



Using Emphasis Series in a Graph

Sometimes it is desirable to highlight in a graph a portion of the data set that meets specific criteria. For example, it might be important to highlight all the values less than a threshold value. If the dataset and threshold value will not change, one option is to manually select each point that is below the threshold value and format those data points individually. However, if the data or threshold value might change it is better to automate the highlighting process. This can be accomplished using one or more emphasis series. Three examples are provided in the companion spreadsheet.

Basically the concept of the emphasis series is to create one or more additional series to add to the graph to highlight specific parts of the data set. For example, suppose we wanted to emphasize data points in a series that were less than a threshold value. As illustrated in Figure 1 we could develop a second series using a logical IF test that identified those values that were below the threshold.

Measurements		Add a second series for emphasis	
Location	Flow (cfs)	Flow	
1	100	#N/A	<div style="border: 1px solid black; padding: 2px; display: inline-block;">=IF(B8<\$B\$18,B8,NA())</div> EXCEL cannot plot a #N/A error. NA() is a function that produces a #N/A error.
2	200	#N/A	
3	75	75	
4	140	#N/A	
5	180	#N/A	
6	90	90	
7	120	#N/A	
Threshold Flow Value			
	100		
	▲		
	▼		

Figure 1. Example of an Emphasis Series

In this example the NA() function is used to produce an error in the cell. EXCEL will not plot any point with an error. The second series is then added to the graph and formatted to use a 100% overlap of the first series. The resulting graph is shown in Figure 2 and is shown as Example 1 in the companion spreadsheet. Note that as the spinner is changed the graph will dynamically adjust to the new situation.

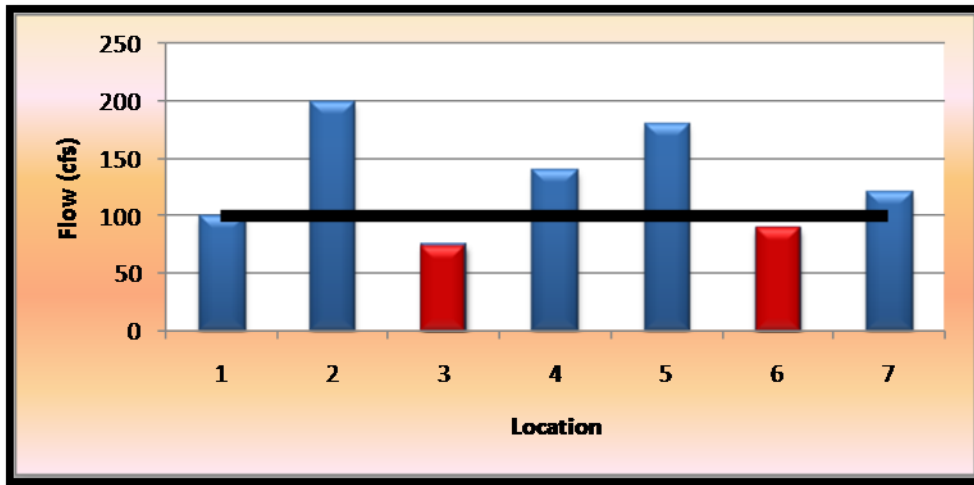


Figure 2. Example Graph with an Emphasis Series

In the preceding example, the emphasis series was plotted on top of the original series. Example 2 in the companion spreadsheets illustrates a case for an x-y scatter plot where the emphasis series is a single point. In this case the marker selected was an unfilled circle and the size of the marker was slightly larger than the size of the markers in the original series. When this marker is plotted on top of a marker in the original series the user is able to see both markers. This is illustrated in the following figure.

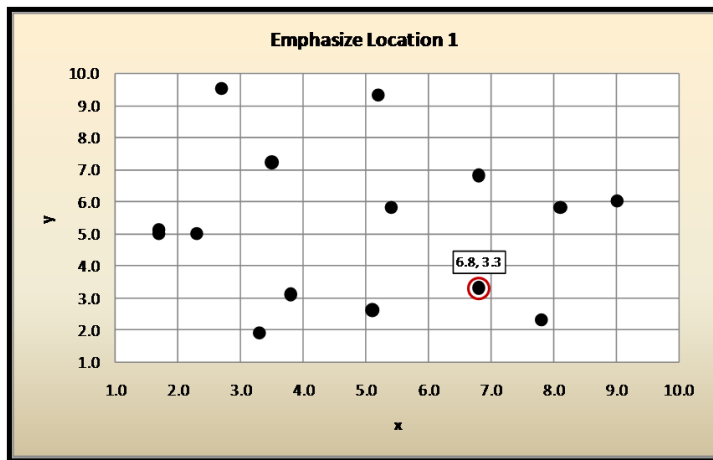


Figure 3. Using an Emphasis Marker as an Unfilled Circle

For other datasets it might be better to divide the original series into two emphasis series and only graph the emphasis series. This provides more flexibility in developing the graph. Figure 4 illustrates a portion of a worksheet where logical IF tests are used to divide an original dataset into two datasets that will be plotted.

Downstream Measurement Point	Measured	Emphasis		
	Dissolved Oxygen Amount	Series 1	Series 2	
1	9	9	#N/A	Series 1 =IF(B9>=\$A\$32,B9,NA())
2	8.5	8.5	#N/A	
3	8	8	#N/A	
4	7.5	7.5	#N/A	
5	7	7	#N/A	
6	6.5	6.5	#N/A	Series 2 =IF(B9<\$A\$32,B9,NA())
7	6	6	#N/A	
8	5.5	#N/A	5.5	
9	5	#N/A	5	
10	4.5	#N/A	4.5	

Figure 4. Example of creating Two Emphasis Series

Now each plotted series can be formatted individually. For example, custom markers can be used for each series and this allows the creation of unique graphs. This concept is illustrated in Example 3 of the companion spreadsheet and an example graph is shown in Figure 5.

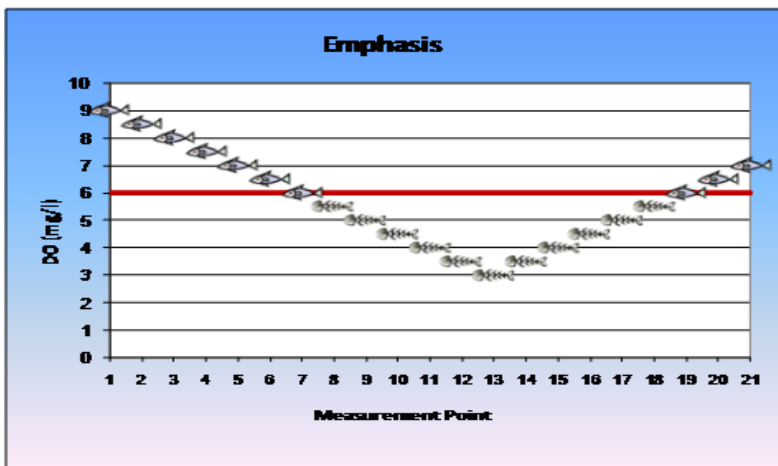


Figure 5. Example of Replacing the Original Series with Two Emphasis Series