

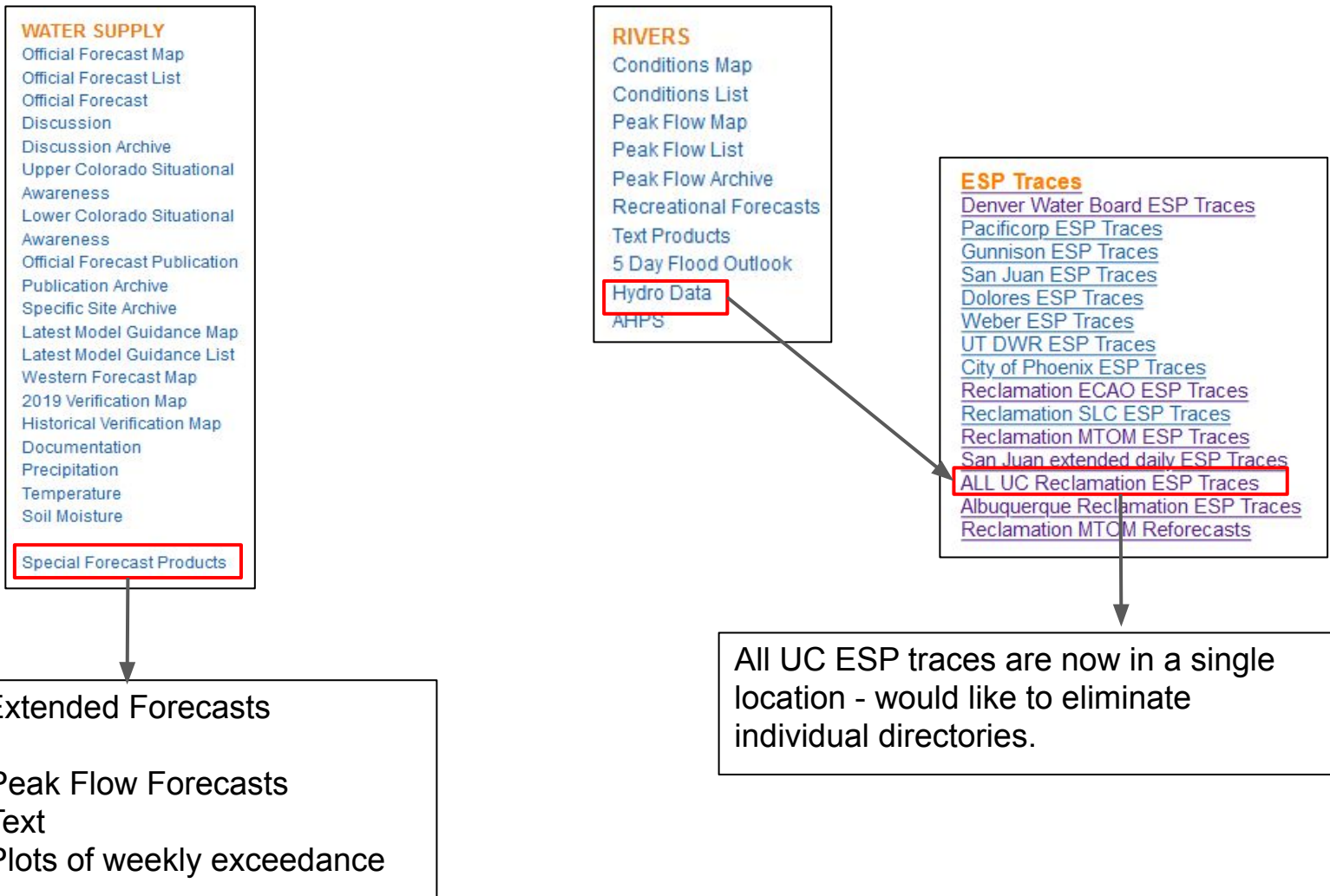
CBRFC Operations Update Water Year 2020

CRFS March 26, 2020

CBRFC Operations Update

- Reminder of Forecasts/Info Available on Web
- Peak Flow Percentiles Map/Dashboard
- Interactive Hydrographs (beta)
- Model calibration updates
- CBRFC Reports
- COVID-19 Operations

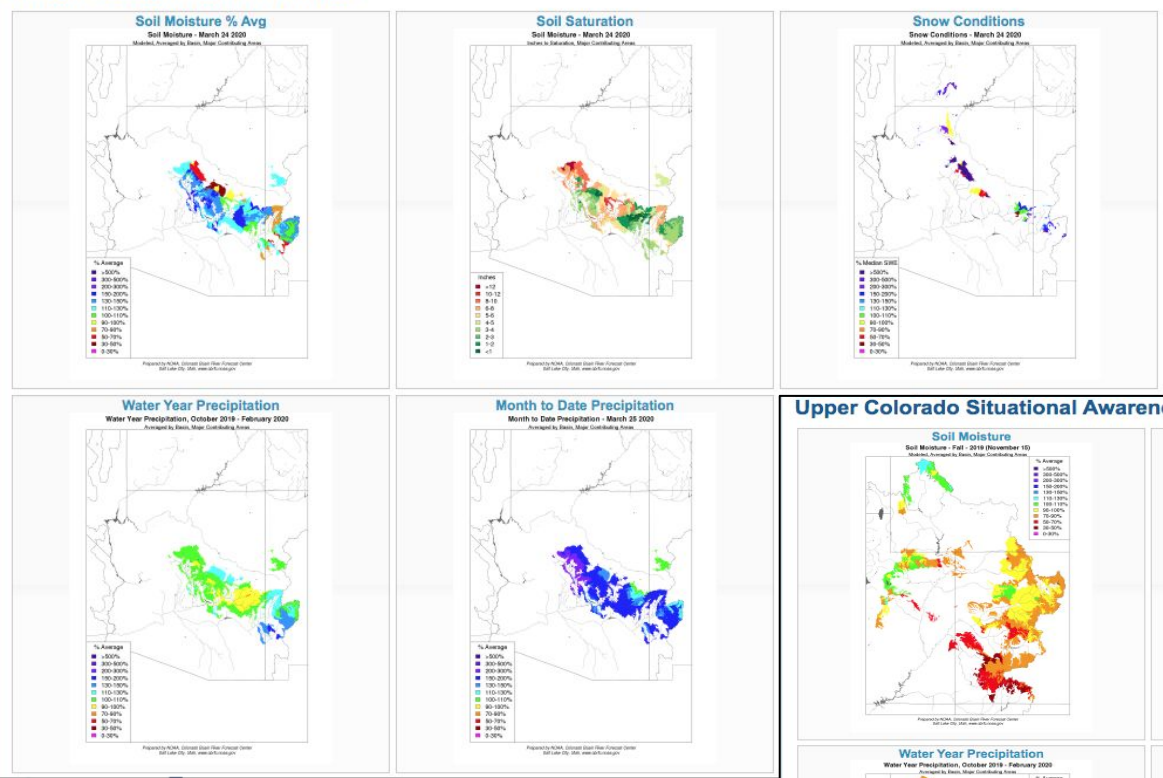
Special Forecast Products and ESP



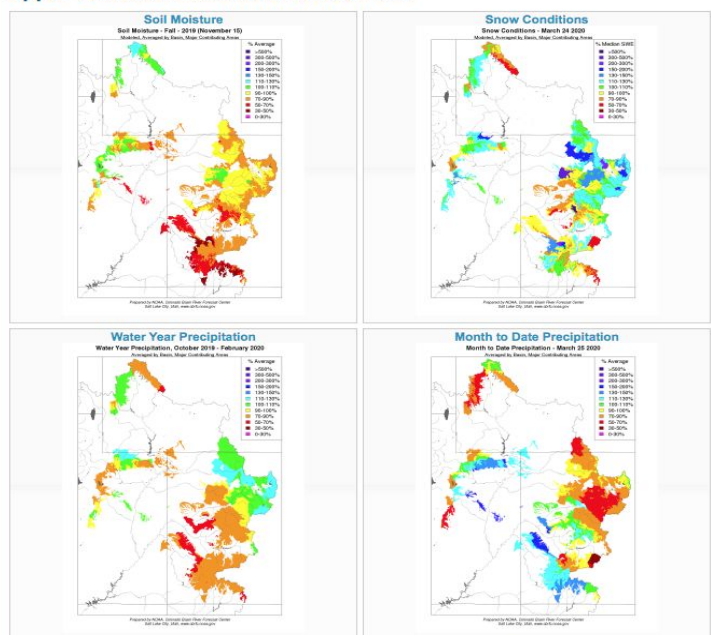
Situational Awareness Pages

- WATER SUPPLY**
- Official Forecast Map
- Official Forecast List
- Official Forecast
- Discussion
- Discussion Archive
- Upper Colorado Situational Awareness**
- Lower Colorado Situational Awareness**
- Official Forecast Publication
- Publication Archive
- Specific Site Archive
- Latest Model Guidance Map
- Latest Model Guidance List
- Western Forecast Map
- 2019 Verification Map
- Historical Verification Map
- Documentation

Arizona Situational Awareness



Upper Colorado Situational Awareness

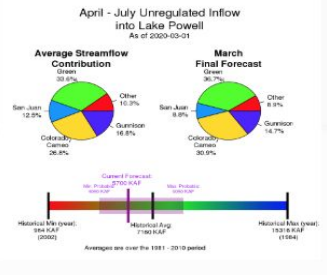


Lake Powell Unregulated Inflow (kaf) Water Year 2020 Forecasts as of 2020-03-01

Period	Obs to Date	Full Fcast	%Avg
Apr-Jul	0	5700	80%
Water Year	1587	8482	78%

Lake Powell %Average Precipitation Water Year 2020

Area	Oct	Nov	Dec	Jan	Feb	Water Year
UC-Powell	75	85	111	89	91	91



More Information

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

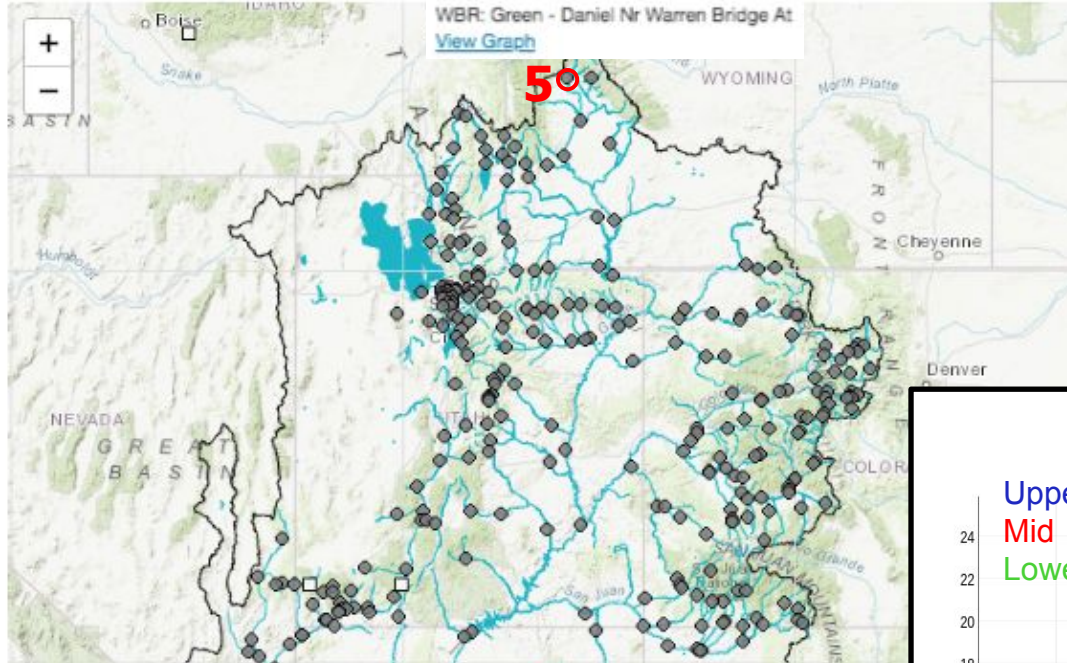
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Model Snow Plots

Conditions Map

Help



► River Conditions

▼ Snow Conditions

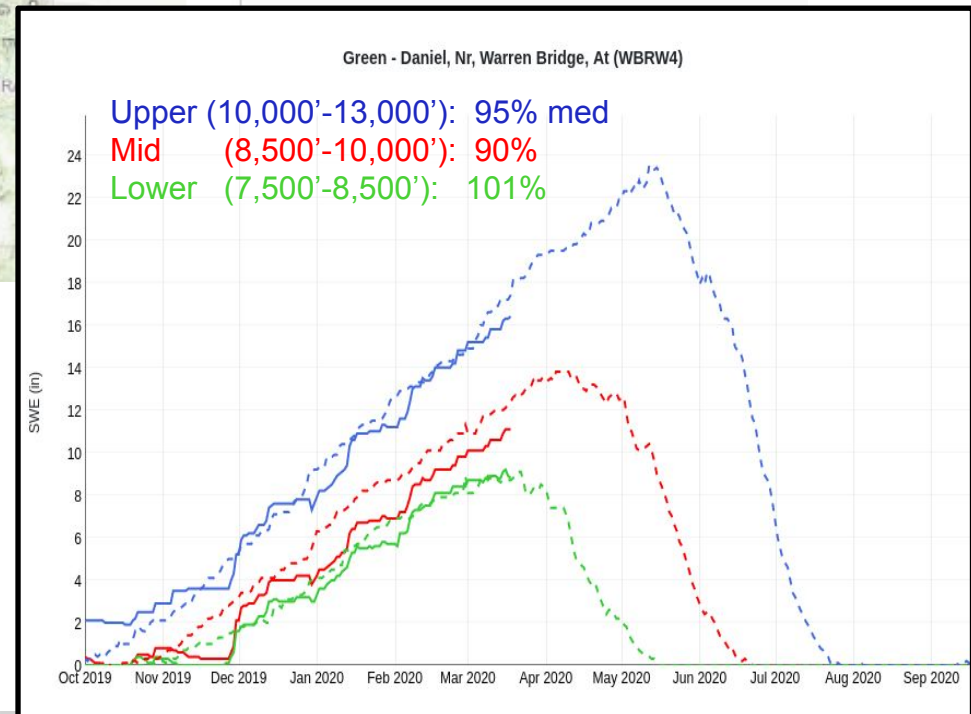
Points Grids **2** Model

3 Show Hide Other Types **4** Help

► Water Supply Forecasts

► Peak Flow Forecasts

- Will make most sense in headwater locations
- downstream points show only snow in local contributing area
- Still working on enhancements
- tabular display/download



Peak Flow Percentiles Map

Conditions Map [Help](#)

RIVERS
Conditions Map
Conditions List
Peak Flow Map
Peak Flow List
Peak Flow Archive
Recreational Forecasts
Text Products
5 Day Flood Outlook
Hydro Data
AHPS

▶ River Conditions
▶ Snow Conditions
▶ Water Supply Forecasts
▼ **Peak Flow Forecasts**
Latest Official Forecast Date: 2020-03-19 [Help](#)
Latest Model Run Date: 2020-03-21
 Show [Hide Other Types](#)
 Official Mean Daily Peak Flow Forecast
 Official Instantaneous Peak Flow Forecast
 Latest Model Guidance Percentile Ranking
 No Data
 Low
 <10
 10-25
 25-75
 75-90
 >90
 High

▶ Reservoir Conditions
▶ Daily Precipitation
▶ Monthly Precipitation
▶ Soil Moisture
▶ Map Options
▶ Search Points

Different set of sites than legacy peak flow forecast points (some overlap, more locations).

- Limited regulation
- Long period of record
- Daily updates

Colors based on historical rank instead of forecast flood.

- Provides context to historical record
- Includes points without defined critical levels

Will be available throughout spring snowmelt period.

- Legacy peak flow forecasts stop May 1 (if not before).
- Helpful for tracking flood/high water potential in late melts and for flows after seasonal peak.

Peak Flow Dashboard - feedback welcome

Peak Flood Potential - STMC2 - Rank: 57 / 112 (50%)

ESP Peak Flow Evolution Plot

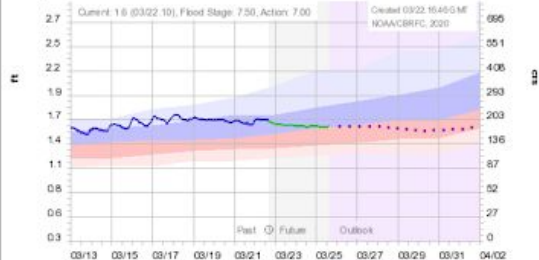


Planning tool: evolution plots can be used to see trends in the forecast based on changing hydrologic conditions.

ESP Peak Flow Forecast Table

STMC2 ESP Mean Daily Peak Includes 5 Day Precipitation Forecast Forecast Date: 2020-03-21 Flood Flow: 5930 CFS		STMC2 ESP Date of Peak Includes 5 Day Precipitation Forecast Forecast Date: 2020-03-21 Normal Time of Peak: 05/19 - 06/10	
Exceedance Probability	Mean Flow CFS	Exceedance Probability	Date of Peak
min	2090	min	2020-05-17
90%	2470	90%	2020-05-21
75%	2820	75%	2020-05-29
50%	3230	50%	2020-06-04
25%	3770	25%	2020-06-09
10%	4900	10%	2020-06-19
max	5290	max	2020-06-24

10 Day Streamflow Forecast



10 day Streamflow Forecast Table

YAMPA - STEAMBOAT SPRINGS
Daily Average Forecast Flow (ending at given date/time)
Units: CFS
[csv file](#)

DATE	TIME	FLOW
3/23/2020	12Z	189
3/24/2020	12Z	181
3/25/2020	12Z	179
3/26/2020	12Z	181
3/27/2020	12Z	181
3/28/2020	12Z	180
3/29/2020	12Z	176
3/30/2020	12Z	170
3/31/2020	12Z	170
4/1/2020	12Z	173

Model Snow



Apr-Jul Historical Peaks

STMC2 QRD5ZZZ Apr-Jul Historical Peaks
High -> Low (reverse table order)
[csv file](#)

RANK	YEAR	PEAK	DATE
1	1921	5870.0	6/15
2	1984	5550.0	5/26
3	1917	5280.0	6/20
4	1952	5190.0	6/5
5	1914	5120.0	6/4
6	1957	5100.0	6/8
7	1997	5090.0	6/4
8	1983	5040.0	6/26
9	2011	4970.0	6/8
10	1928	4920.0	5/31

Raw ESP plot and tables

- Official forecasts plotted if available
- Click on plot for page with more options (similar to ESP volume plot)
 - Plan to add more to plot to make it similar to legacy peak plot

Raw ESP Tables

- Probability of peak magnitude
 - highlights values over flood if available
- Probability of peak timing
 - will give 'normal' date range until time of peak nears (7-10 days)

10 Day Deterministic Forecast

- Click on plot to get to standard hydrograph page
- Table of forecast mean daily flow
 - link to download csv

Use this as the time of peak nears (7-10 days)

Model snow plot

- Click on plot for page with more options

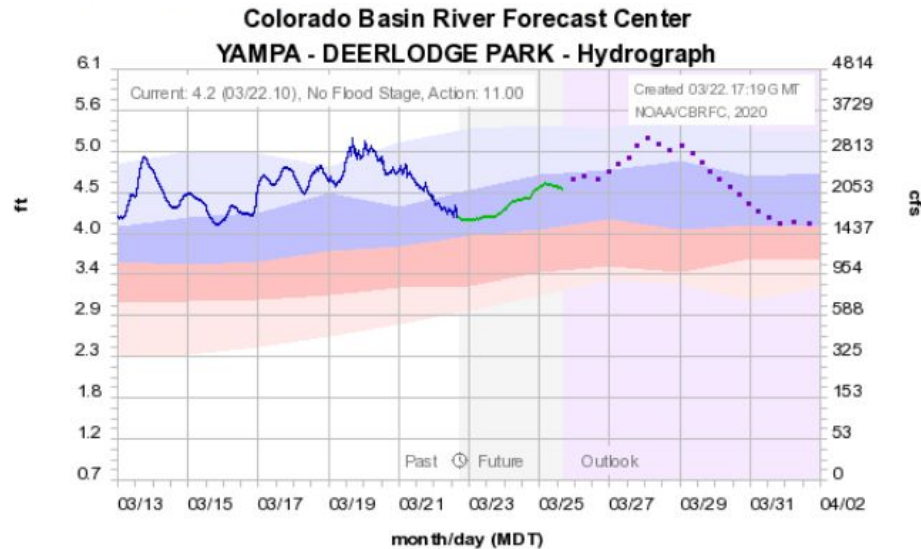
Historical peaks table

- Can reverse order (Low->High)
- Can download csv

Legacy Hydrographs (still the default)

YAMPA - DEERLODGE PARK (YDLC2)

Info: [Station](#) [Rating Table](#) [Critical Stages](#) [Yearly Peaks](#) [Daily Stats](#) [Recent Verification](#) [Seasonal Verification](#) [Beta Hydrograph](#) [USGS data](#)



Simulated — Observed — Forecast (03/22.13:00) — Outlook (increasing uncertainty) —

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

Observed=QRIRGZZ, Simulated=QRI2ZZZ, Forecast=QRIFEZZ F (2020-03-22 13:00)
resoutid=

Hydrograph Options

- Critical Stages
 - Simulated
 - Raw Data
 - Linear Flow
 - Historical Peak
 - Yearly Peaks
 - Daily Maxima
 - Statistics
 - Contingency
 - Adjust
 - Requery
 - Forecasts
- Years: 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991
- Date: 03-22-20
- Past Days: 10
- Future Days: 10
- Analog Years: Off
- Analog Years Period: Off

Apply and Redisplay

Graphs

- Precipitation
- Temperature
- Freezing Level
- Snow
- Soil Moisture
- Hydrograph

Tabular Data

- Precipitation
- Temperature
- Freezing Level
- Snow
- Soil Moisture
- Flows
- Hourly Forecast Flow csv
- Daily Average Forecast Flow csv

Interactive Hydrographs (beta)

Forecast Hydrograph - YDLC2 - Yampa - Deerlodge Park

Yampa - Deerlodge Park (YDLC2)

2020/03/22 16:00:

Observed

(QRIRGZZ): 1674

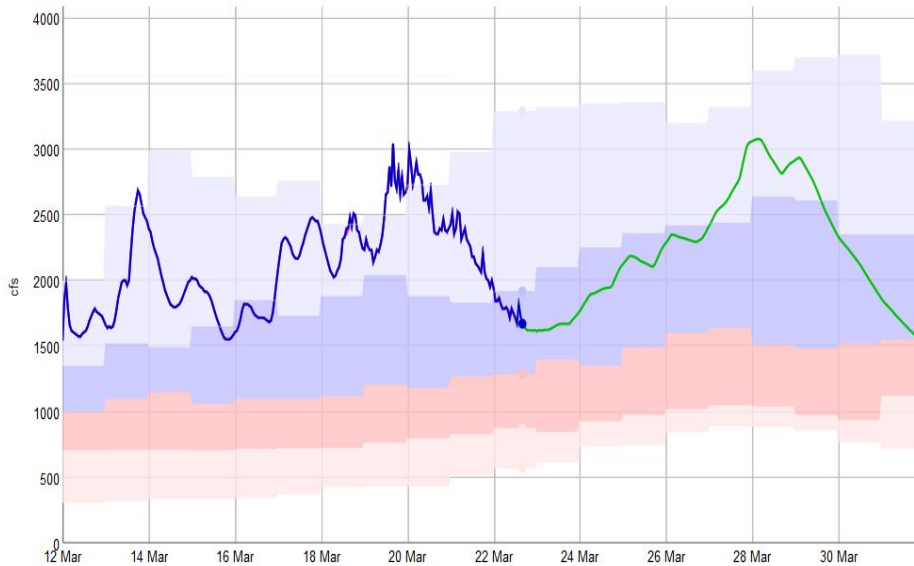
Stat 10%: 3290

Stat 25%: 1920

Stat 50%: 1290

Stat 75%: 875

Stat 90%: 576



Begin Date

2020-03-12

Forecast Date

2020-03-22

End Date

2020-04-01

Hydrograph Options

Plot Flow

Critical

Simulated

Raw Data

Statistics

Historical Peak

Yearly Peaks

Daily Maxima

Plot Tools

Select Latest

Observed

Snap Shot

Plot Help

Hover for values.

Click and drag to zoom.

Double click to zoom out.

Shift-click and drag to

pan.

- Has the same hover and zoom capabilities as our other interactive graphs (Water Supply, Model Snow).
- Working to ensure it has the same information and links that are available on current hydrographs.
- New (to come):
 - ability to plot previous forecasts
 - more easily select a specific date range.
- Feedback welcome

Model Calibration Updates

- Completed/Installed
 - Roaring Fork - installed January 2020
 - 1981-2015 (recalibration)
 - addresses dry model bias above Ruedi Reservoir
 - Virgin River - installed February 2020
 - 1981-2017 (new/extension)
 - new segments to account for increased water storage/use
 - need to run reforecasts for intervening flow
- Completed/Not Installed
 - Upper Gila River
 - 1981-2017 (recalibration/extension)
 - Colorado River below Havasu - completed; not installed
 - 1981-2017 (new)
 - new segments; just route water downstream to Imperial Dam
- Planned UC/GB recalibration through 2020
 - Preliminary work to begin this summer
 - Plan is to have new calibrations in place for WY22
 - Any new forecast point requests should be made soon

CBRFC Reports

Working to get more information on projects to the web

- Project summaries
- Year in Review

HOME	RIVERS	SNOW	WATER SUPPLY	RESERVOIRS	WEATHER	CLIMATE	HELP	ABOUT	SEARCH
News Tuesday March 24, 2020, 10 am MT: CBRFC Peak Flow Forecast Webinar. Registration -> More Info... Tuesday April 7, 2020: CBRFC Water Supply Webinars. Registration -> More Info...								Contact Us Organization Cooperating Offices Papers and Presentations Projects Downloads Reports	
Reports									
2014 2014 CBRFC Stakeholder Forum , April 11, 2014.									
2012 2012 CBRFC Stakeholder Forum , July 31, 2012.									
2011 2011 CBRFC Stakeholder Forum , December 1, 2011. Wallow Fire Post-Burn Increased Flash Flood Risk Analysis , August 10, 2011 Monument Fire Post-Burn Increased Flash Flood Risk Analysis , July 21, 2011 Horseshoe 2 Fire Post-Burn Increased Flash Flood Risk Analysis , July 15, 2011, William Reed, Michael Schaffner, Chad Kahler									
2010 2010 CBRFC Stakeholder Forum , Kevin Werner, Service Coordination Hydrologist, CBRFC October 1, 2010.									
2009 Field Trip to Lower Green Basin , William B. Reed, Senior Hydrologist, CBRFC and Tim Bardsley, Utah NRCS November 12, 2009. Field Trip to Upper Green Basin , William B. Reed, Senior Hydrologist, CBRFC August 3-4, 2009.									
2006 Familiarization Trip to the San Juan River Basin , Brent Bernard, Hydrologist, CBRFC, Tracy Cox, Hydrometeorologist, CBRFC, August 22-25, 2006. South Western Colorado. Field Trip to Northern Arizona , William B. Reed, Senior Hydrologist, CBRFC April 10-13, 2006. WFO Flagstaff and Pheonix, AZ Field Trip to South Eastern Arizona , William B. Reed, Senior Hydrologist, CBRFC January 23-27, 2006. WFO Tucson AOR, AZ									
2005 Flooding Review in Southern Utah , William B. Reed, Senior Hydrologist, CBRFC May 24-25, 2005. Sevier and Virgin Basins, UT Flooding Review along Lower Colorado in Nevada and Arizona , William B. Reed, Senior Hydrologist, CBRFC May 9-13, 2005. Lower Colorado Basin, NV and AZ Durango Multipurpose Outreach , David Brandon, Hydrologist In-Charge, CBRFC April 5-7, 2005. Durango and Pagosa Springs, CO									
2004 August 2004 Familiarization Trip and BOR Outreach , Slide Show , Brent M. Bernard, Hydrologist									
2003 April 2003 Familiarization Trip and WFO Outreach , Tucson, El Paso, Albuquerque and Pheonix HSA's, William B. Reed, Senior Hydrologist March 2003 Familiarization Trip and WFO Outreach , Phoenix, Las Vegas and Flagstaff Hydrologic Service Areas, William B. Reed, Senior Hydrologist									
2002 Rodeo/Chediski Fire: December 16, 2002 Hydrology Meeting , William B. Reed, Senior Hydrologist September 2002 Familiarization Trip to Arizona , William B. Reed, Senior Hydrologist									
2001 November 2001 Trip Report for Arizona , William B. Reed, Senior Hydrologist									

COVID-19 Operations at CBRFC

- Still staffed 7 days a week 6:30 am - 4:00 pm
- Minimal staff in the office each day
 - Others working from home, but not necessarily every day
- Water Supply forecasts may be delayed slightly
 - Goal is to have April 1 forecasts ready by afternoon of Friday 4/3
- Please contact Operations if you don't hear back from your normal contact(s)
 - They can either answer your question or get a hold of someone who can

Operational Hydrologist

- 801-524-4004
- cbrfc.operations@noaa.gov