

PRODUCT DESCRIPTION

The Graphic

Water Supply Verification

Select Type

2022

Select Month

January

Filter points...

Filter

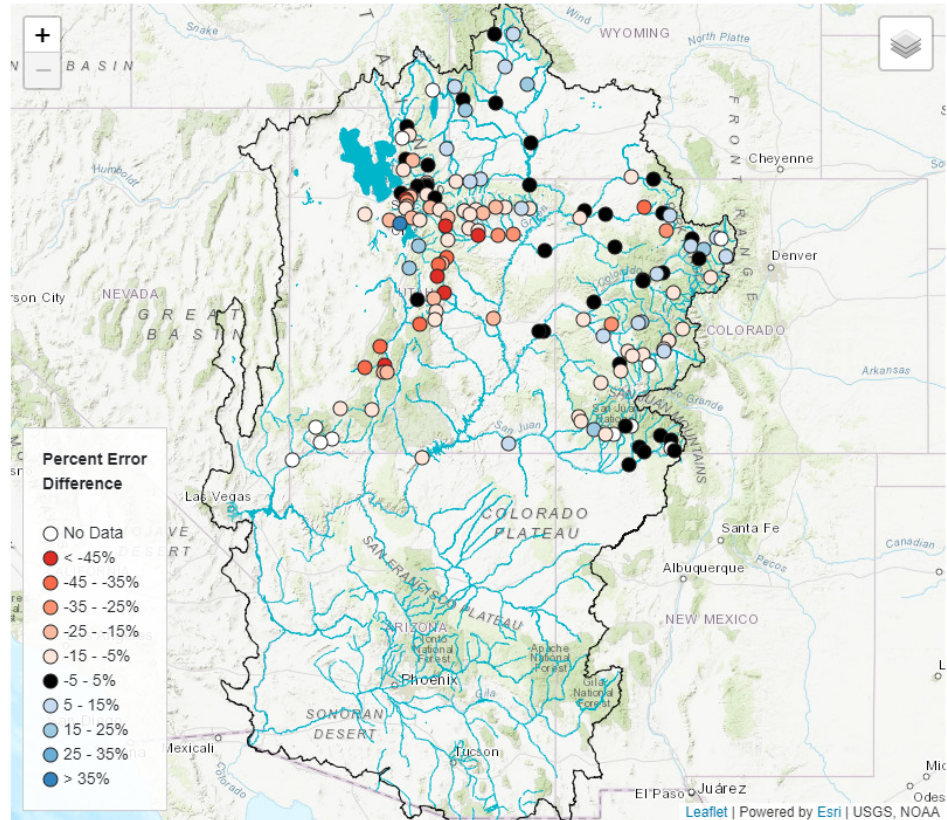
Select Point

American Fork - Amer
Animas - Durango
Ashley Ck - Vernal-
Bear - Stewart Dam
Bear - Utah-wyoming
Bear - Woodruff Narr
Beaver - Beaver- Nr
Big Brush Ck - Verna
Big Cottonwood Ck -
Big Sandy - Farson-

Point Info

[Historical Help](#)

[Yearly Help](#)



Displayed is a map of the current year (e.g. 2022) January 1st April-July volume official forecast error compared to the error of 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 Upper Colorado River basin above Lake Powell.

The legend on the lower left side of the map labeled 'Percent Error Difference' represents the current year forecast error compared to the ESP model error as a percentage. This statistic is calculated for each point on the map as follows:

Current Year Official Forecast Error:

1. *Current Year Forecast Error = Official 50% Forecast - Observed Volume (April-July)*

ESP Model Error:

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:

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

Percent Error Difference

1. $\% Error\ Difference = (ESP\ Mean\ Absolute\ Error - Current\ Year\ Forecast\ Error) * 100$

PRODUCT INTERPRETATION:

Percent Error Difference:

The map displays a spatial representation of how the current year forecast error compares to the ESP model error. Ideally, the current year forecast should have a similar or lower error than the raw ESP model. If the current year forecast error is higher than the ESP error, it may suggest a problem with the model initial conditions, model adjustments during the season, or data quality issues. This map allows the user to quickly identify locations where the current year forecast did not perform well.

Negative % Error Difference values, designated by warm colors (reds), indicate the current year forecasts had a higher error than the ESP model.

Positive % Error Difference values, designated by cool colors (blues), indicate the current year forecast had a lower error than the ESP model.

% Error Difference values between -5 and 5, designated by the color black, indicate the current year forecast had a similar error to the ESP model.

PRODUCT MENU OPTIONS:

Default plot and menu:

The Yearly 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 difference and a link to additional verification information.

Example of pop-up box:

