CBRFC
April 2012 mid-month
Peak Flow Forecast Webinar

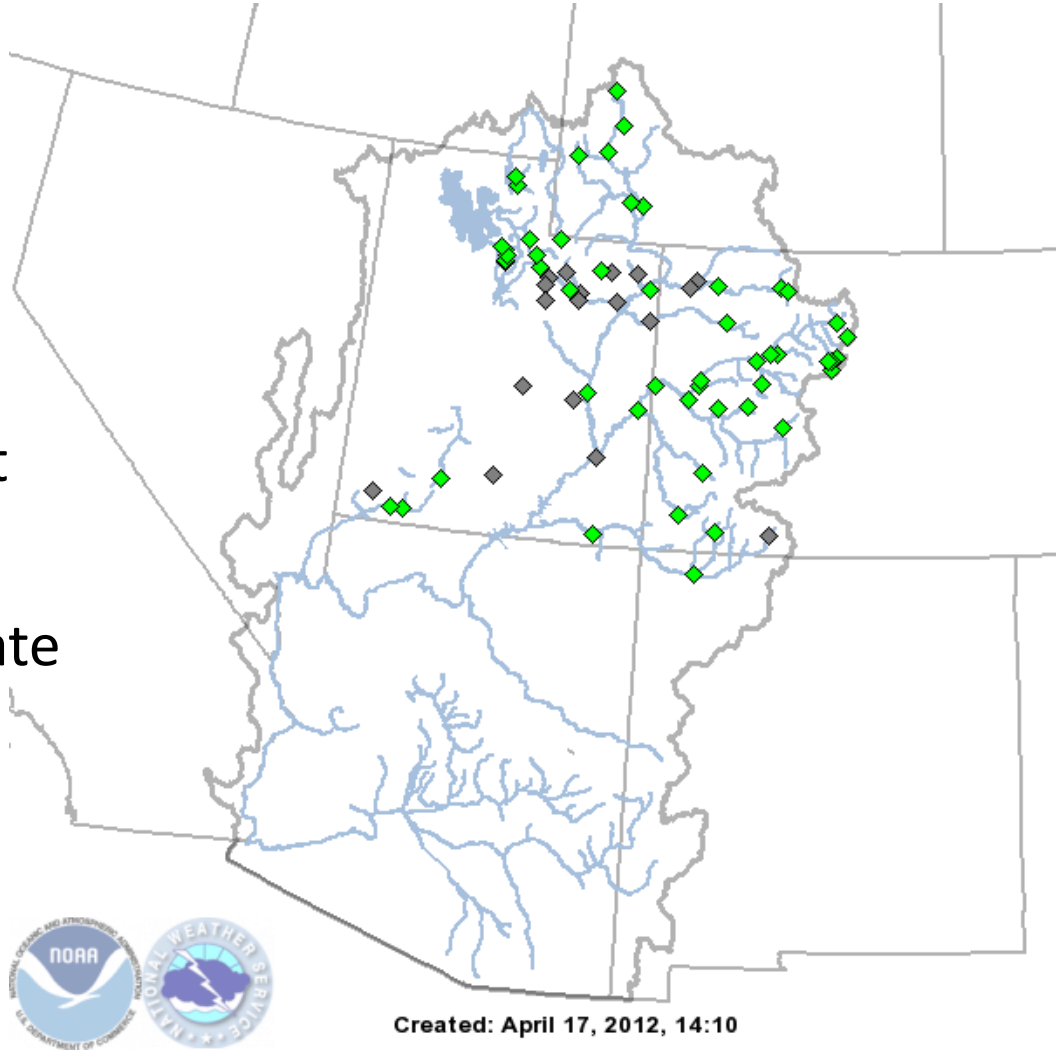
1 pm, April 18, 2012

Greg Smith

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

Today's Presentation

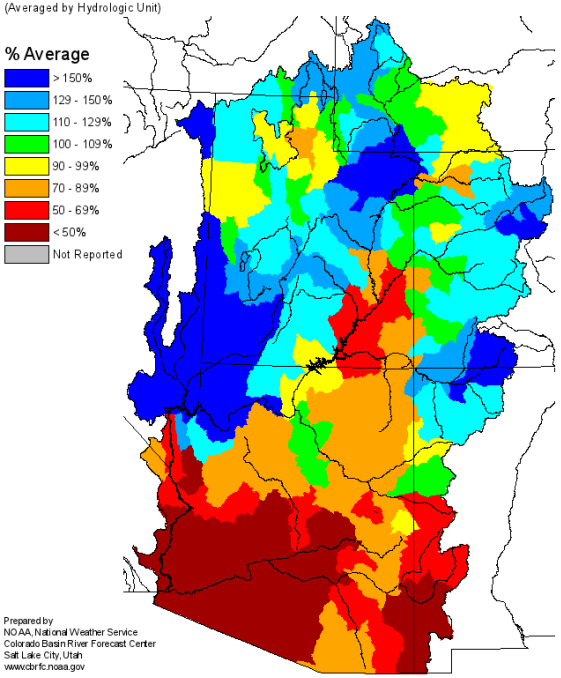
- Winter Precipitation Review
- Snow States
- Short term weather forecast
- Peak Flow Forecasts
- Mid April water supply update



Web Reference: www.cbrfc.noaa.gov click on peak map

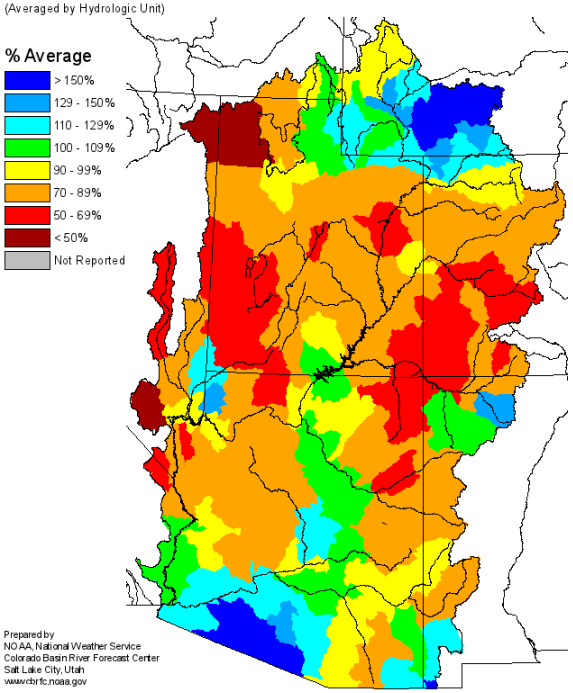
Monthly Precipitation for October 2011

(Averaged by Hydrologic Unit)



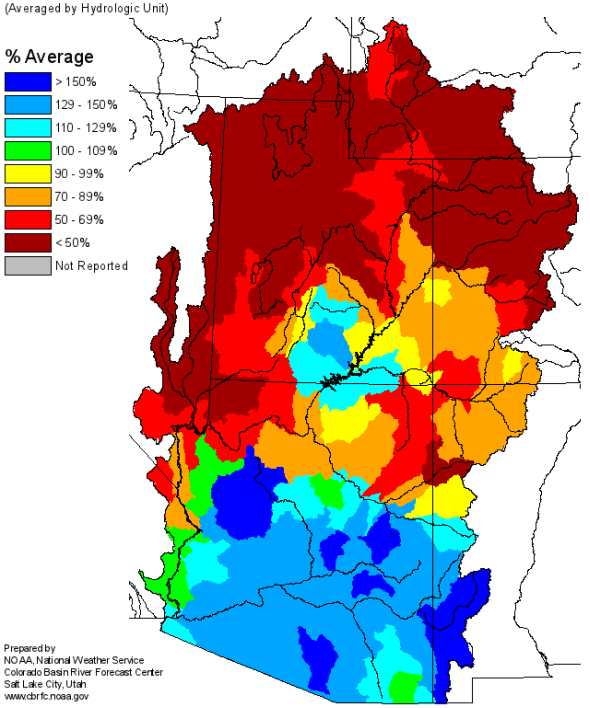
Monthly Precipitation for November 2011

(Averaged by Hydrologic Unit)



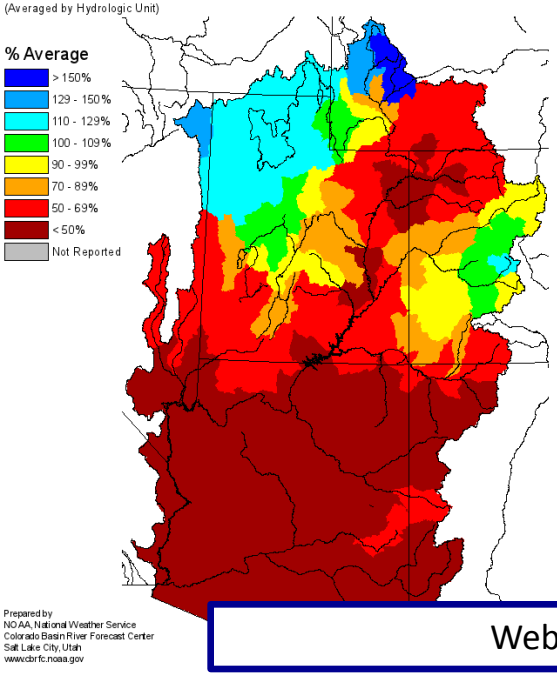
Monthly Precipitation for December 2011

(Averaged by Hydrologic Unit)



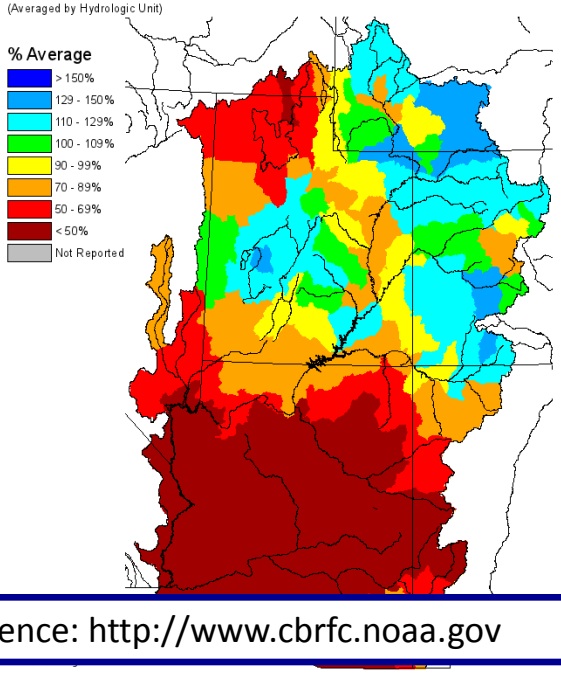
Monthly Precipitation for January 2012

(Averaged by Hydrologic Unit)



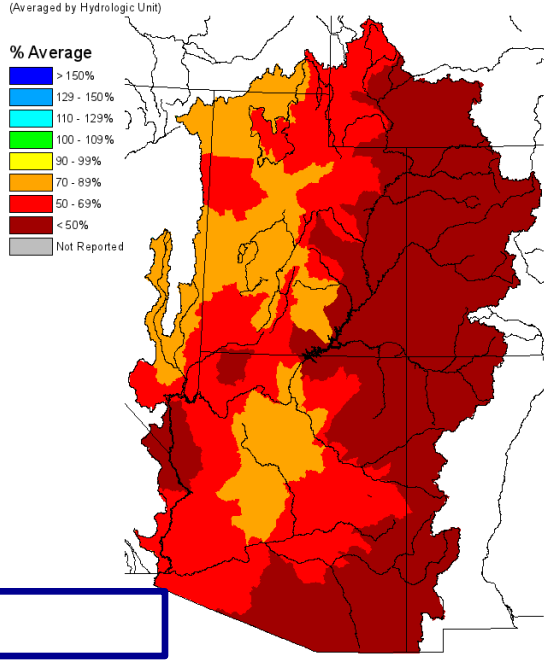
Monthly Precipitation for February 2012

(Averaged by Hydrologic Unit)



Monthly Precipitation for March 2012

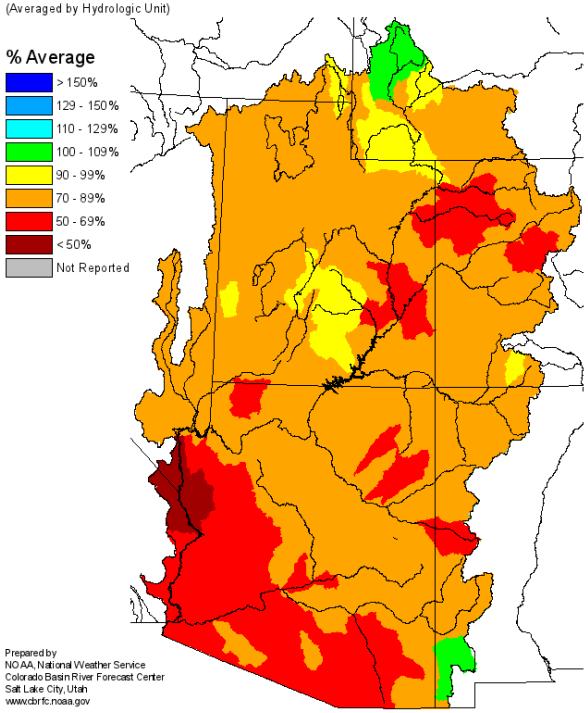
(Averaged by Hydrologic Unit)



Web Reference: http://www.cbrfc.noaa.gov

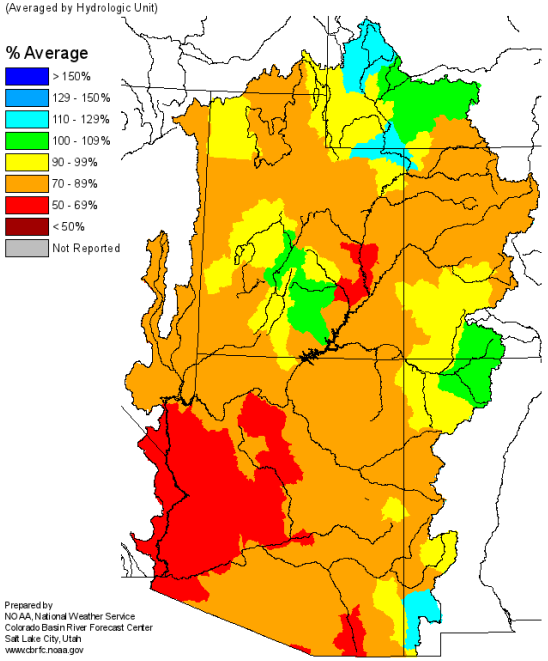
Seasonal Precipitation, October 2011 - March 2012

(Averaged by Hydrologic Unit)



Seasonal Precipitation, October 2011 - February 2012

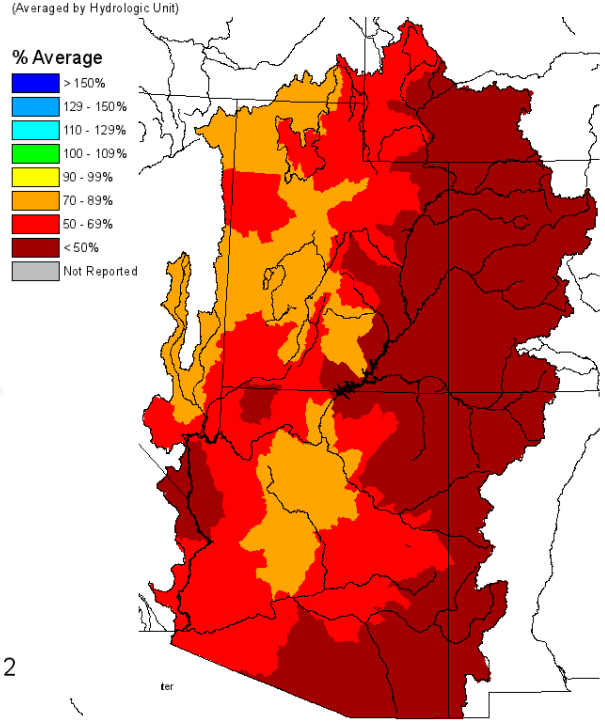
(Averaged by Hydrologic Unit)



Very Warm &
Very Dry
March

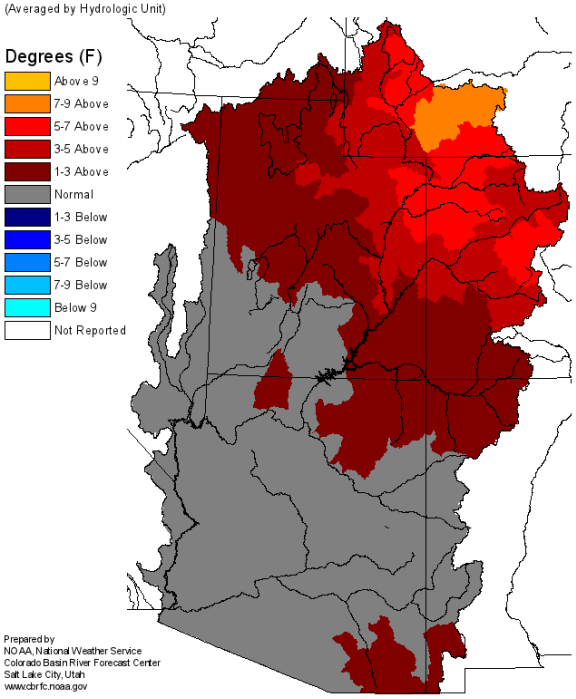
Monthly Precipitation for March 2012

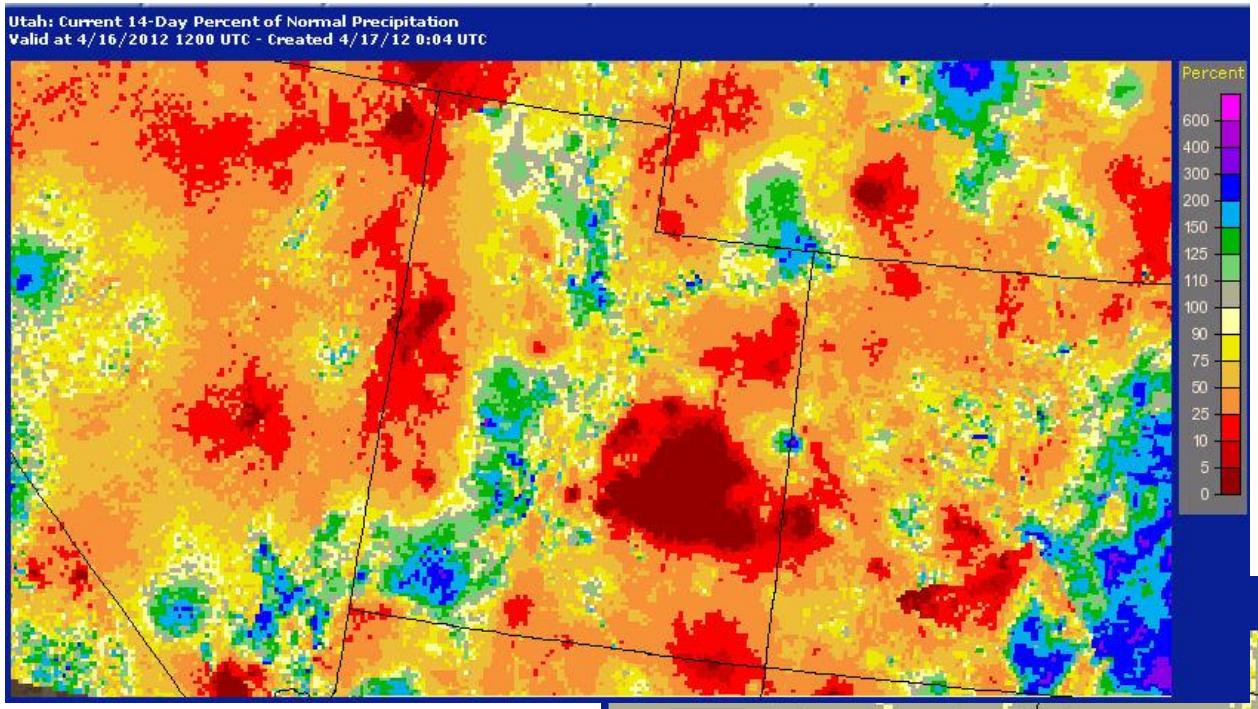
(Averaged by Hydrologic Unit)



Monthly Max Temp Deviation for March 2012

(Averaged by Hydrologic Unit)

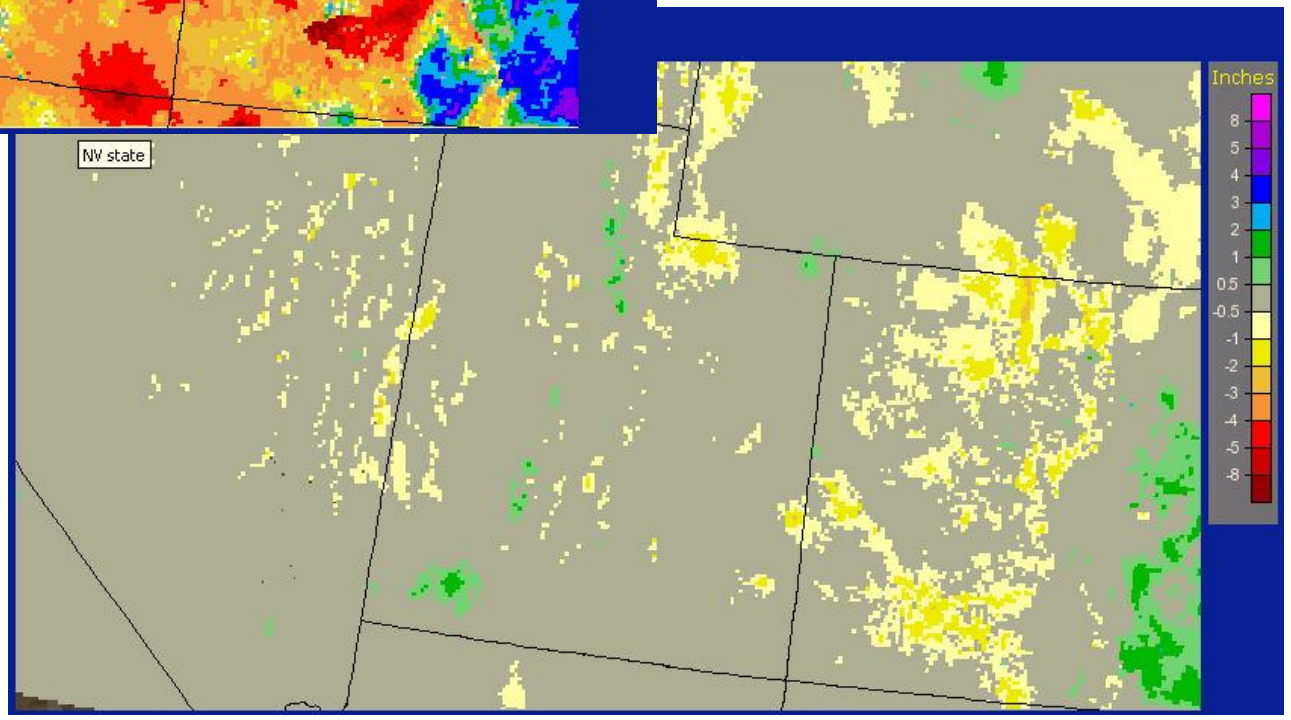




First Half of April Precipitation

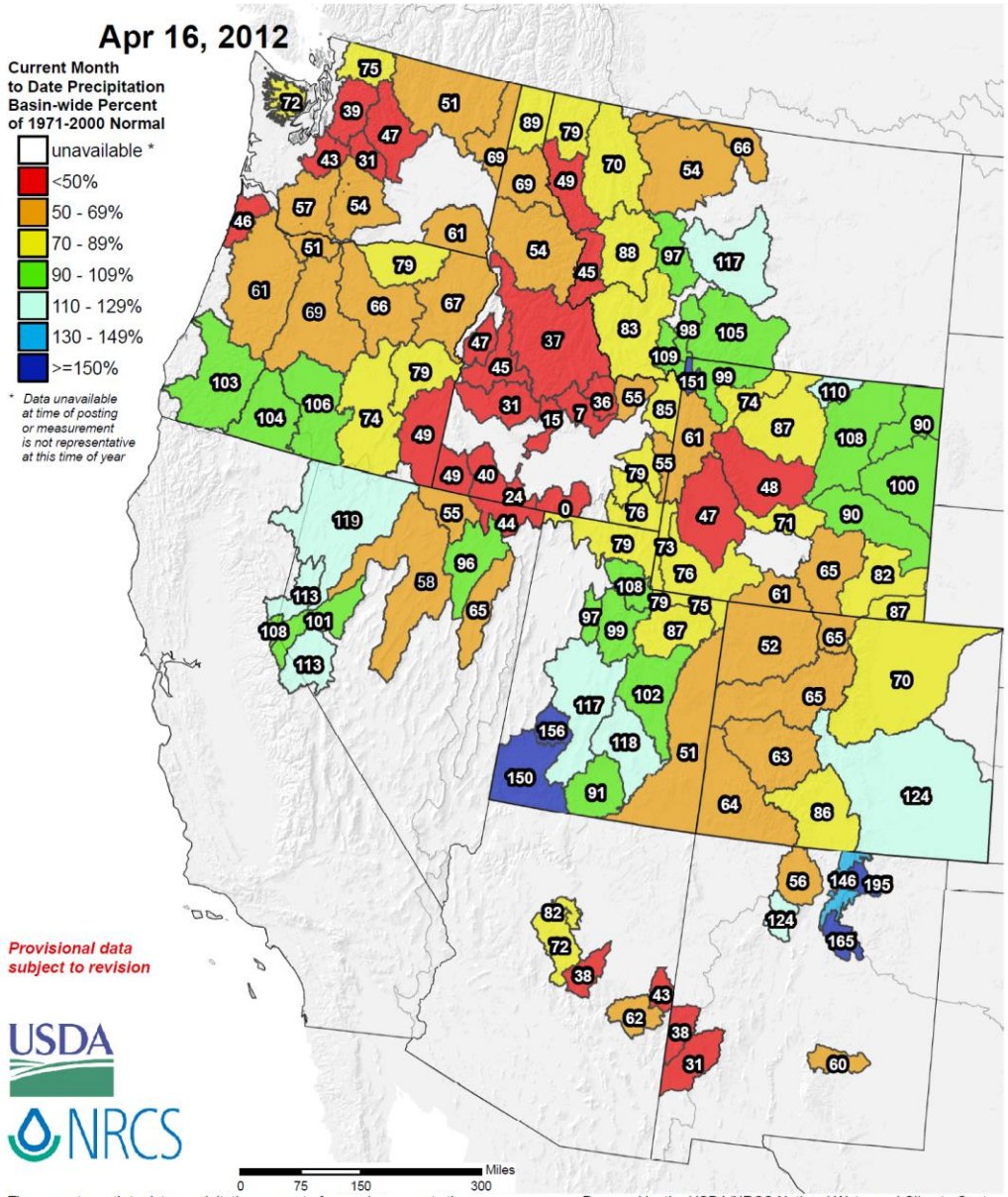
Percent of Average

Departure from Average



Web Reference: http://water.weather.gov/precip

Westwide SNOTEL Current Month to Date Precipitation % of Normal

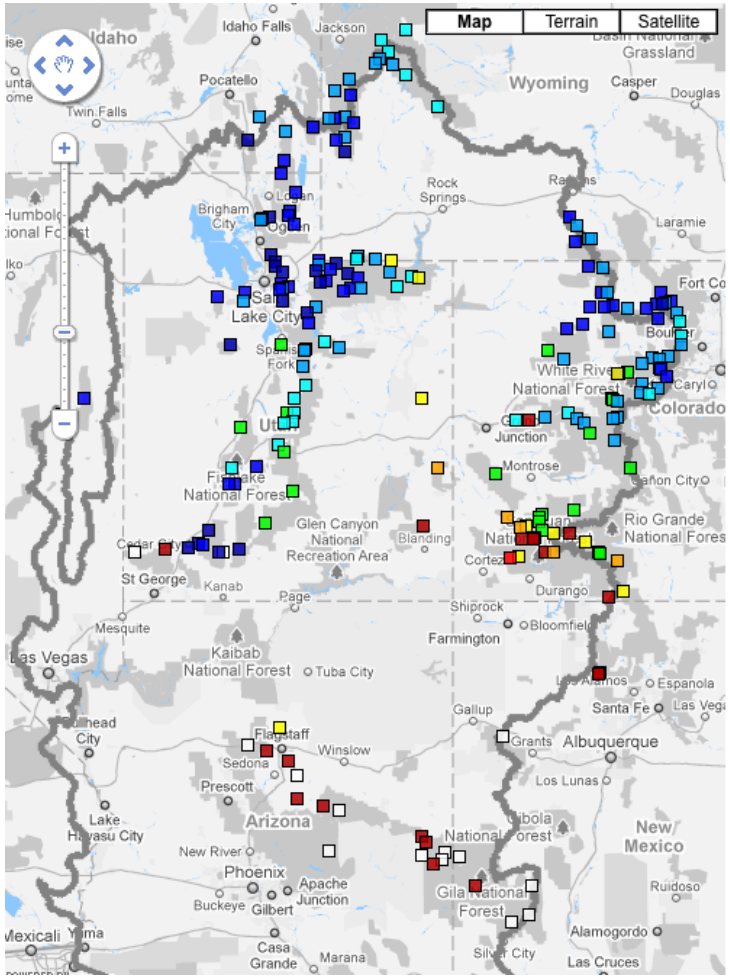


The current month to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

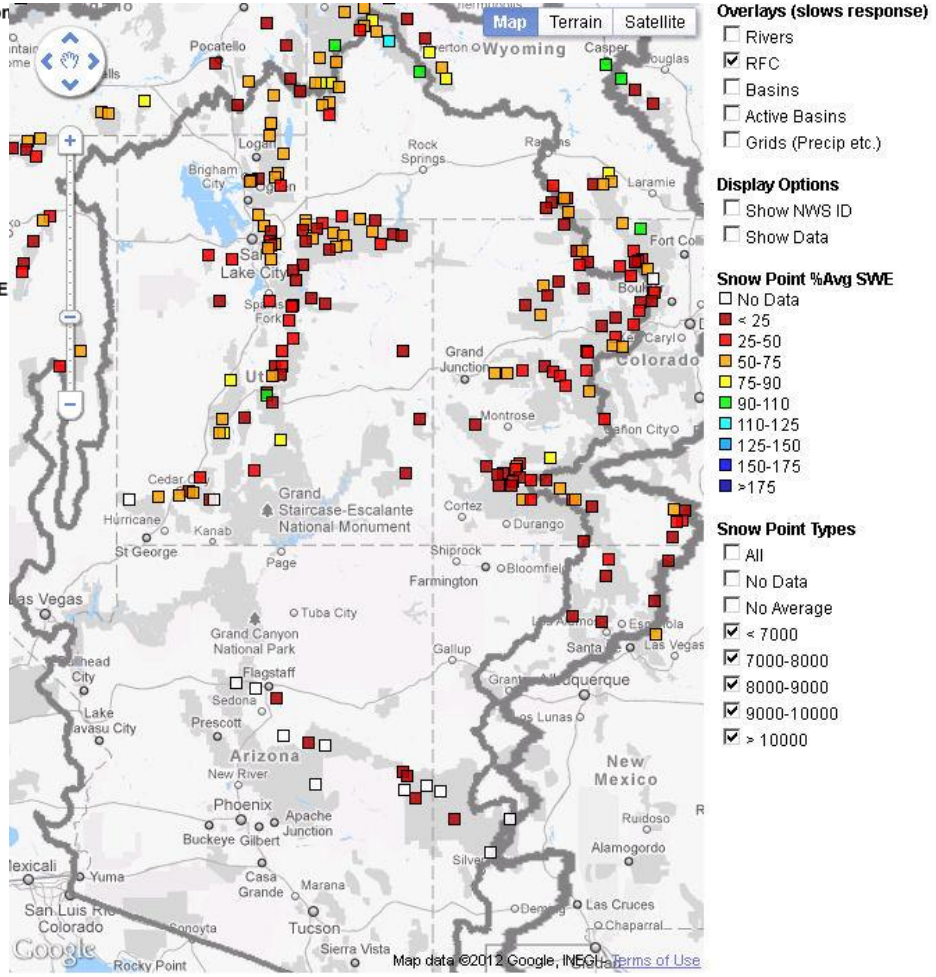
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

Snow

Feast or Famine – The difference a year makes



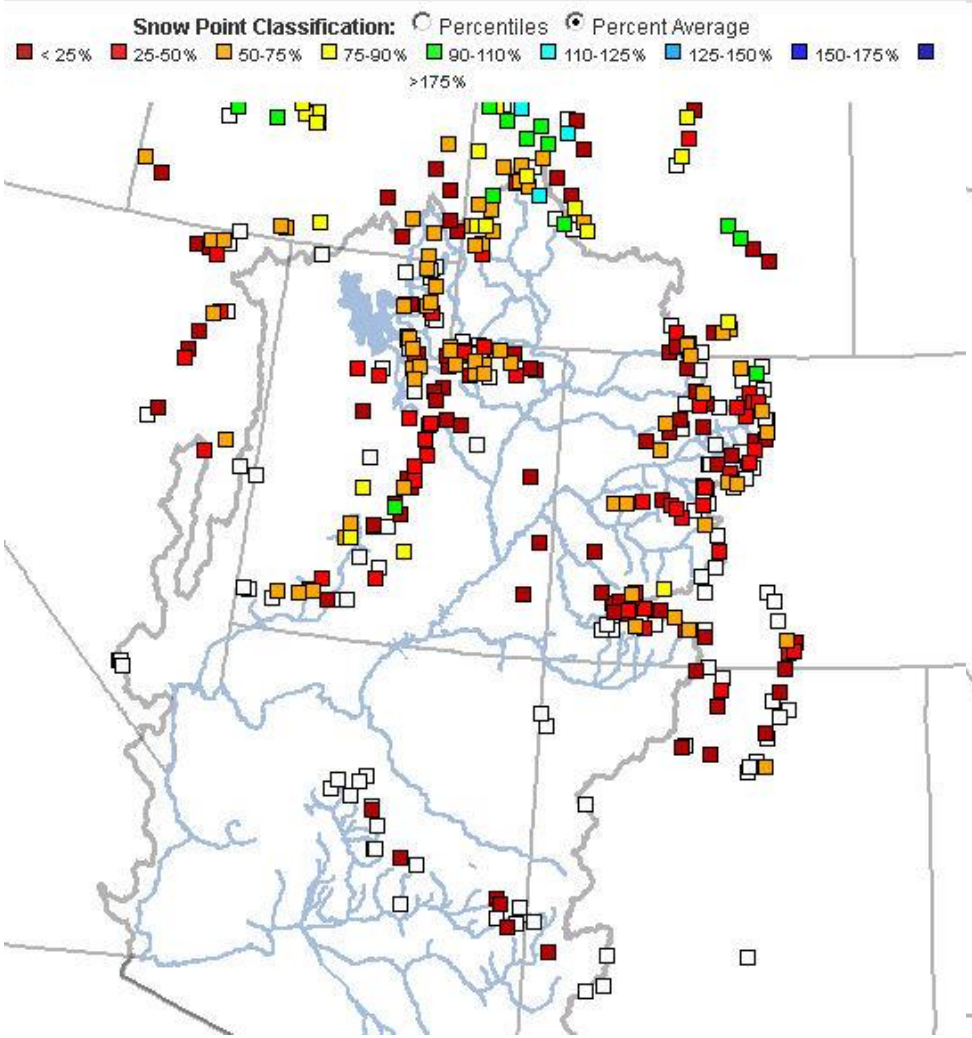
April 20 2011

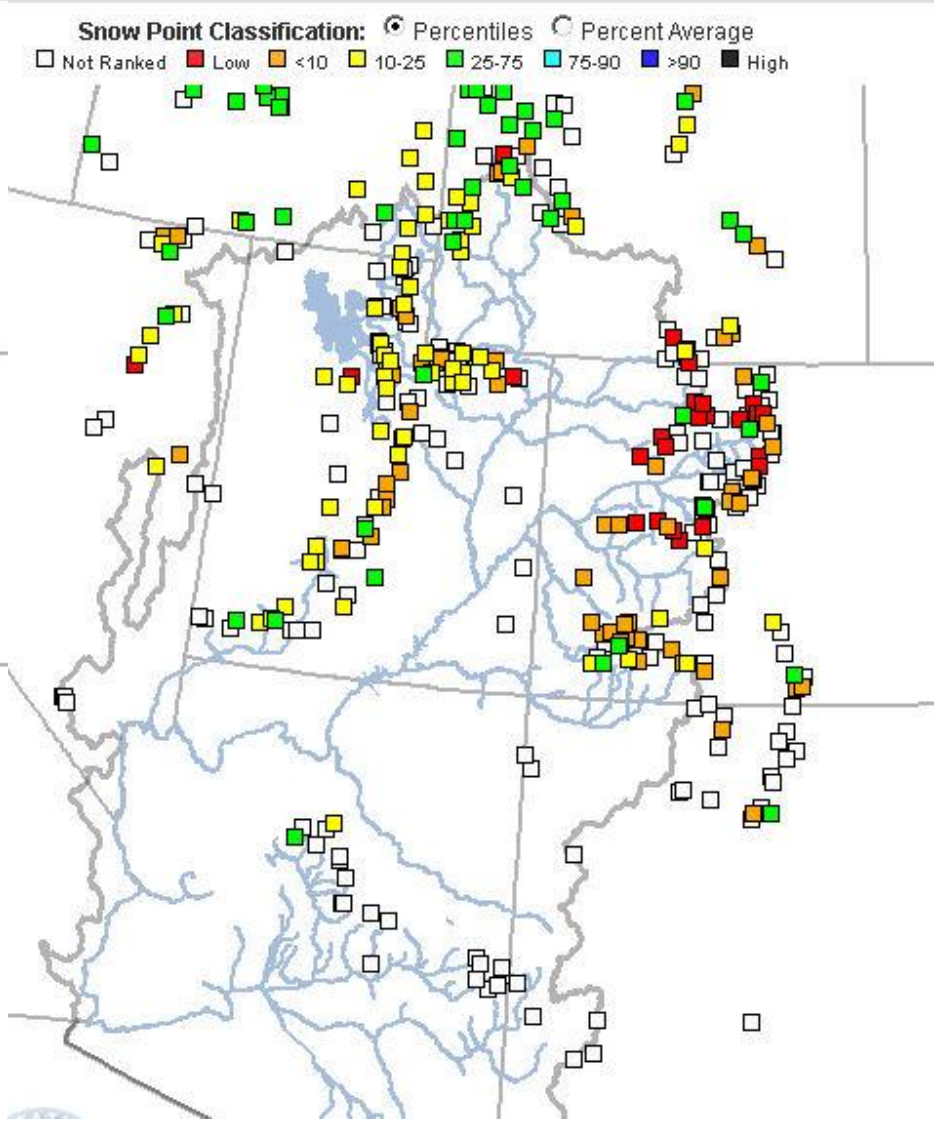


April 17 2012

Web Reference: http://www.cbrfc.noaa.gov/gmap/cmap2.php?con=snow

Snow

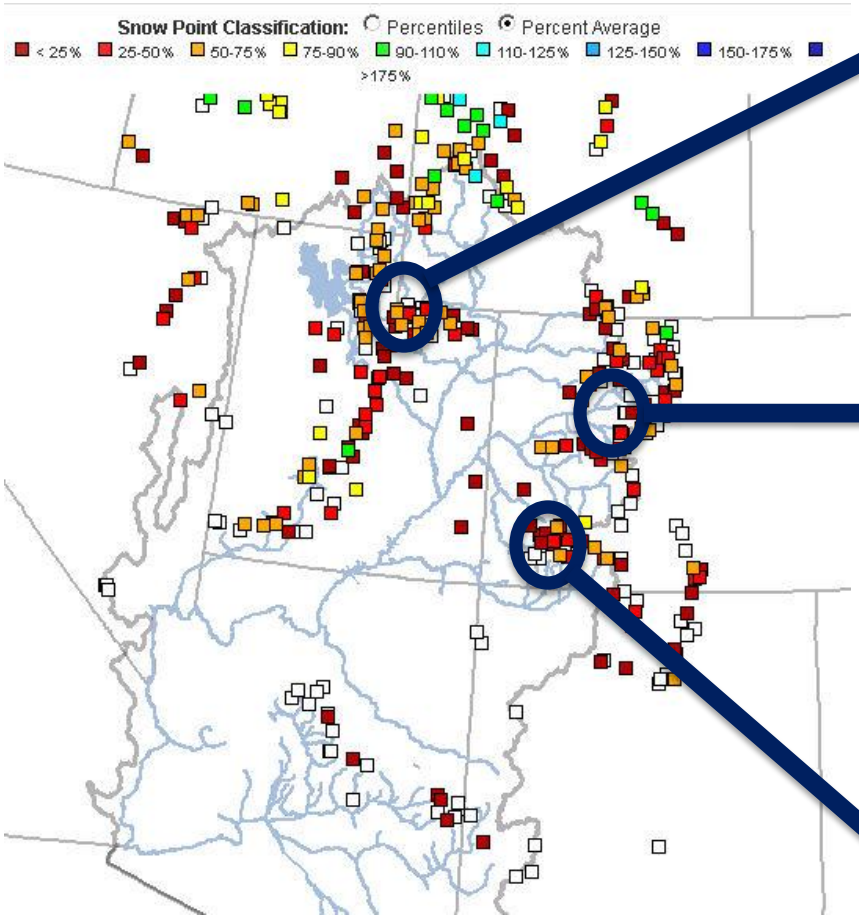




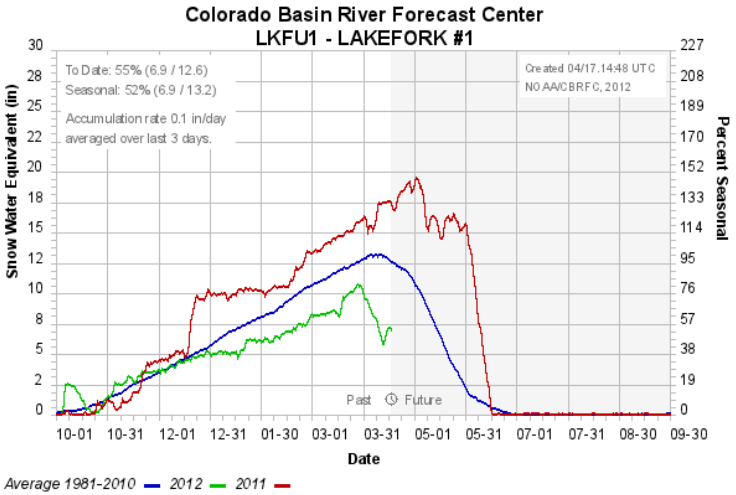
April 17 as a percent of average (above)
April 17 as a percentile (right)

Web Reference: http://www.cbrfc.noaa.gov/gmap/cmap2.php?con=snow

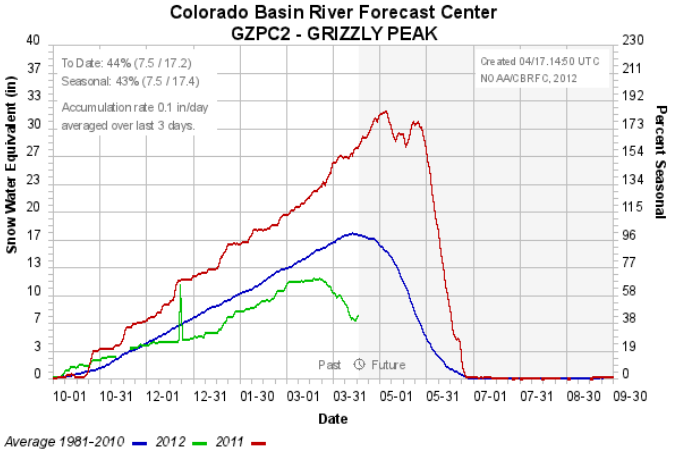
Snow started melting at all beginning in March



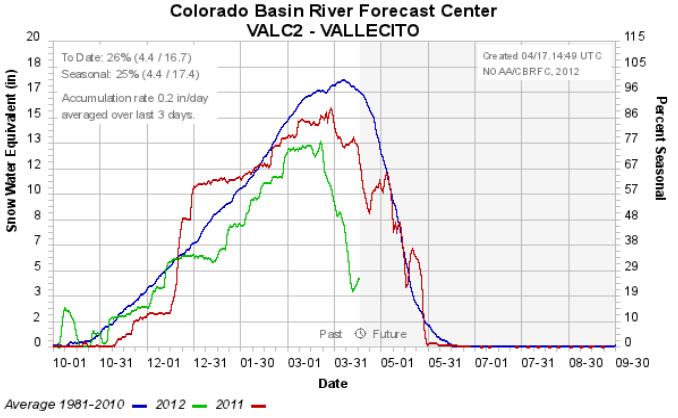
10100 FT



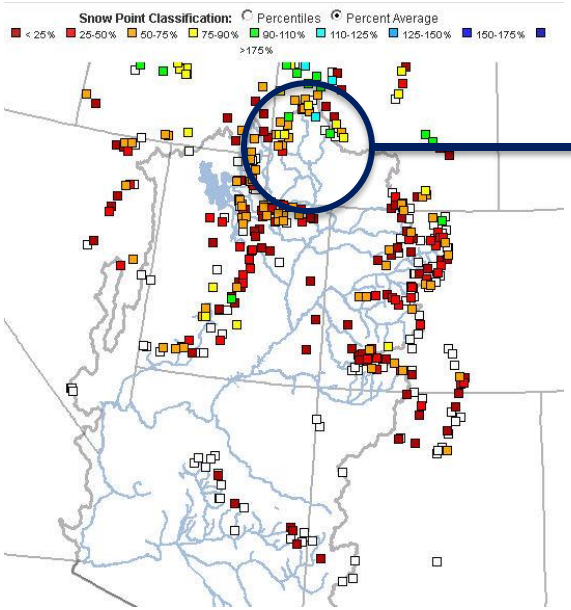
11100 FT

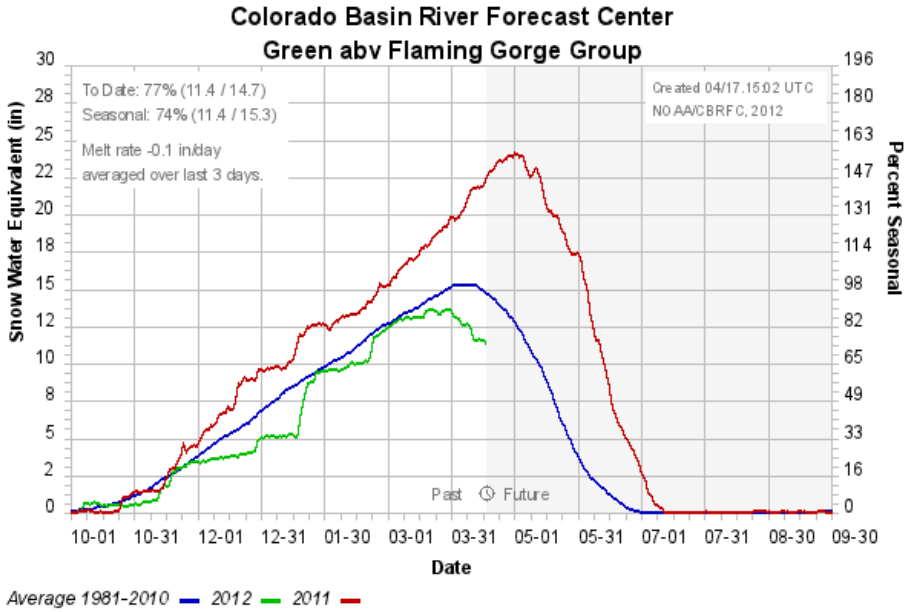


10800 FT

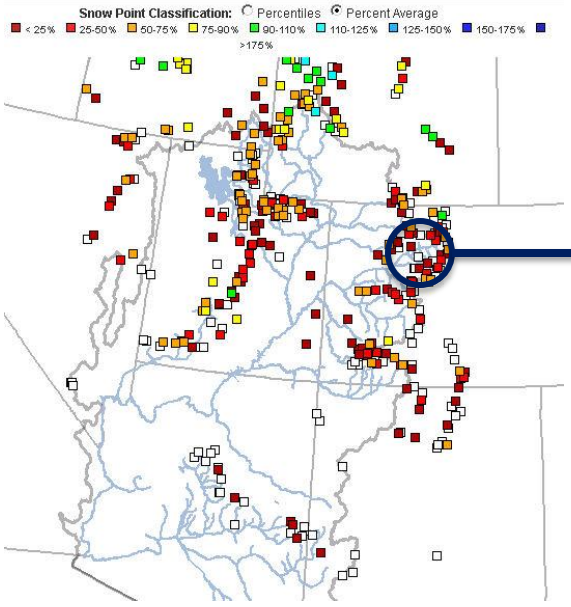


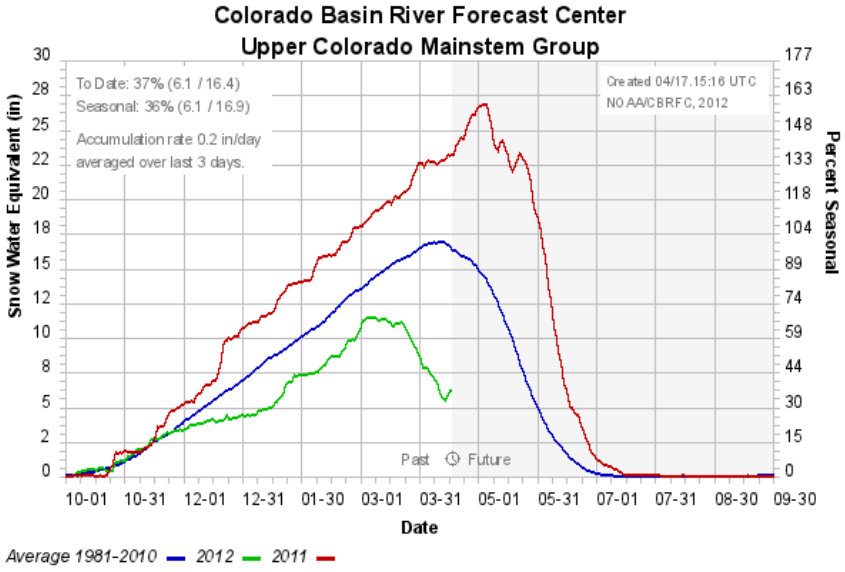
SNOW: Upper Green Basin (above Flaming Gorge)



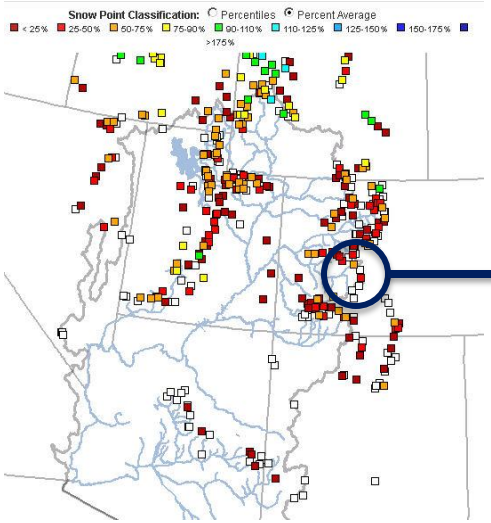


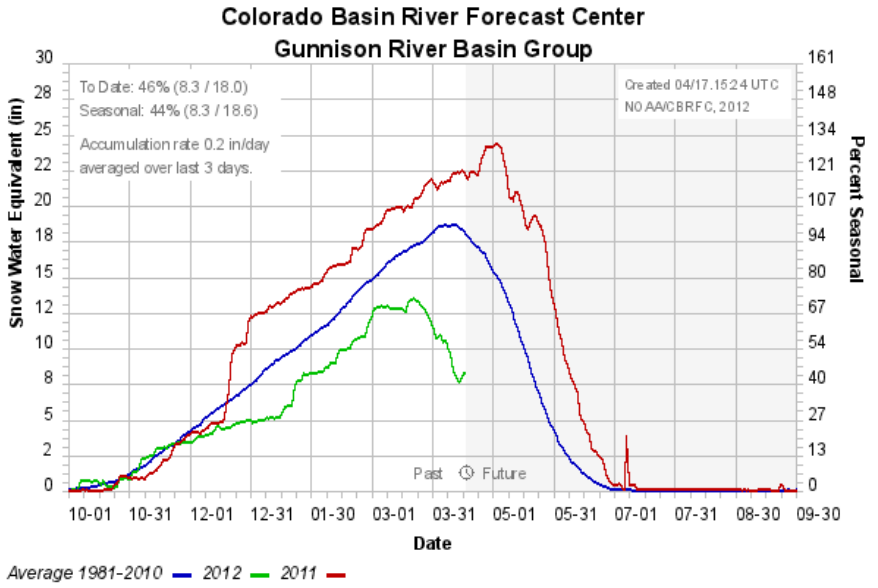
SNOW: Colorado Mainstem (above Cameo)



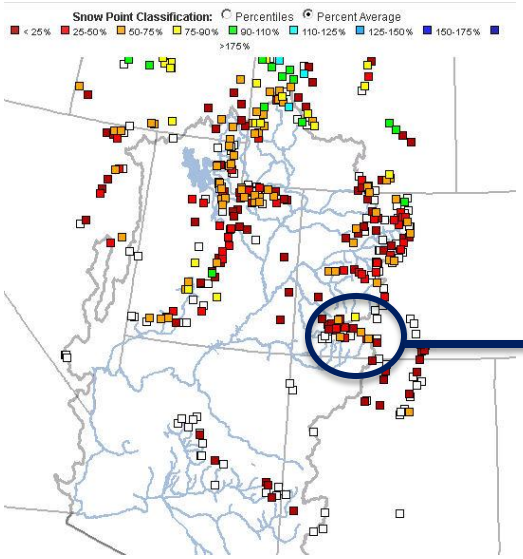


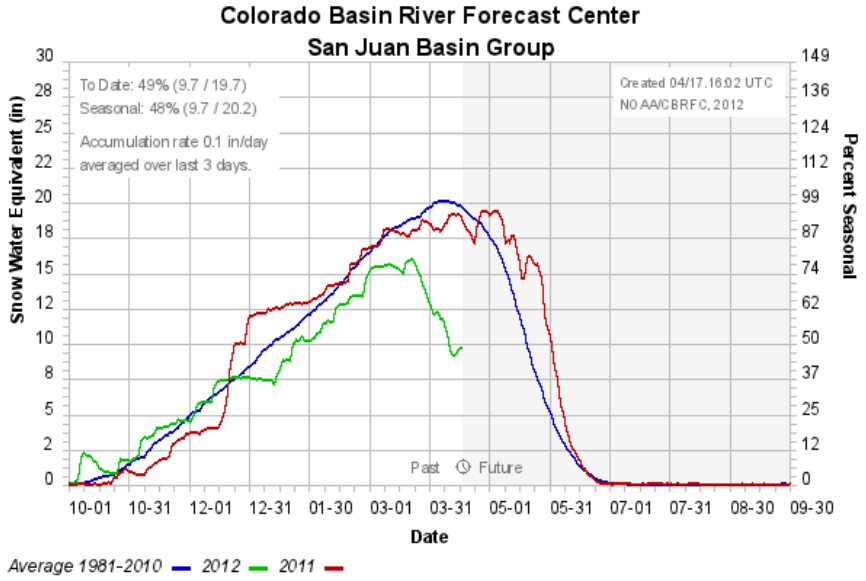
SNOW: Gunnison Basin





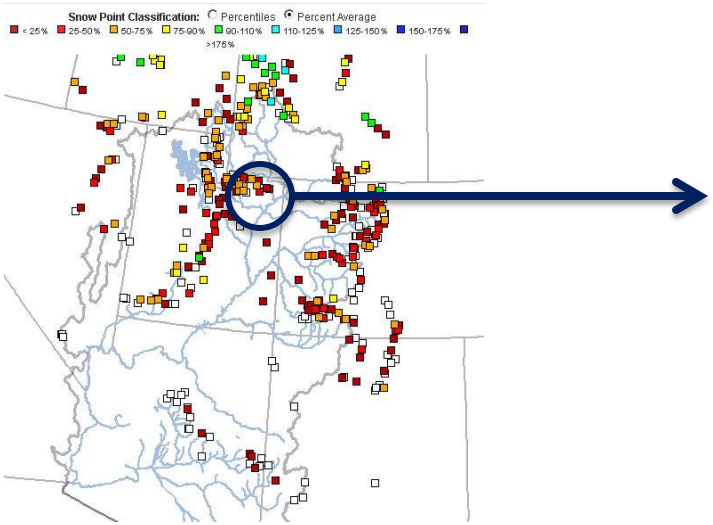
SNOW: San Juan Basin

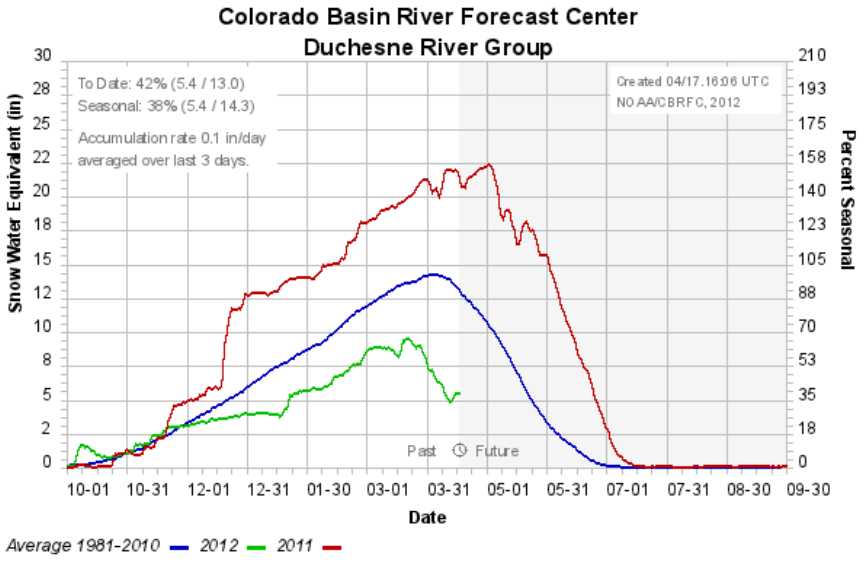




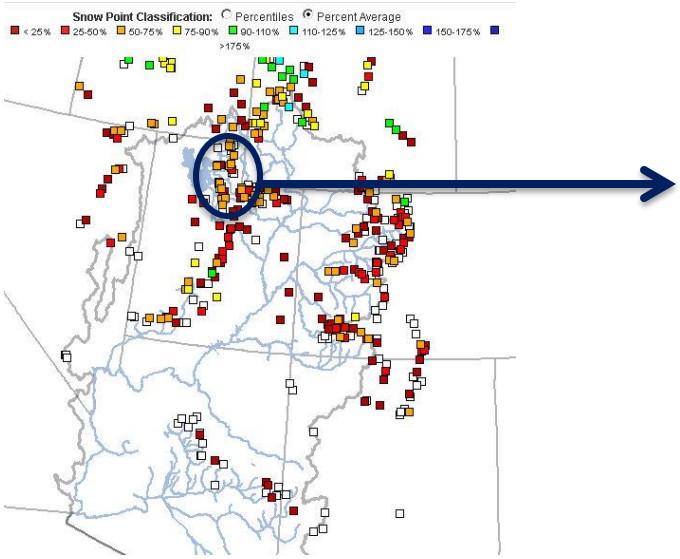
Web Reference: http://www.cbrfc.noaa.gov/station/sweplot/sweplot.cgi???open

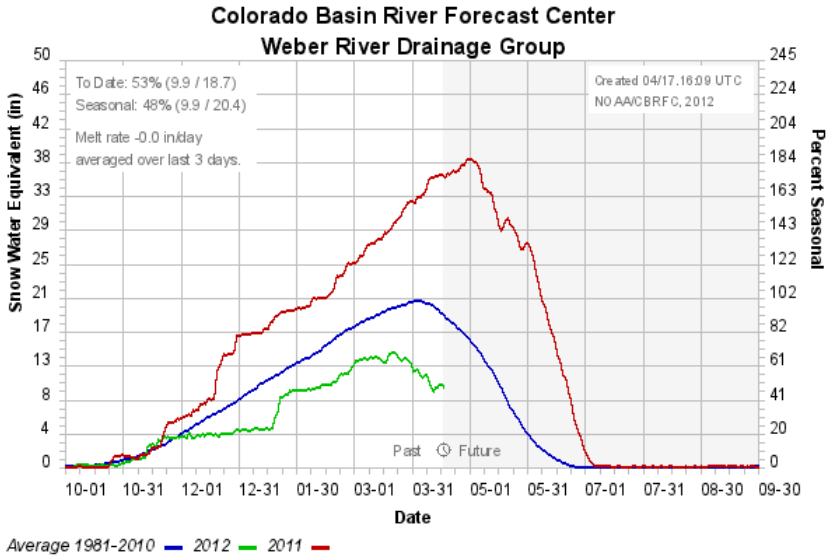
SNOW: Duchesne River Basin





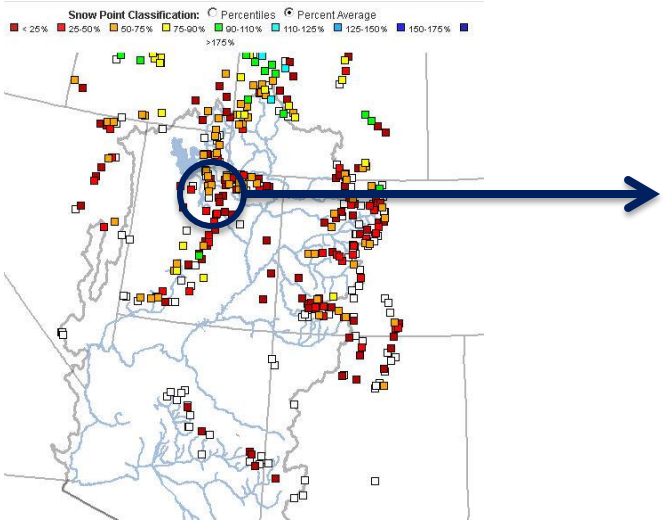
SNOW: Weber River

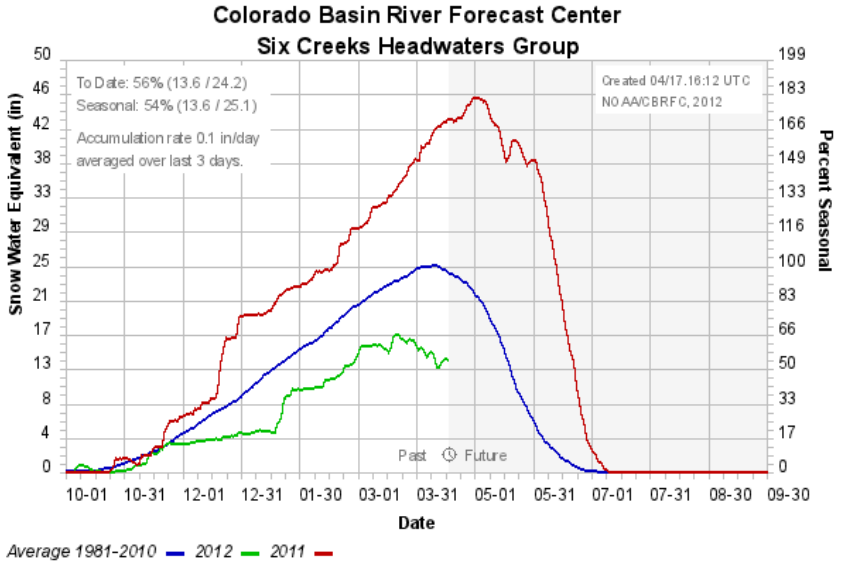




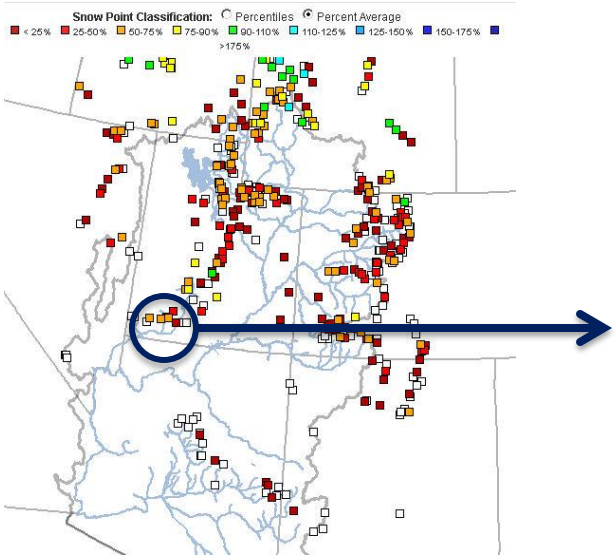
Web Reference: http://www.cbrfc.noaa.gov/station/sweplot/sweplot.cgi???open

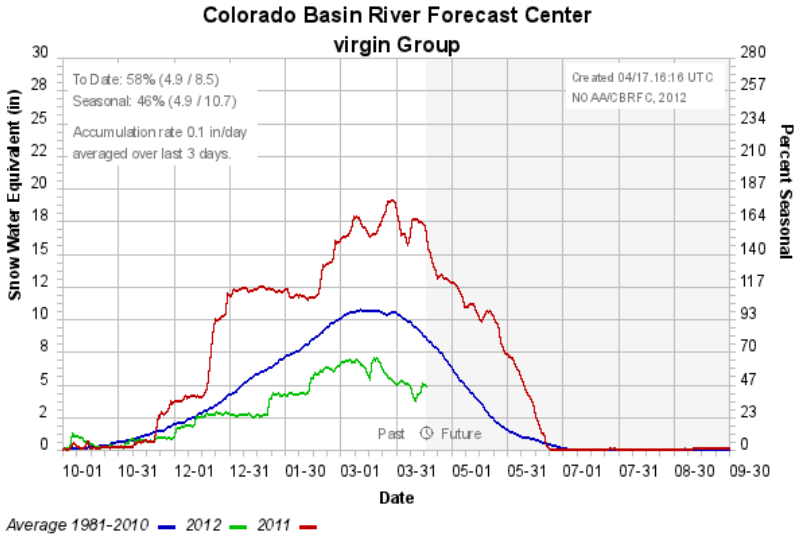
SNOW: Six Creeks (S.L. County)





SNOW: Virgin River

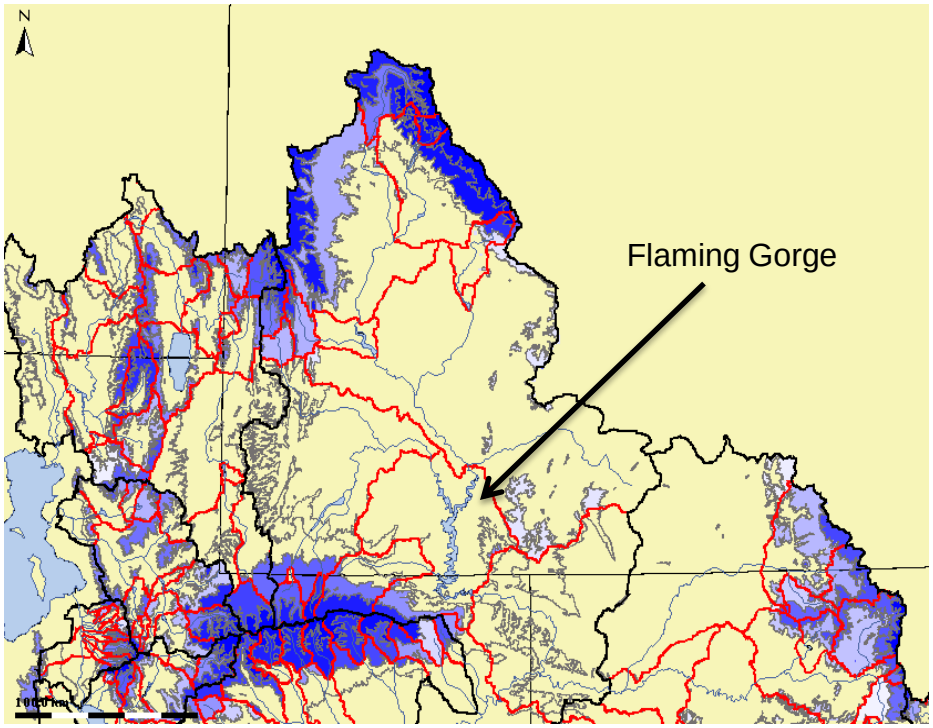


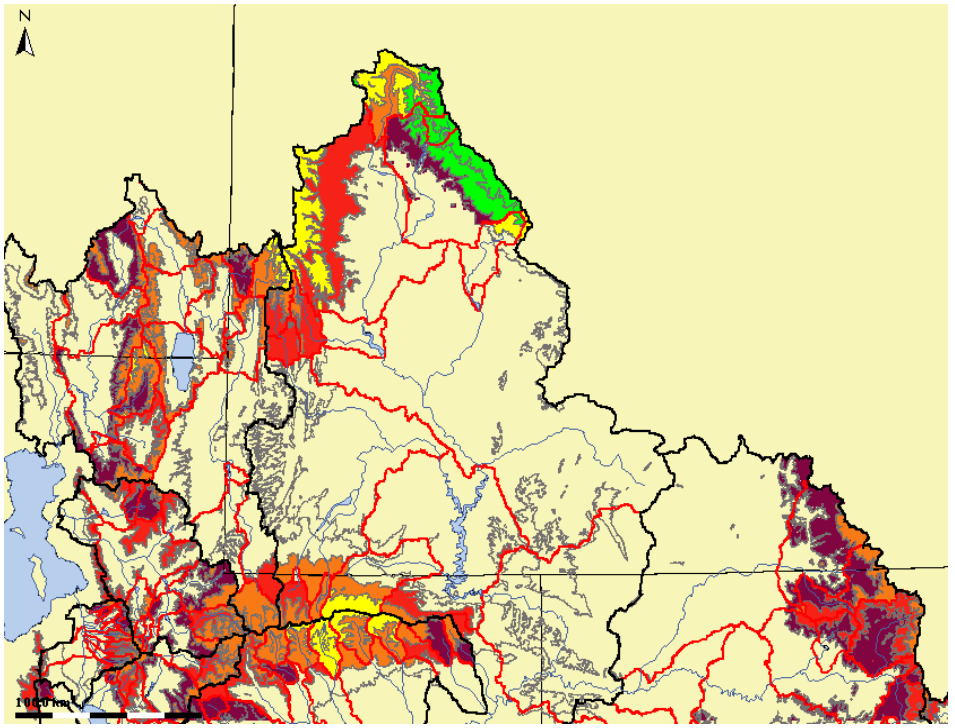


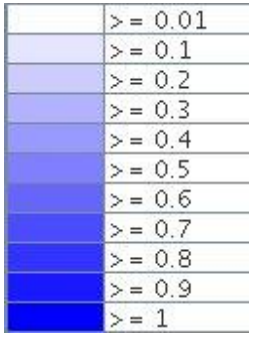
Web Reference: http://www.cbrfc.noaa.gov/station/sweplot/sweplot.cgi???open

SNOW: Upper Green Basin (above Flaming Gorge)

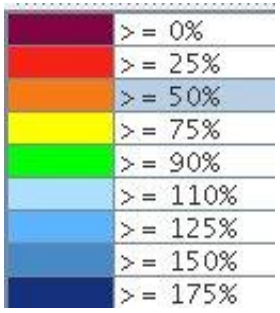
Community Hydrologic Prediction System ("CHiPS")
Snow-17 – Modeled Snow States







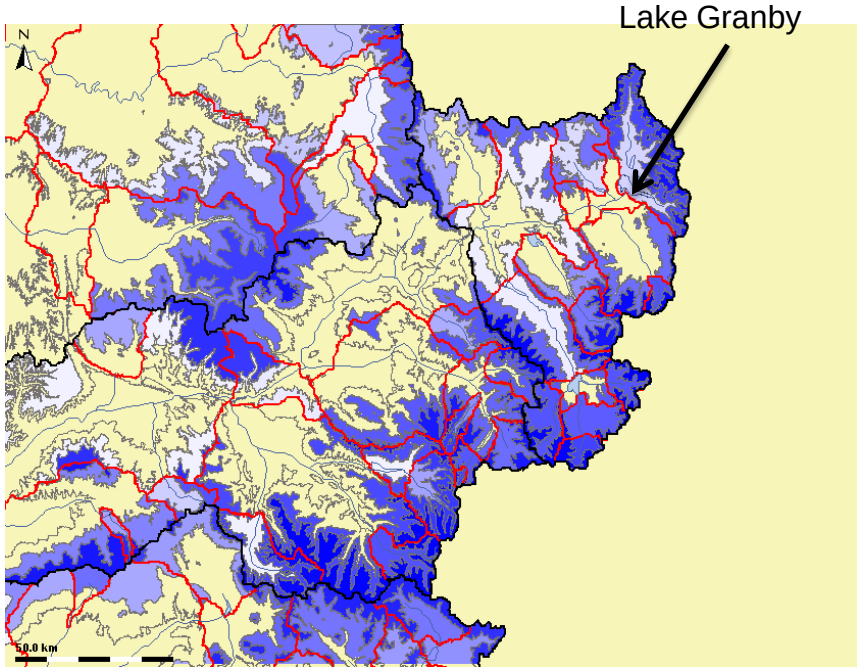
Area Extent of
Snow Cover
(percent coverage)

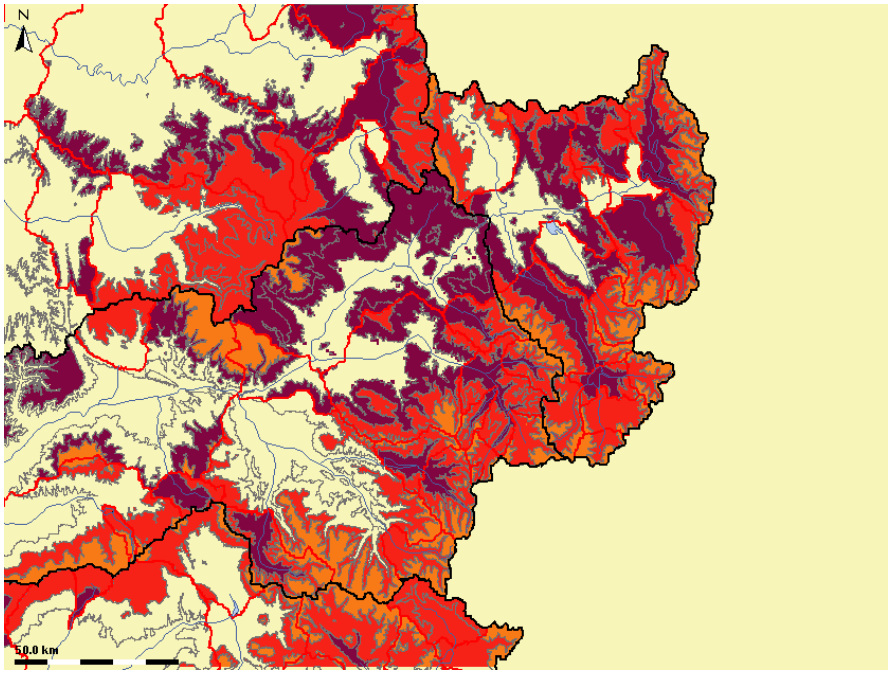


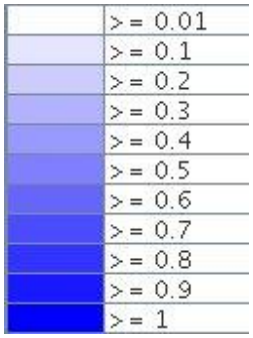
Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

SNOW: Upper Colorado Mainstem

Community Hydrologic Prediction System (“CHiPS”)
Snow-17 – Modeled Snow States







Area Extent of
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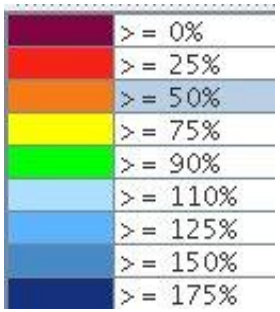
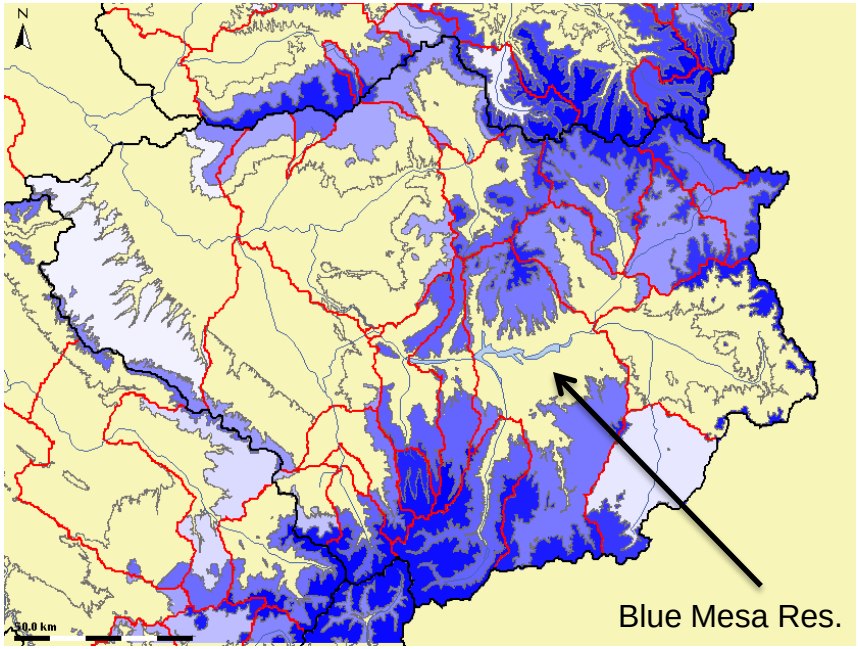
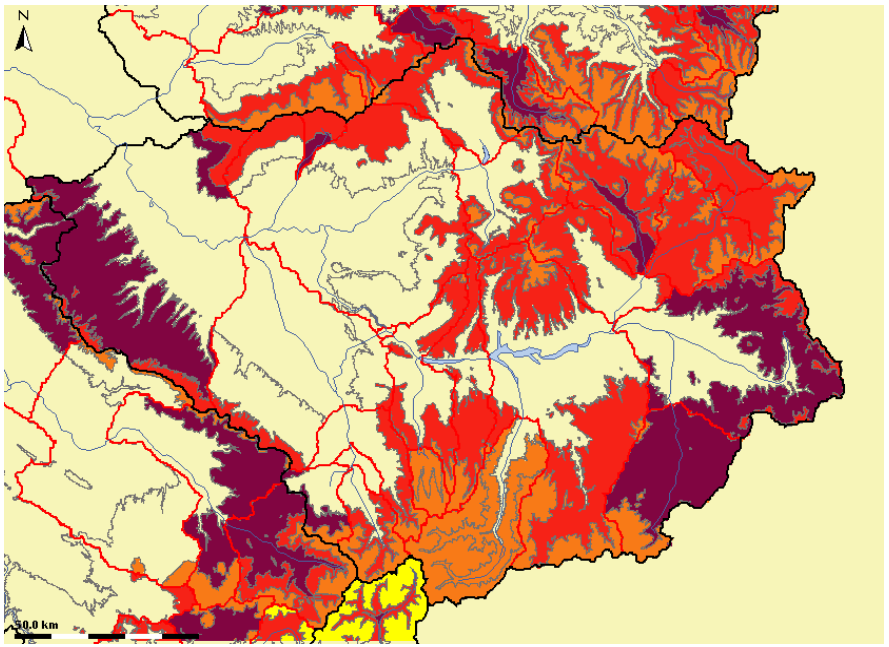


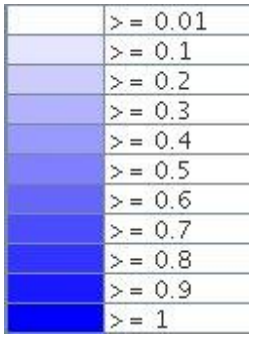
Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

SNOW: Gunnison

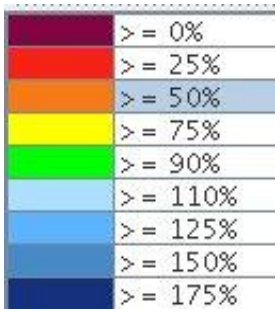
Community Hydrologic Prediction System (“CHiPS”)
Snow-17 – Modeled Snow States







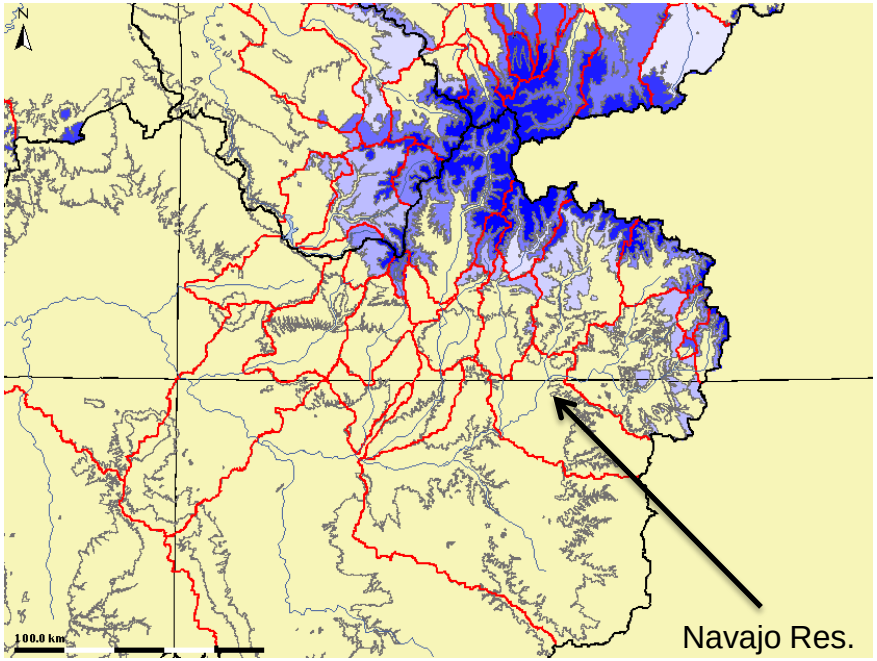
Area Extent of
Snow Cover
(percent coverage)

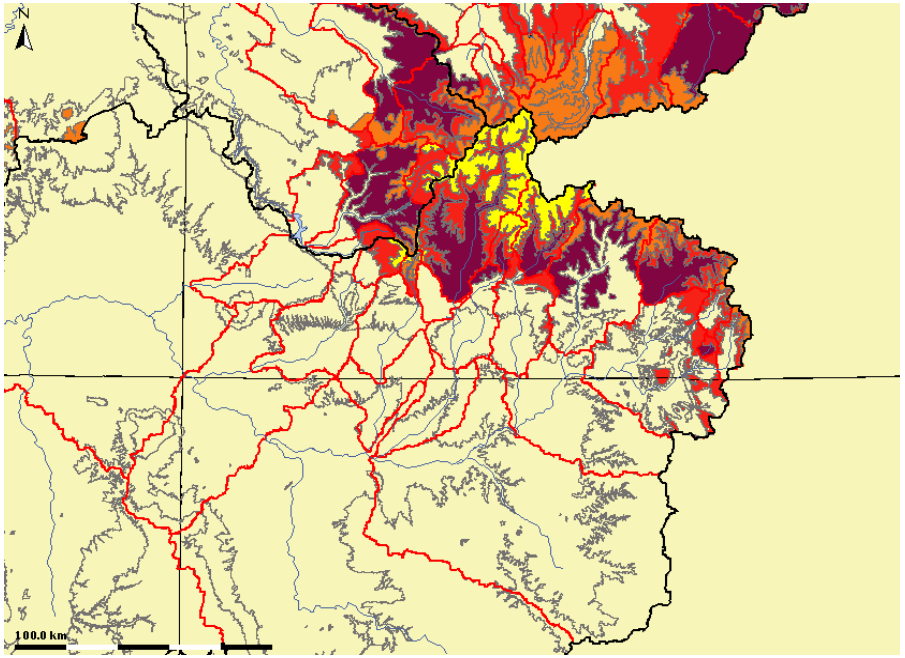


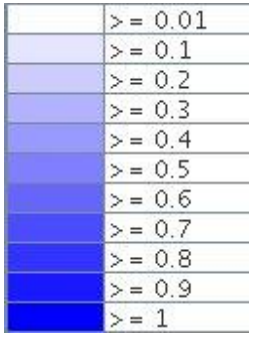
Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

SNOW: San Juan

Community Hydrologic Prediction System (“CHiPS”)
Snow-17 – Modeled Snow States







Area Extent of
Snow Cover
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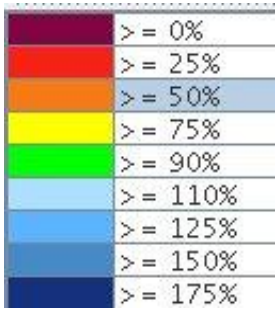
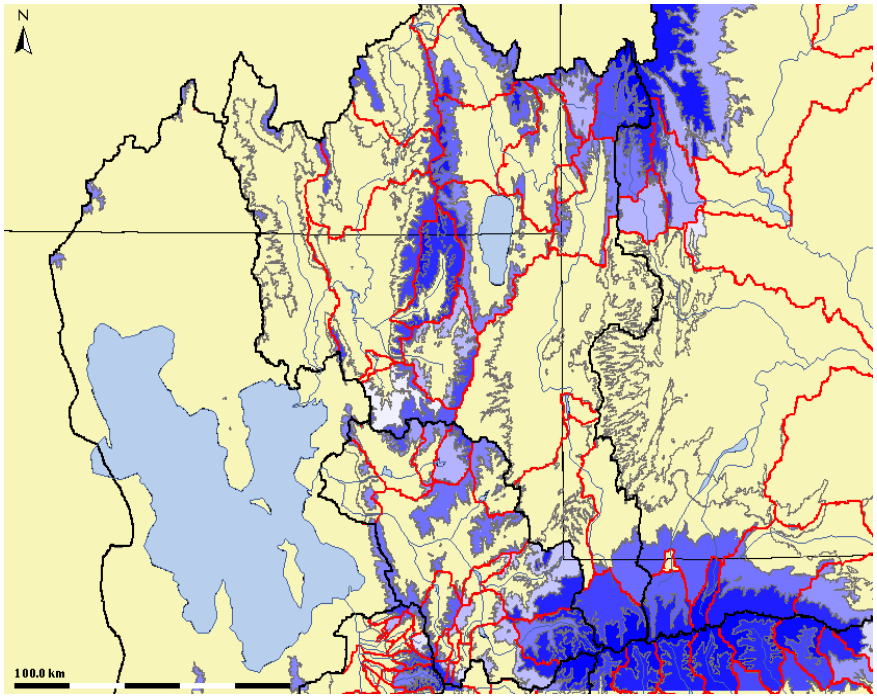
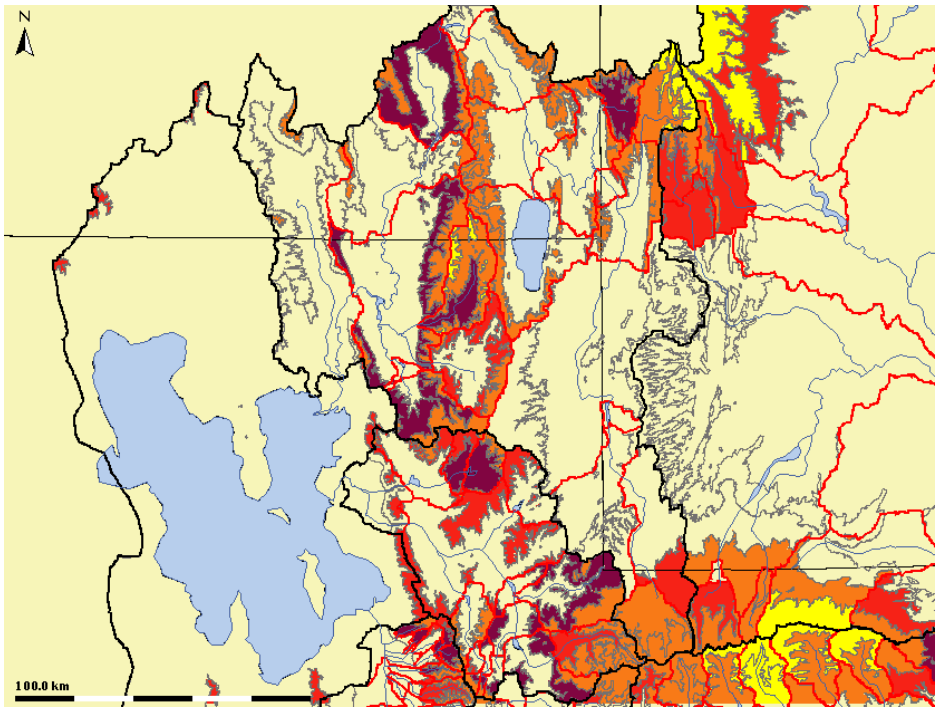


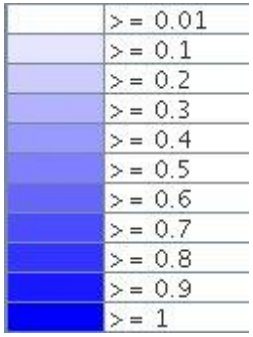
Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

SNOW: Bear & Weber

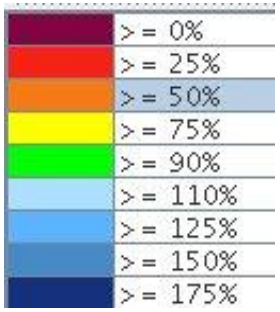
Community Hydrologic Prediction System (“CHiPS”)
Snow-17 – Modeled Snow States







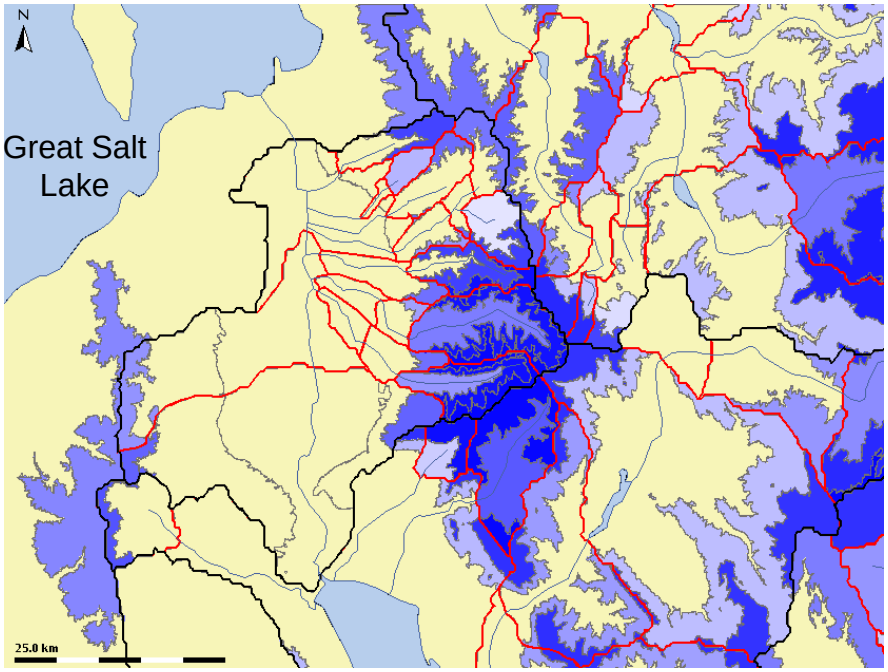
Area Extent of
Snow Cover
(percent coverage)

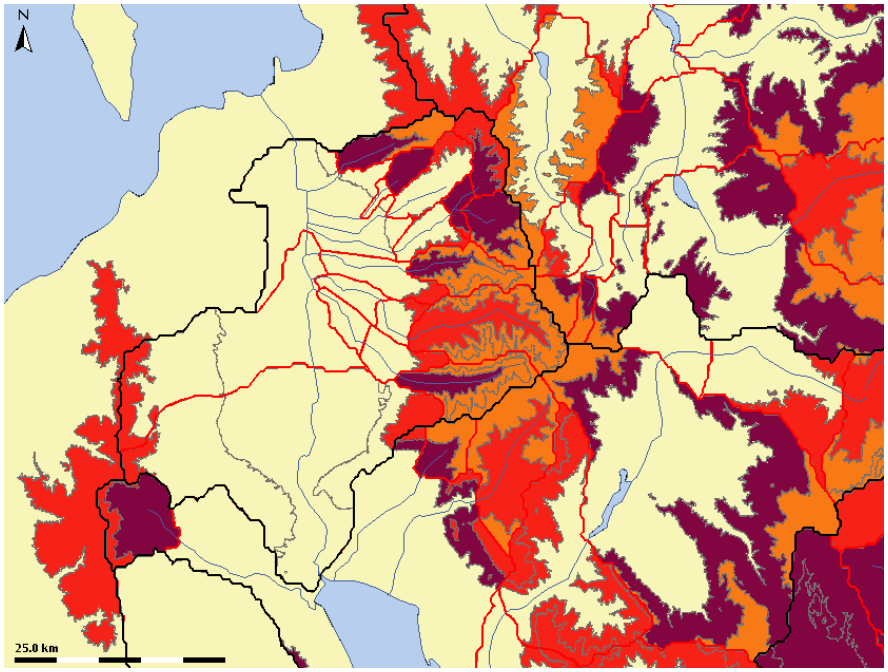


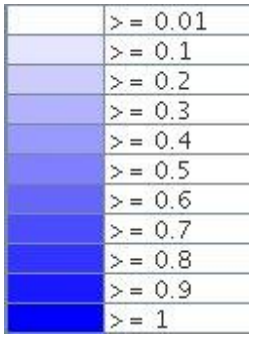
Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

SNOW: Bear & Weber

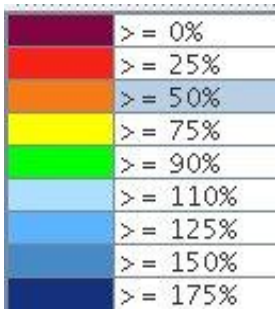
Community Hydrologic Prediction System (“CHiPS”)
Snow-17 – Modeled Snow States





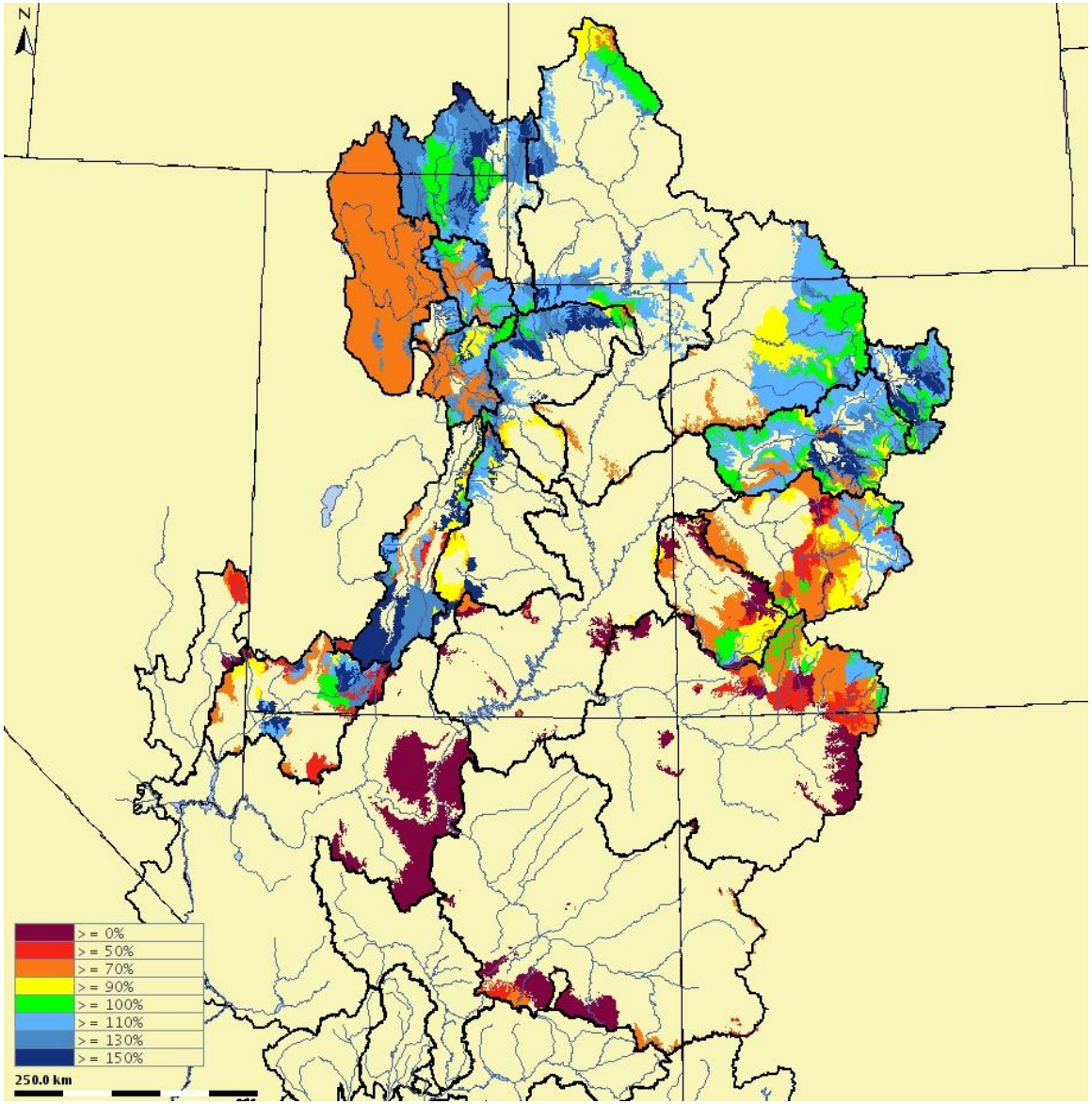


Area Extent of
Snow Cover
(percent coverage)

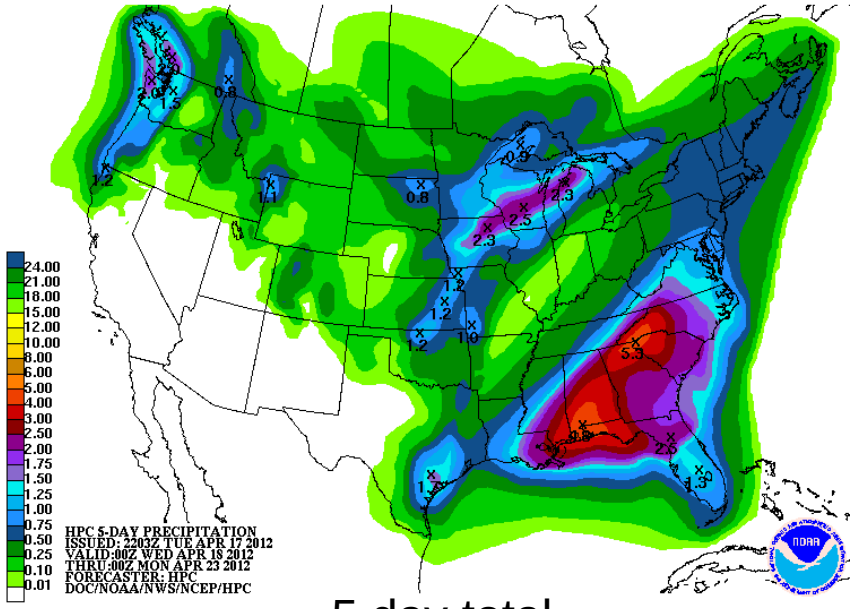


Percent of Average
Model Snow Water
Equivalent
(clipped at 2 inches)

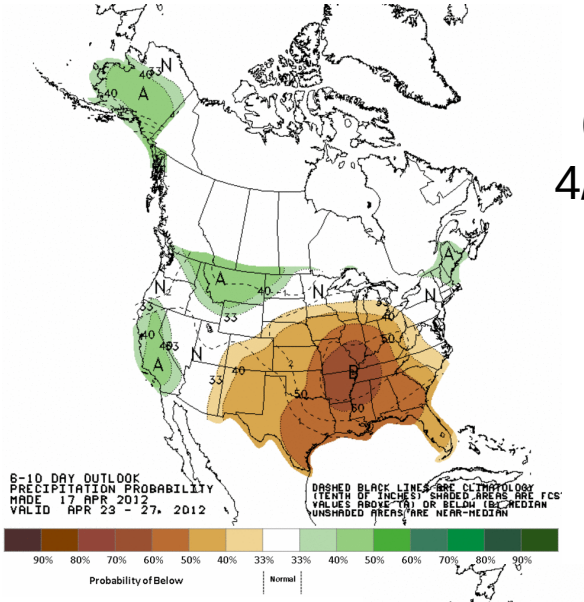
Soil Moisture (model states as of December 1st 2011)



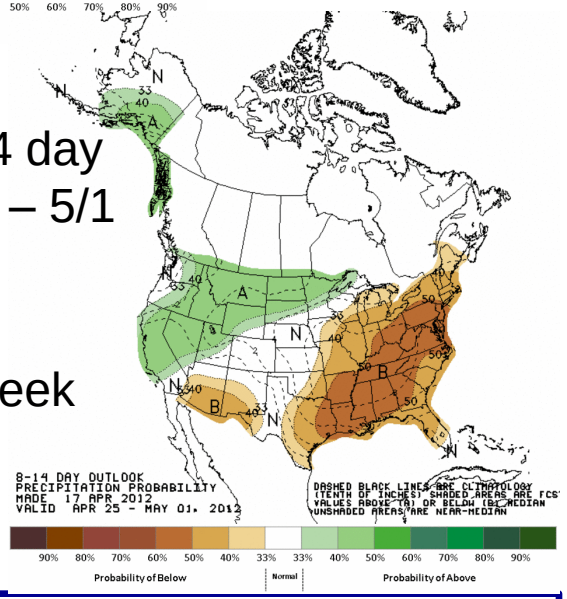
Forecast Precipitation



5 day total
4/18 – 4/23



6-10 day
4/23 – 4/27

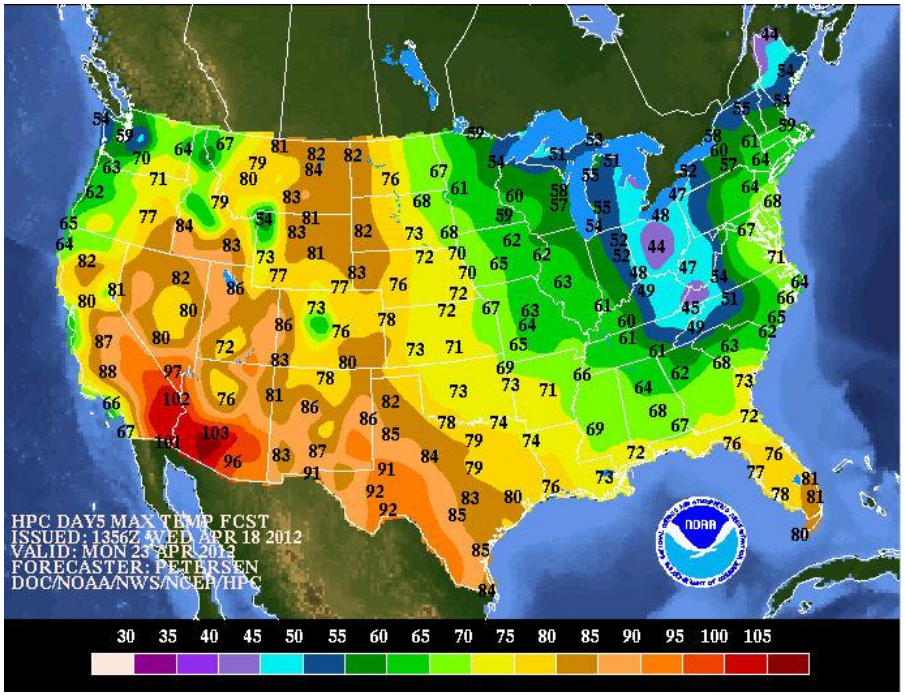


8-14 day
4/25 – 5/1

- Weak storm over north today & Friday (< .50” water)
- High pressure / warmer into middle of next week
- Temperatures 15-20 degrees above average early next week
- Less confidence beyond, but cooler, with precipitation

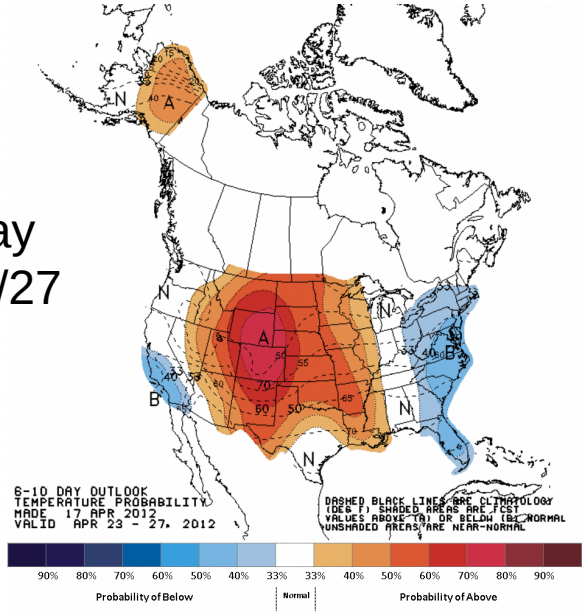
Web Reference: www.hpc.ncep.noaa.gov

Forecast Temperature

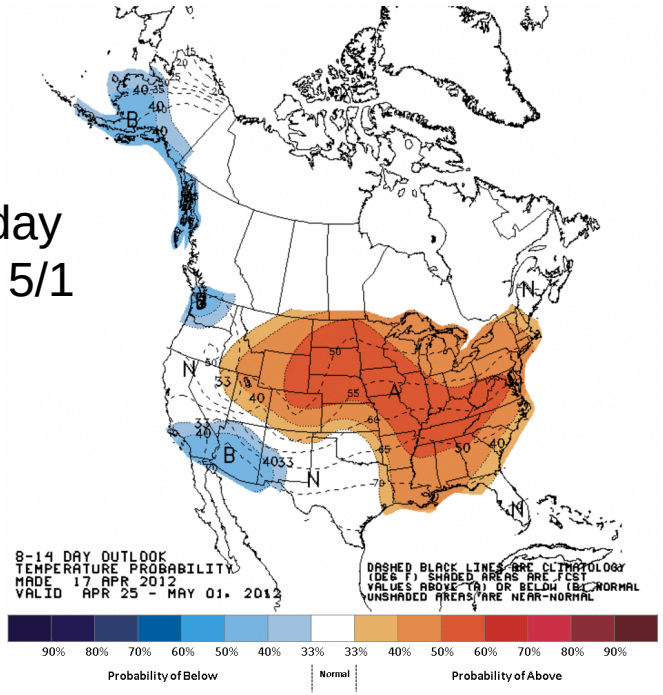


HPC Temperature Forecast
valid Mon April 25th

6-10 day
4/23 – 4/27



8-14 day
4/25 – 5/1



What is a Peak Flow Forecast?

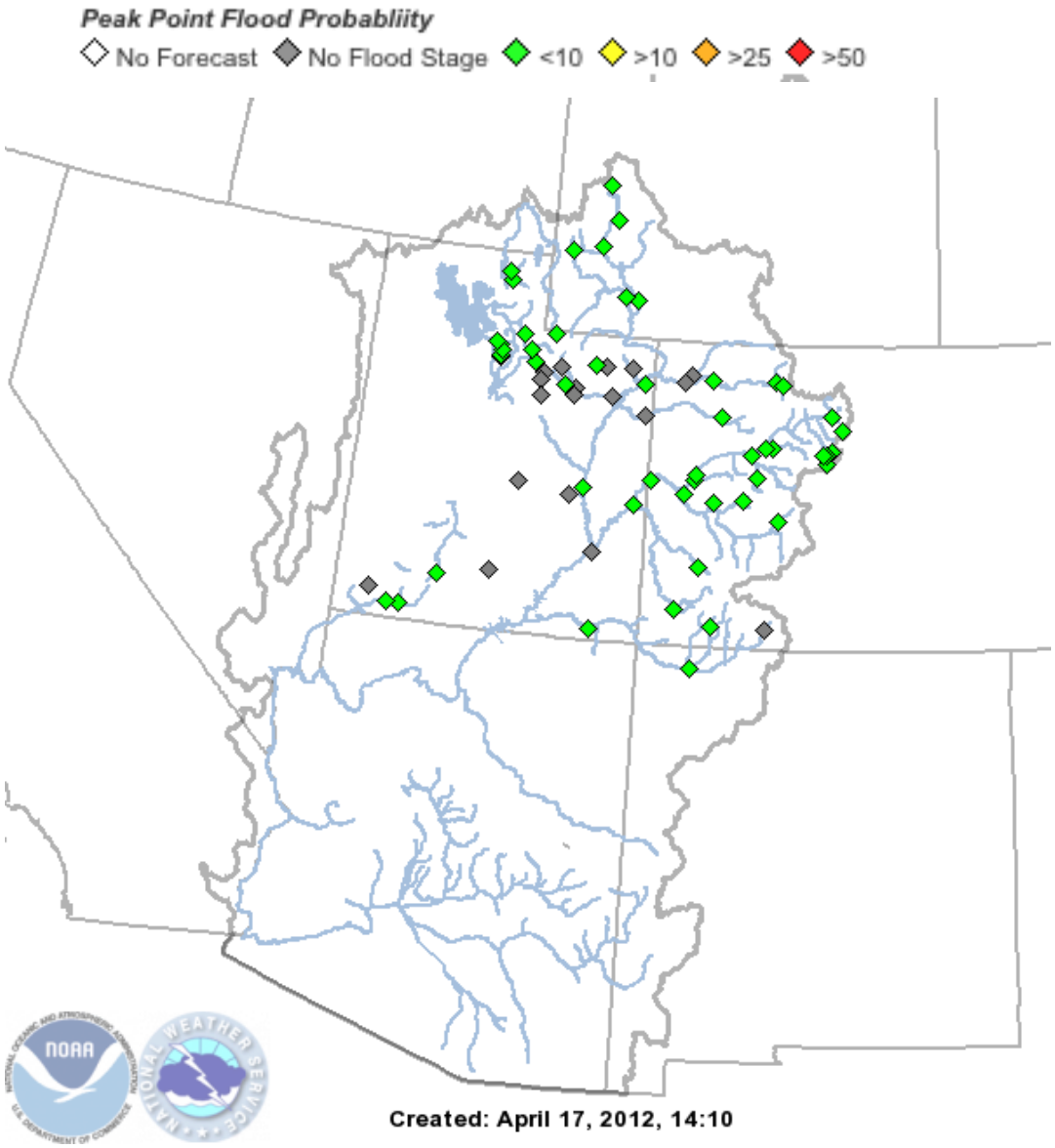
- Snowmelt Mean Daily Maximum Flow (April-July)
- Probabilistic Forecasts

  Exceedence Probabilities -10%,25%,50%, 75%, 90%
- Issued (at least) monthly from March-June (April 17th, May 1st, May 17th depending upon runoff scenario)
- ~60 forecast points – some unregulated, some regulated
- Updated as needed
- Forecast Users include:
  - Emergency Managers
  - USGS hydrologists
  - Water Managers
  - River Recreation

Spring Weather Really Matters

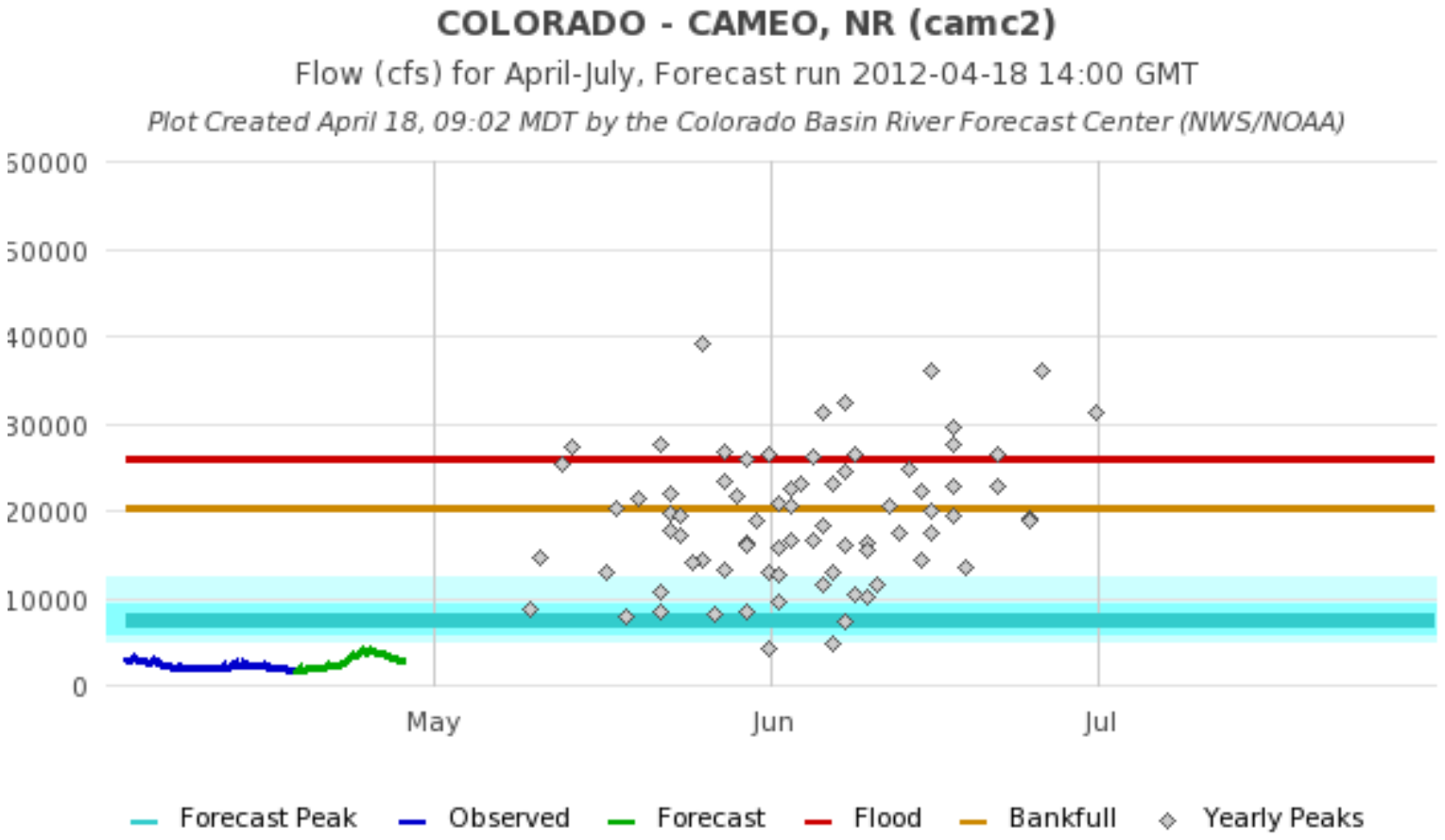
- **Runoff characteristics are largely determined by the day-to-day spring weather.**
  - While large snow pack years increase chances for flooding, it is not an inevitability (dodged a bullet at many sites in 2011)
  - Small snow pack years can flood with the right sequence of spring temperatures and with flows enhanced by precipitation.
  - Rain events may play a larger role in the magnitude of the peak flow during very low snow years.
  - Keep an eye on our web page / daily forecasts (sooner this year)

April 17 Peak Flow Forecasts



Peak Flow Forecast Graphic

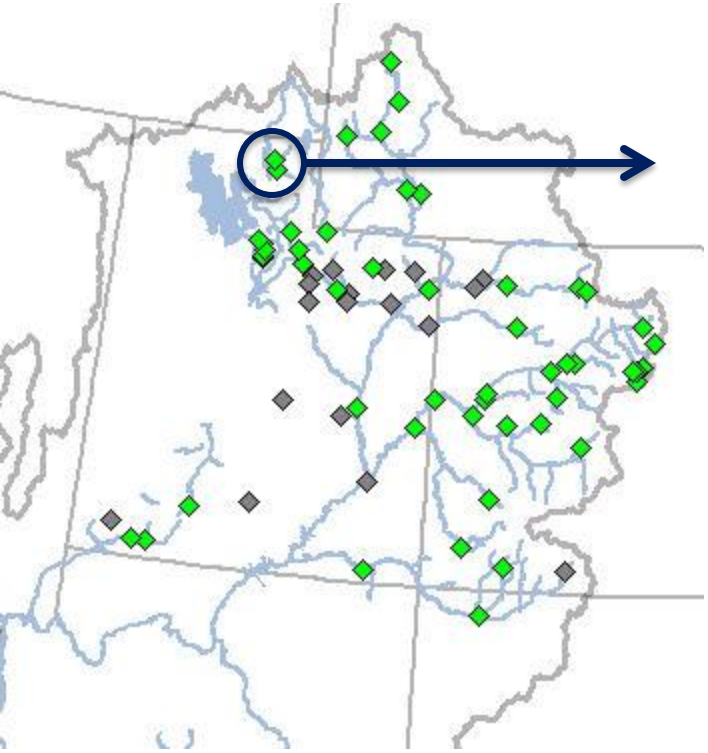
Accessible from peak flow map, list, publication, and CBRFC main web page

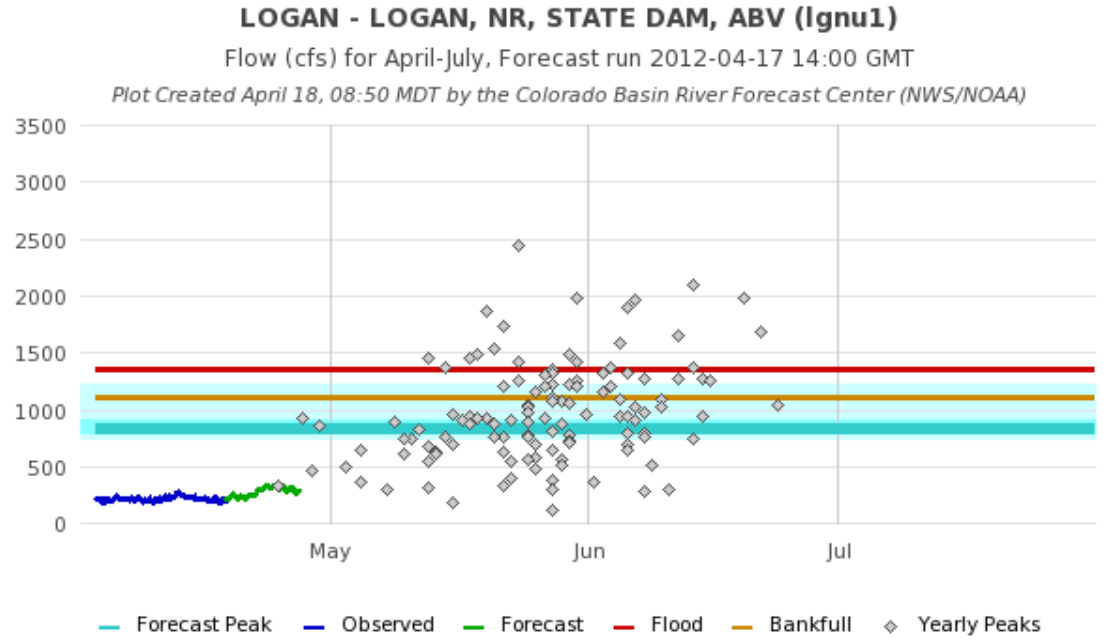


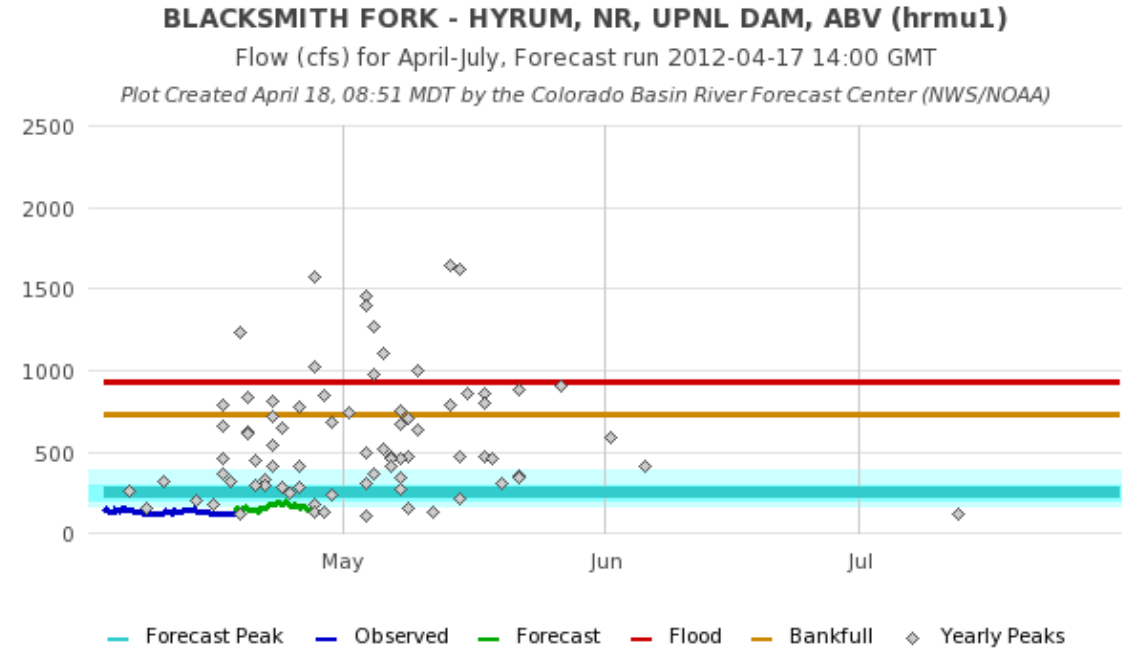
Exceedance Probability

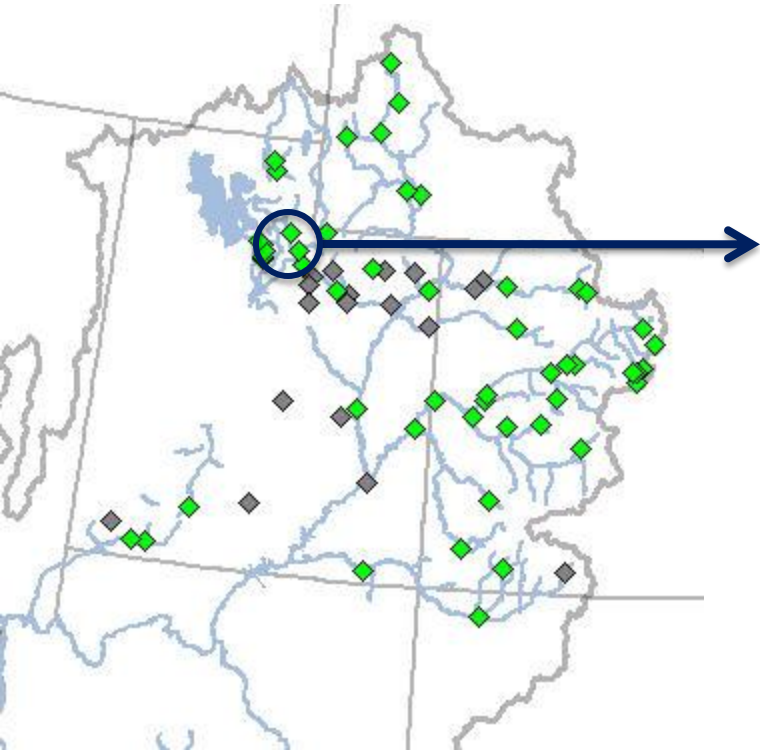
10%
25%
50%
75%
90%

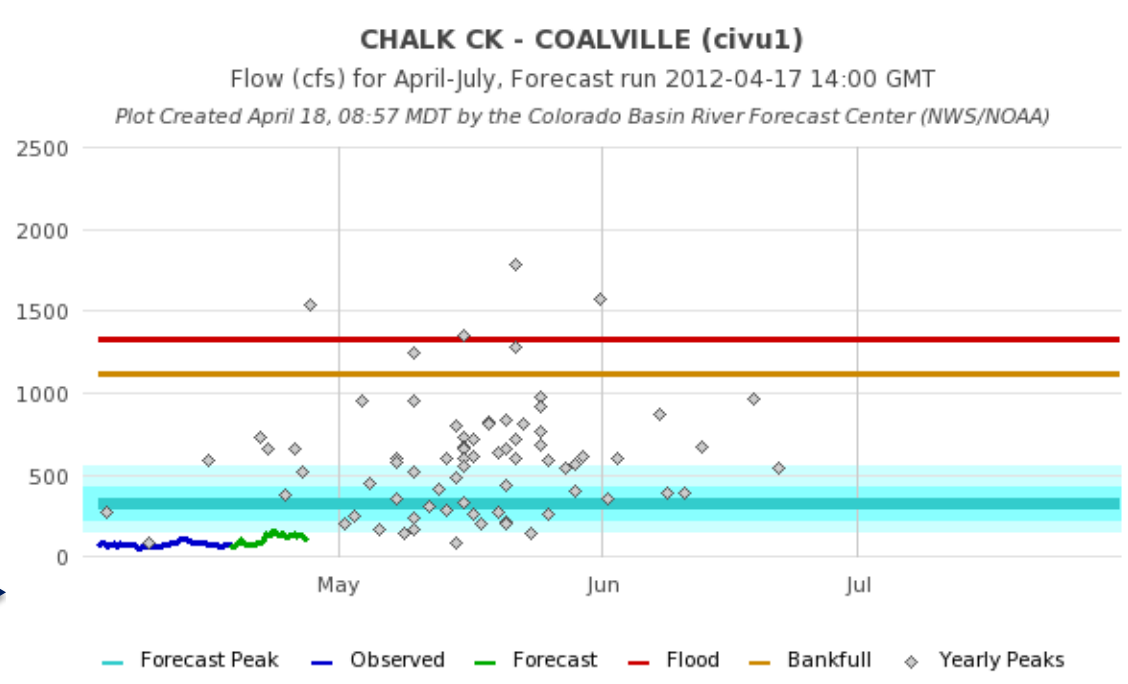
Historical yearly peaks are instantaneous , forecasts are mean daily peaks (CFS)

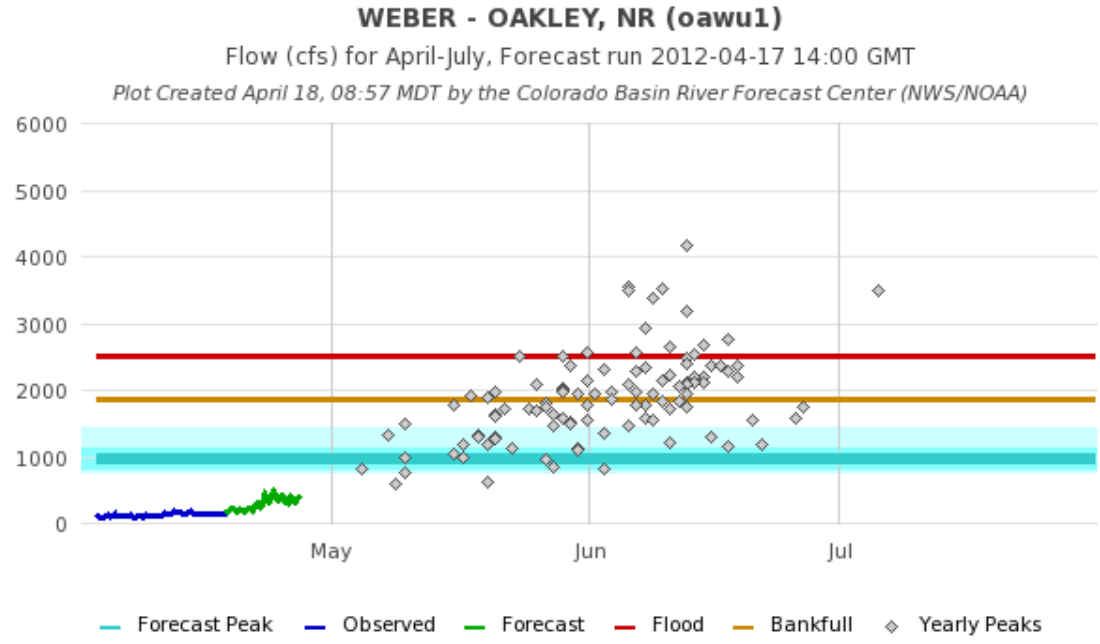


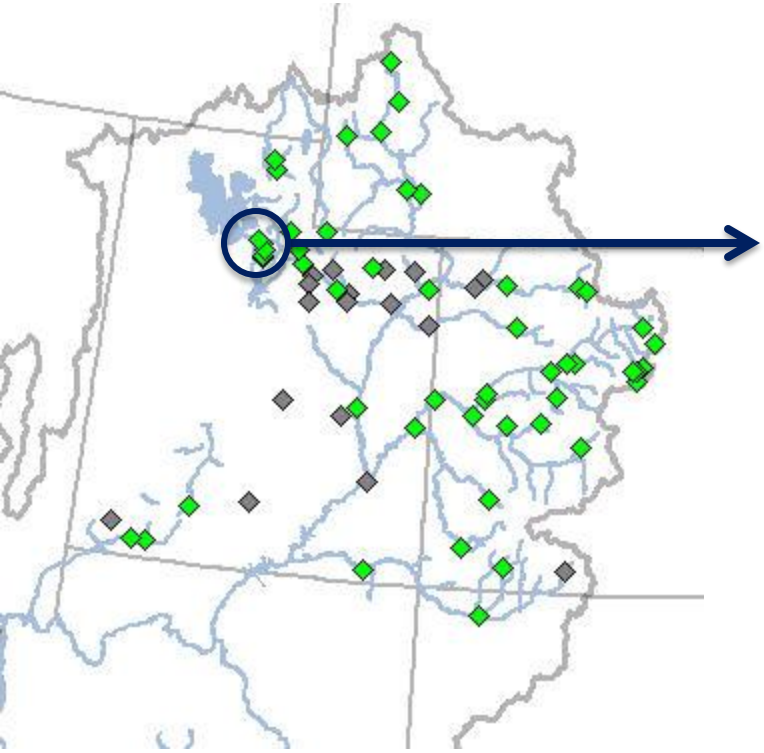

LOGAN - LOGAN, NR, STATE DAM, ABV (lgnu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 08:50 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
3500
3000
2500
2000
1500
1000
500
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

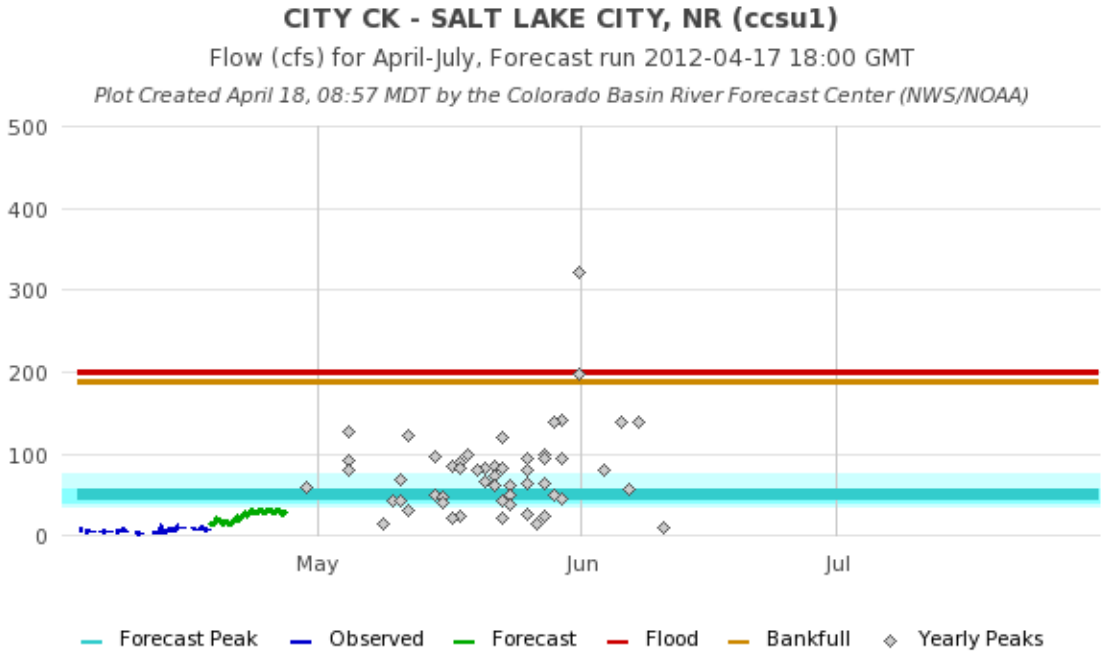

BLACKSMITH FORK - HYRUM, NR, UPNL DAM, ABV (hrmu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 08:51 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
2500
2000
1500
1000
500
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

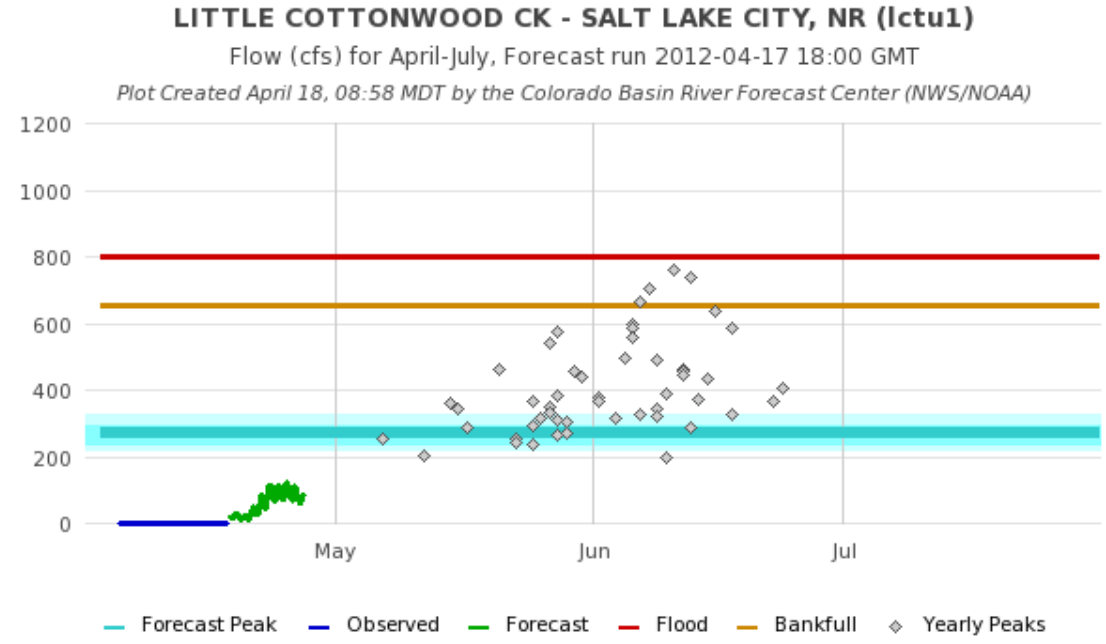


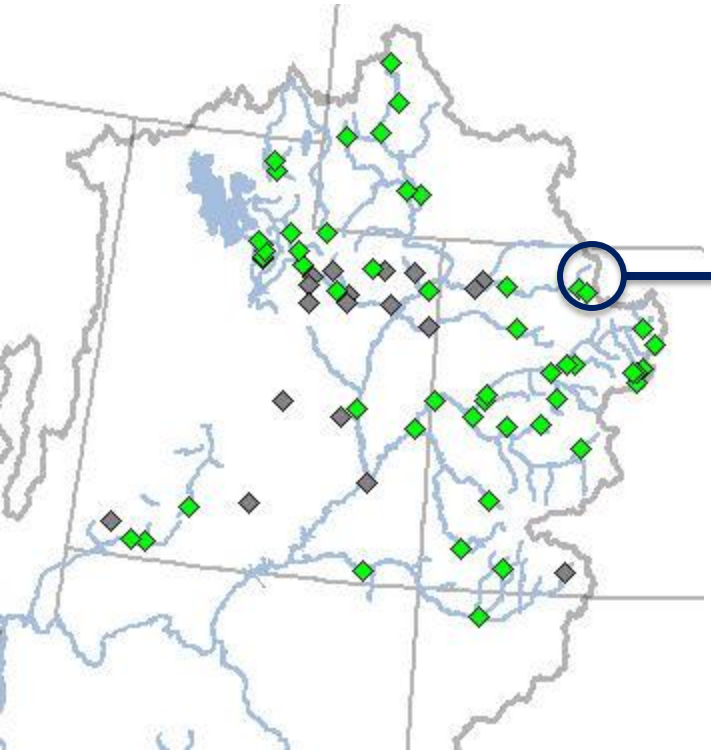

CHALK CK - COALVILLE (civu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 08:57 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
2500
2000
1500
1000
500
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

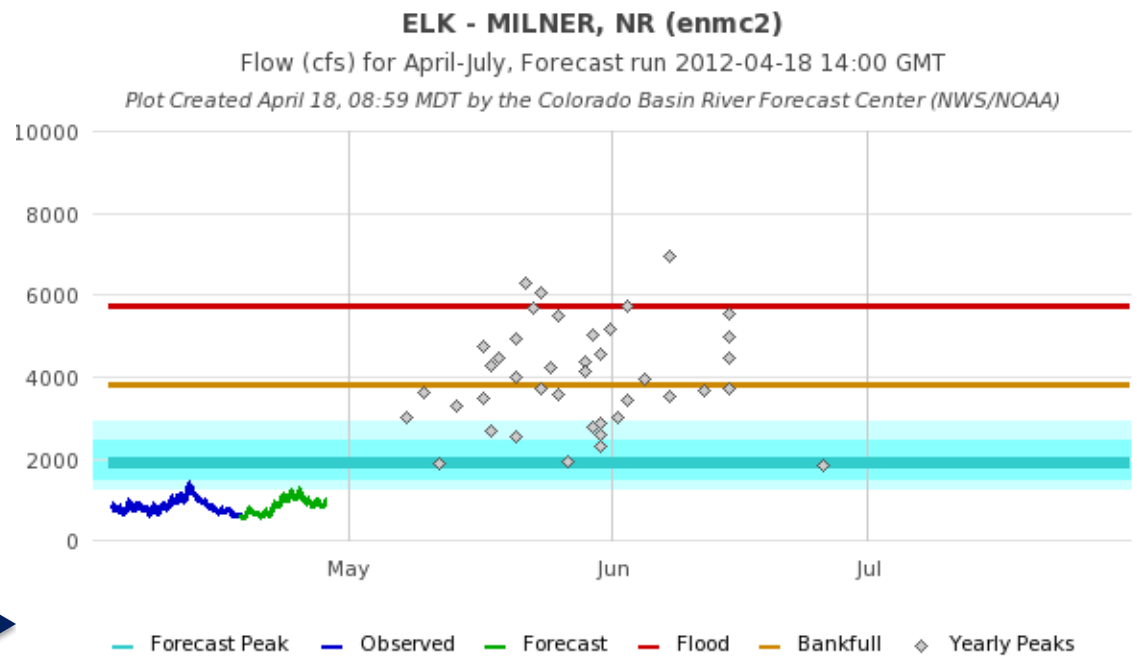

WEBER - OAKLEY, NR (oawu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 08:57 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
6000
5000
4000
3000
2000
1000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

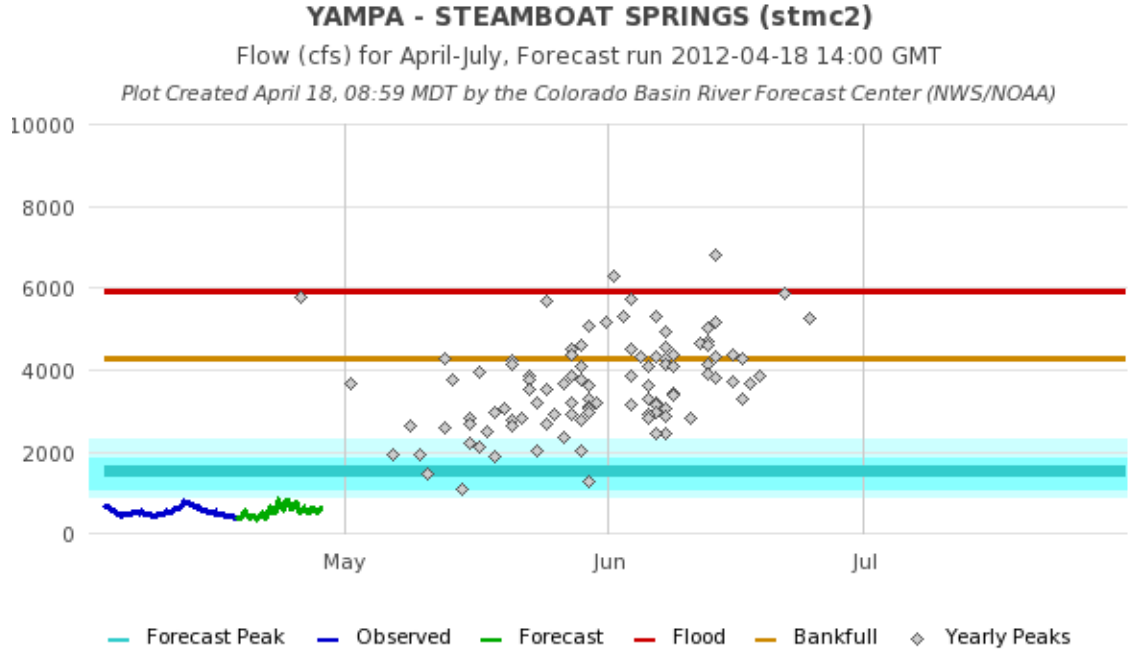


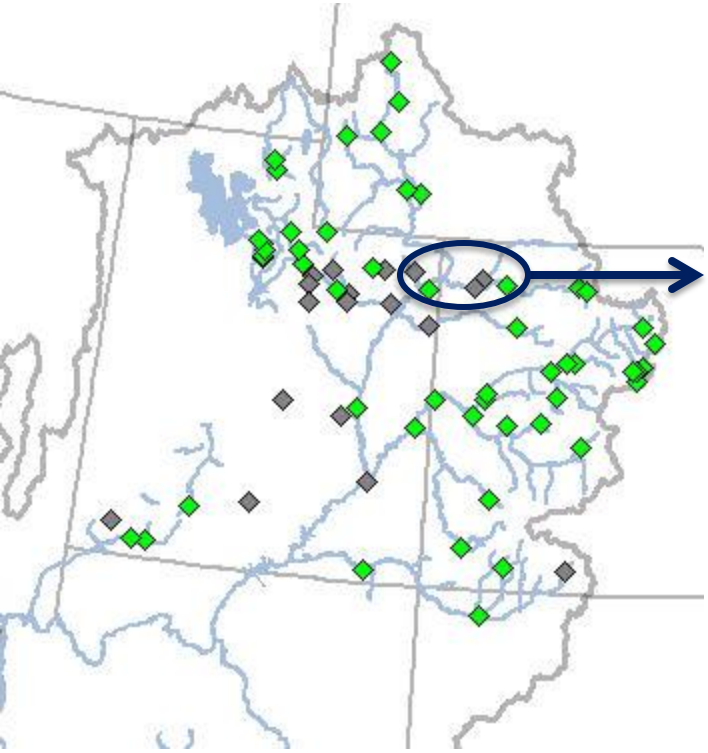

CITY CK - SALT LAKE CITY, NR (ccsu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 18:00 GMT
Plot Created April 18, 08:57 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
500
400
300
200
100
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks


LITTLE COTTONWOOD CK - SALT LAKE CITY, NR (lctu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 18:00 GMT
Plot Created April 18, 08:58 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
1200
1000
800
600
400
200
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks




ELK - MILNER, NR (enmc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 08:59 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
10000
8000
6000
4000
2000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

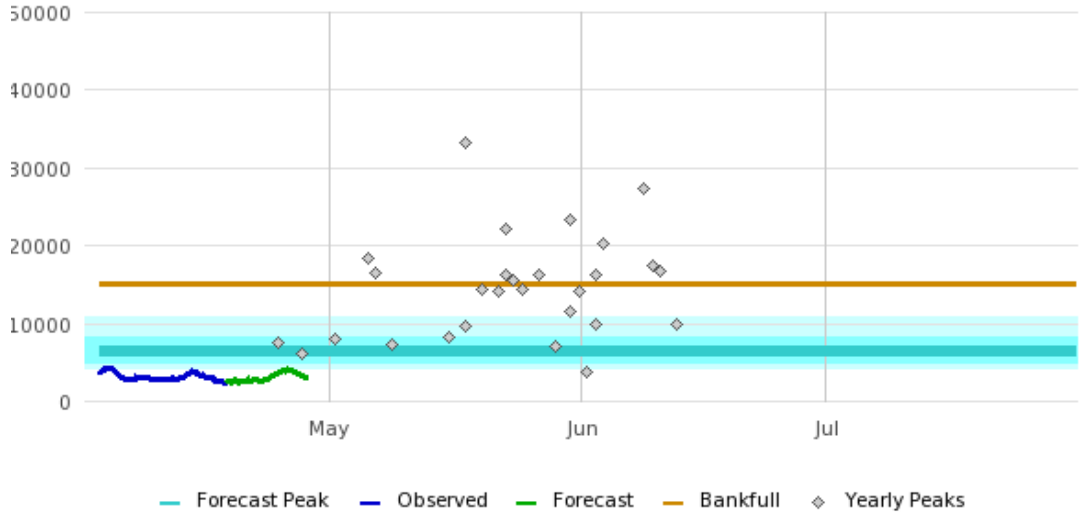

YAMPA - STEAMBOAT SPRINGS (stmc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 08:59 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
10000
8000
6000
4000
2000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks



YAMPA - DEERLODGE PARK (ydlc2)

Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT

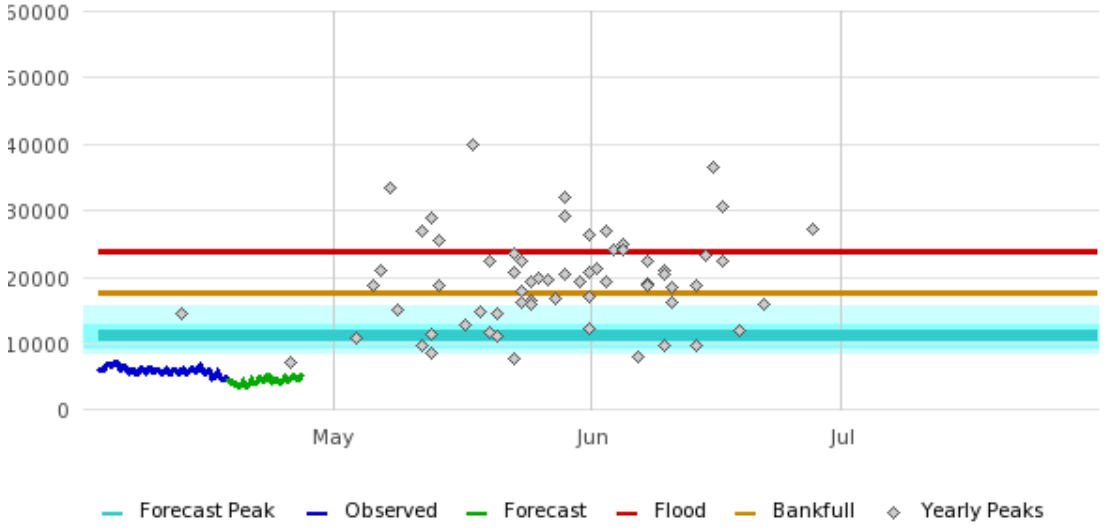
Plot Created April 18, 08:59 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)

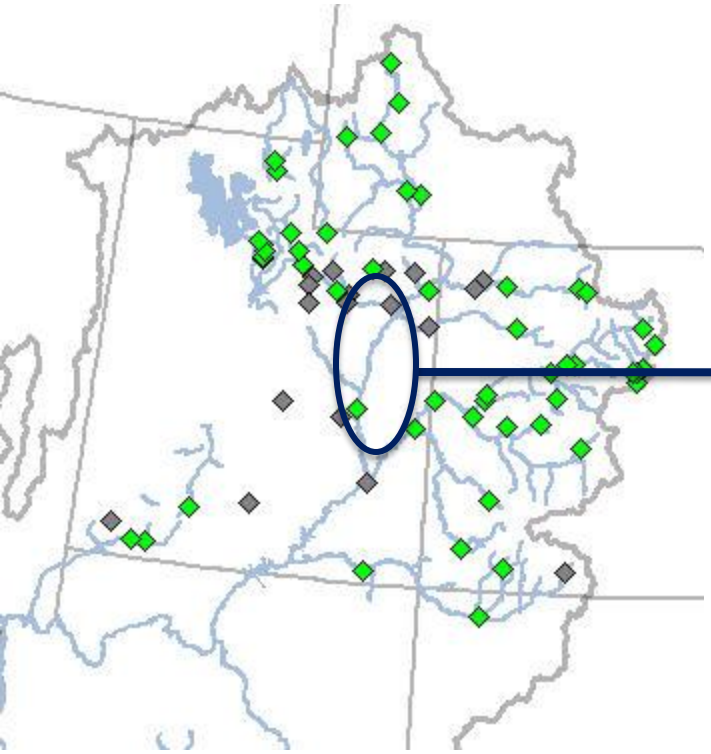


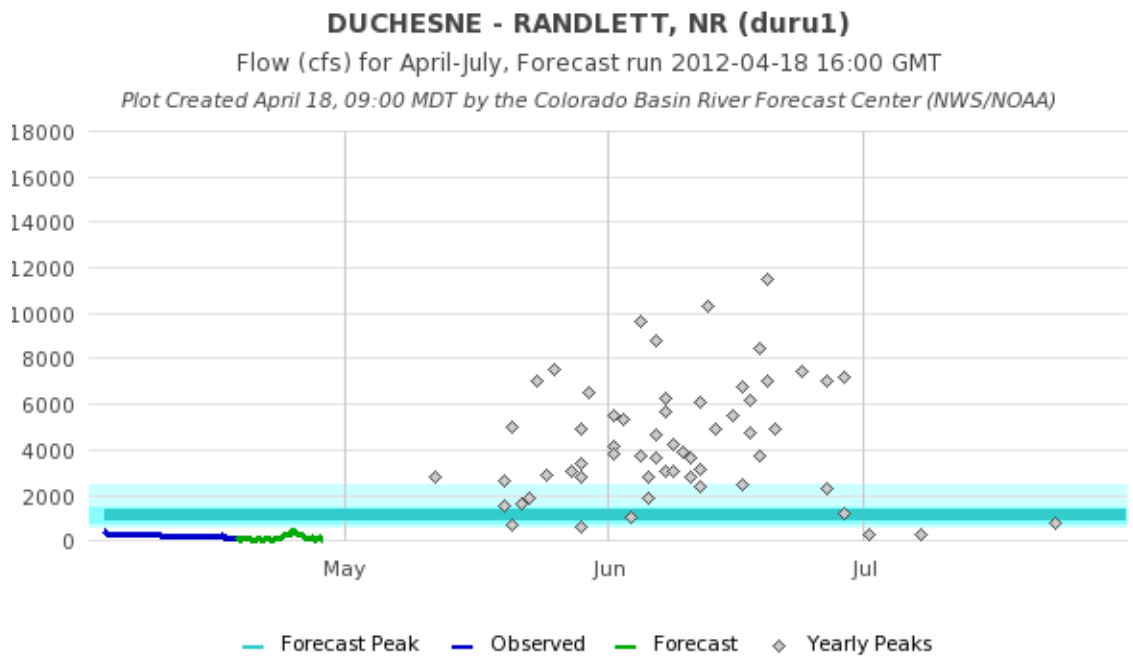
GREEN - JENSEN, NR (jesu1)

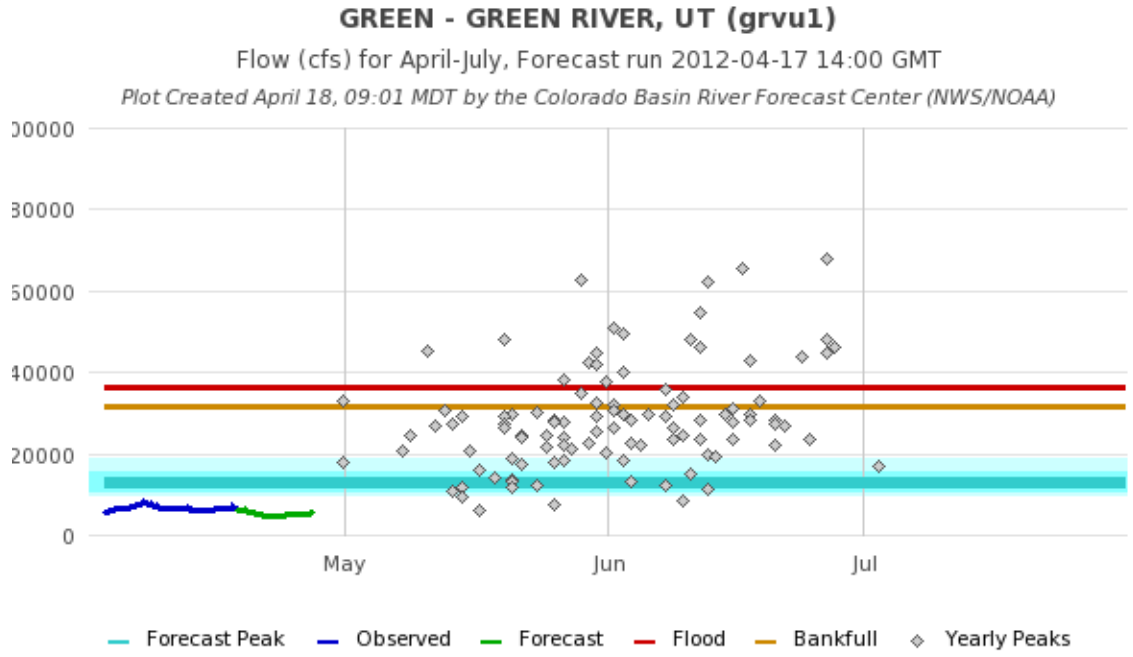
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT

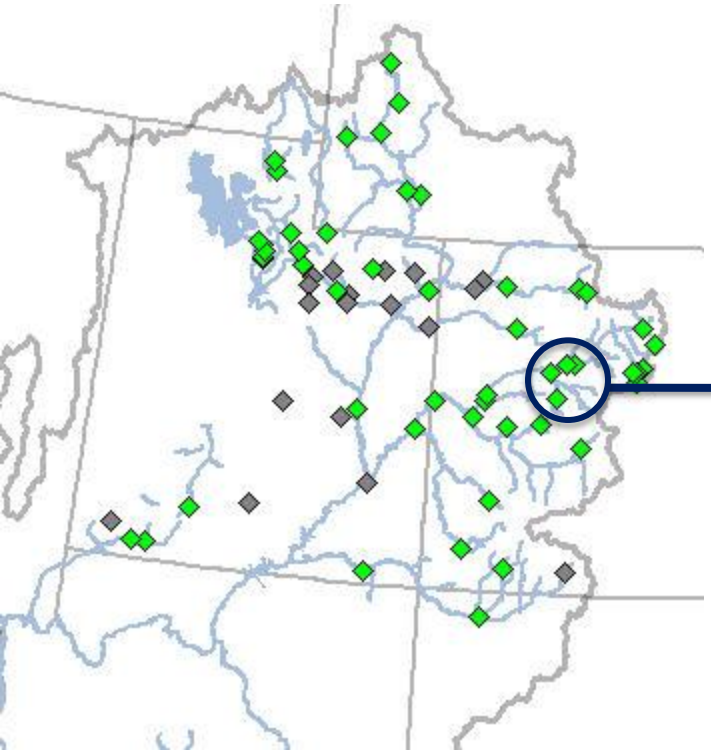
Plot Created April 18, 09:00 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)

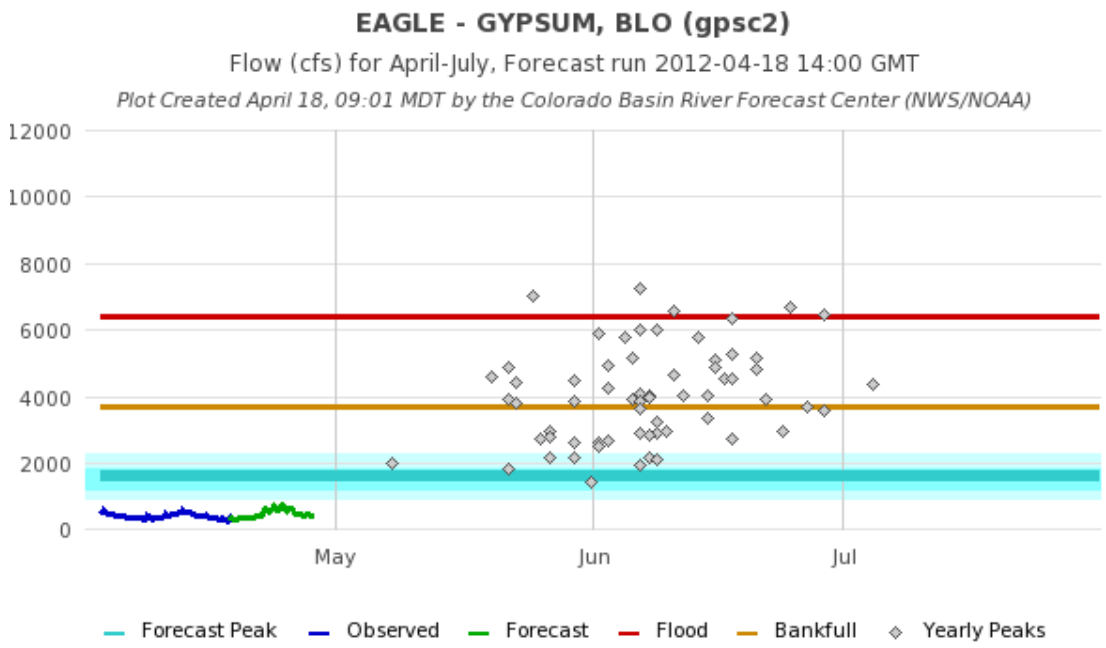


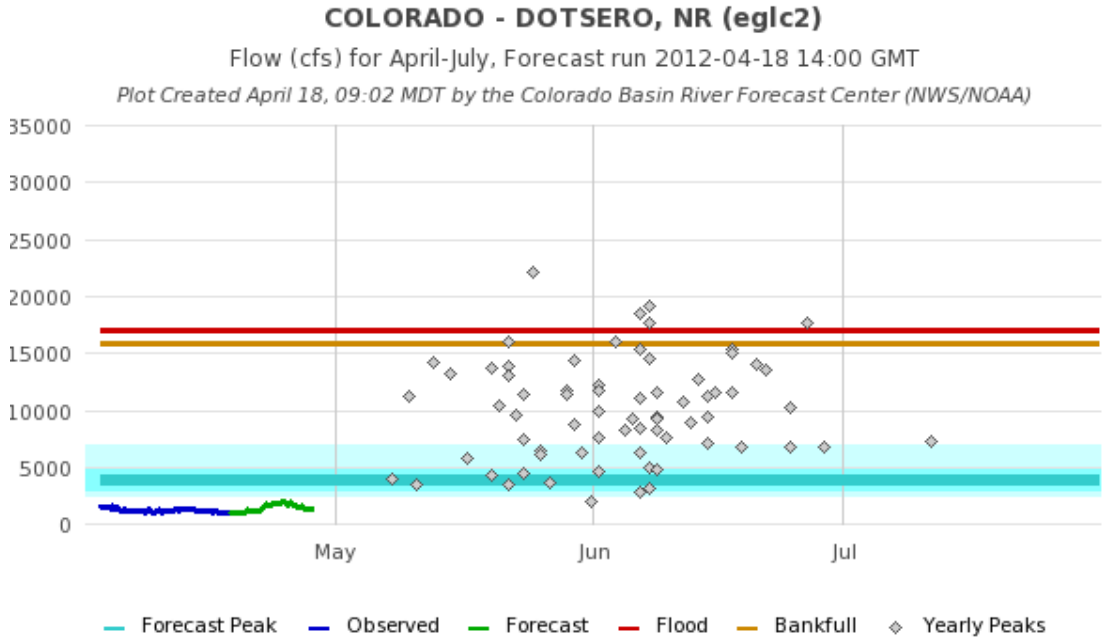


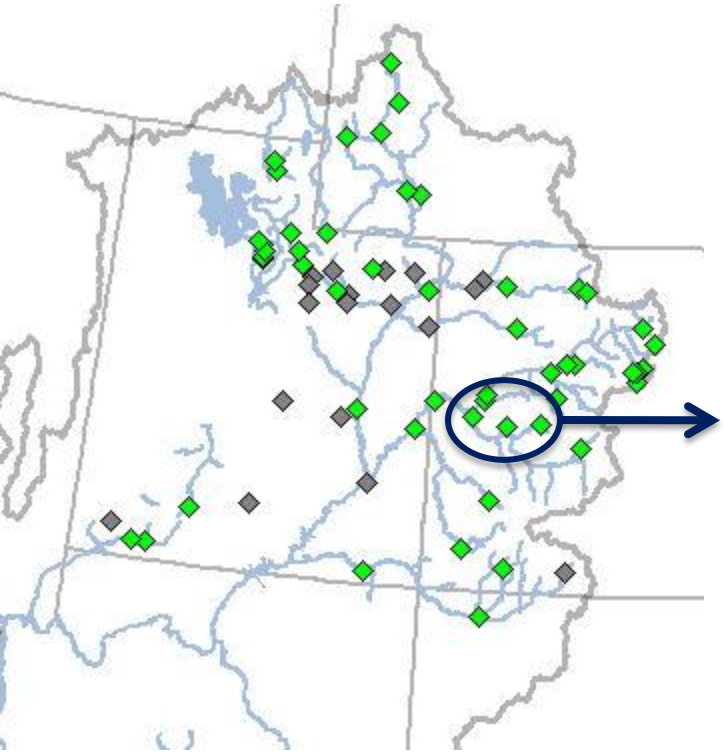

DUCHESNE - RANDLETT, NR (duru1)
Flow (cfs) for April-July, Forecast run 2012-04-18 16:00 GMT
Plot Created April 18, 09:00 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Yearly Peaks

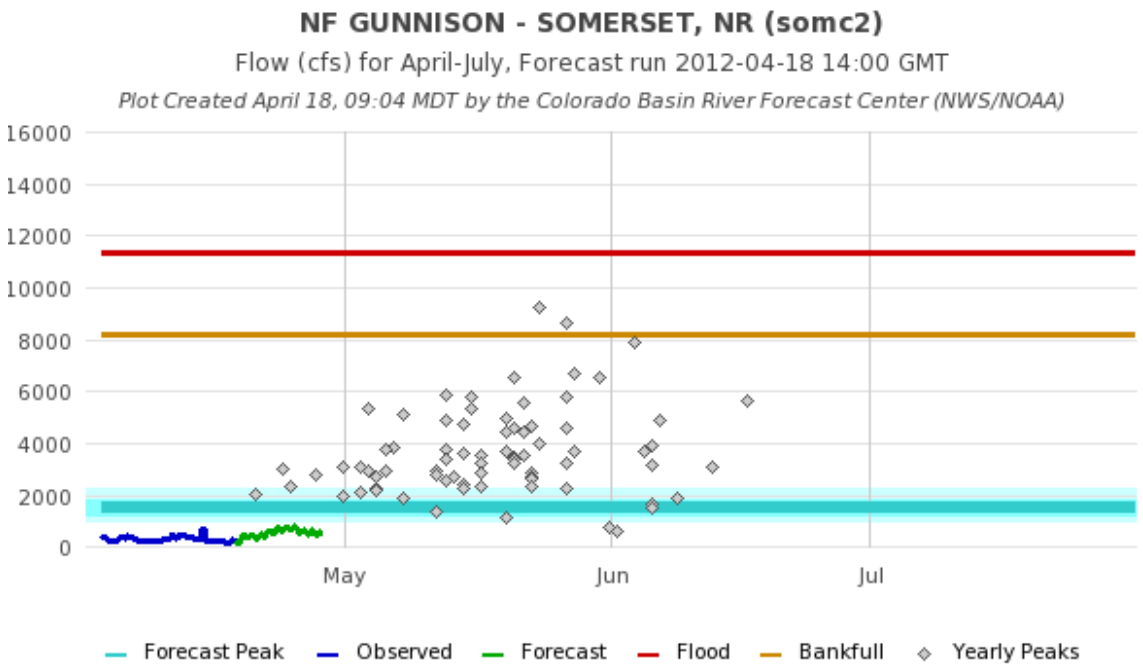

GREEN - GREEN RIVER, UT (grvu1)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 09:01 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
30000
20000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

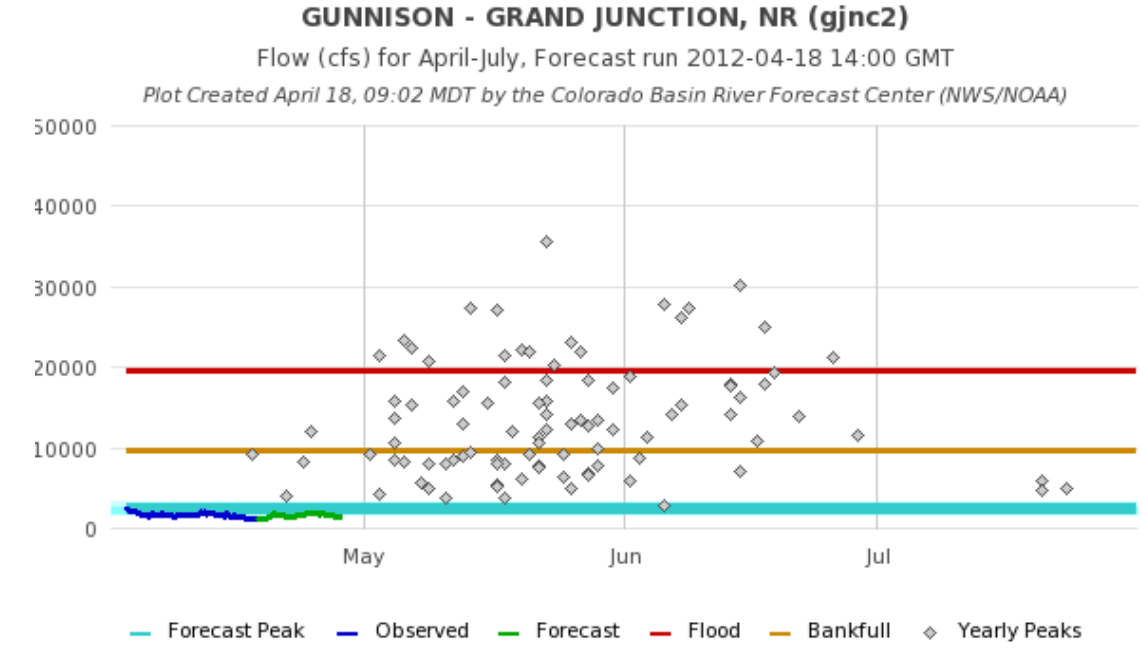


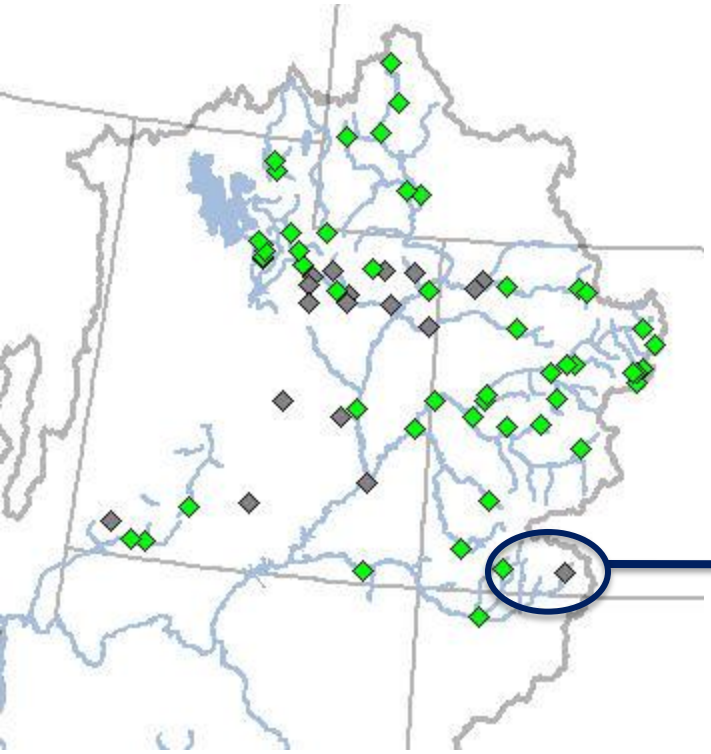

EAGLE - GYPSUM, BLO (gpsc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 09:01 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
12000
10000
8000
6000
4000
2000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

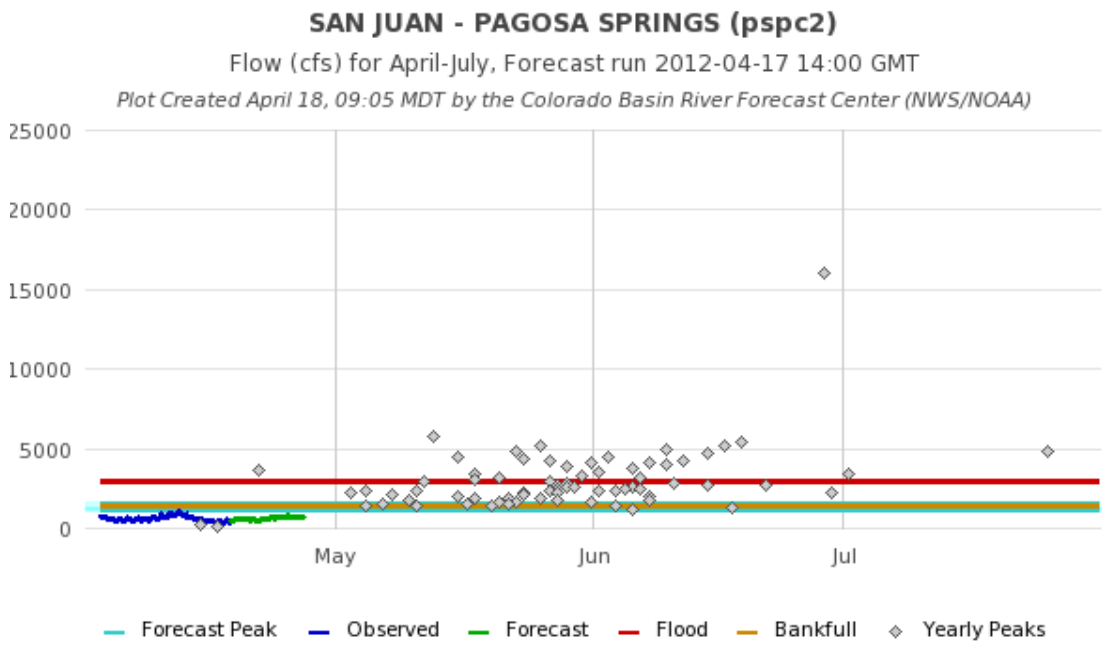

COLORADO - DOTSERO, NR (eglc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 09:02 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
35000
30000
25000
20000
15000
10000
5000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

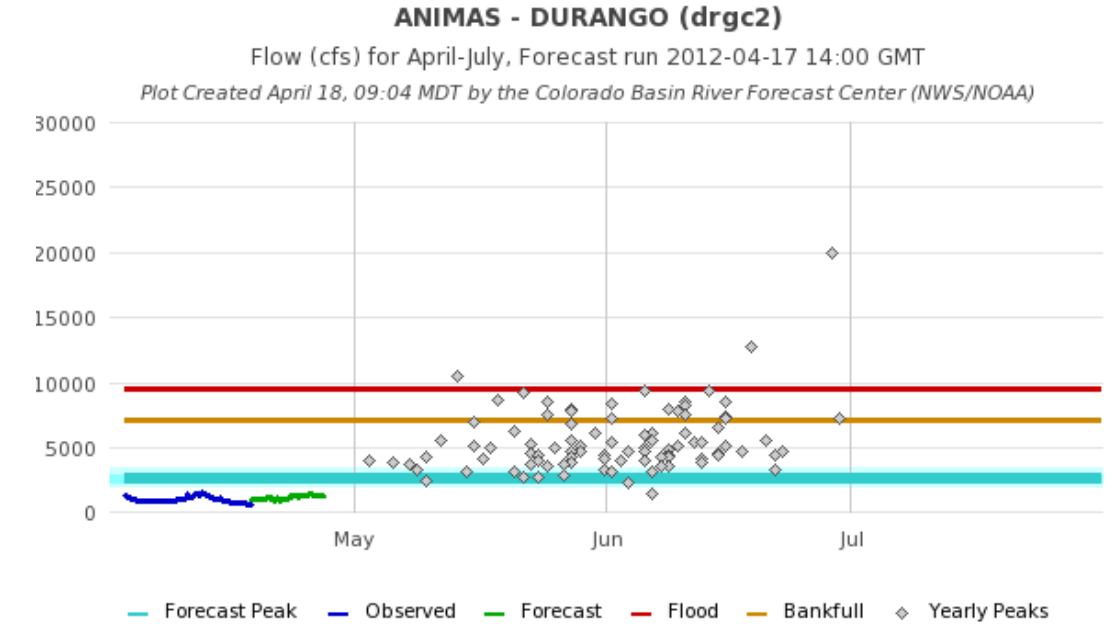



NF GUNNISON - SOMERSET, NR (somc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 09:04 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
16000
14000
12000
10000
8000
6000
4000
2000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks


GUNNISON - GRAND JUNCTION, NR (gjnc2)
Flow (cfs) for April-July, Forecast run 2012-04-18 14:00 GMT
Plot Created April 18, 09:02 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
50000
40000
30000
20000
10000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks




SAN JUAN - PAGOSA SPRINGS (pspc2)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 09:05 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
25000
20000
15000
10000
5000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks


ANIMAS - DURANGO (drgc2)
Flow (cfs) for April-July, Forecast run 2012-04-17 14:00 GMT
Plot Created April 18, 09:04 MDT by the Colorado Basin River Forecast Center (NWS/NOAA)
30000
25000
20000
15000
10000
5000
0
May
Jun
Jul
Forecast Peak
Observed
Forecast
Flood
Bankfull
Yearly Peaks

COLORADO BASIN RIVER FORECAST CENTER

NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

News: Recording: How to use this web page webinar

RIVERS SNOW WATER SUPPLY RESERVOIRS WEATHER

Conditions Map Active Points Peak Map Peak List Peak Pub Recreational Forecasts

Peak Flow List

New 1981-2010 Averages being used this year.

Click point type or enter search to change points displayed. Click column heading to sort by that data. Click ID to show plot for point.
Download pipe-delimited file of displayed points.

Help: Introduction Definitions River Permits Additional Information

Area: CBRFC Upper Colorado Green San Jaun Great Basin Sevier Virgin Lower Colorado

SEARCH POINTS

Plots: Auto Off On

Peak Flood Probability

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

	NWS ID	River	Location	Flood Probability	Mean Daily 90%	75%	50%	25%	10%	Instantaneous 90%	75%	50%	25%	10%	Issue Date	Historic Peak	Average Peak	Flood	Last Year Peak	Last Year Date	Normal Earliest Date	Normal Latest Date	Observed Peak	Observed Date
1	ALEC2	East	Almont	◆	560	630	750	900	1100	570	650	790	960	1200	04-16	5000	2000	2980	2580	06-08	05-21	06-11		-
2	ARFN5	Animas	Farmington	◆	2100	2300	2700	3200	3700						04-16	11000	4710	8810	4860	06-08	05-20	06-09		-
3	BCTU1	Big Cottonwood Ck	Salt Lake City Nr	◆	210	240	270	290	340						04-17	925	430	800	698	06-24	05-18	06-07		-
4	BERU1	Bear	Utah	◆	800	920	1020	1120	1310	950	1100	1200	1400	1600	04-17	3030	1600	3670	3030	07-01	05-15	06-14		-
5	BFFU1	San Juan	Bluff Nr	◆	6100	6600	6900	7200	7600	7100	7700	8000	8300	8700	04-16	15200	7340	33838	4300	06-01	05-15	06-28		-
6	BPNW4	New Fork	Big Piney Nr	◆	3100	3400	4100	4800	5500	3200	3500	4200	4900	5700	04-16	9110	4730	8850	7750	07-03	05-26	06-23		-
7	BRUU1	Big Brush Ck	Vernal Nr Red Fleet Res Abv	◆	80	100	120	150	210						04-01	414	235		245	06-22	05-04	06-01		-
8	BSWC2	Blue	Dillon Nr	◆	140	160	200	260	340						04-16	1160	505	1770	955	07-20	05-27	06-25		-
9	BUEC2	Blue	Blue River	◆	60	70	90	120	160						04-16	580	185	835	410	07-20	05-28	07-05		-
10	CAMC2	Colorado	Cameo Nr	◆	5000	6000	7500	9500	12500	5500	6600	8100	10000	13000	04-16	38000	17000	26000	29200	06-09	05-24	06-12		-
11	CCSU1	City Ck	Salt Lake City Nr	◆	35	40	50	60	75						04-17	262	80	210	167	06-16	05-13	06-01		-
12	CCUC2	Colorado	Co	◆	4500	6500	9000	12000	15000	5100	7100	9700	13000	16000	04-16	68300	25500	46200	46800	06-10	05-19	06-11		-

Peak Flow List & Publication at www.cbrfc.noaa.gov

April 1, 2012
Water Supply Forecasts

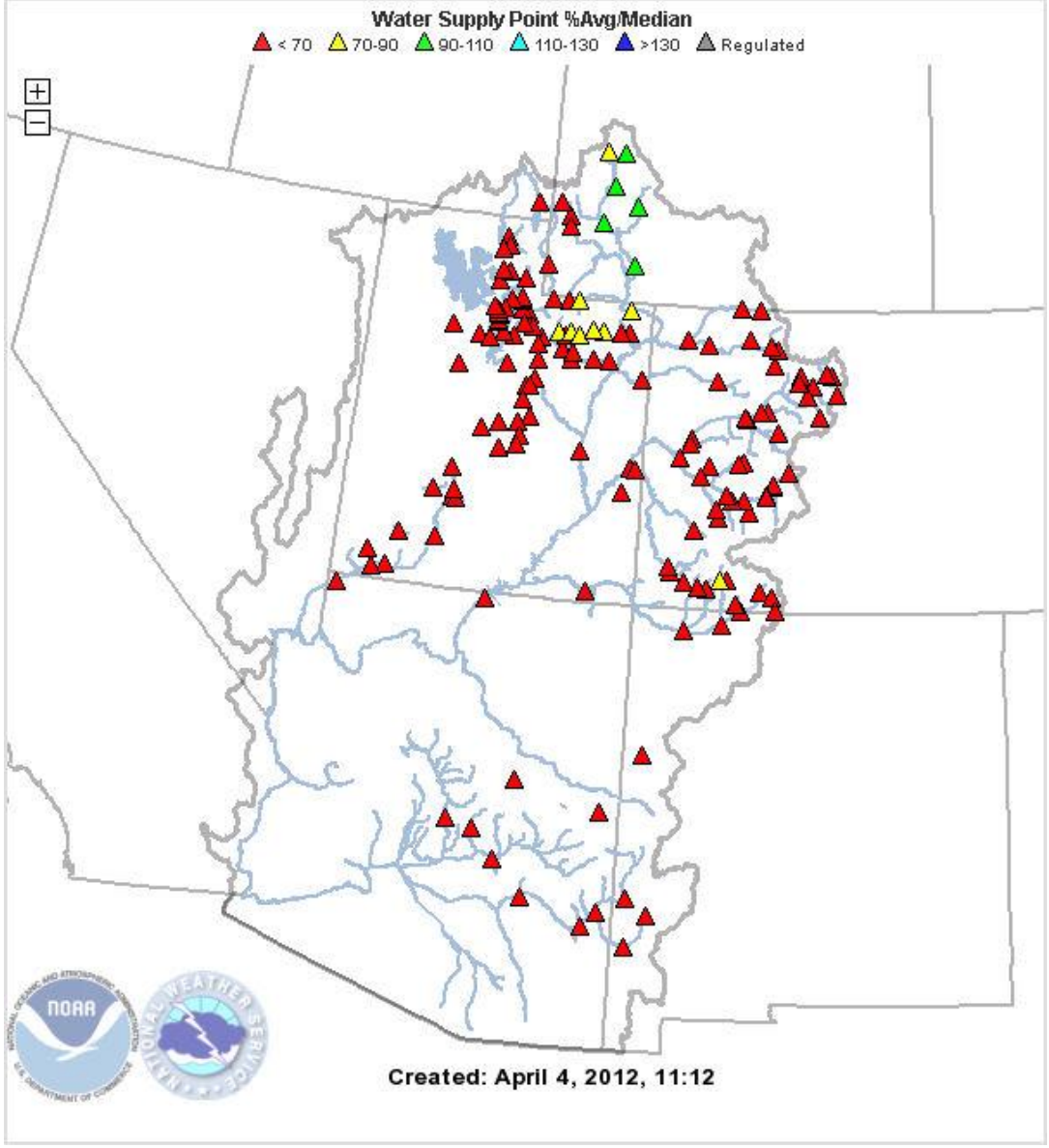
Highlights:

• Snow opposite 2011, several sites at historical lows this year.

• Very dry and warm March resulting in early snow melt even at high elevations.

• Many forecast call for volumes less than 60% of the 1981-2010 average, several areas below 50% or even 40% of average.

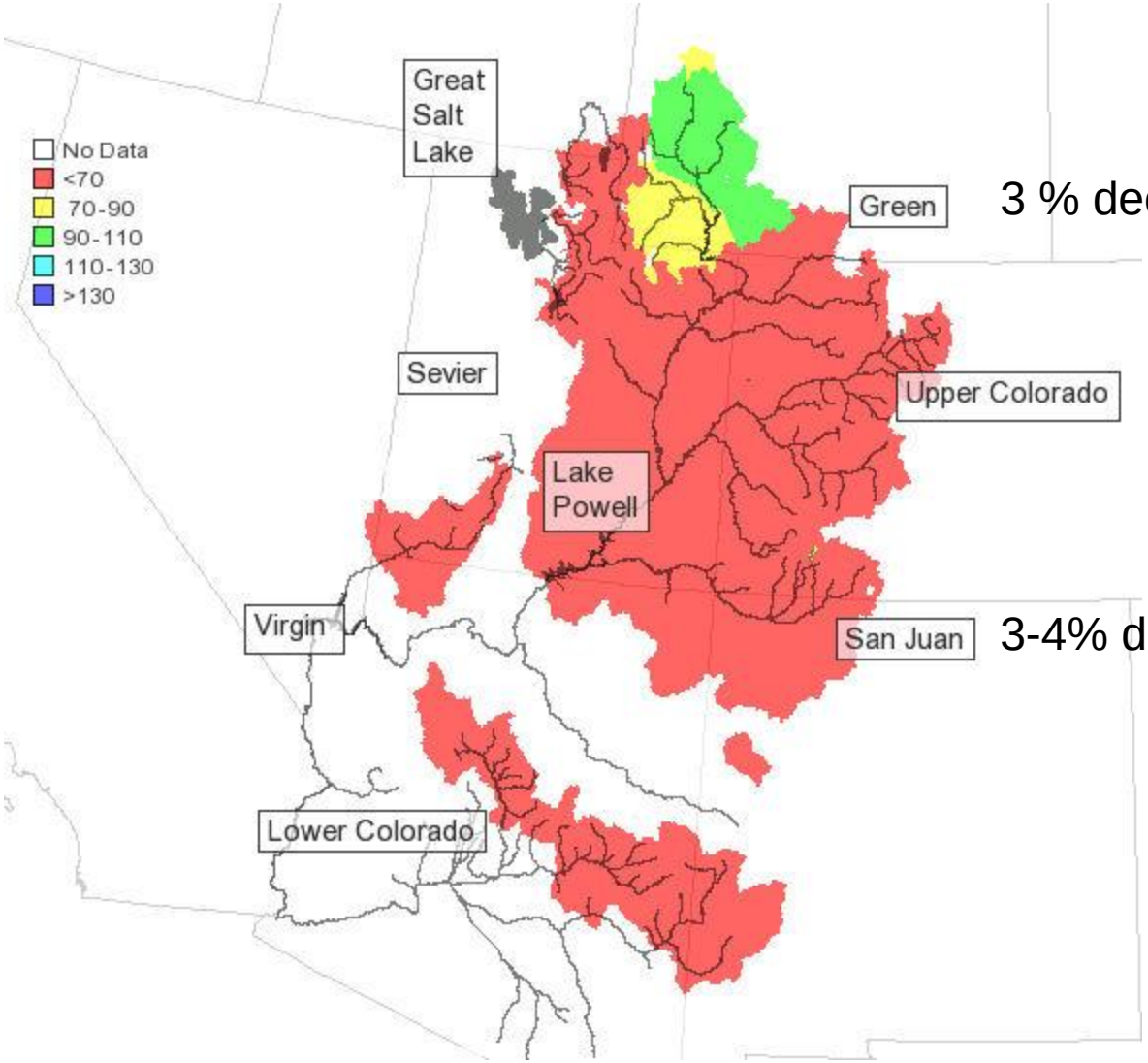
• Highest forecasts (as a percent of average) are in the Upper Green.



Web Reference: www.cbrfc.noaa.gov

April 16th Water Supply Forecast Update (Major Reservoirs)

Change in April-July forecast volumes as a percent of average



3 % decrease

3-5% decrease – Colorado
0-8% decrease - Gunnison

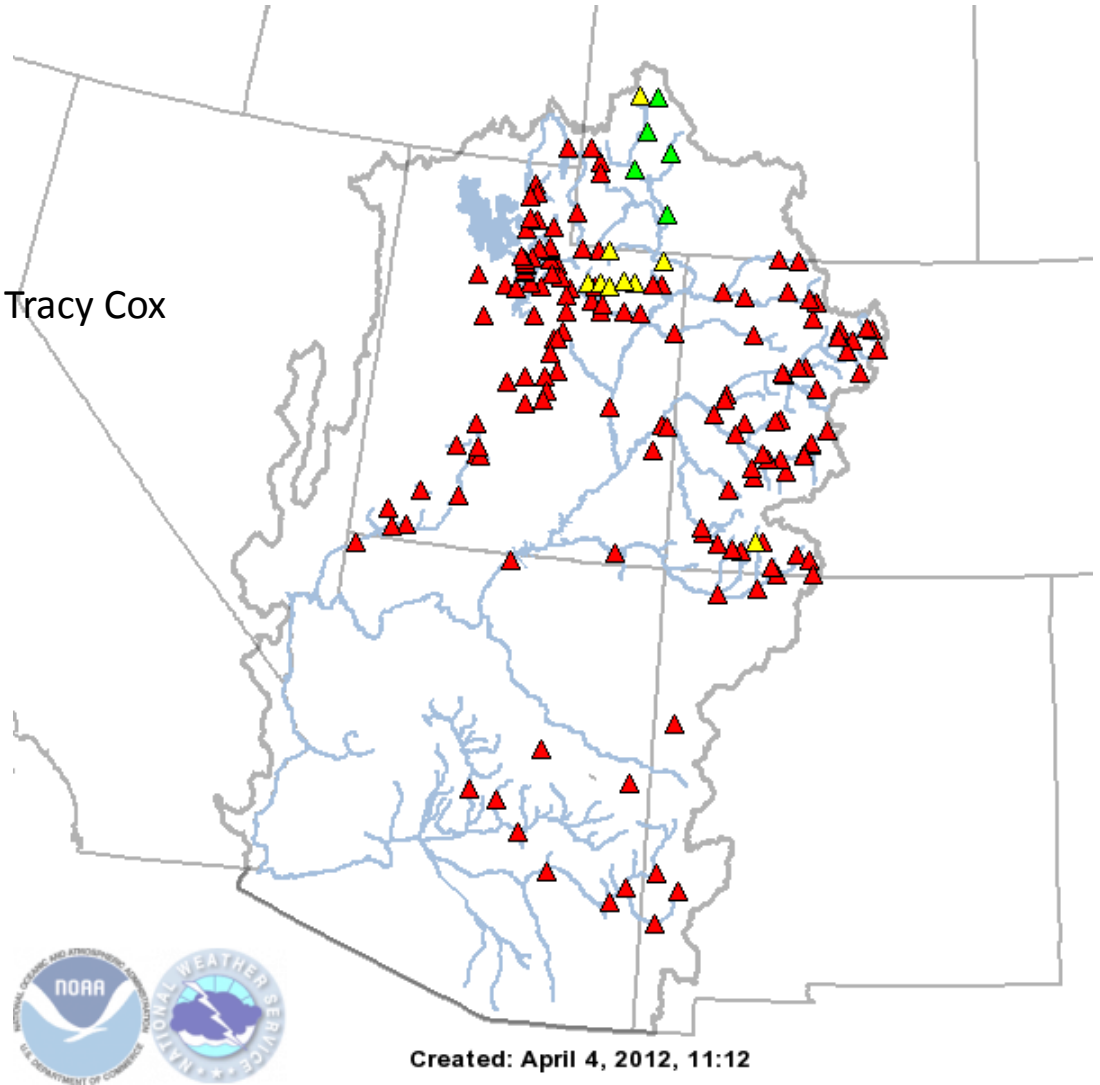
3-4% decrease

Peak Flow Forecasts

- Forecast updates planned for:
  - 5/1, 5/17-? (depending on evolution of the runoff)
- Webinars: 5/4, 5/17, 6/1 – all at 1 pm
  - water supply volumes and peak flow
- Website developments:
  - SNOTEL percentiles (completed in 2011)
  - Peak Flow List (Now available)
  - Instantaneous peaks (vs mean daily) implemented in 2011. Relationships reviewed again in 2012 as we moved to the 1981-2010 period for model calibration and averages.

CBRFC Contacts

- Basin Focal Points (Available to discuss forecasts: 801.524.5130)
  - Upper Colorado: Brenda Alcorn
  - Green: Ashley Nielson
  - San Juan / Gunnison: Greg Smith
  - Great Basin: Brent Bernard
  - Virgin / Sevier – Stacie Bender
  - Lower Colorado (below Lake Powell): Tracy Cox



Feedback, Questions, Concerns always welcome….

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