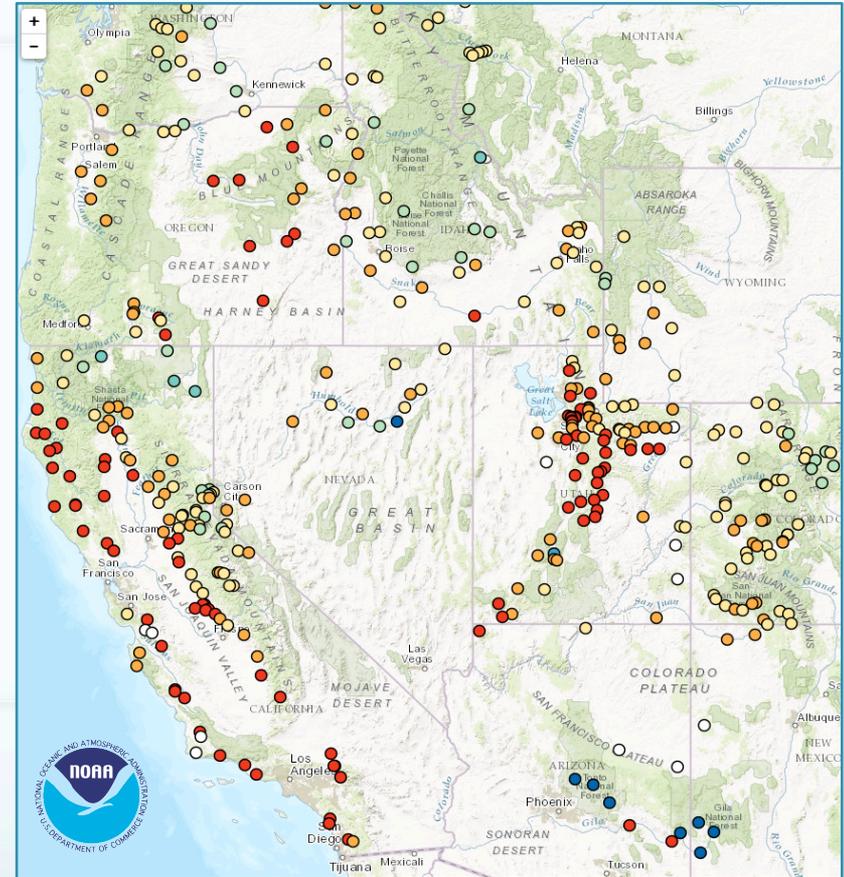


NOAA Water Resources Monitor and Outlook

**Andrea J. Ray, NOAA/ESRL
Physical Sciences Division,
Michelle Stokes, NOAA Colorado
Basin River Forecast Center &
WRMO Steering Team**

- NIDIS IMW DEWS meeting, 25 Oct 16
- Case for the WRMO
- WRMO prototypes
- Future enhancements to the WRMO



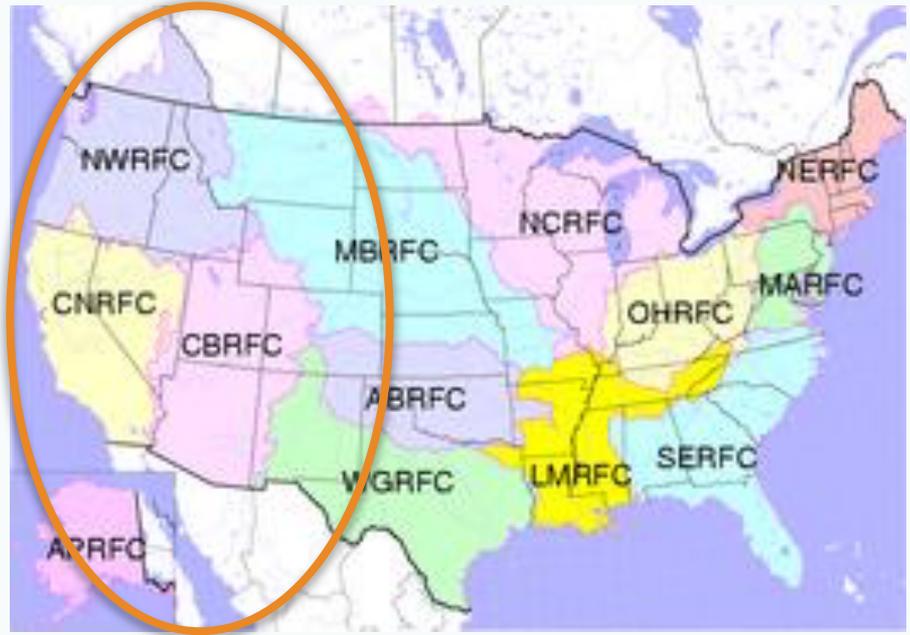
For more info: CBRFC.noaa.gov/WRMO, prototype also will be available in late 2016





13 River Forecast Centers

- Streamflow forecasts at hundreds of locations across the country
- Used for flood warning program, recreational uses, etc.



Water Supply Forecasts in the West

- Driven by mountain snow melt
- 6 RFCs provide water supply forecasts to support water resources managers decisions

Water Supply Forecasts

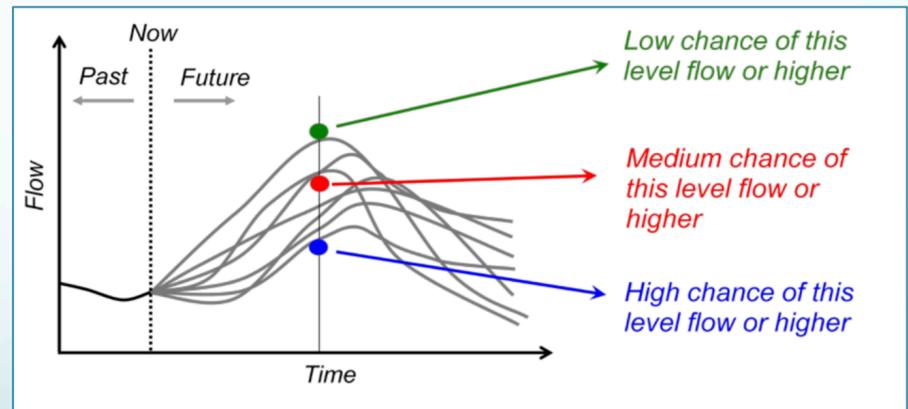
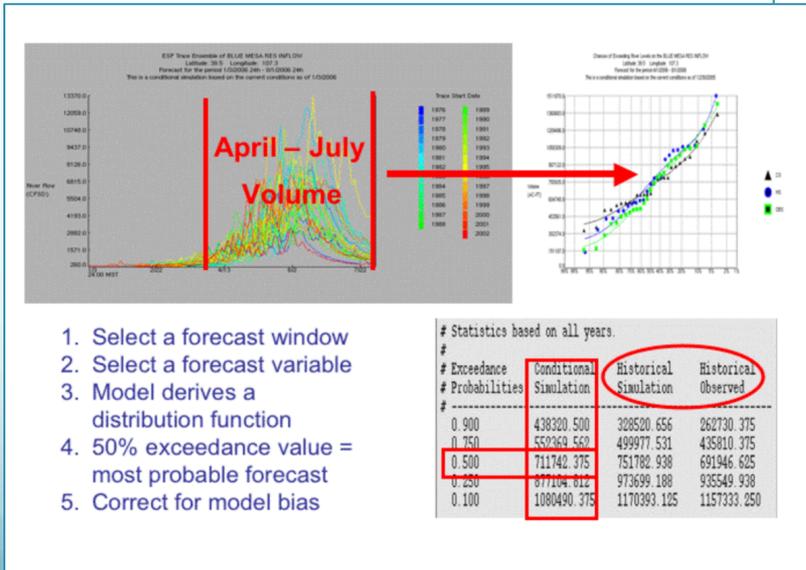
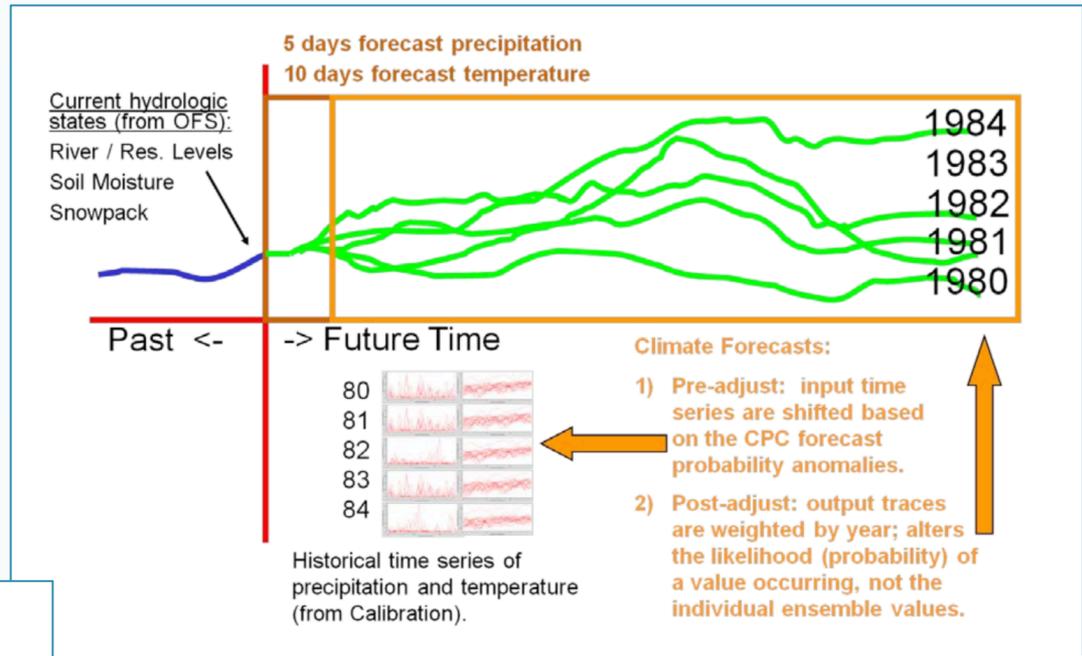
Used for

- Reservoir operations
 - Irrigation
 - Food Supply
 - Power generation
 - Price of electricity
- Water supply to communities
- Endangered species
- Recreational uses
 - Tourism
- Drought information

Increasing in importance of water supply

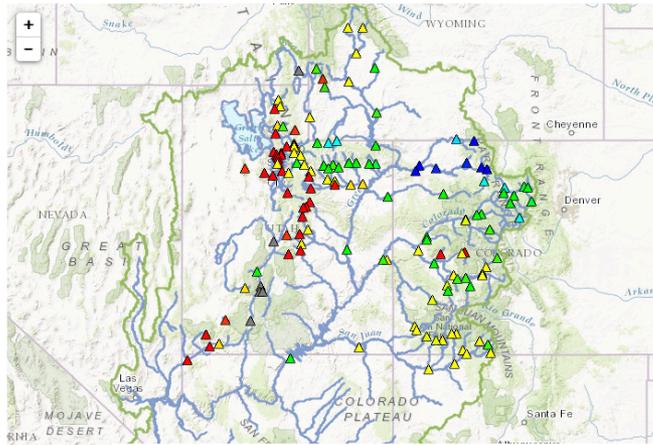
- Population increasing in water scarce areas
- Impacts of climate change
- Growing demand due to environmental vulnerabilities
- Power generation
- Competing demands
- More and more scrutiny, requests for more and more information

Ensemble Streamflow Prediction (ESP) method



News Most recent presentations of Water Supply Briefings can be found here: [Read More...](#)

Conditions Map [Help](#)



- ▶ River Conditions
 - ▶ Snow Conditions
 - ▶ Water Supply Forecasts
- Official Forecast Date: 2016-6-1
ESP Model Run Date: 2016-07-31
- Show Hide Other Types
- Official Percent Average
 - Official Percent Median
 - ESP Model Percent Average
 - ESP Model Percent Median
- ▲ < 70%
 - ▲ 70-90%
 - ▲ 90-110%
 - ▲ 110-130%
 - ▲ > 130%
 - ▲ Regulated
 - ▲ No Forecast
- Offices
- CBRFC
 - WGRFC
 - ABRFC

San Juan - Bluff-Nr (BFPU)
2016-06-01 Apr-Jul Official 50% Forecast: 780 kaf (71% of average)
ESP is Intransmitted and No. Precipitation Forecast Includat

Local forecast by "City, ST" or ZIP Code
Enter location:

NOAA / NWS News and Local CNRFC Information
New "About CNRFC" Section Added - Learn more about the CNRFC and our various products on our new "About CNRFC" pages under the "About Us" menu above, or click the direct link here.

October 2016 Datum change - On Oct. 3, 2016 the CA Department of Water Resources will change the reporting of river stage data collected on 5 locations in the lower Sacramento River area from the current datum (NGVD28) to the NAVD83 datum. This will affect critical stages at these locations. For more information on these changes, please check out this webpage hosted by CDEC (California Data Exchange Center).

NORMAL All River Guidance (Flood Forecast) Points Are Currently and Forecast to Remain Below Critical Stages **NORMAL**

Recently-Issued CNRFC Text Products: (ID) Date/Time Issued to Web

Home Page Version: Interactive Map | Legacy

Geographic CNRFC Boundary States Counties Lakes Rivers

Point Data Filters Elevation Filter: -500 to 15000 ft

Download File: Show Data Table:

Rivers/Reservoirs

Water Resources

Data updated (unless otherwise noted): Thu Sep 15 2016 09:19 AM PDT

Observed Water Year Flow To Date (WY2016)

Previous Water Year Flow (WY2015)

Forecast ESP Water Supply Seasonal Volume

Forecast ESP Water Year Volume

NWS Water Supply Seasonal Volume Forecast (Updated Thu Jun 30 11:00 AM PDT)

Observed Date of Peak Flow / Inflow (Apr 1-Jul 31)

Forecast Date of Peak Flow / Inflow (Apr 1-Jul 31)

Monthly Archive

Month/Year: Sep 2016

Monthly Accumulated Flow (Data to Apr 2011)

Reservoir Storage (Data to 1925 for all reservoirs/1951 for "major")

Major All Major All

Snow Data

Observed Precipitation (QPE)

Forecast Precipitation (QPF)

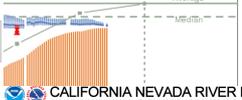
Observed Temperatures

Forecast Temperatures

Freezing Levels

Flash Flood Guidance

Microclimate



CARSON RIVER - FORT CHURCHILL (FTCN2)
Latitude: 39.29° N Longitude: 119.31° W
Elevation: 4180 Ft
River Group: Eastern Sierra
Sequence Time: Sep 15 2016 at 10:18 AM PDT

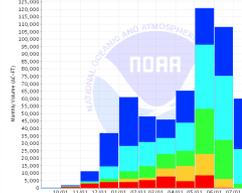
Monthly Probability

Monthly Volume Exceedance Values on the CARSON - FORT CHURCHILL

Latitude: 39.29° N Longitude: 119.31° W

Forecast for the period 09/15/2016 - 09/01/2017

This is a conditional simulation based on the current conditions as of 09/15/2016



Monthly Reservoir Volume (100% of Amd-Fwd)

Prob. 0.1 1.0 10.0 20.0 40.0 60.0 80.0 90.0 95.0 99.0 99.9 100.0

0.0 0.7 3.2 4.2 6.2 8.2 10.1 14.0 22.0 33.0 53.0 81.0



Search Enter NWS ID:

GO

Map Overlays

- NWRFC Boundary
- NWRFC Basins
- NWS HSAs
- Counties

ESP WS Volumes

- Status
- Percent of Normal
- Rank (ASC)
- Rank (DESC)
- Exceedance (%)
- Percentile (%)
- Runoff Status
- Runoff % of Normal

Water Supply Forecast

Period: APR-SEP

COLUMBIA - JOHN DAY DAM (JDAO3)
Forecasts for Water Year 2016

Water Supply Forecasts COLUMBIA - JOHN DAY DAM
Period APR to SEP -- Water Year 2016

Official Forecast

10 days QPF: Ensemble: 2016-09-15 Issued: 2016-09-15

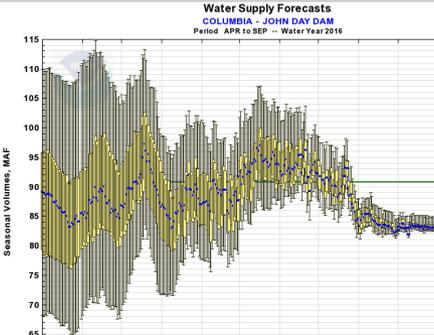
Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1981-2010)
APR-SEP	81740	81811	90	81954	90714
APR-JUL	72179	72179	92	72179	78433
JAN-SEP	104599	104599	95	105173	110866
JAN-JUL	95398	95398	97	95398	95896
OCT-SEP	119411	119482	95	119625	126995

5 days QPF: Ensemble: 2016-09-15 Issued: 2016-09-15

Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1981-2010)
APR-SEP	81672	81780	90	82046	90714
APR-JUL	72179	72179	92	72179	78433
JAN-SEP	104591	104599	95	105265	110866
JAN-JUL	95398	95398	97	95398	95896
OCT-SEP	119343	119451	95	119717	126995

0 days QPF: Ensemble: 2016-09-15 Issued: 2016-09-15

Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1981-2010)
APR-SEP	81545	81732	90	82121	90714
APR-JUL	72179	72179	92	72179	78433
JAN-SEP	104764	104951	95	105339	110866
JAN-JUL	95398	95398	97	95398	95896
OCT-SEP	119343	119451	95	119717	126995



JDAO3 COLUMBIA - JOHN DAY DAM

Based on 45 years of historical record (1971-2015):
the median (50%) forecast is ranked 31st wettest and 16th driest
the percentile is placed in the 34th percentile of the record (exceedance probability is 66%)

APR-SEP	Ensemble Traces: 2016-09-15	Issued: 2016-09-15	(Units in KAF)	
exceedance	10 Day QPF (Official)	5 Day QPF	Climatology	
90%	81811	81780	81732	90%
70%	81740	81672	81545	90%
50%	81740	81672	81545	90%
30%	81954	82046	82121	91%

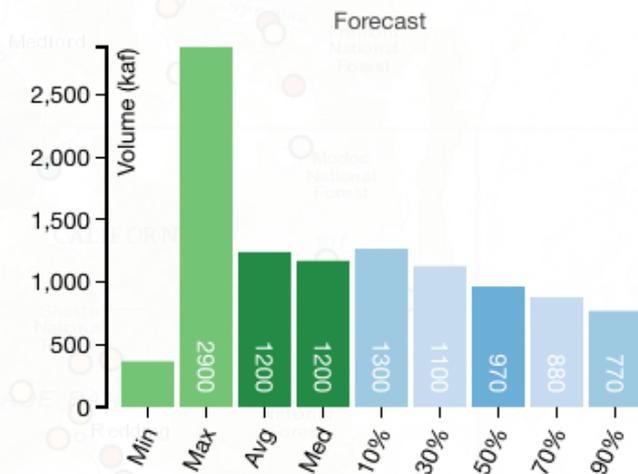
FORT CHURCHILL, NR (FTCN2)
Latitude: 39.29° N Longitude: 119.31° W
Elevation: 4180 Ft

ESP Water Supply Seasonal Forecast Issuance: Sep 15 2016
Forecast Period: Apr - Jul 2016
Most Probable Volume: 127.6 kaf
Percent of Mean: 75%
Average seasonal flow: 171.0 kaf

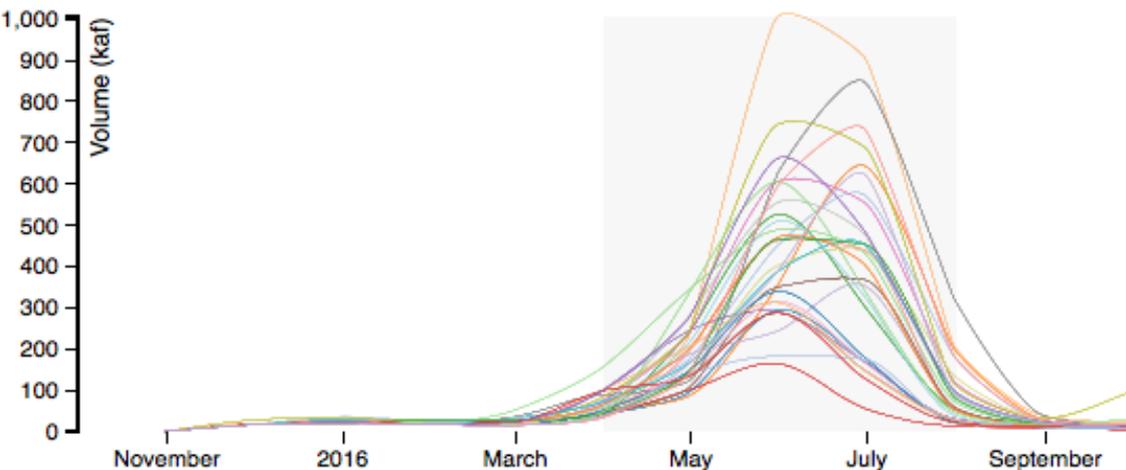
CNRFC ESP Water Supply Seasonal Forecast (Text)
CNRFC ESP Water Supply Monthly Forecast (Image)
Link to Water Supply Trend Plots

Forecast Point Details

Yampa - Deerlodge Park



Forecast Traces



Location
Yampa - Deerlodge Park (YDLC2)

Water Year
2016

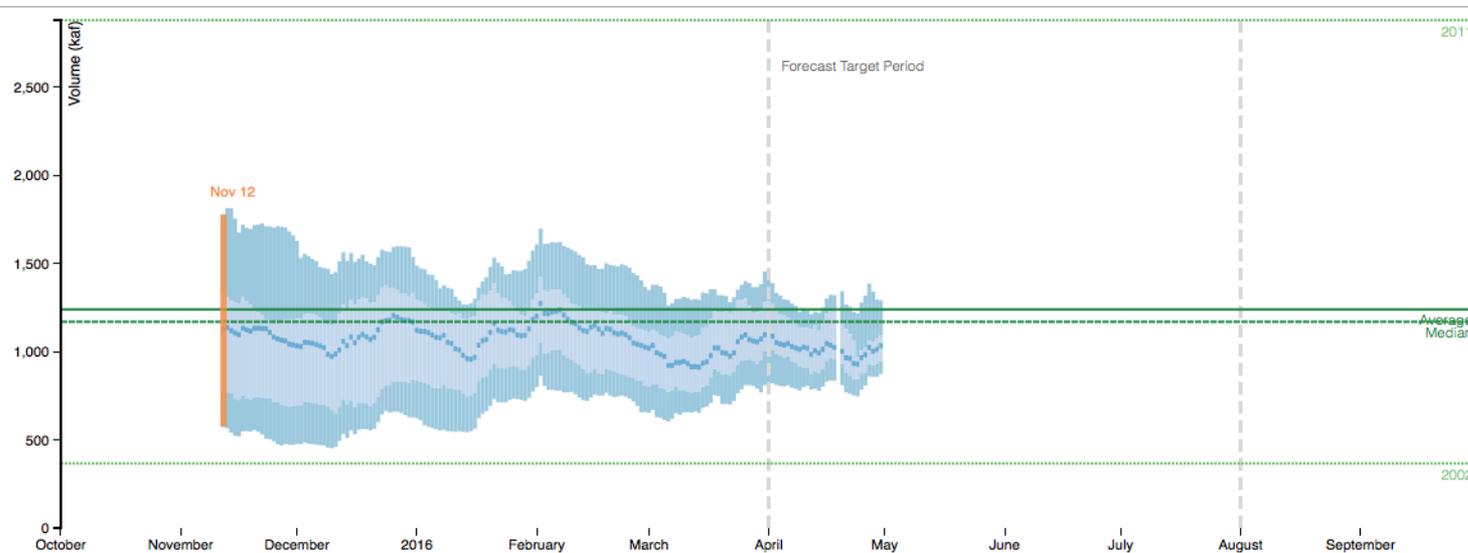
Forecast Period
Apr - Jul

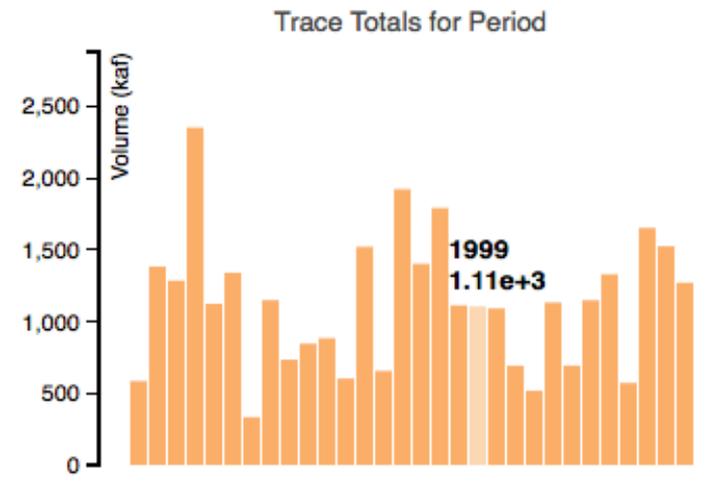
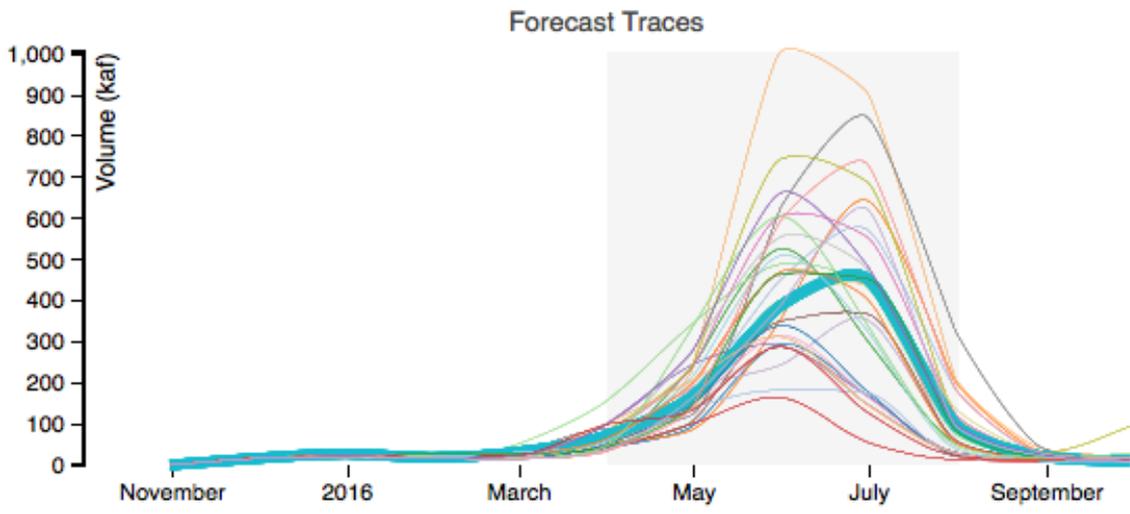
Selected Forecast
Nov 12

Most Probable
1128 kaf

Average
1240 kaf

Percent Average
91%





Benefits & upcoming features of WRMO

Benefits:

- One location for all forecasts westwide, eventually nationally
- Updated daily; Options for user-customization
- Based on user needs & feedback, including User defined periods, more flexibility

Upcoming Features:

Supporting data:

- Snow information (observed)
 - Soil moisture information
 - Temperature and precipitation
 - Reservoir conditions
-
- Documentation & user guide
 - Verification information
 - Climate outlooks: NOAA CPC week 3-4, monthly, seasonal outlooks
 - Seasonal water outlook envisioned based on CPC outlooks and other analysis

For more info: CBRFC.noaa.gov/WRMO, prototype will be available in late 2016

