NOAA's Colorado Basin River Forecast Center

An Overview of the CBRFC – How can we help you?

Paul Miller
Service Coordination Hydrologist

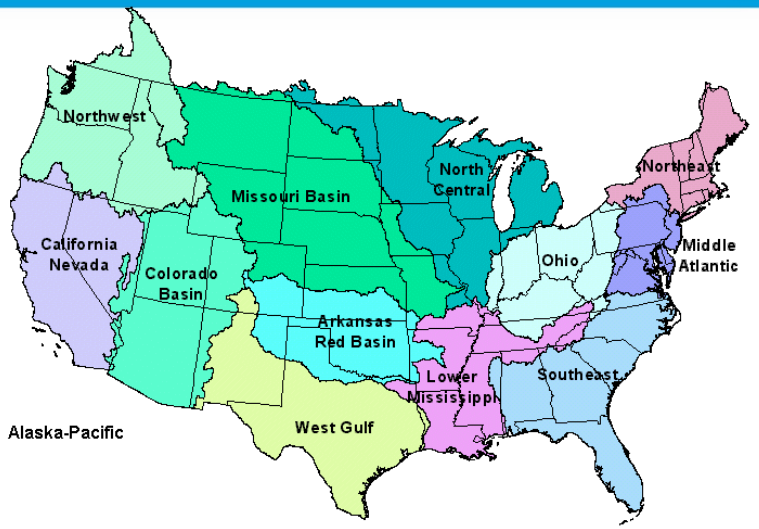
Southwest Tribal Climate Change Network Call

October 5, 2016

Overview

- Who we are
- Summary of operations
- Products and Services
- How can we help?
- How can you help?

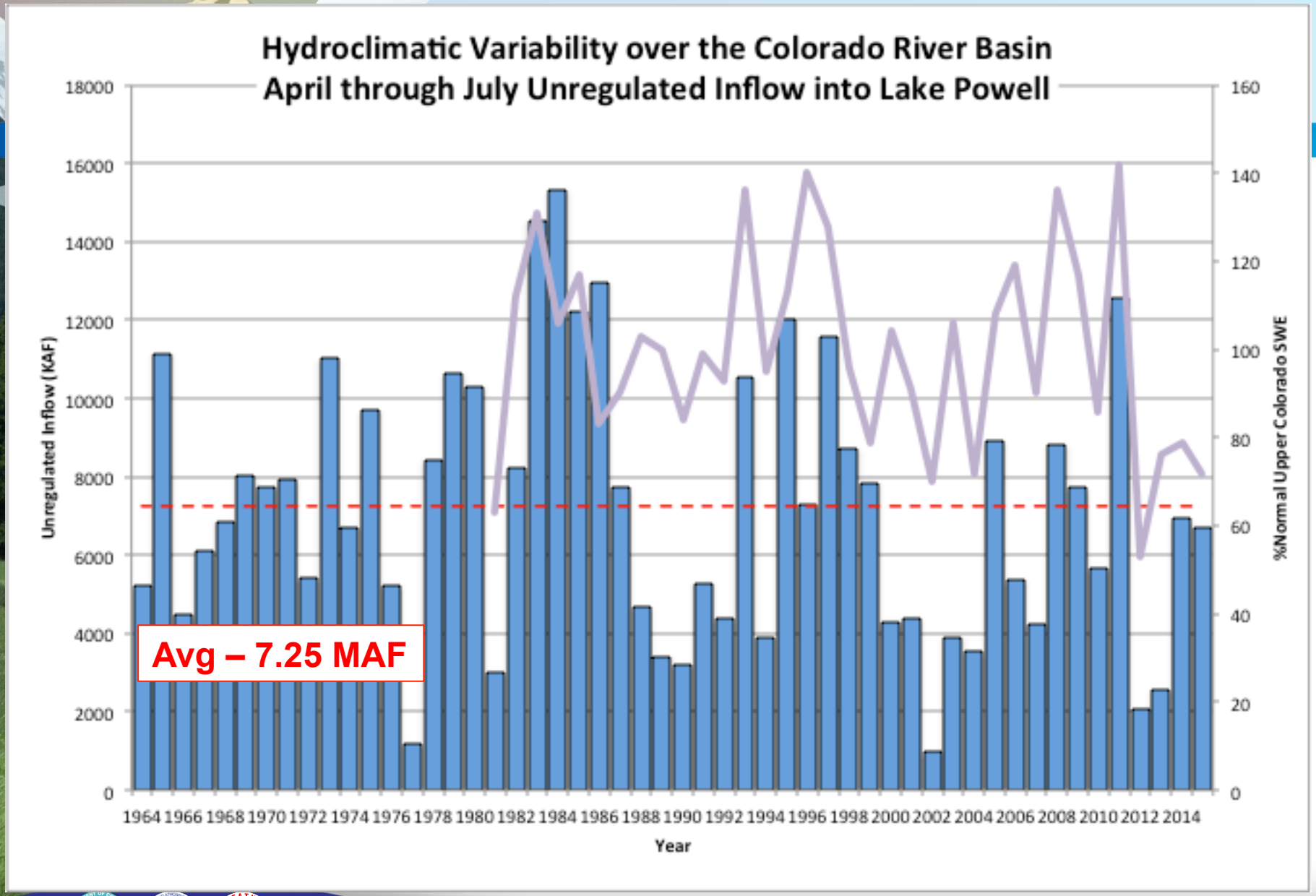
Who Are We?



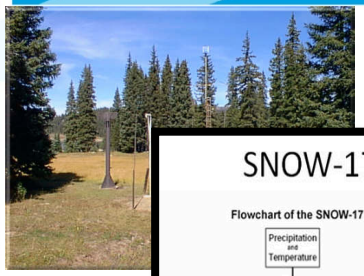
- Part of NOAA - NWS, one of 13 RFCs nationwide
- An operational field office located in Salt Lake City, UT
- Highly collaborative, reliant on partners and data
- All about decision-support!

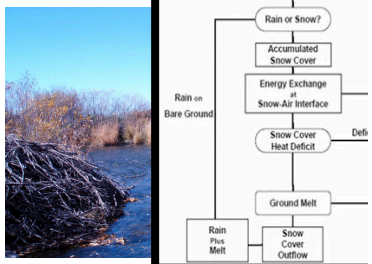
Who We Are

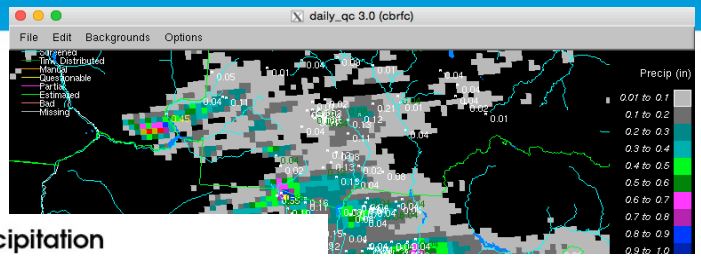
- Work with a broad and diverse set of stakeholders
  - Weather Forecast Offices and Reclamation
  - Municipal and Agricultural Water Users
  - USGS, NRCS, and many other federal agencies
  - State agencies, Academics, NGOs, Tribes
- Receive data from many of these sources

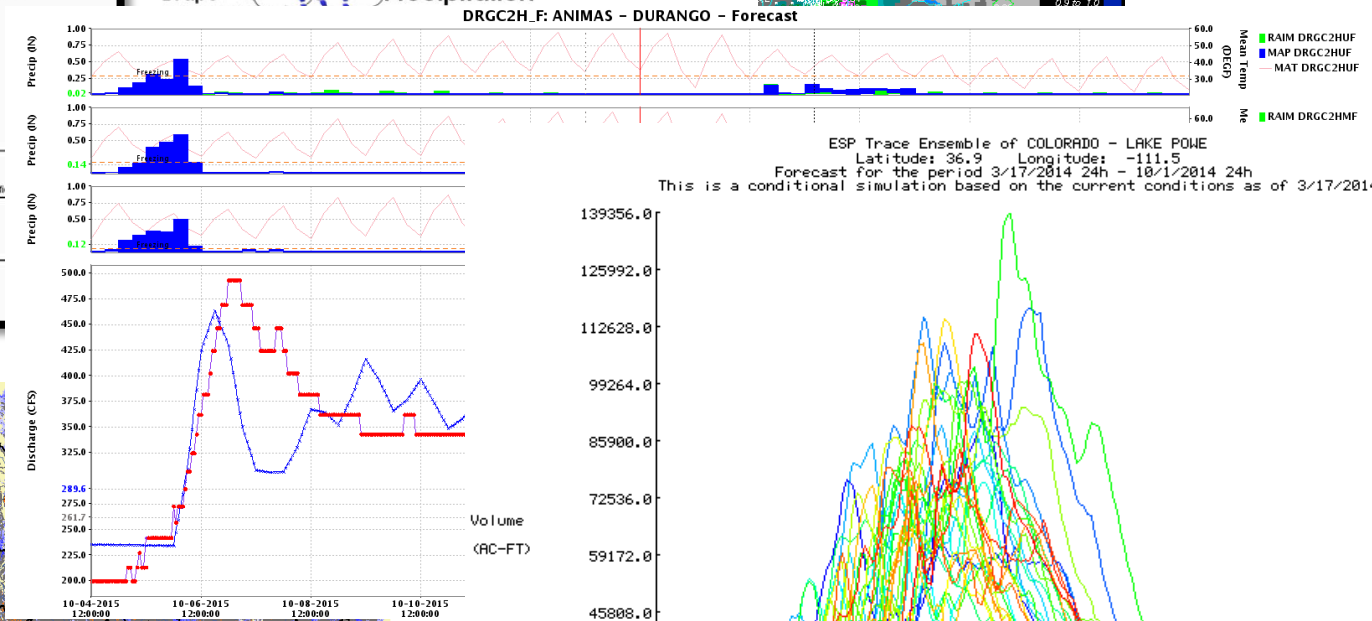

Hydroclimatic Variability over the Colorado River Basin
April through July Unregulated Inflow into Lake Powell
Unregulated Inflow (KAF)
%Normal Upper Colorado SWE
Year
Avg – 7.25 MAF
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
160
140
120
100
80
60
40
20
0
1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014

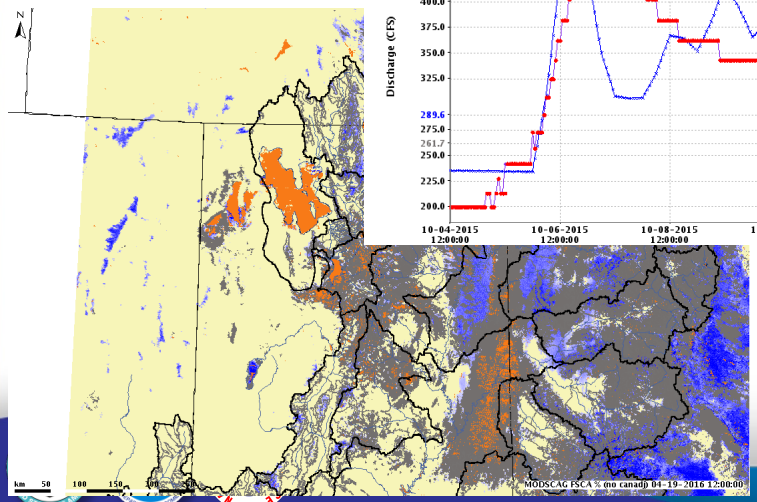
Providing Decision Support











We Know The Climate Is Changing

Temperatures are rising and will continue to rise

Precipitation outlook is uncertain, but we do expect more extreme events

Decreased water supply, particularly for the Southwest and Colorado River Basin

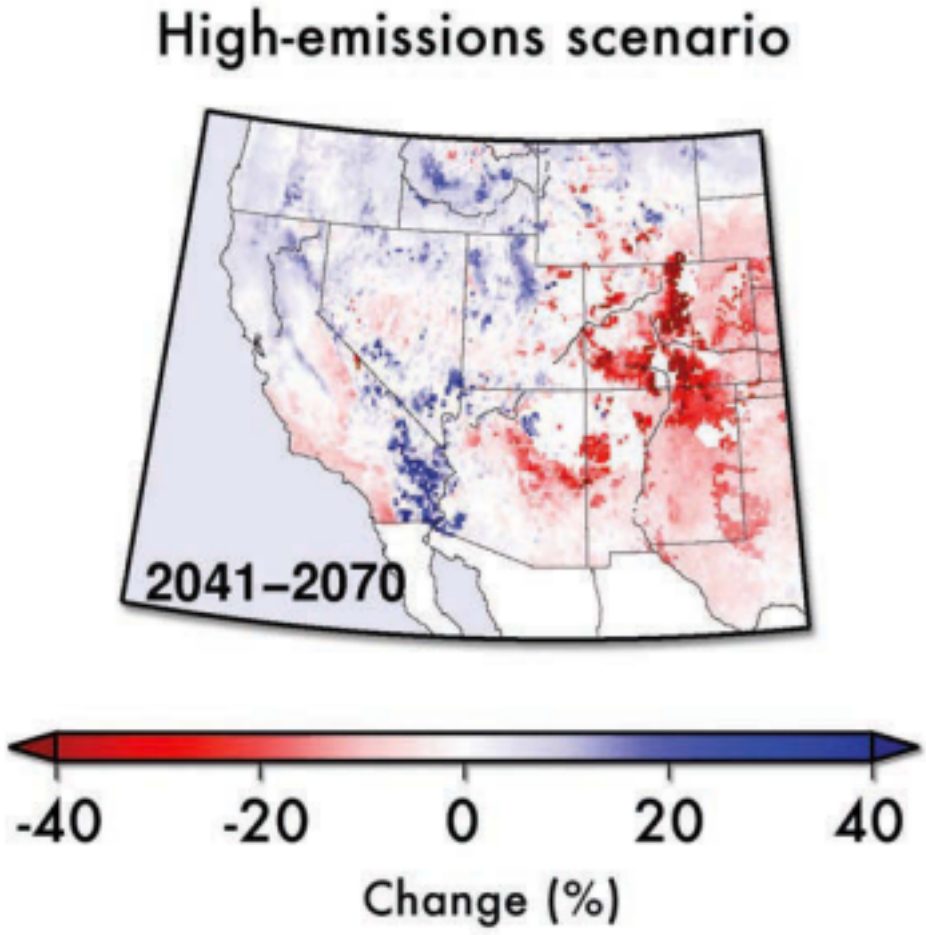
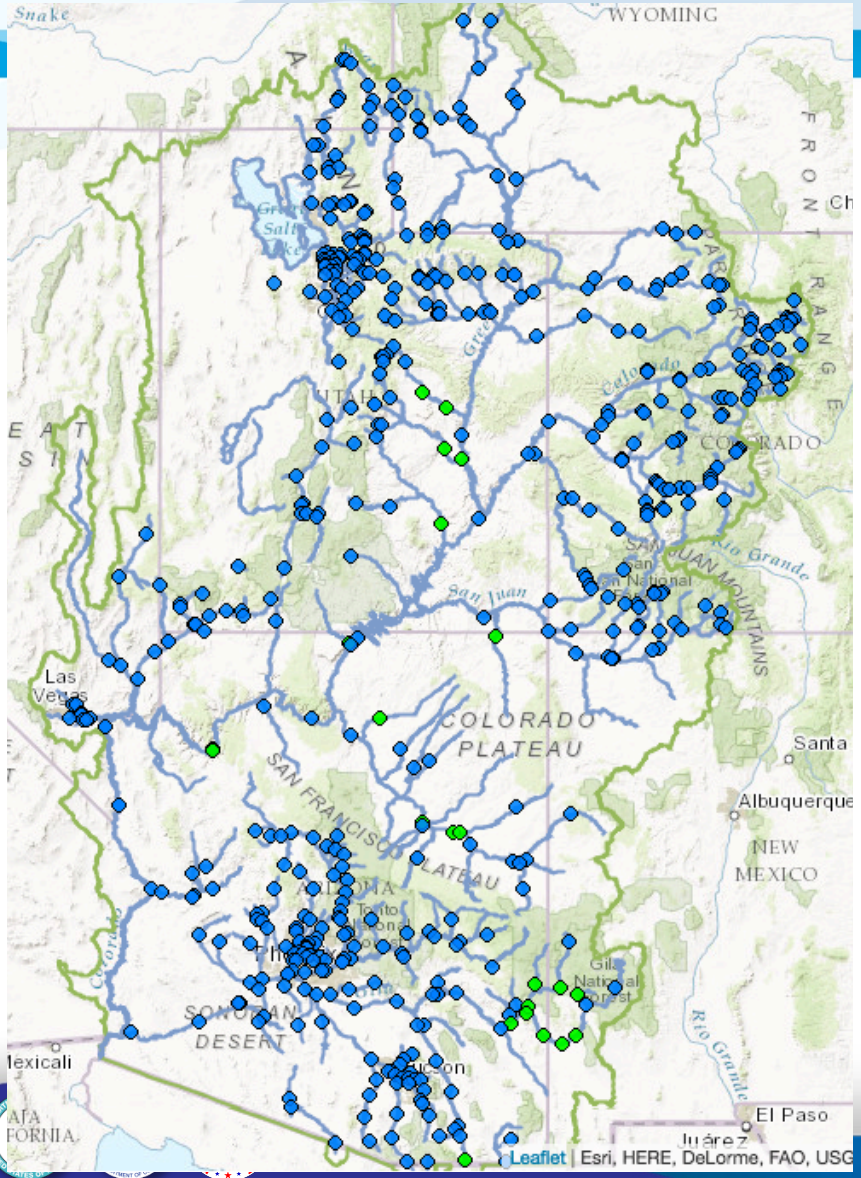


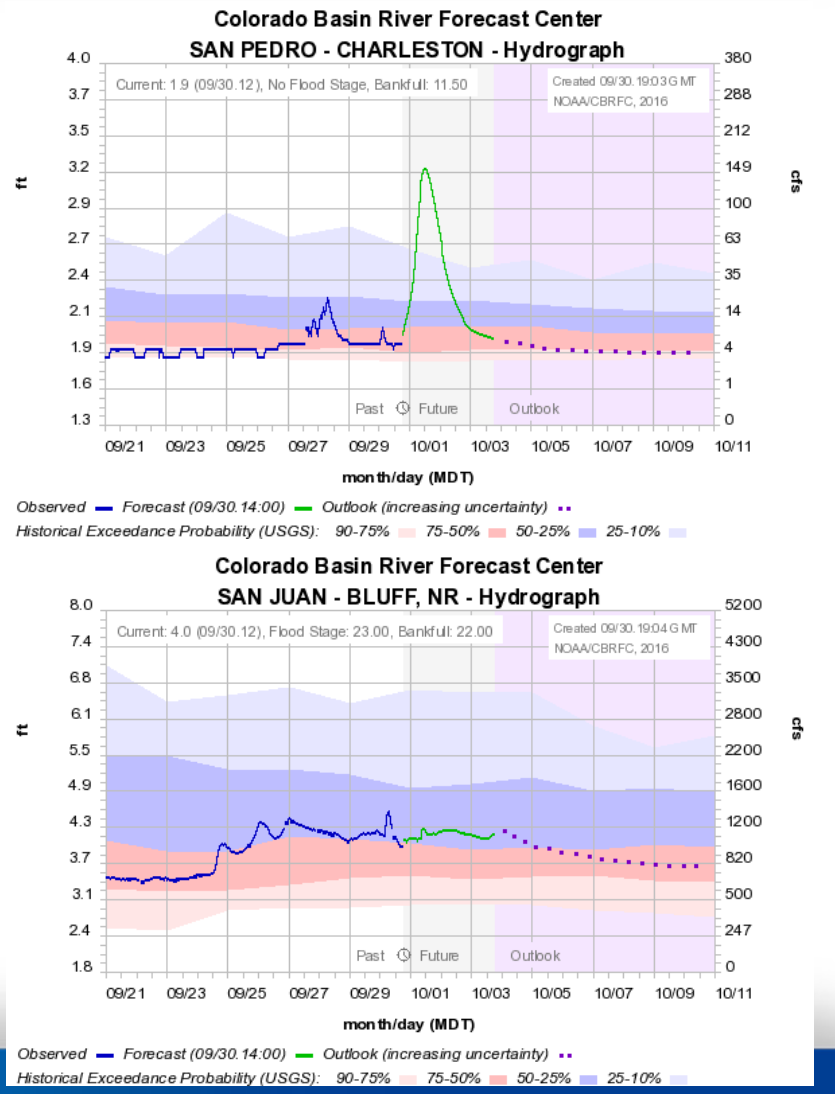
Figure from: Garfin, G., A. Jardine, R. Merideth, M. Black, and S. LeRoy, eds. 2013. Assessment of Climate Change in the Southwest United States: A Report Prepared for the National Climate Assessment. A report by the Southwest Climate Alliance. Washington, DC: Island Press.

And Needs Are Changing

- Where we were:
  - What is THE forecast?
  - How much water is there?
  - How much snow is there?
  - Will there be flooding?
- Where we are going:
  - What is the range of forecasts?
  - What is the likelihood of reaching this flow?
  - What if it's a dry/wet year?
  - What is the risk to filling my reservoir?
  - What is your uncertainty?

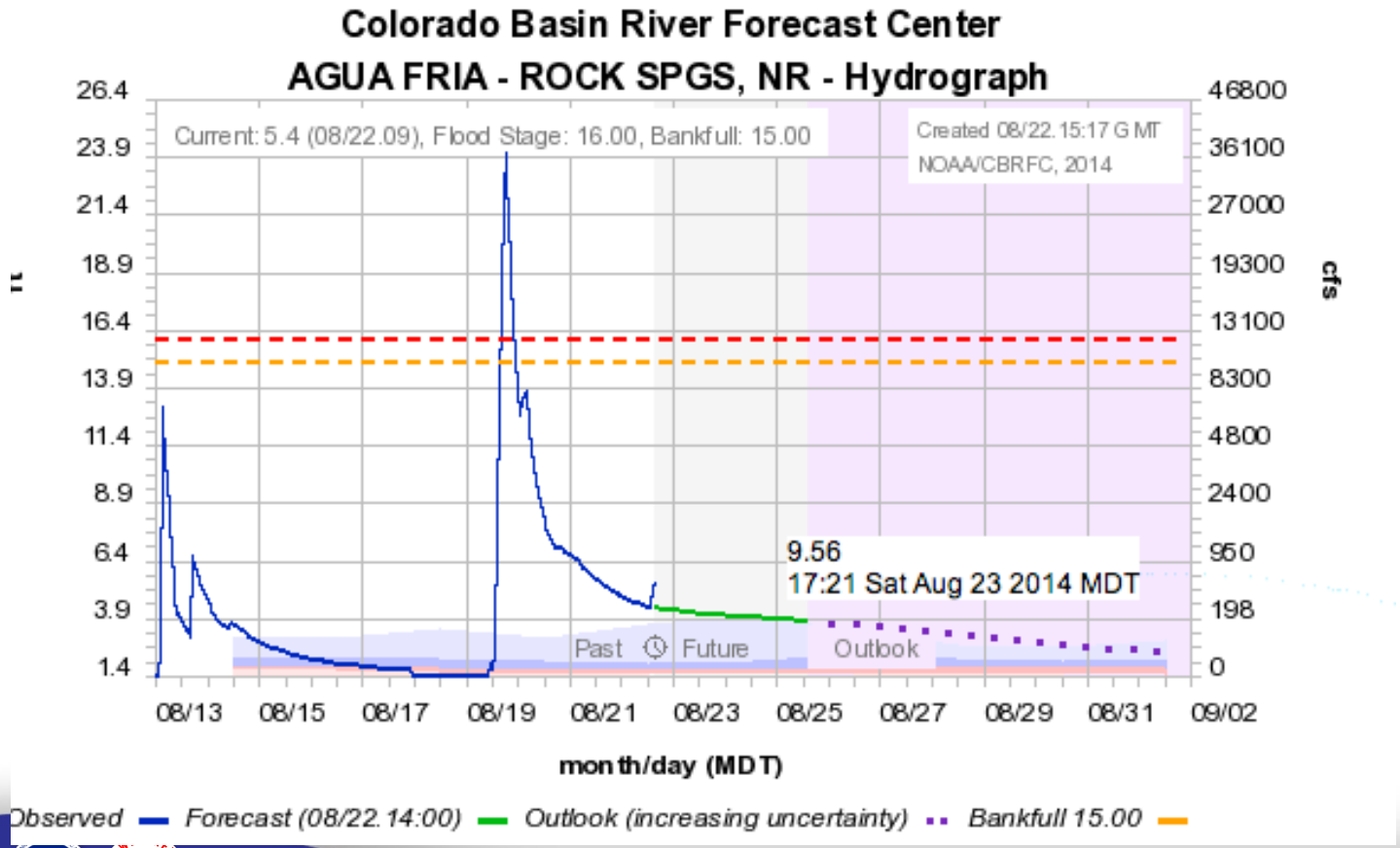
Products and Services





Products and Services

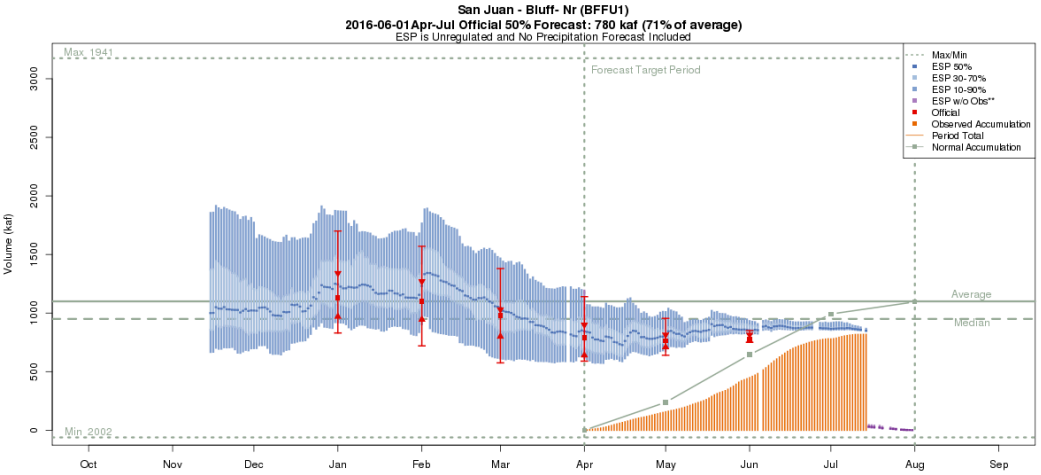
Support flood warning efforts by weather forecast offices

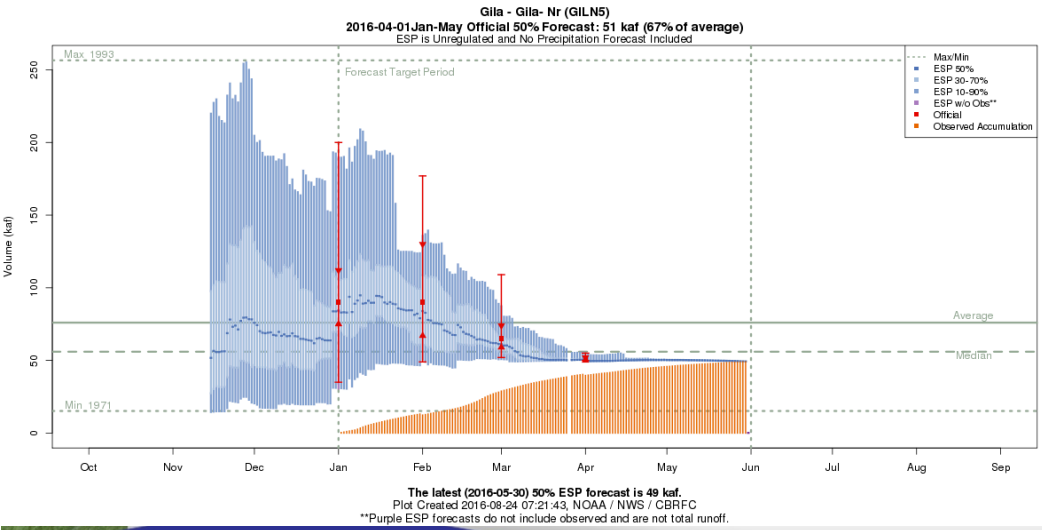


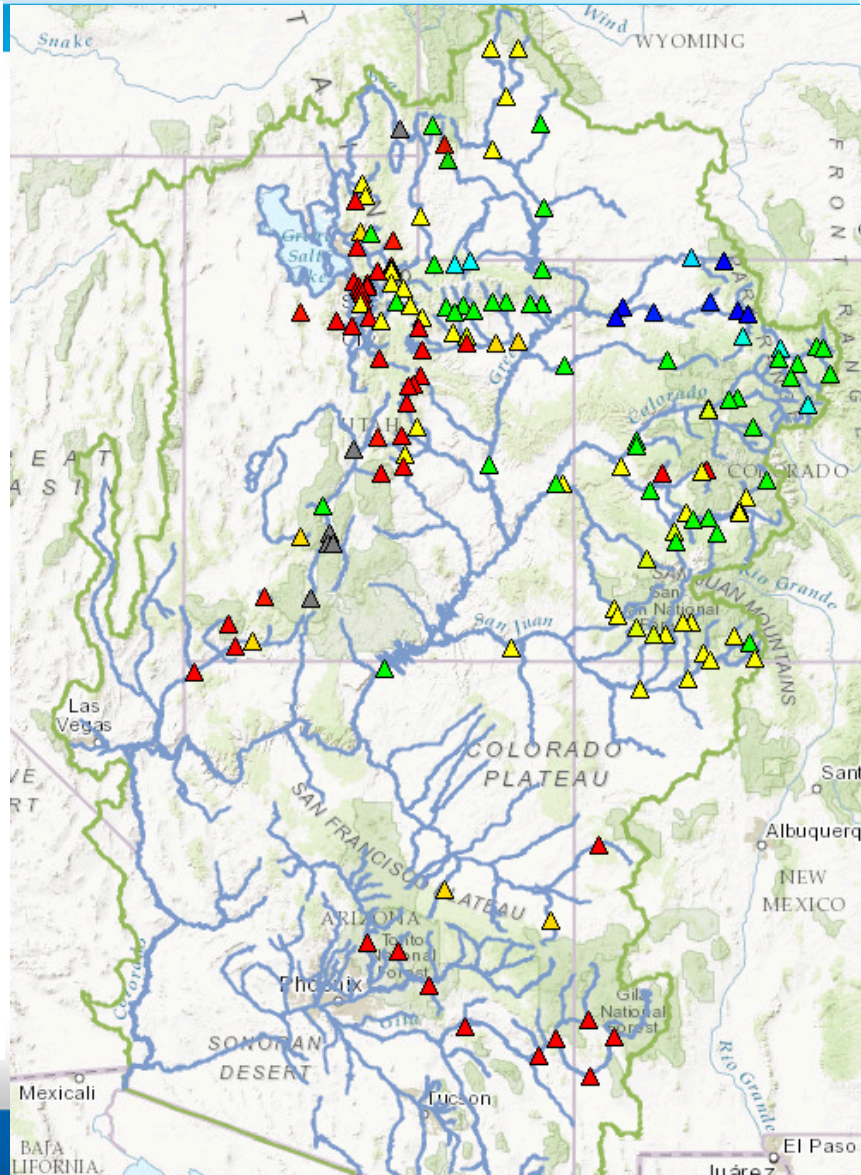
Products and Services

- Water Supply Forecast
  - Utilize an ensemble of future climate to generate possible streamflow futures
  - Dependent on precipitation information during the runoff season – we pay close attention to snowpack
  - Model soil moisture component is very important
- The more information we have the better!

Products and Services

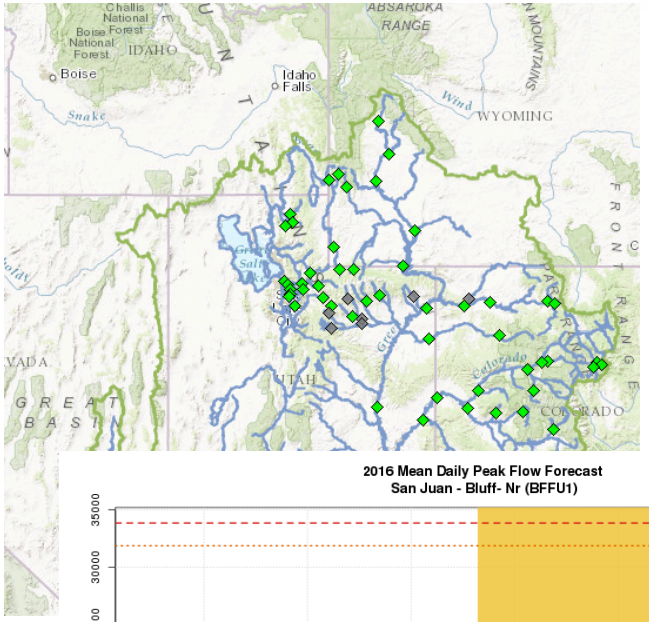






Products and Services

- Peak Flow Forecasts
  - Mean Daily Peak Flow
  - Helpful for environmental resource managers
  - Meet environmental targets



Coordination Efforts

- Annual Stakeholder Open House
  - Broad range of stakeholders
  - Introduce new products and services
  - Reinforce traditional products and services
  - Important for us to get feedback
- Frequent webinars
  - Water supply, peak flows
  - Custom Webinars for your group
  - WFO Coordination

Coordination Efforts

- Participation in stakeholder-run meetings and events
- Participation in multi-agency efforts
  - Landscape Conservation Cooperatives
  - Climate Science Centers
  - NOAA RISAs (like CLIMAS)
  - Others
- Direct contact by phone, e-mail, etc…

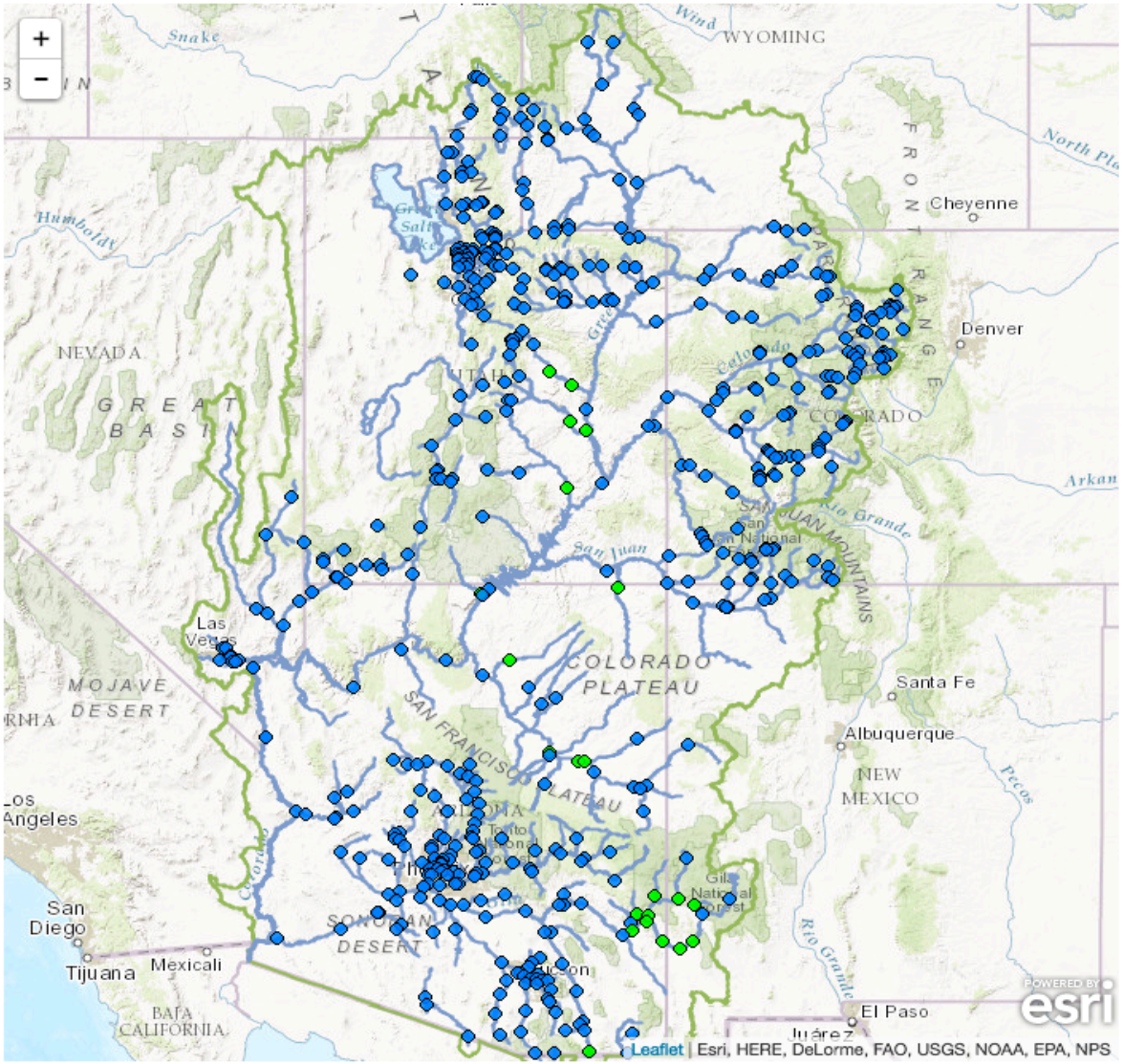
COLORADO BASIN RIVER FORECAST CENTER

NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

News Most recent presentations of Water Supply Briefings can be found here: Read More...

Conditions Map

Help



Lat: 37.6 Lng: -110.5 Zoom: 6

River Conditions

Data Updated: 09/30/19Z Help

Show Hide Other Types

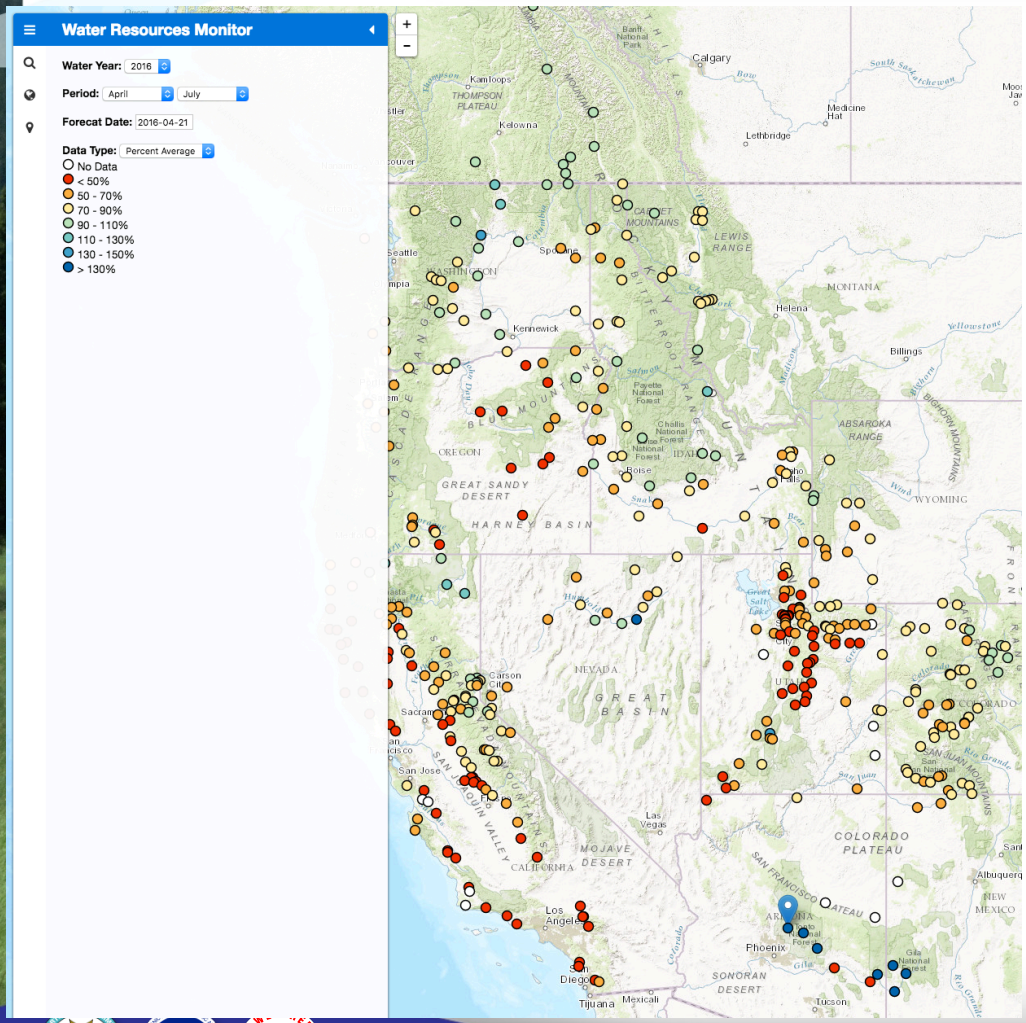
- Data
- Forecast
- Reservoir Inflow
- Reservoir Outflow
- Official Flood
- Active

- Not Available
- Normal
- Significant Rise
- Near Bankfull
- Above Bankfull
- Above Flood Stage
- Outlook (> 3 days)

Popup Alerts

- Snow Conditions
- Water Supply Forecasts
- Peak Flood Probablity
- Reservoir Conditions
- Daily Precipitation
- Monthly Precipitation
- Soil Moisture
- Map Options
- Search Points

Coordination Efforts



- Western Region Monitoring and Outlook Page
  - More customizable
  - Lots of information in an intuitive interface
  - West-wide
- Coming Soon!

National Water Center

Weather-Ready Nation
National Oceanic and Atmospheric Administration

National Water Model

Improving NOAA's Water Prediction Services

In August 2016, NOAA took a giant leap forward in its ability to forecast the flow of rivers and streams throughout the entire continental United States with the launch of the new high resolution National Water Model (NWM).

The NWM will enhance and expand NOAA's water flow forecasts, which to date have been available for approximately 4,000 river locations with stream gages operated by the U.S. Geological Survey. This new model will expand forecasts to 2.7 million stream locations nationwide. Leveraging the full network of nearly 8,000 U.S. Geological Service stream gauges and NOAA's investment in atmospheric modeling, the NWM will provide high-resolution forecasts of soil moisture, surface runoff, snow water equivalent, and other parameters.

We all recognize that water is an essential component of sustainable and resilient communities. But its also a stressed natural resource and potential threat to life, property, and livelihoods during extreme weather events.

Improved Water Information Services

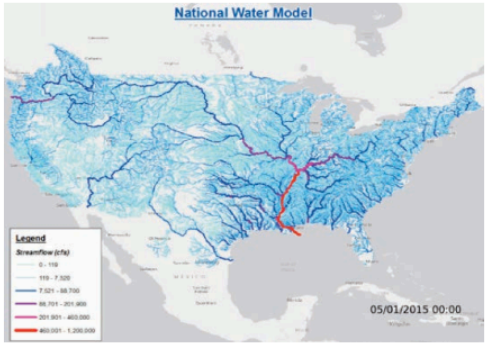
The new NWM improves the National Weather Service's ability to deliver impact-based decision support services nationwide by providing "street level" water information and guidance, as well as serve as the foundation for additional private sector water services. At a minimum, the NWM will immediately provide predictive water information for many locations where none previously existed.

Initially, this new NWM-based information will be particularly useful in headwater areas in support of NOAA's flash flood mission.

How it Works

The NWM simulates the water cycle with mathematical representations of the different processes and how they fit together. This complex representation of physical processes such as snowmelt and infiltration and water movement through the soil layers varies significantly with changing elevations, soils, vegetation types and a host of other variables.

Additionally, extreme variability in precipitation over short distances and times can cause the response on rivers and streams to change very quickly. Overall, the processes are so complex that to simulate it with a mathematical model means that it needs a "supercomputer" in order to run in the time frame needed to support decision makers when flooding is threatening.



National Water Model is a new forecasting tool that will help forecasters predict when and where flooding can be expected.

www.water.noaa.gov

National Water Model Image Viewer

The viewer below has been made available to view the pre-generated imagery depicting output from the National Water Model. For direct access to the imagery shown in the viewer, visit the following location: http://www.nohrsc.noaa.gov/pub/staff/keicher/WRFH_ppd/web/static_images/

Dataset: Stream Flow

Forecast Type: Long Range

5.0 s Apply

2016-09-09 06:00:00 UTC

- 2016-09-09 06:00:00 UTC
- 2016-09-09 12:00:00 UTC
- 2016-09-09 18:00:00 UTC
- 2016-09-10 00:00:00 UTC
- 2016-09-10 06:00:00 UTC
- 2016-09-10 12:00:00 UTC
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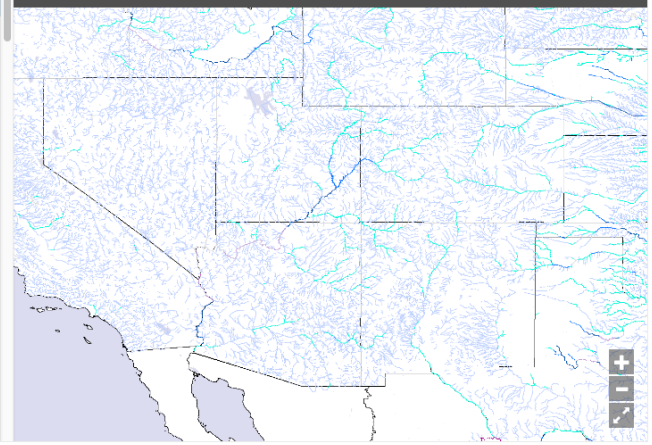

How can we help?

- What sites, areas are important to you?
- Is there a site or area that you would like us to add?
- What are your major concerns and decisions? What kind of information can we provide to help with decision support?

How can you help?

- We always need data and can work with you to get us the information in a way that is convenient to you
  - We understand that some tribal information can be proprietary
  - If there's enough data, we can add points
- What are your major decision points?
- Let us know how we can help!

Contact us!

- Michelle Stokes – Hydrologist In Charge
- John Lhotak – Development and Operations Hydrologist
- Paul Miller – Service Coordination Hydrologist

- michelle.stokes@noaa.gov
- john.lhotak@noaa.gov
- paul.miller@noaa.gov

Call us at: 801-524-5130

Website: www.cbrfc.noaa.gov