GoldSim Plotting Hacks to Enhance Communication of Results and Make Life Easier for the Harried GoldSim Developer

Paul A. Haby

Stantec Consulting Services Inc. Fort Collins, CO, USA

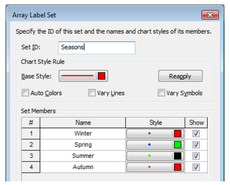
Abstract

This presentation describes several unique approaches for creating and enhancing GoldSim time series plots. The first tip demonstrates use of vectors to convey additional information about a single time series result (such as month or season, model calibration period, or operational status of a system). The second tip describes a method to display non-scenario related data in Scenario Mode plots. The final tip describes an array-based method to simplify creation and maintenance of numerous related plots (such as plots for water quality constituents or multiple monitoring locations).

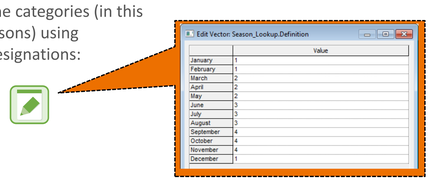
Tip 1: Categorize Data Using Arrays to Convey Additional Information

Time history plots are the primary means of visually conveying model results. Results can sometimes be easier to interpret if additional information is available. This background or classification information can be hard to plot in an easily-interpreted manner and impossible if both the primary and secondary plot axes are already used to plot other variables. This tip provides a way to classify plot data based on classification variables using arrays.

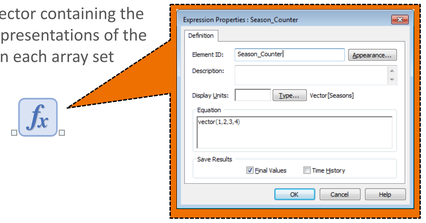
Step 1: Define an array with set members representing each category (note: symbols only, no lines so that the resulting plot doesn't show vertical lines as data vary between seasonal result and blanking value when not in respective season):



Step 2: Define categories (in this example seasons) using numerical designations:

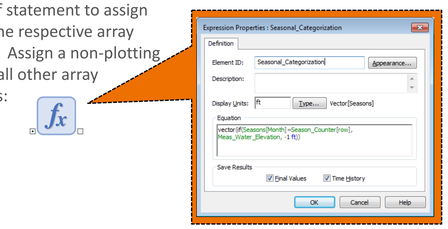


Step 3: Use a vector constructor to create a vector containing the numerical representations of the season within each array set member:

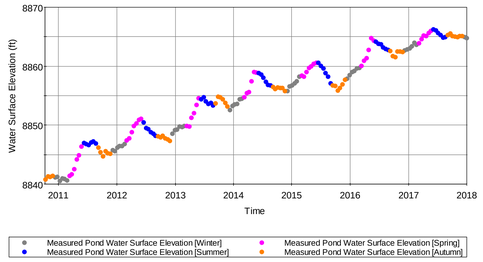


Tip 1: (continued)

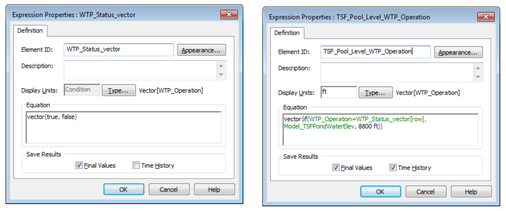
Step 4: Use a vector constructor with an if statement to assign data to the respective array element. Assign a non-plotting value to all other array members:

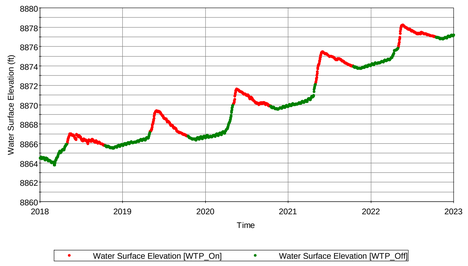


Step 5: Plot the categorized vector using only symbols so that lines to inactive (and non-plotting) values are not displayed:



Second Example: Seasonal operation of a water treatment plant to control water levels:

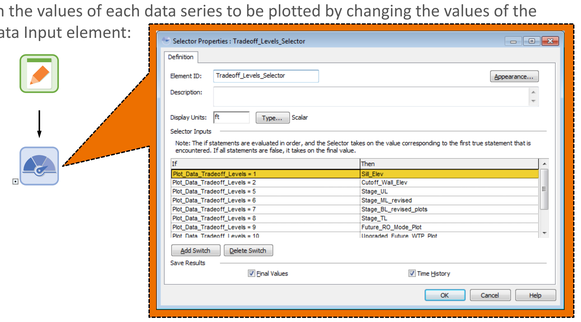




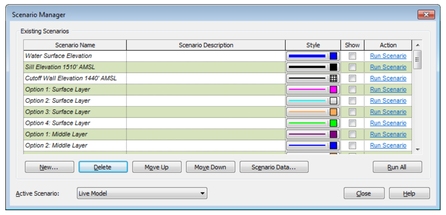
Tip 2: Add Additional Data Series to Scenario Plots

Scenario plots are a powerful tool for comparison of alternative modeling parameters. Evaluation of multiple scenarios can be enhanced with the inclusion of additional data series to provide context or reference information. This can be accomplished via the following method originated by Rick Kossik.

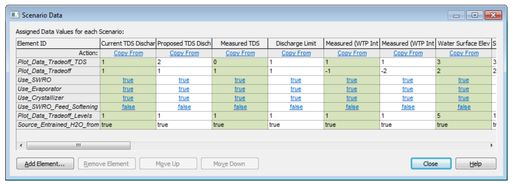
Step 1: Use a Data Input element and Selector element. Have the Selector take on the values of each data series to be plotted by changing the values of the Data Input element:



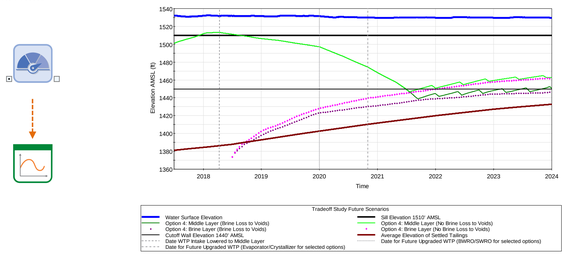
Step 2: In Scenario Manager, create a scenario for each of the data series in the plot including non-scenario reference series:



Step 3: Change the value of the Data Input element in each scenario definition to match the data series needed for the scenario:



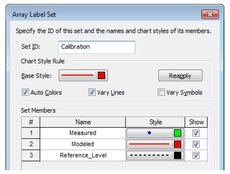
Step 4: Create a Time History plot of the Selector element and run all the scenarios:



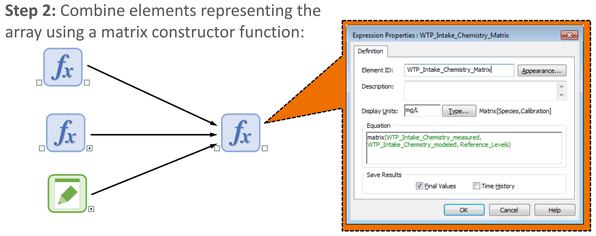
Tip 3: Use Arrays for Creation and Batch Formatting of Multiple Plots

Arrays can be used to simplify the creation and formatting of multiple related plots. This method is handy for plotting multiple species concentrations at one or more monitoring locations. Batch editing of plot line styles and colors for all related plots can be performed via the Array Labels Editor.

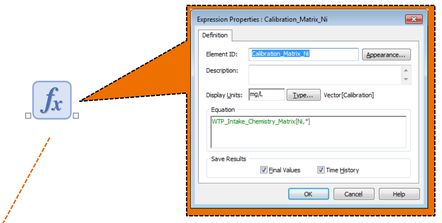
Step 1: Define an array with set members representing each data series desired in the plots and apply desired formatting:



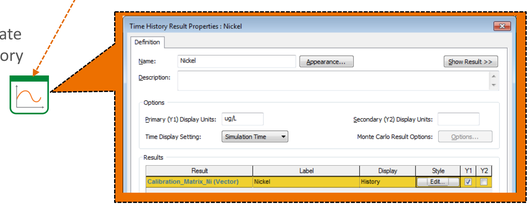
Step 2: Combine elements representing the array using a matrix constructor function:

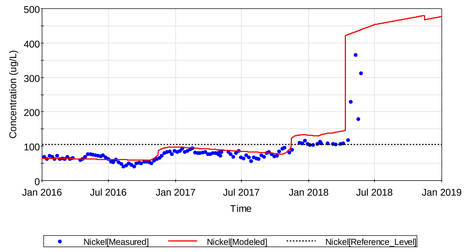


Step 3: Extract the desired species from the matrix:



Step 4: Create a Time History plot of the extracted species





Contact Information

Paul.Haby@Stantec.com
Stantec Consulting Services Inc.
3325 South Timberline Road Suite 150
Fort Collins CO 80525-2903 US
(970) 212-2760