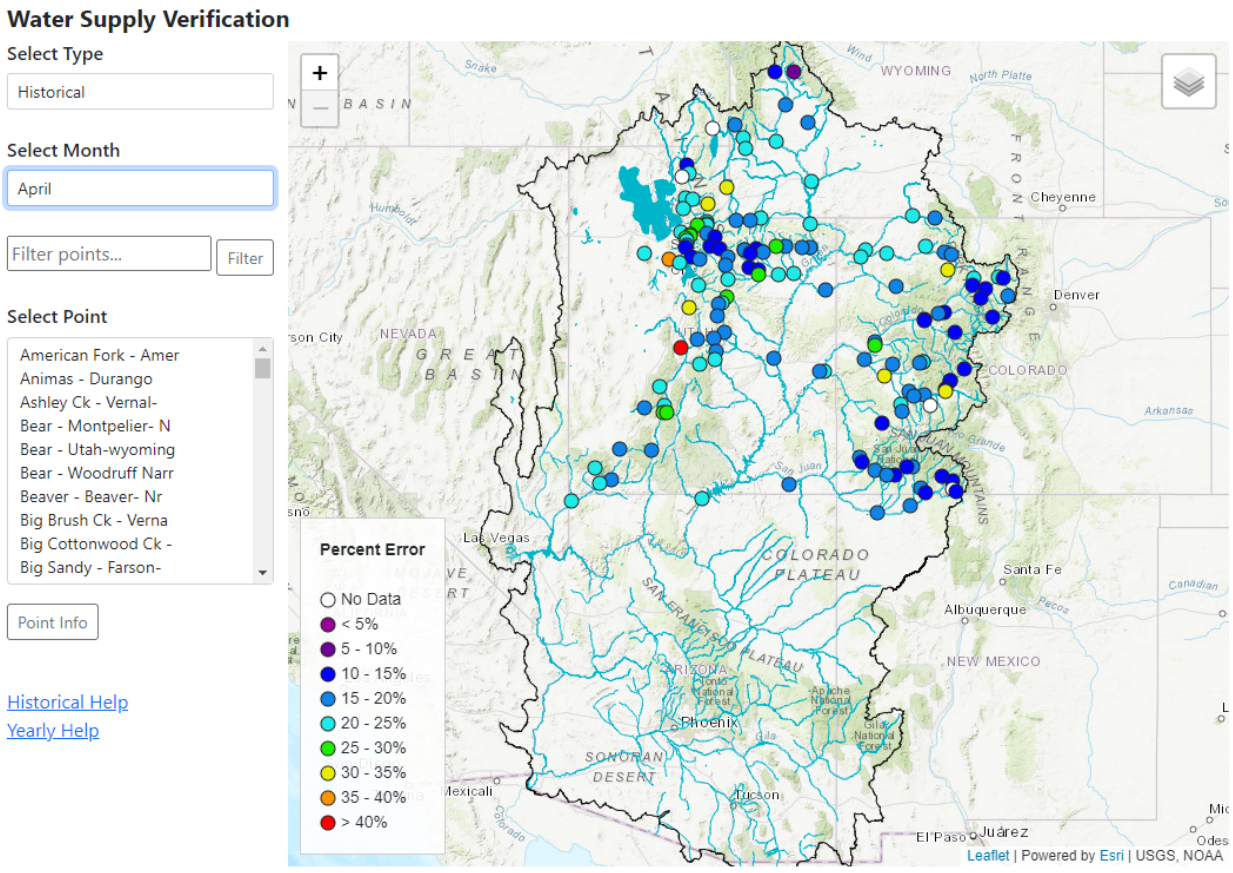
PRODUCT DESCRIPTION

The Graphic



Displayed is a map of the mean absolute percent error of the April 1st forecast of the April-July volume from the Ensemble Streamflow Prediction (ESP) model. The points displayed on the map are the current water supply forecast points in the Eastern Great Basin and the Upper Colorado River Basin above Lake Powell.

In the water supply context, large data sets of forecast-observation pairs are not common due to the lack of archived “raw” forecast data. Reforecasts were generated for each year of the thirty year period of 1991-2020 from the ESP model to create a sufficiently sized dataset needed to draw conclusions about the errors of the ESP model.

The legend in the bottom left of the map labeled ‘Percent Error’ represents the mean absolute percent error normalized by the 30 year April-July average. This statistic was calculated for each point on the map as follows:

1. For each year of the ESP reforecasts from 1991-2020 the error is calculated:
   ESP Error = ESP reforecast median (50%) - Observation (April-July)

2. The mean absolute error (MAE) over the 30 years is calculated:

$$ESP\ MAE = \frac{Sum(ESP\ reforecasts - Observations)}{30\ (number\ of\ years)}$$

3. The MAE is normalized by the 30-year April-July average and converted to a percentage:

$$Mean\ absolute\ percent\ error = \frac{ESP\ MAE}{30\ year\ Average} * 100$$

PRODUCT INTERPRETATION:

Model Error:

The map displays a spatial representation of the mean absolute error of the ESP model. Low percent error values are ideal and indicate low model error while high percent error values are not ideal indicate higher model error. Cool colors (blues) designate locations with low percent error values (low error) while warm colors (reds) designate locations with high percent error values (high error)

The map shows that the error of ESP is typically lower at the following:

- Locations at higher elevations (i.e headwater basins)
- Locations where snowmelt is the primary source of runoff
- Locations where there are few diversions or the diversions are well documented

PRODUCT MENU OPTIONS:

Default plot and menu:

The Historical Water Supply Verification map defaults to forecasts from January 1st. Similar maps are also available for the first of month forecasts from January-June by selecting the desired month from the ‘Select Month’ dropdown menu on the left hand side of the graphic.

Points can be selected by directly clicking on the map or selecting individual points from the ‘Select Point’ dropdown menu.

A pop-up box is available by clicking on an individual point. The pop-up box includes the id, location name, percent error and a link to additional reforecast verification information.

Example of pop-up box:


Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)
Error: 20%
View GLDA3