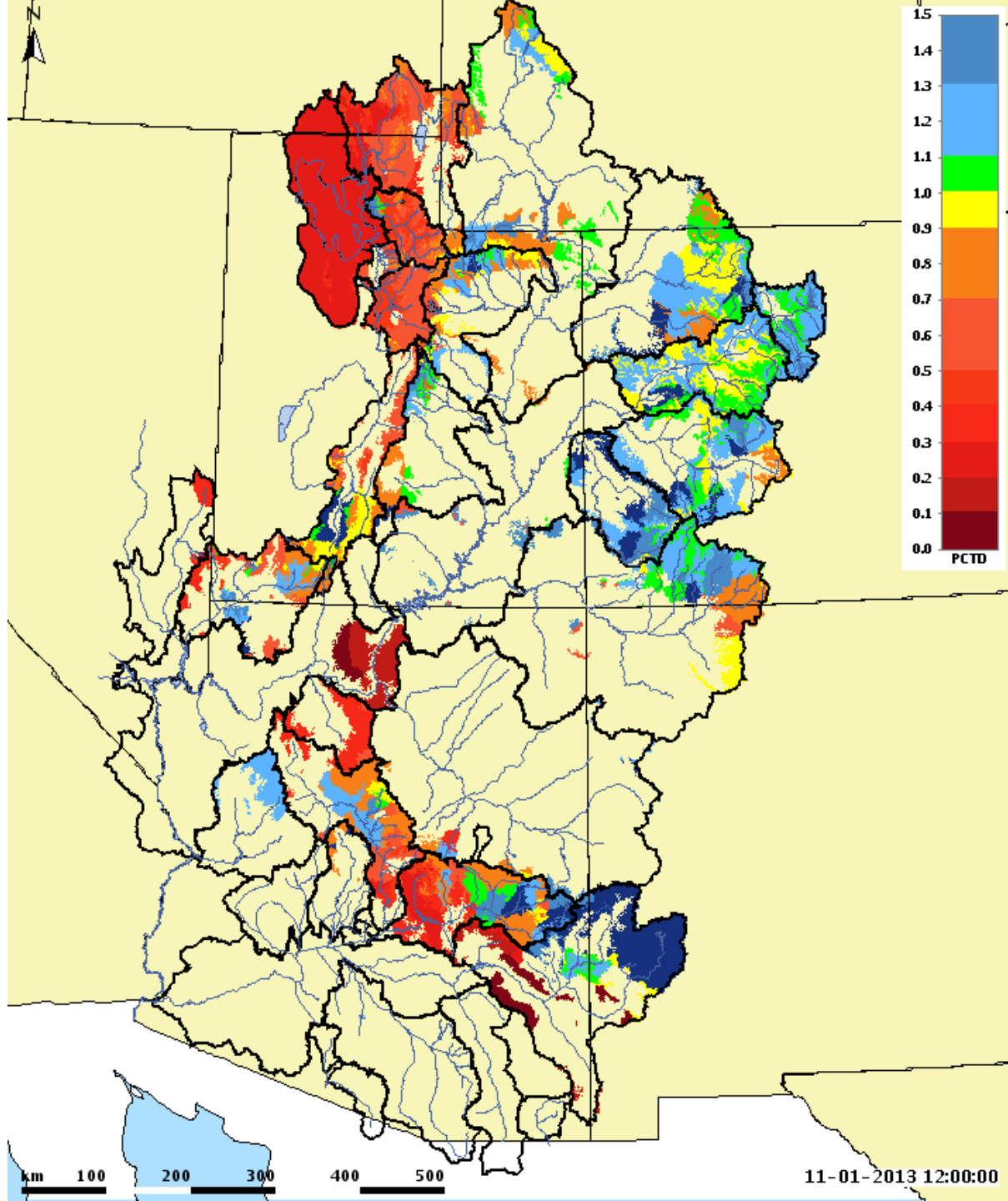


Web Reference: <http://www.cbrfc.noaa.gov/station/swep/plot/swep/plot.cgi???open>

Snow: Six Creeks in Salt Lake County



Soil Moisture



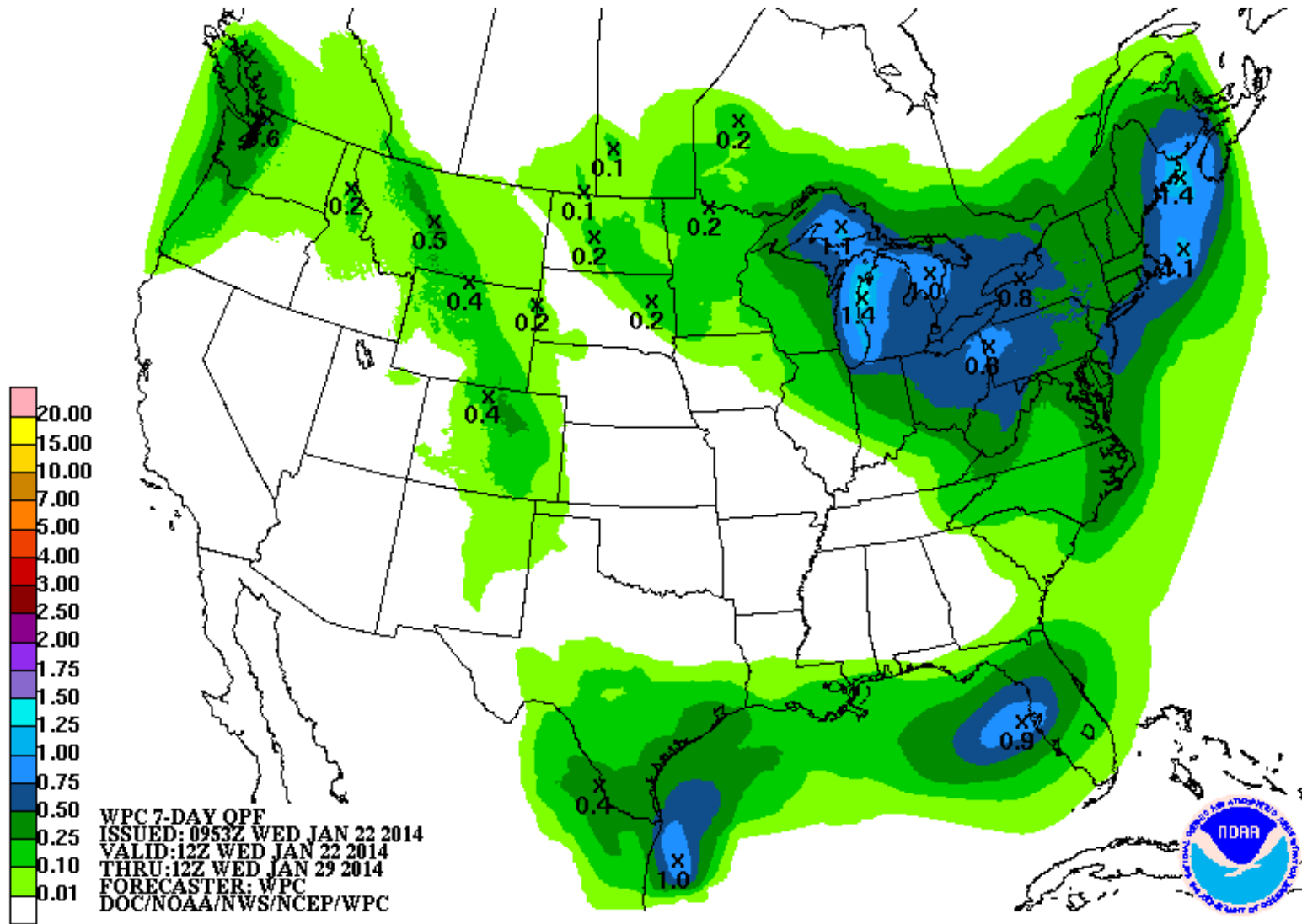
Weather Forecast Info

- NWS WPC – Producer of national scale precipitation forecasts
- PSU “e-wall” – Nice visualizations of current numerical weather prediction
- NAEFS – Multi-model (and probabilistic) plots for North America
- CBRFC – Maps of precipitation and temperature input to our model
- WFO – Local NWS “retailers” and producers of forecasts

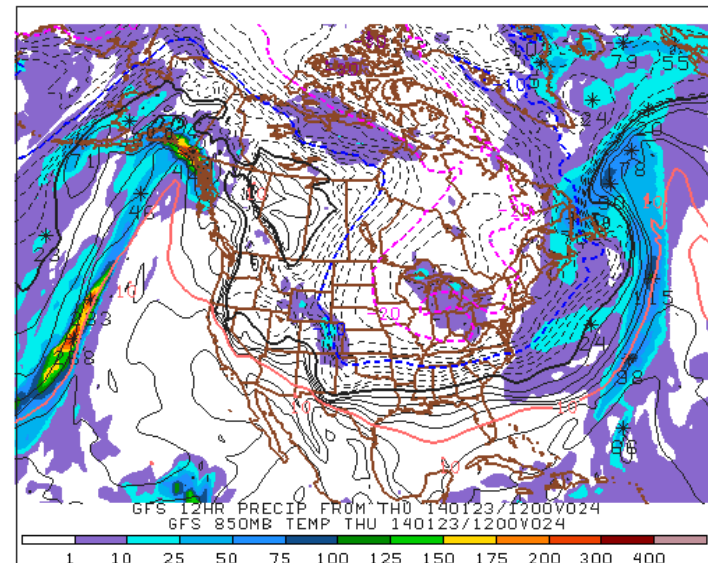
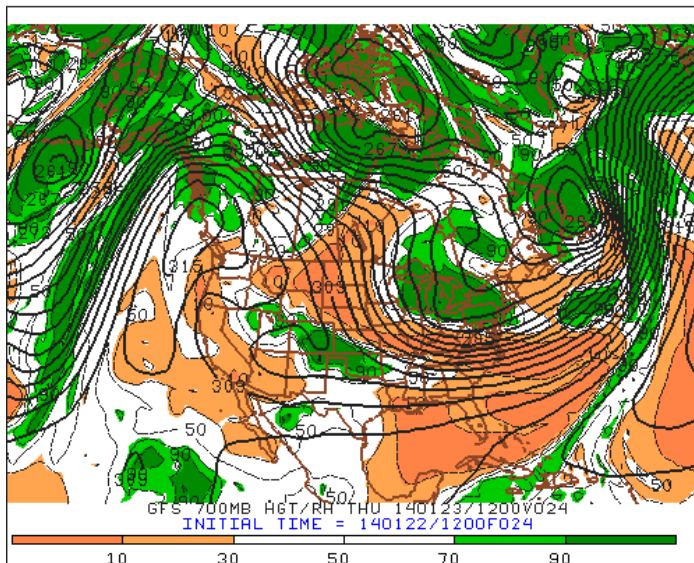
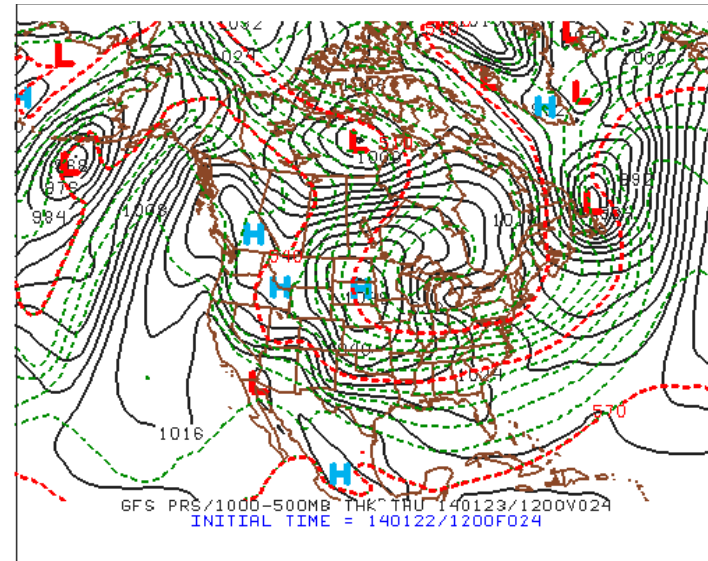
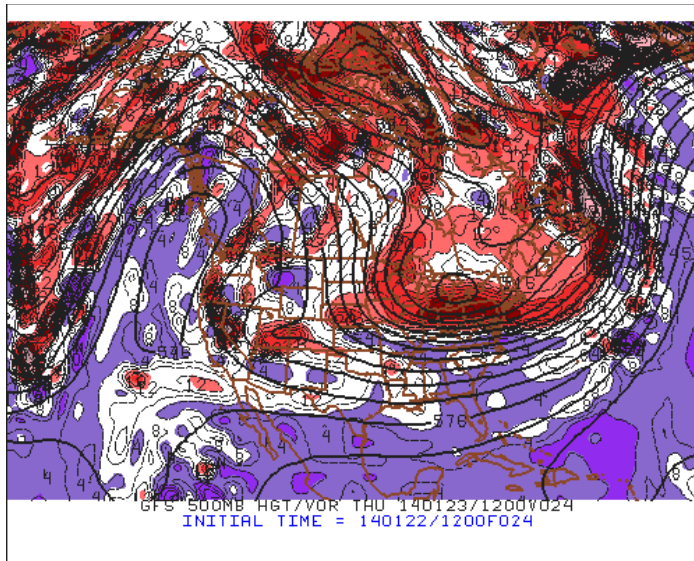
Weather synopsis

- Major atmospheric ridge persists for one more week
- Weak short wave trough passes through extreme northern part of region delivering minimal precip today/tomorrow
- Pattern change mid/late next week bringing significant chances for precip across northern region. Details vary between models

Forecast Precipitation

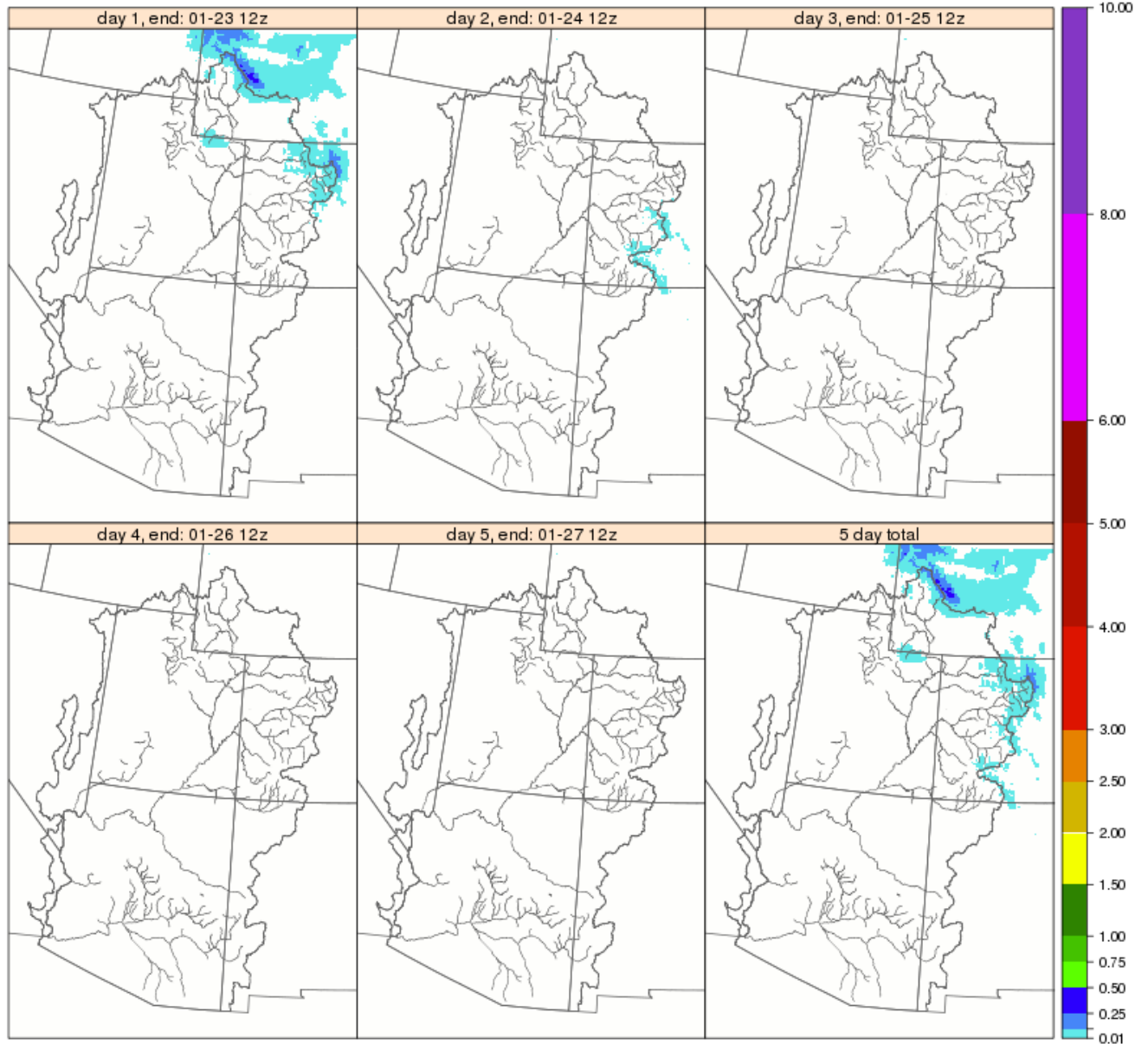


Tomorrow's weak short wave



CBRFC Precip Forecast

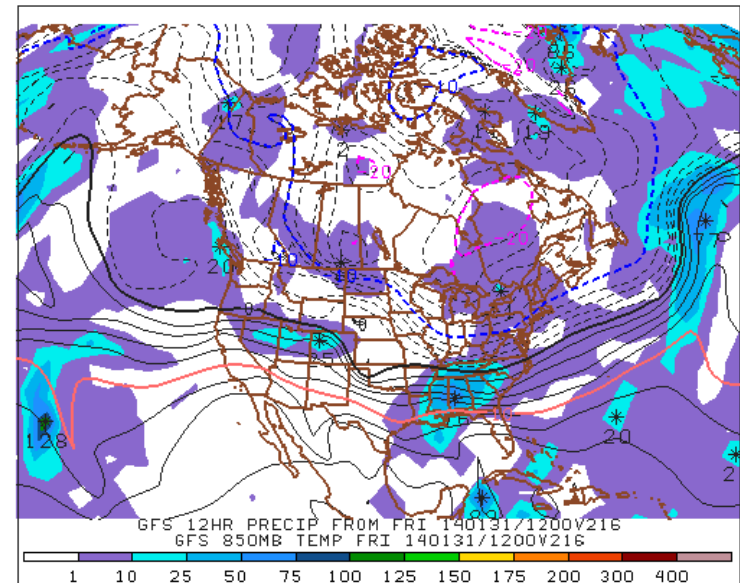
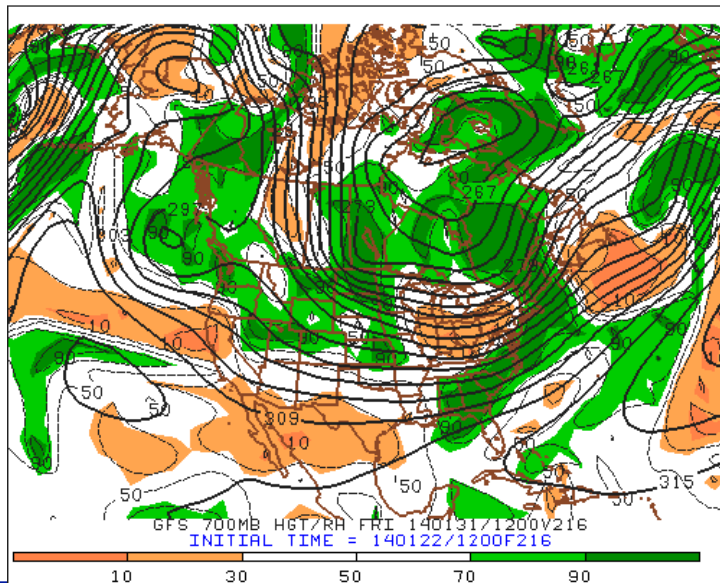
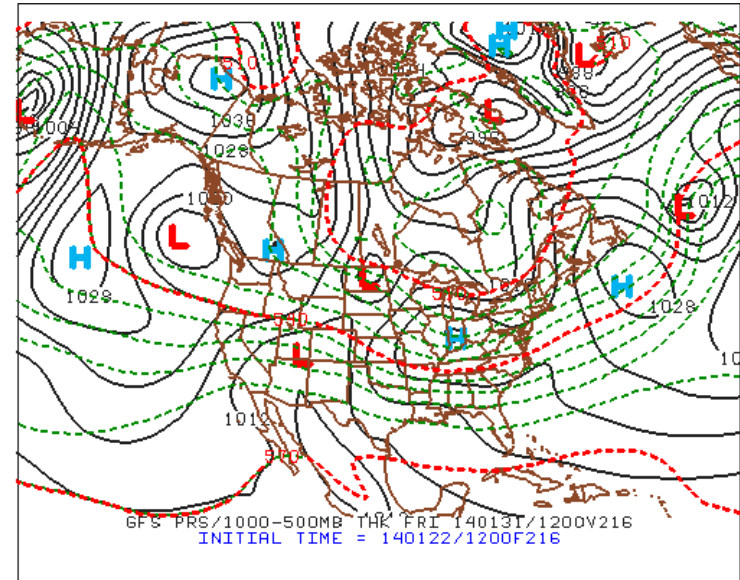
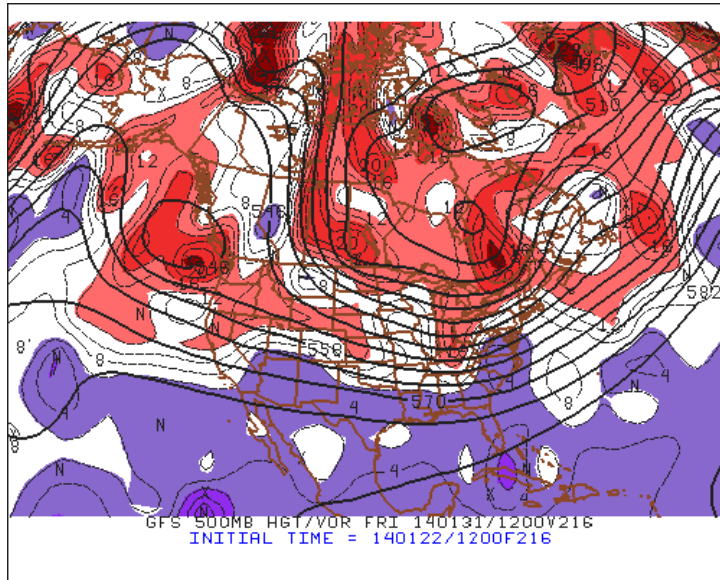
QPF Daily Totals (inches), issued: 01-22-2014 12z



CBRFC/NWS/NOAA

Web Reference: www.cbrfc.noaa.gov

Next Week's Pattern Change

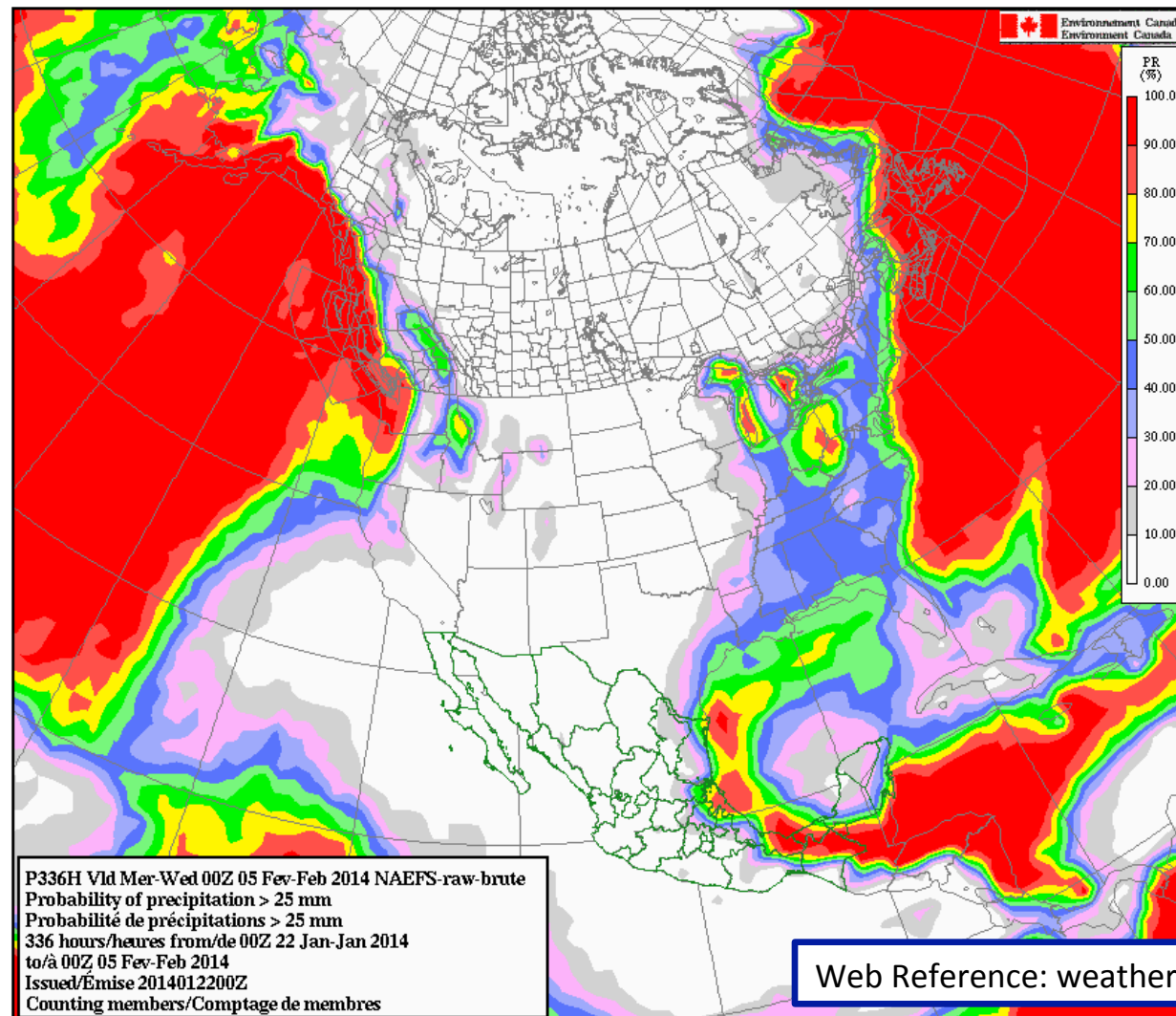


Probability of precipitation accumulation over 25 mm for the whole period

Issued Day 2014-01-22 Hour UTC [Information](#)

Forecast Day: Start 2014-01-22 End 2014-02-06

Product type



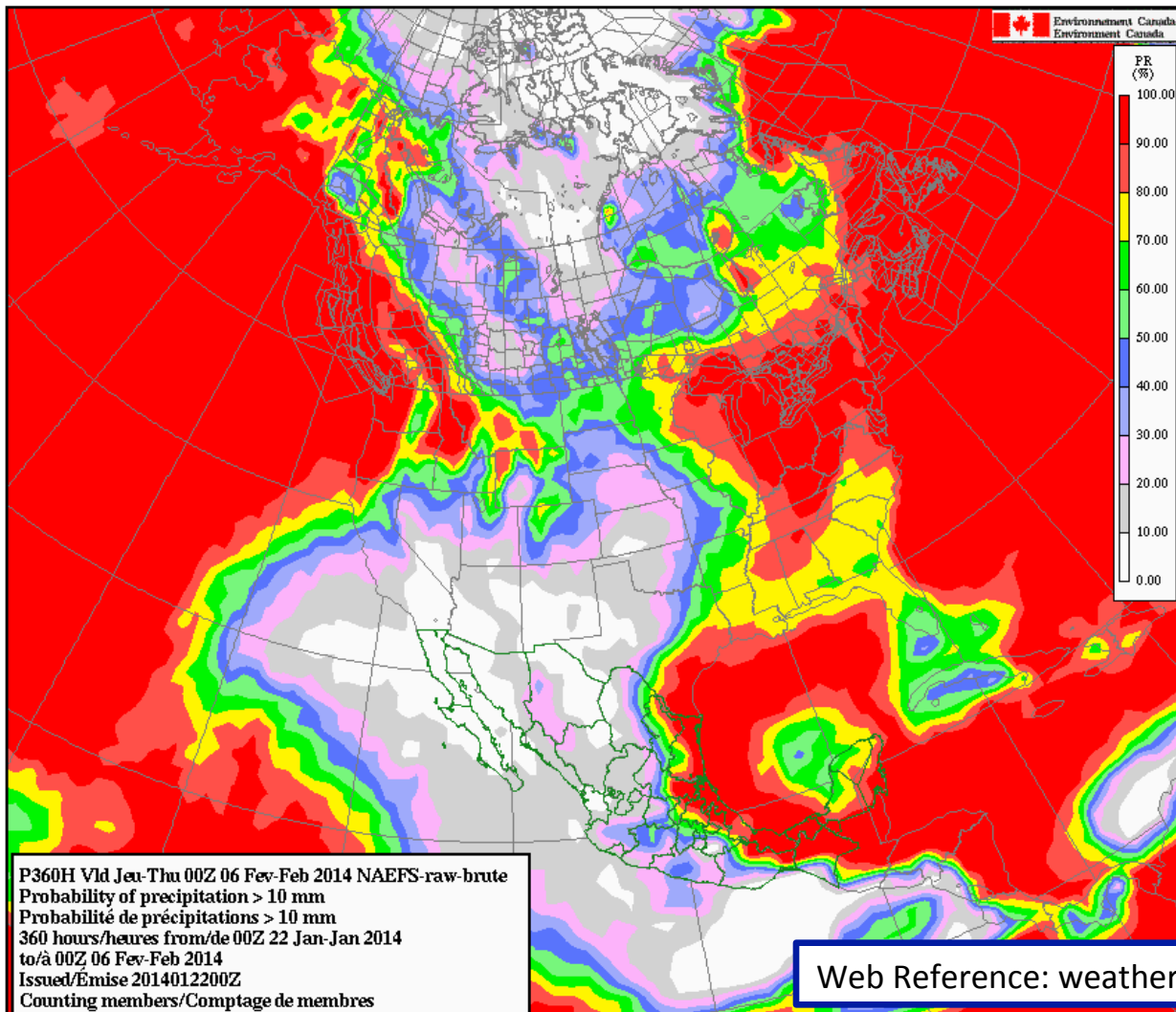
Web Reference: weather.gc.ca/ensemble/naefs/produits_e.html

Probability of precipitation accumulation over 10 mm for the whole period

Issued Day Hour UTC [Information](#)

Forecast Day: Start End

Product type

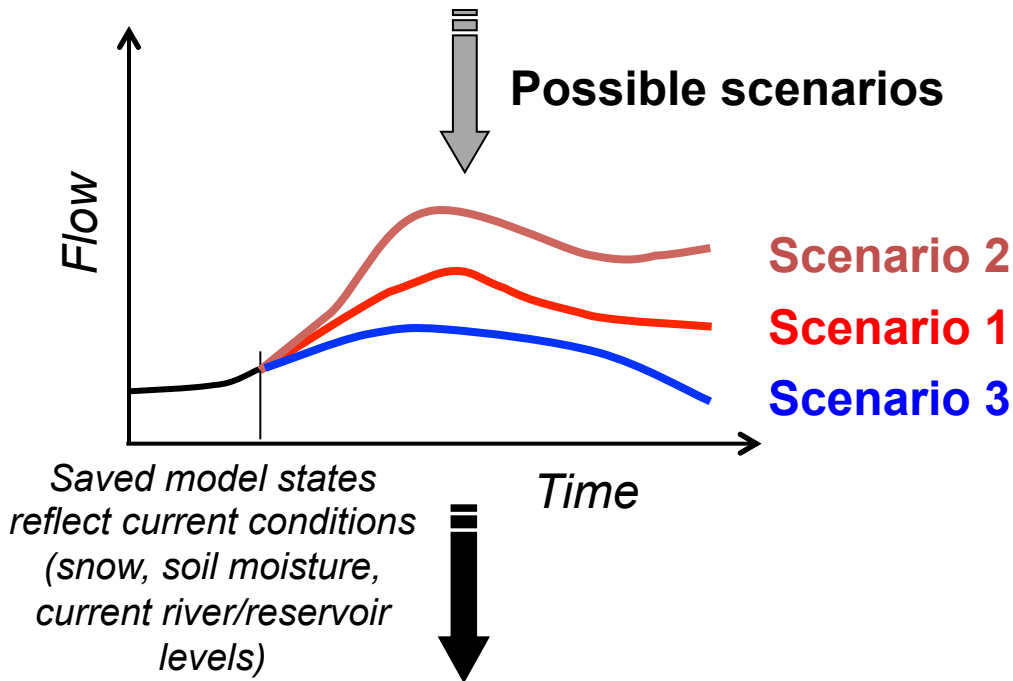


Daily ESP

- ESP = Ensemble Streamflow Prediction
- Forecast technique first proposed/tested by NWS in the 1970s, developed/documentated in the 1980s, and widely implemented in the 1990s.
- Creates forecasts based on **current model states** and **weather forecasts** and/or **climatology** going forward

ESP Technique

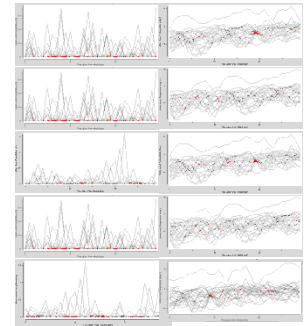
Multiple streamflow scenarios with historic meteorological or forecast weather/climatic data



Results used in statistical analysis to produce forecasts with probabilistic values

Historical time series of precipitation and temperature

81
82
83
84
85



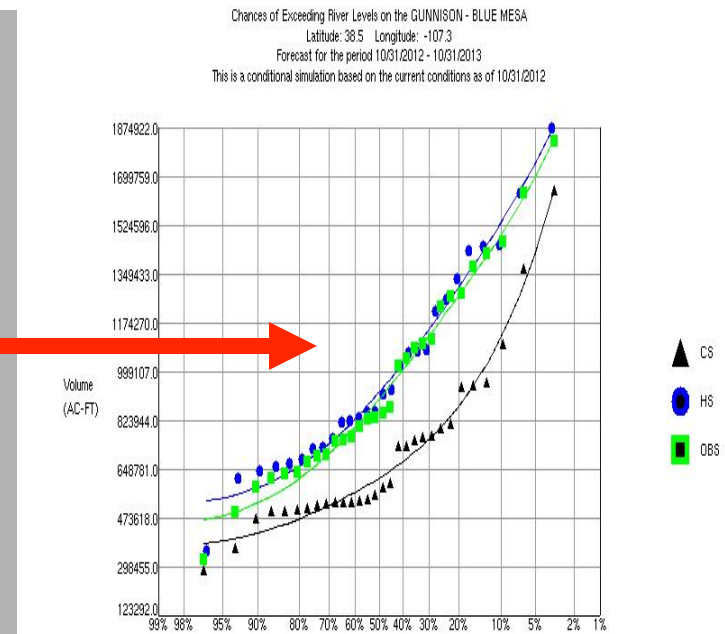
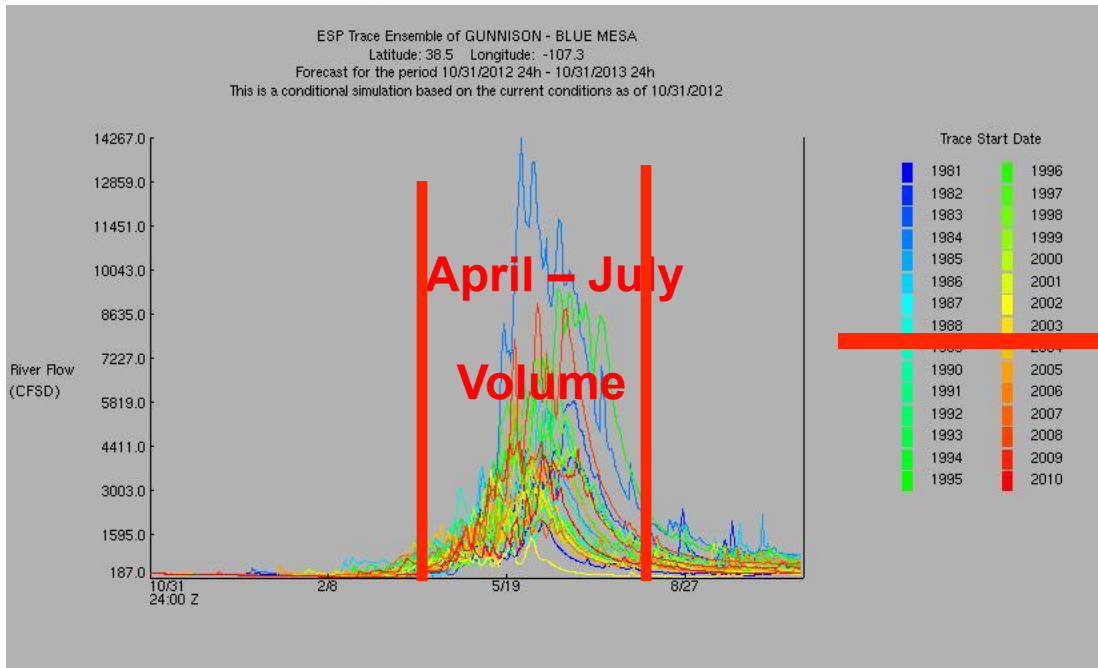
CBRFC: Currently using water years 1981-2010

Can also include forecast precipitation and temperature.

CBRFC:

- Use 10 days of forecast max/min temperatures.
- Two runs –
 - 5 days of forecast precipitation
 - 0 days of forecast precipitation

Ensemble Streamflow Prediction (ESP)

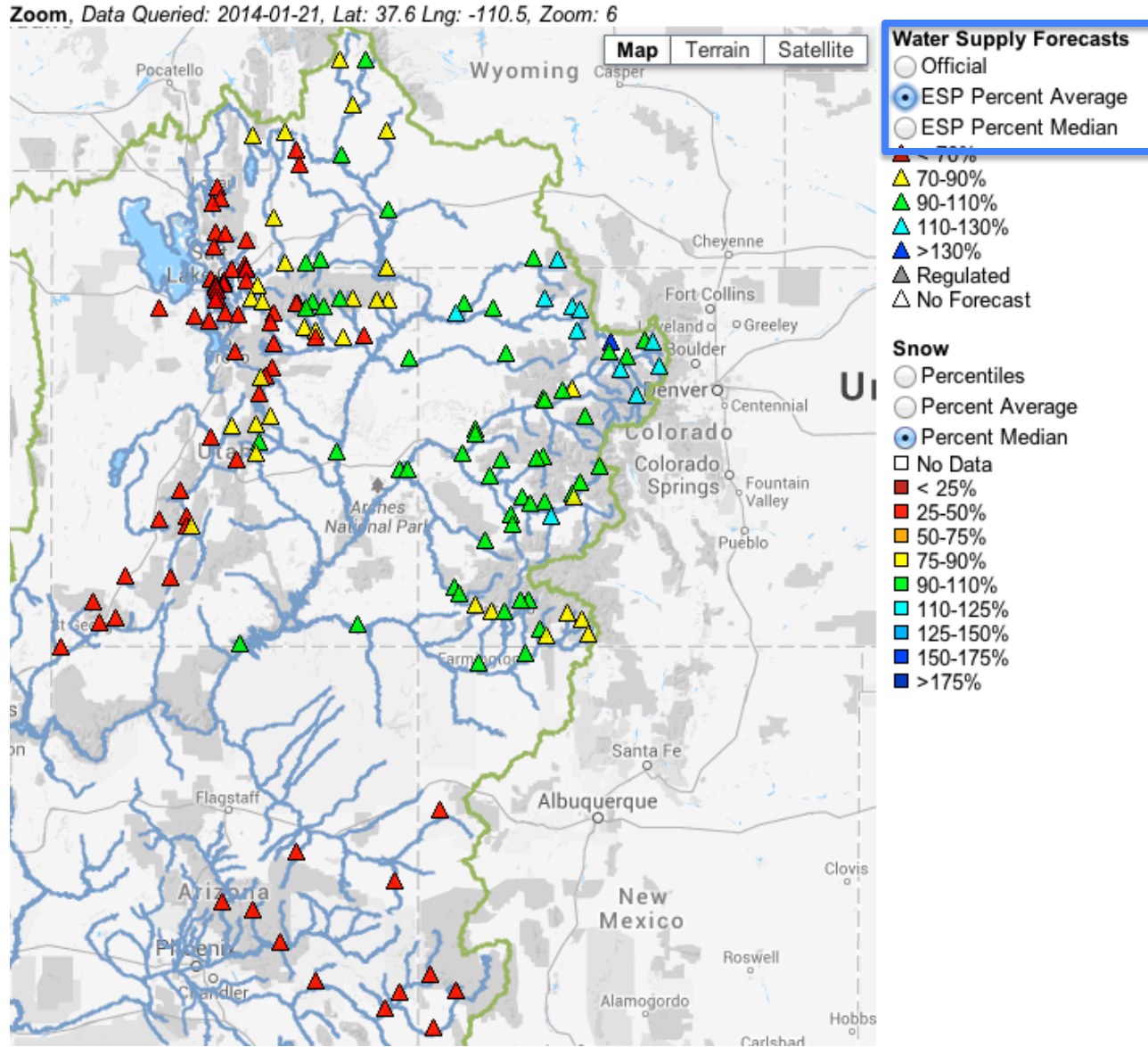


1. Select a forecast window
2. Select a forecast variable
3. Model derives a distribution function
4. 50% exceedance value = most probable forecast
5. Also use 10%/90% levels

# Exceedance Probabilities	Conditional Simulation	Historical Simulation	Historical Observed
0.900	417330,156	581462,500	525460,000
0.750	493856,750	699928,938	659224,812
0.700	517683,500	741569,312	705094,750
0.600	565268,875	829048,438	799524,375
0.500	616216,625	923809,188	898919,562
0.400	676330,375	1029094,688	1006031,062
0.300	755745,938	1151067,250	1126296,500
0.250	808794,500	1222083,250	1194804,500
0.100	1123002,375	1534576,375	1490881,125

January 21, 2014 ESP forecasts

Highlights:
• Similar patterns with some degradations as compared to the first of the month



GRNU1 Water Supply Forecasts

Plot Forecasts Observations Historical Annual/Official Verification Reforcast Verification

Water Year: 2013 2014
Plot Options (on/off): QPF ESP Official Forecasts Observations Max/Min Historical Unapproved

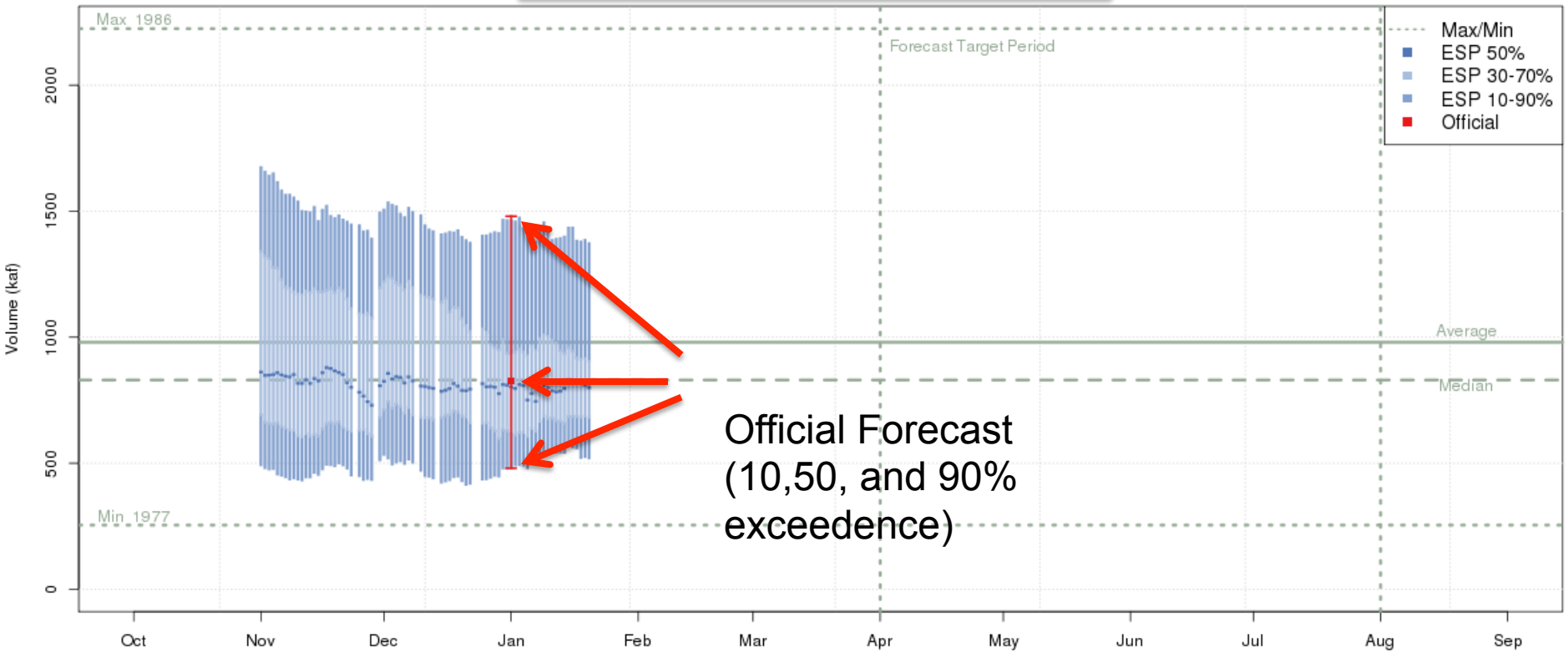
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 825kaf (80.9% of average)



Plot Created 2014-01-21 15:03:38, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed -0.9% from yesterday and -1.2% from January 1
Forecasts in the observed period include observed values.

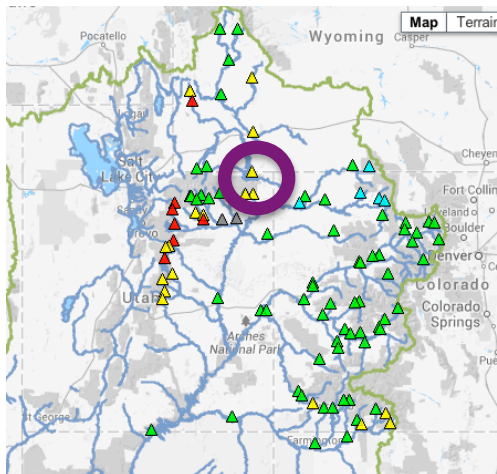
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)

2014-01-01 Official 50% Forecast: 825kaf (80.9% of average)

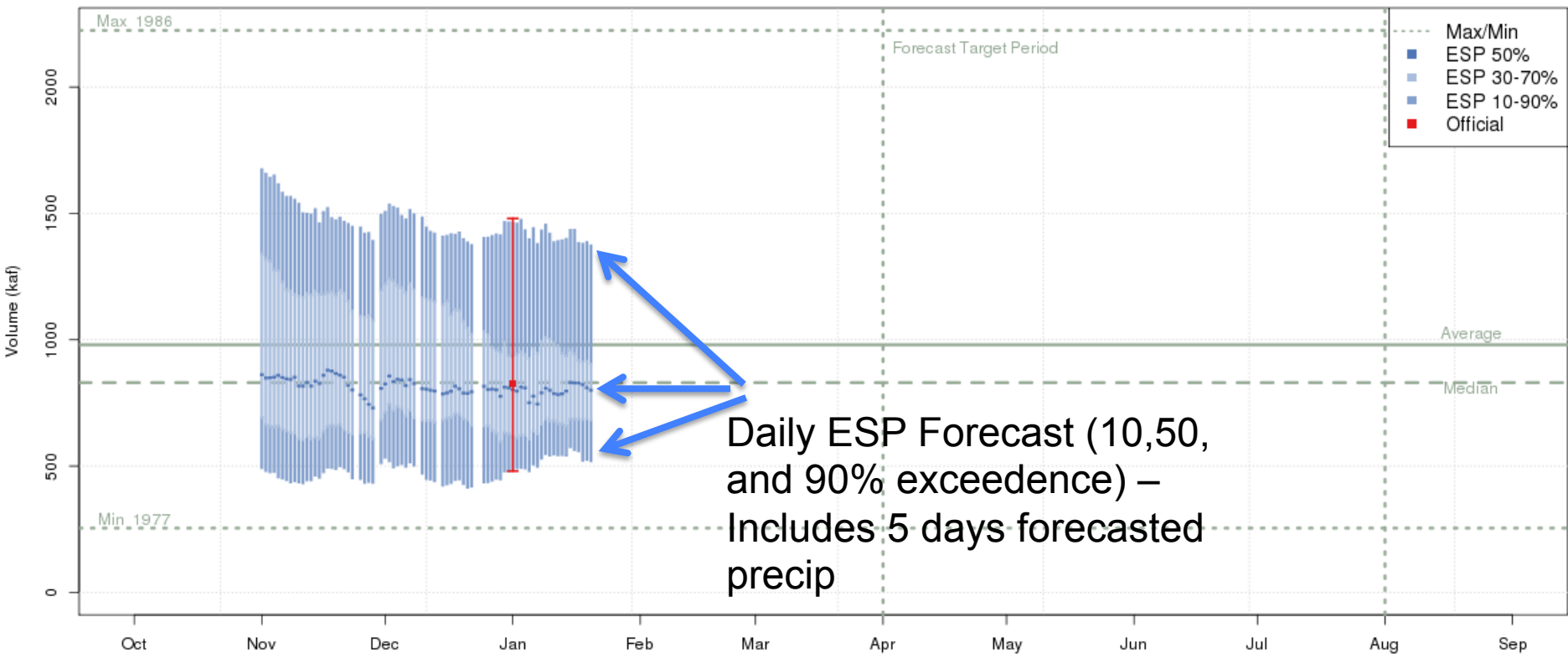


Official Forecast
(10,50, and 90%
exceedence)

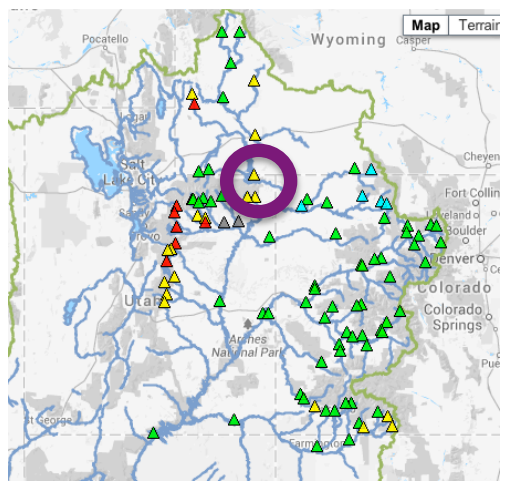
Plot Created 2014-01-21 15:03:38, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -0.9% from yesterday and -1.2% from January 1
 Forecasts in the observed period include observed values.



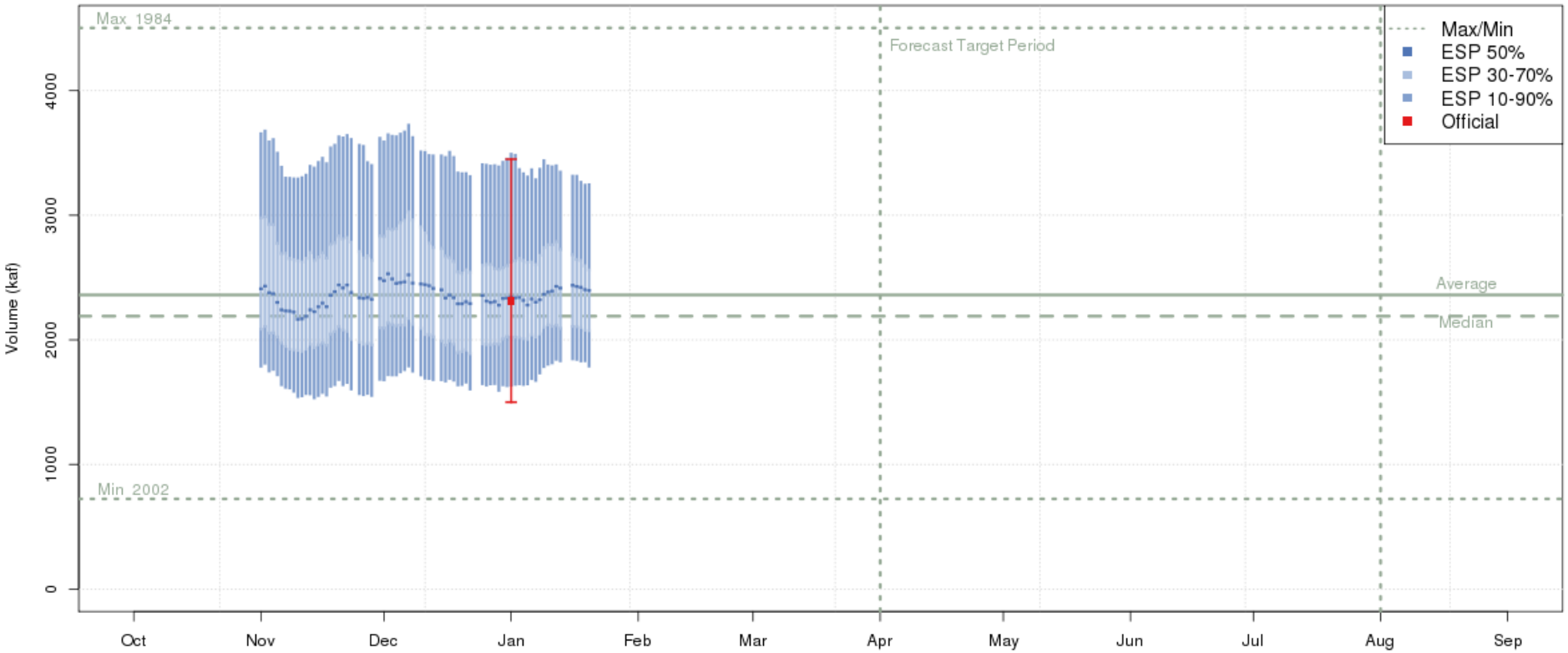
Green - Flaming Gorge Res- Flaming Gorge Dam- At (GRNU1) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
 2014-01-01 Official 50% Forecast: 825kaf (80.9% of average)



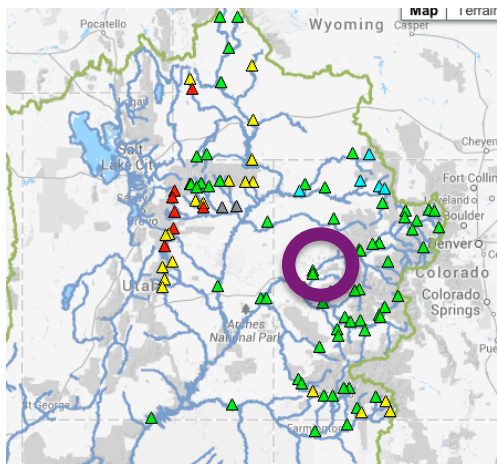
Plot Created 2014-01-21 15:03:38, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -0.9 % from yesterday and -1.2 % from January 1
 Forecasts in the observed period include observed values.



Colorado - Cameo- Nr (CAMC2) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 2310kaf (100.3% of average)



Plot Created 2014-01-21 14:52:52, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -1.2 % from yesterday and 1 % from January 1
 Forecasts in the observed period include observed values.

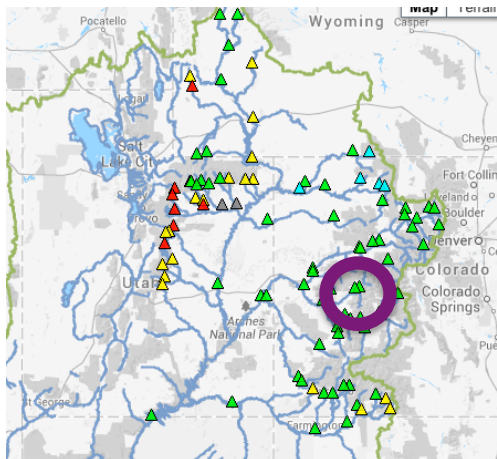


Gunnison - Blue Mesa Res (BMD2) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)

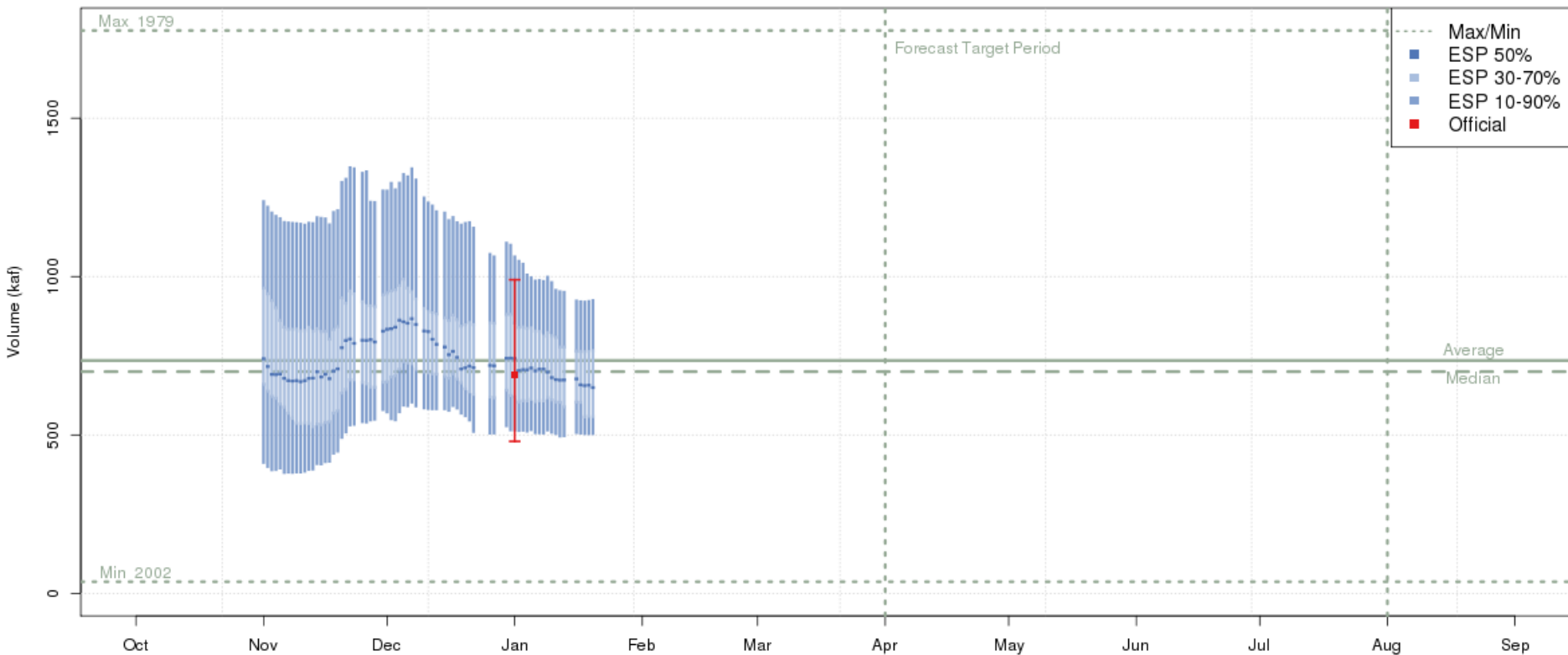
2014-01-01 Official 50% Forecast: 660kaf (97.7% of average)



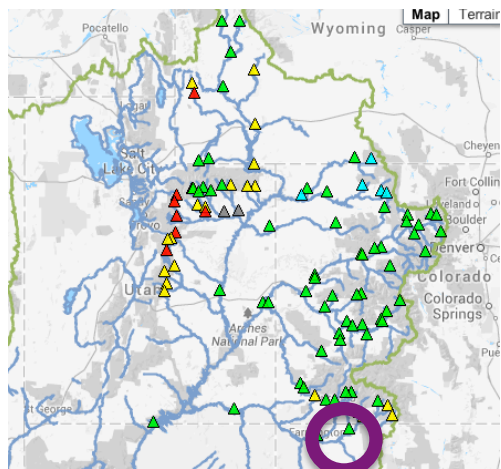
Plot Created 2014-01-21 14:51:25, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -2.3 % from yesterday and -0.3% from January 1
 Forecasts in the observed period include observed values.



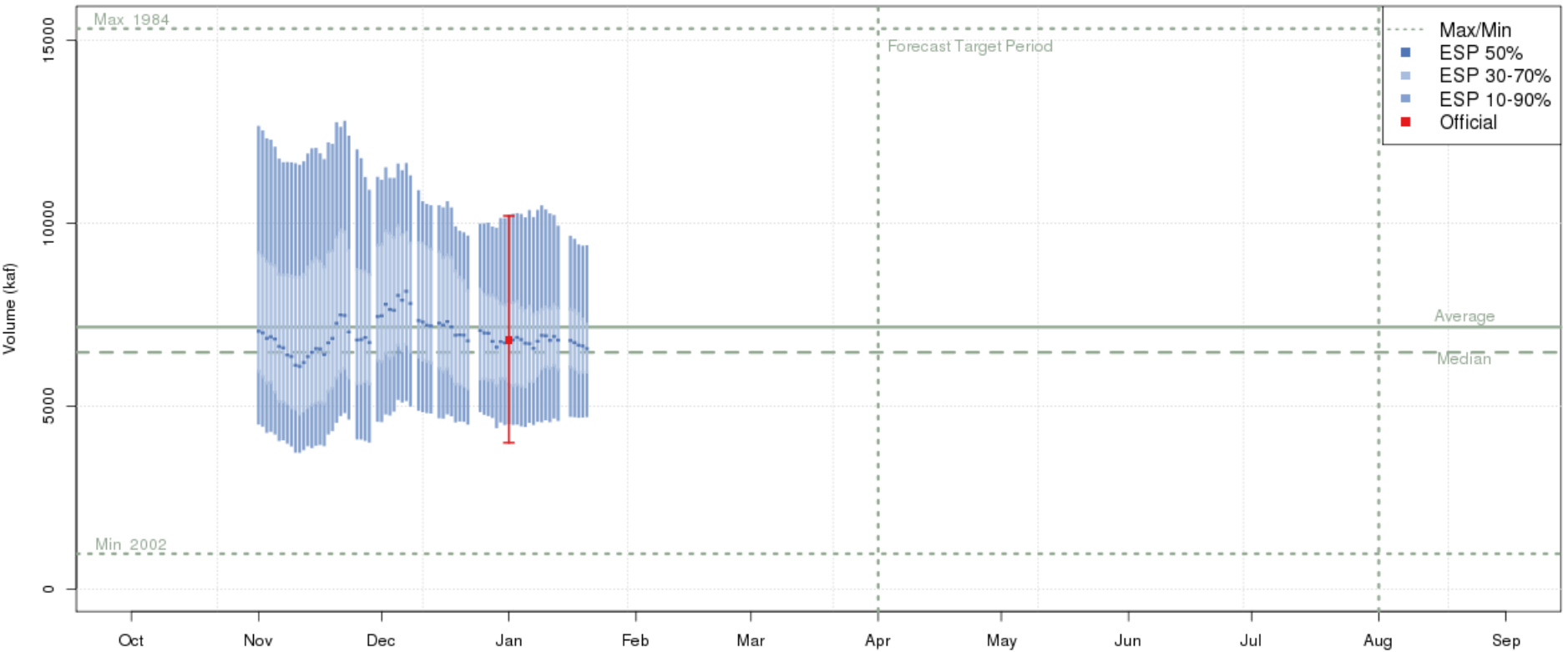
San Juan - Navajo Res- Archuleta- Nr (NVRN5) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 690kaf (86.3% of average)



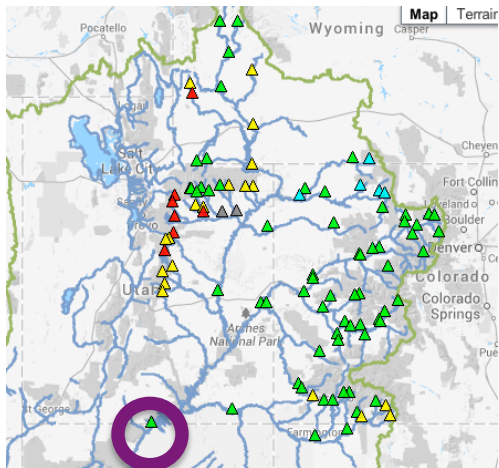
Plot Created 2014-01-21 15:12:01, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -2.4 % from yesterday and -14.5 % from January 1
 Forecasts in the observed period include observed values.



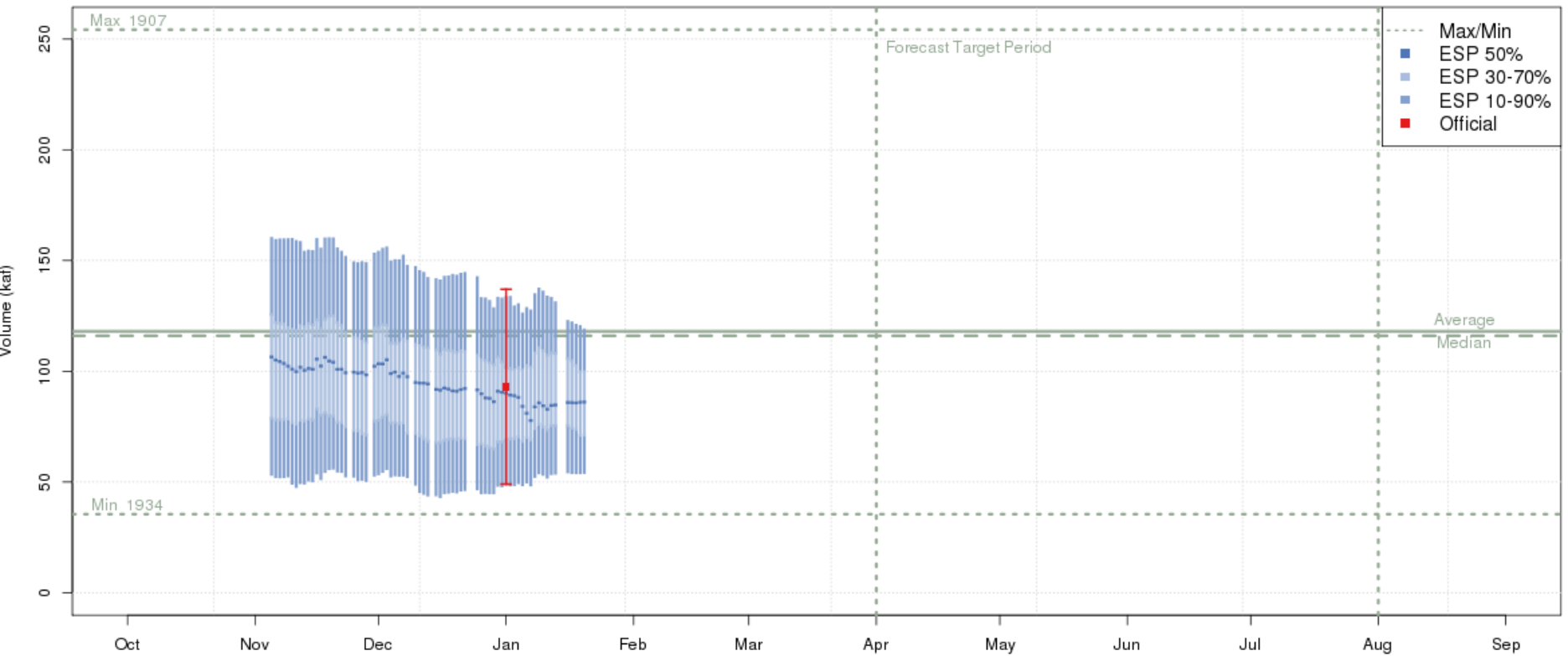
Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
 2014-01-01 Official 50% Forecast: 6810kaf (90.8% of average)



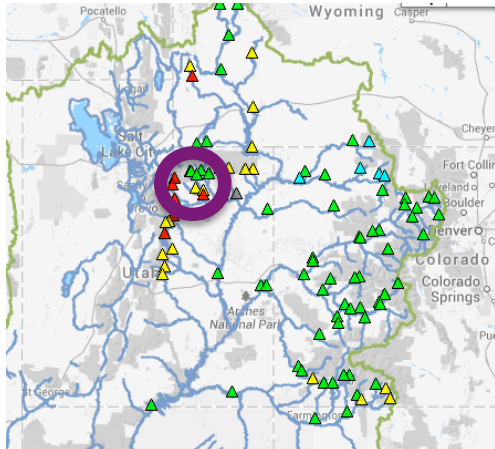
Plot Created 2014-01-21 15:02:42, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -1 % from yesterday and -4.2 % from January 1
 Forecasts in the observed period include observed values.



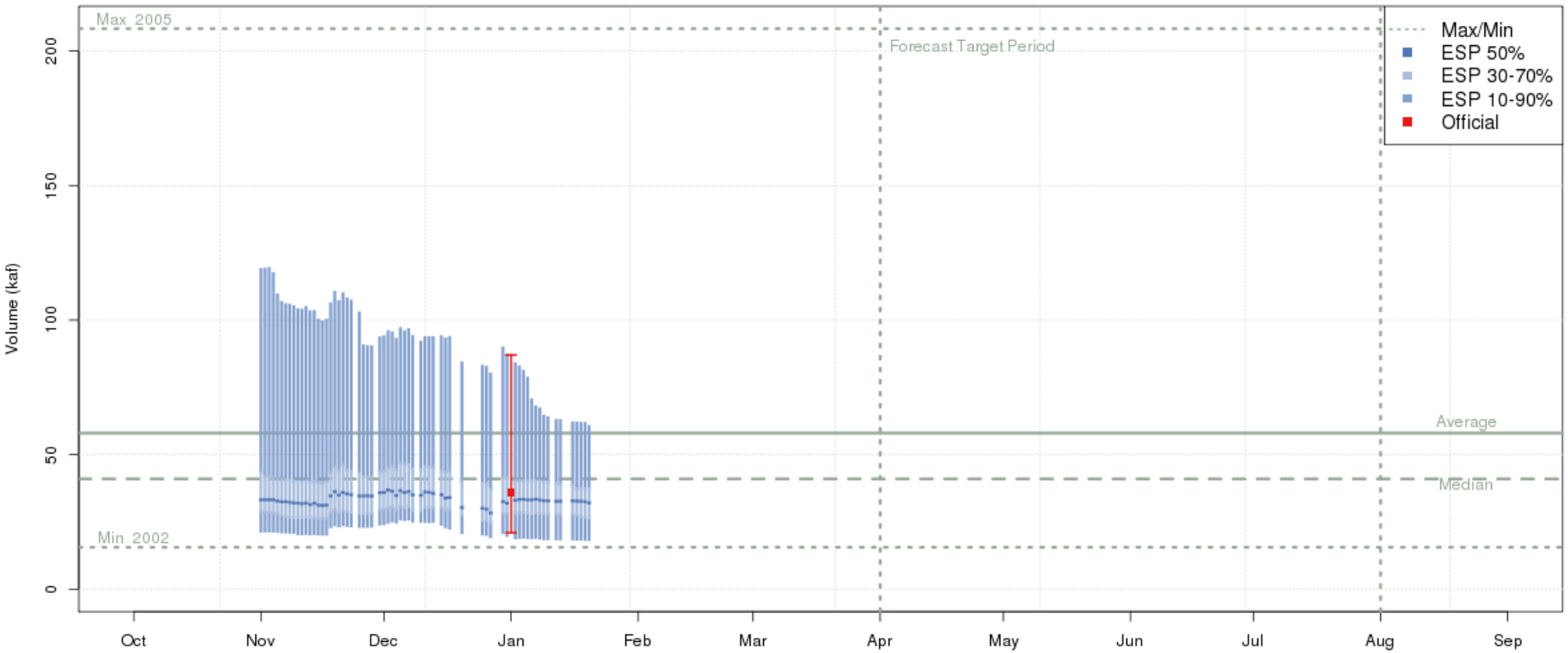
Weber - Oakley- Nr (OAWU1) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 93kaf (72.5% of average)



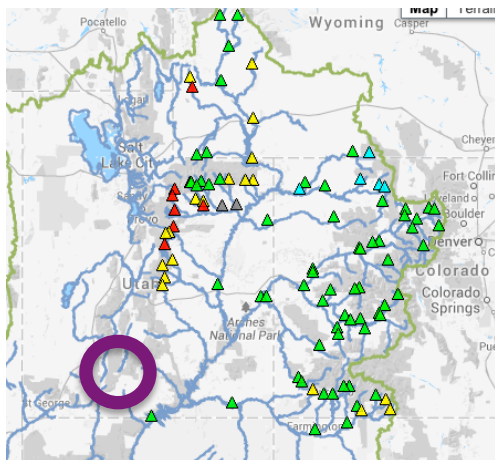
Plot Created 2014-01-21 15:12:15, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -0.6% from yesterday and -5.1% from January 1
 Forecasts in the observed period include observed values.



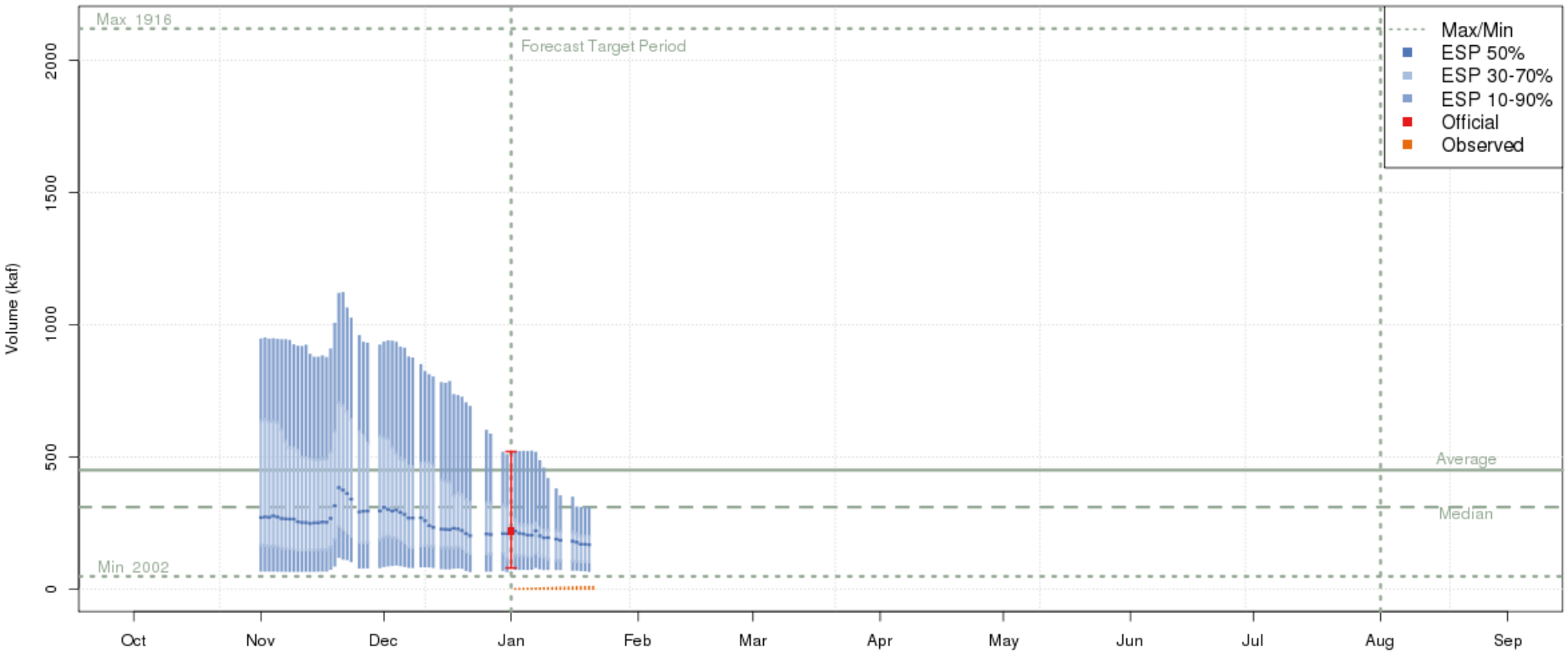
Virgin - Virgin (VIRU1) Apr-Jul 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 36kaf (54.3% of average)



Plot Created 2014-01-21 15:22:30, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -1.8% from yesterday and -5.3% from January 1
 Forecasts in the observed period include observed values.



Salt - Roosevelt- Nr (SLRA3) Jan-May 2014 Runoff Forecast (Includes 5 Day Precip Forecast)
2014-01-01 Official 50% Forecast: 220kaf (33.4% of average)



Plot Created 2014-01-21 15:17:58, Lastest ESP Run from 2014-01-21, NOAA / NWS / CBRFC
 Today's 50% ESP forecast changed -5.6 % from yesterday and -32.2 % from January 1
 Forecasts in the observed period include observed values.

2014 Forecast Webinar Schedule

January 7 at 1pm MT

February 6 at 1pm MT

March 6 at 1pm MT

April 7 at 1pm MT

May 6 at 1pm MT

June 5 at 1pm MT

Registration available:

www.cbrfc.noaa.gov/news/wswebinar2014.html



COLORADO BASIN RIVER FORECAST CENTER



NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

2014 Fourth Annual Colorado Basin River Forecast Center Stakeholder Forum

Dates: February 25-26 2014

Location: Colorado Basin River Forecast Center, 2242 West North Temple, Salt Lake City, UT 84116

Theme: Forecast Products, Delivery, Interpretation, and Application

Goals:

- (1) Open discussion between CBRFC personnel and stakeholders regarding CBRFC products and services, with an emphasis on recently released products and their interpretation.
- (2) Critical discussion on Colorado River and Great Basins products and their interpretation, practical application of these products, and delivery of these products through the CBRFC website and other methods.
- (3) Opportunities for improvement of and collaboration over CBRFC products and services.

Registration:

Registration is free. To register, please contact Valerie Offutt at Valerie.Offutt@noaa.gov at 801.524.5130. You may also contact Greg Smith at Greg.Smith@noaa.gov or Paul Miller at Paul.Miller@noaa.gov with questions or comments.

Background:

CBRFC's annual stakeholder forum is important to the CBRFC and its stakeholders for determining forecast and development priorities. The forum emphasizes interaction between participants and CBRFC decision-makers such that participants develop an in-depth understanding of the CBRFC's forecast process and its development activities while also providing a forum for participants to share their experiences, priorities, and questions with CBRFC staff and management. Past forums have helped guide CBRFC projects and product development paths as well as other activities in the NWS and NOAA. Reports and presentations from the forum will be made available online.

Please feel free to pass along any additional comments or suggestions with your answers as well. Please send your responses to Greg Smith at Greg.Smith@noaa.gov.

Agenda:

Draft agenda now available [here](#). Please check back periodically for updates!

More Resources

- www.cbrfc.noaa.gov
- February webinar: 1pm Feb 6

Feedback, Questions, Concerns always welcome....



Kevin Werner

CBRFC Service Coordination Hydrologist

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Email: kevin.werner@noaa.gov

