

# 14 Correlation Display

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## Correlation Display

The Correlation display allows application of the Correlation Utility in an interactive manner. Correlations can be evaluated and derived between datasets using various criteria. The derived correlation can for example be applied to monitored time series data or manually entered data points.

### Input

At first, a *correlation group* should be selected from which a dataset will be used for making a correlation. Next, a *forecast location* needs to be selected and a *support location* or a number of support locations. With these steps a dataset is selected from a configuration file with pre-defined correlation input values for making a correlation.

Correlation Display

Correlation module

Input | Scatter plot | Forecast | Events

Correlation Groups

CorrelationDisplay\_Trent

Forecast locations

Colwick (4009)

Support locations

Drakelow (4019)

Selection criteria

☐ Period: Start date: 2005-01-14 10:00 End date: 2005-01-14 10:00 ☒ Select inside period ☐ Select outside period

☐ Thresholds: Threshold limit:  ☒ Select above threshold ☐ Select below threshold

☐ Tags: dummy time invalid month in Tpot.inf ☒ Include selected tags ☐ Exclude selected tags

Regression equations

Linear Regression:  $f(x) = A + B * x$  Polynomial order: 0

Show Report Close Help

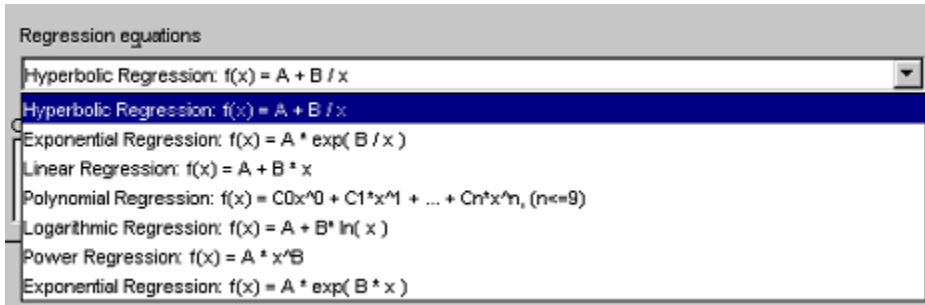
When required, the above mentioned dataset can be restricted on the basis of a number criteria...

- *Period*  
A period can be defined inside or outside which data points should be included in the analysis.
- *Thresholds*  
A threshold can be defined below or above which data points should be included in the analysis.

- *Tags*

One or more tags of data points can be selected. Data points that have a corresponding tag are or are not included in the analysis. Please note that these tags should be available in the datasets. Typical tags could be winter or summer event.

After having selected a dataset for which a function should be fitted, a regression equation can be selected. The available equations are shown below. For the polynomial regression, an order can be entered.



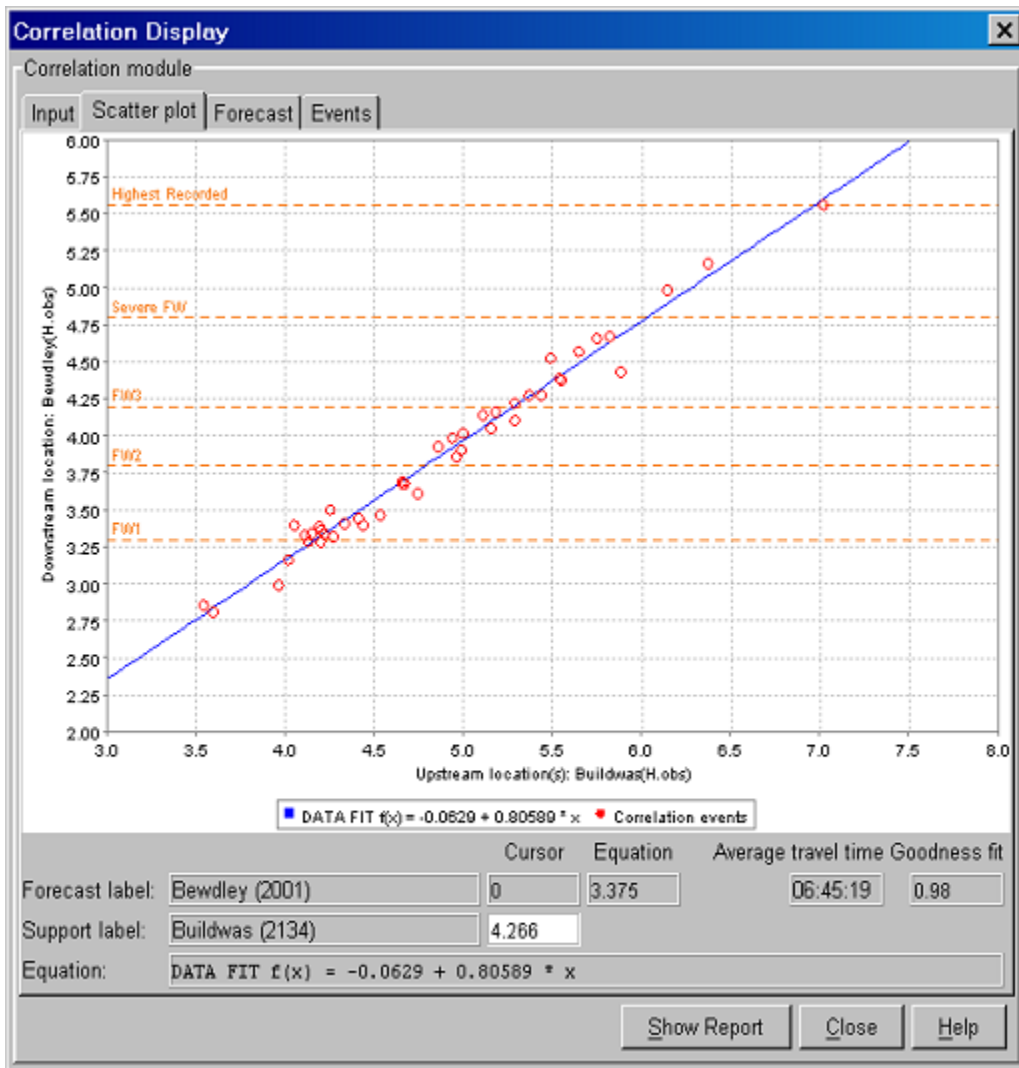
## Scatter Plot

When selecting the *Scatter Plot* tab, a scatter plot is displayed. Defining the criteria for the restriction of the dataset- if any- and the best regression equation, requires probably a number of iterations where the scatter plot will prove to be helpful.

Moving the cursor in the scatter plot displays a cross hair that helps to look at data values. Tool tips with event information are displayed when the cursor is placed on an event.

Below the scatter plot, the discharge or water level at the support location (X) and at the forecast location are displayed (Y). The Cursor column indicates the values for the support location and the forecast location at the location of the cursor on the graph. The forecast computed with the regression relation is displayed in the equation column; this computed value assumes an X-value as indicated by the cursor. The regression formula used to compute the forecast value is also given.

In addition, the travel time computed from the selected events is presented in the field *Travel time* .



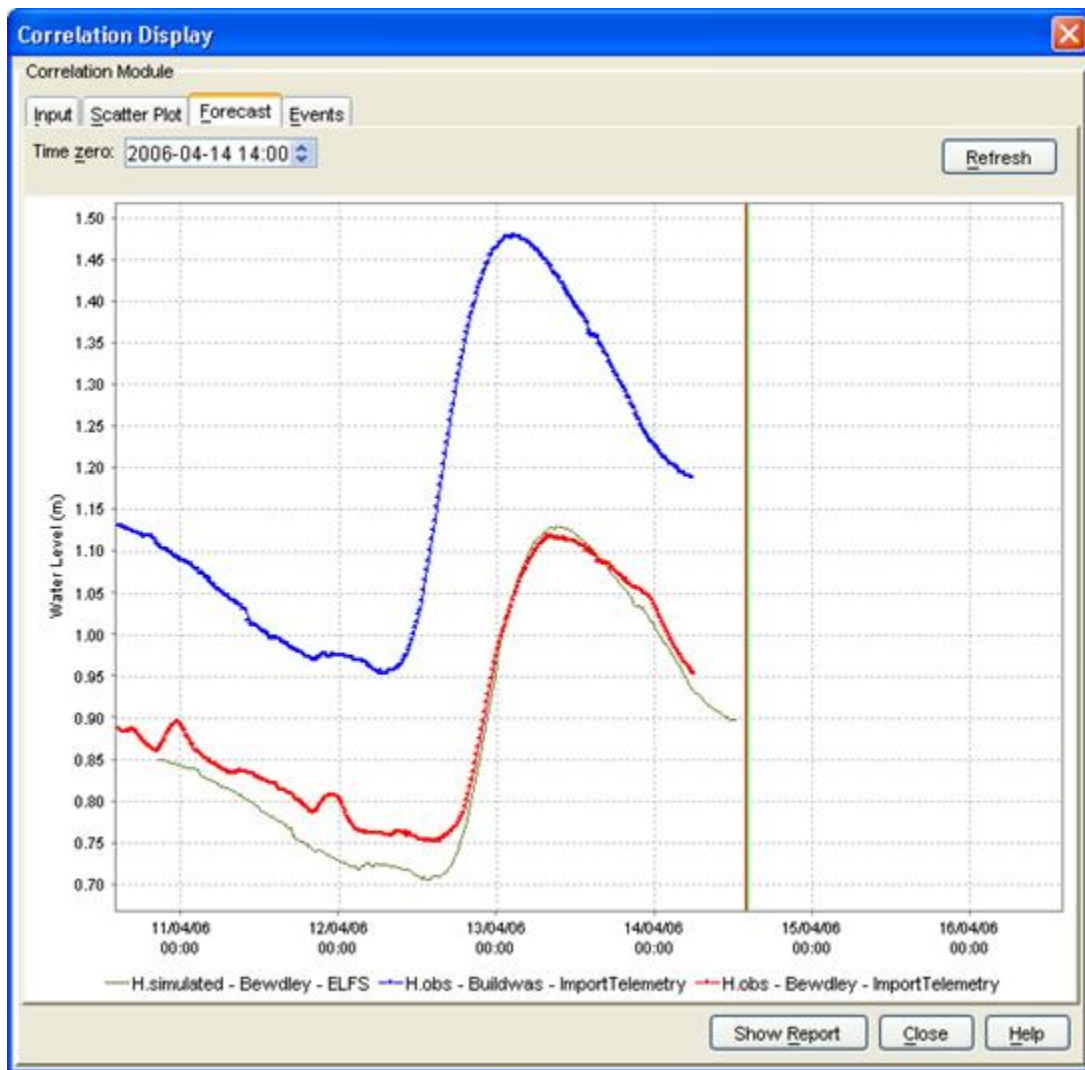
A forecaster can also enter a value in the cursor column for the support location. By pressing [ENTER] the correlation display computes the forecast with the equation and shows the result in the equation column.

## Forecast

On the Forecast tab of the Correlation display, the derived regression equation can be applied to a monitored data series for the support location or a manually entered value.

By entering the *Time zero* (T0), the FDO can review the result of the application of the derived regression equation in time. After T0 is changed, pressing [Refresh] will update the graph.

In the displayed graph, the observed water levels at the support and forecasting locations are respectively given in blue and red. The thin line is the time series that results from applying the regression equation to the observed time series at the support location.



## Events

The events tab shows a list of all events used in the correlation function. The list includes the dates, forecast level, support level, travel time of the selected events, comments and tags (user configured in CorrelationEventSets file). These can be sorted by clicking on the header of each column.

## Show Report and Close

The forecasts generated by applying the regression relation can be presented in a report with [Show Report] when required. With [Close], a user can leave the Correlation display.

The generated report includes the selected events and the computed correlation function. This report can be printed or saved to a text file.

