ExtendChartMACRO–Pair chart series and data ranges

Chart series extents and ranges of data can be inconsistent (Figure 1). Series might not contain all data as data are added annually. Alternatively, series can extend well beyond available data to capture incremental data additions, but workbook performance can be degraded. Noticeable and needless degradation of performance occurs where series are defined across greater than 100,000 rows to plot less than 1,000 rows of values.
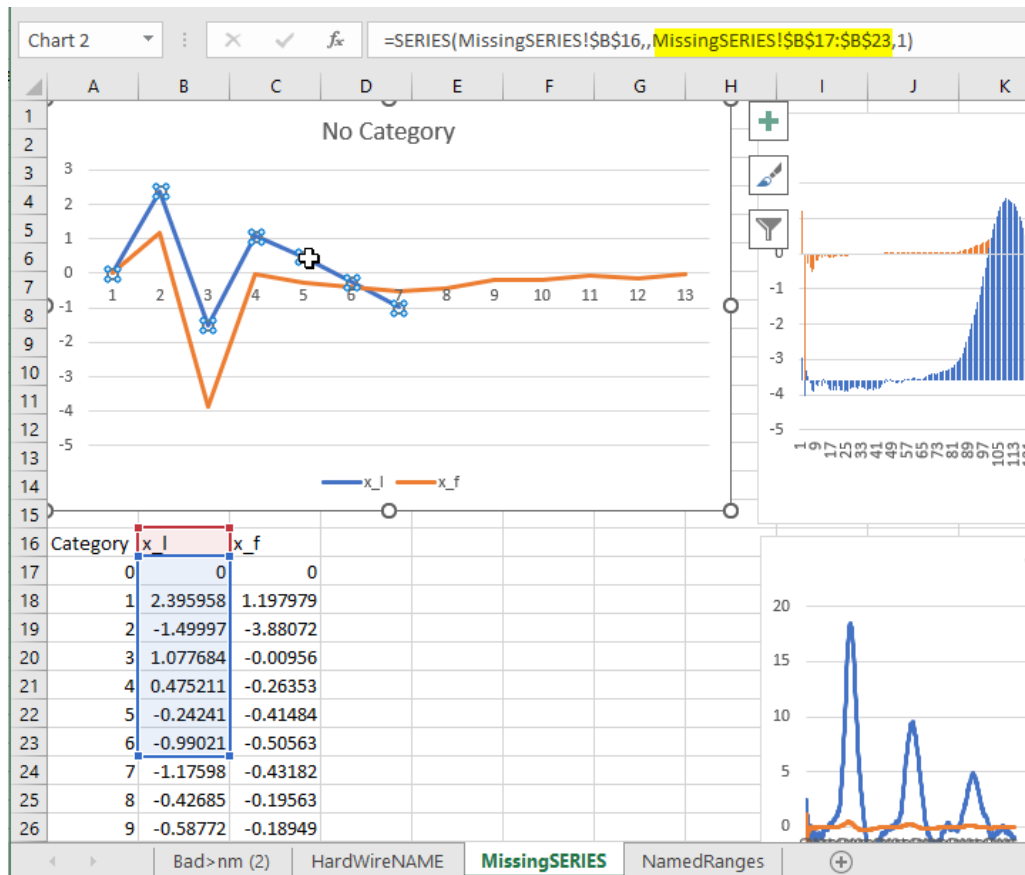

Figure 1.— Example of discrepancies between series extent and rows of data on a worksheet.

Inconsistencies between series extents and data ranges can be rectified for a single chart, all charts in a workbook, or all charts in multiple workbooks with *ExtendCHARTS* macro. This macro identifies all charts in selected workbooks. Each series formula, **SERIES**(*Name*, *Category-X*, *Values-Y*, *iOrder*), in a chart is examined, where *Category-X* is the range of labels or ordinate values on the X axis and *Values-Y* is the range of values on the Y axis. Ranges in *Category-X* and *Values-Y* are fit to available data by selecting the first cell in a range and extending the range by either of two methods. The first method assumes a continuous range and searches downward to end of a contiguous data block. The second method searches upward from the bottom of a worksheet to first filled cell, which allows for empty cells in a charted range.

The ***ExtendChartMACRO.v?.xlsm*** workbook consists of a single control on one page that launches the ***Specify Workbooks*** form. The form allows selection of a workbook or multiple workbooks to be processed. Method of fitting series extent to data ranges can be changed between assuming continuous data or data with missing values in a series. All charts and series changed optionally can be summarized in a new workbook (Figure 2).

	A Workbook name	B Worksheet name	C Chart name	D Series name	E Category change	F Value change	G Revised diff
3	B2_OtherWB.xlsx	O	Chart 1\R1C1\1	x_I	Range not specified for Categories.	Values changed from 13 to 513 rows, external WB [B2_TestPAGES.xls	Differs
4	B2_OtherWB.xlsx	O	Chart 1\R1C1\1	x_f	Range not specified for Categories.	Values changed from 5 to 513 rows, external WB [b2_ExtraFRAG.xlsx]	Differs
5	B2_TestPAGES.xl	Bad>nm (2)	Chart 4\R1C10\3	data	Categories changed from 533312 to 36 rows	Values changed from 533312 to 36 rows.	Differs
6	B2_TestPAGES.xl	Bad>nm (2)	Chart 4\R1C10\3	Trend/HP	Categories changed from 666512 to 36 rows	Values changed from 666512 to 36 rows.	Differs
7	B2_TestPAGES.xl	Bad>nm (2)	Chart 4\R1C10\3	Adjusted	Categories changed from 666512 to 36 rows	Values changed from 666512 to 36 rows.	Differs
12	B2_TestPAGES.xl	HardWireNAME	Chart 2\R1C19\2		Categories changed from 61 to 513 rows.	Values changed from 61 to 513 rows.	Differs
13	B2_TestPAGES.xl	HardWireNAME	Chart 2\R1C19\2		Categories changed from 61 to 512 rows.	Values changed from 61 to 512 rows.	Differs
14	B2_TestPAGES.xl	HardWireNAME	Chart 1\R1C7\1	Measured	Categories changed from 61 to 513 rows.	Values changed from 61 to 513 rows.	Differs
15	B2_TestPAGES.xl	HardWireNAME	Chart 1\R1C7\1	Estimated	Categories changed from 61 to 513 rows.	Values changed from 61 to 513 rows.	Differs
16	B2_TestPAGES.xl	MissingSERIES	Chart 1\R1C16\4	x_I	Range not specified for Categories.	Values changed from 313 to 513 rows.	Differs
17	B2_TestPAGES.xl	MissingSERIES	Chart 1\R1C16\4		Range not specified for Categories.	Values changed from 213 to 513 rows.	Differs
18	B2_TestPAGES.xl	MissingSERIES	Chart 4\R1C8\3	x_I	Range not specified for Categories.	Values changed from 313 to 513 rows.	Differs
19	B2_TestPAGES.xl	MissingSERIES	Chart 4\R1C8\3	x_f	Range not specified for Categories.	Values changed from 213 to 513 rows.	Differs
20	B2_TestPAGES.xl	MissingSERIES	Chart 3\R17C8\2	x_I	Categories changed from 1513 to 513 rows.	Values changed from 1513 to 513 rows.	Differs
21	B2_TestPAGES.xl	MissingSERIES	Chart 3\R17C8\2	x_f	Categories changed from 513 to 513 rows.	Values changed from 1513 to 513 rows.	Differs
22	B2_TestPAGES.xl	MissingSERIES	Chart 2\R1C1\1	x_I	Range not specified for Categories.	Values changed from 13 to 513 rows.	Differs
23	B2_TestPAGES.xl	MissingSERIES	Chart 2\R1C1\1	x_f	Range not specified for Categories.	Values changed from 13 to 513 rows.	Differs
25	B2_TestPAGES.xl	NamedRanges	Chart 3\R2C1\1	x_f	Range not specified for Categories.	Values changed from 213 to 207 rows.	Differs
27	ChartAutoXY.xlsm	Row	Chart 4\R16C10\5	Metered	Categories changed from 222110 to 110 rows	Values changed from 222110 to 110 rows.	Differs
28	ChartAutoXY.xlsm	Row	Chart 4\R16C10\5	Irrigation	Categories changed from 10 to 110 rows.	Values changed from 10 to 110 rows.	Differs
30	ChartAutoXY.xlsm	Row	Chart 4\R16C10\5	Predevelopment discharge	Categories changed from 10 to 110 rows.	Values changed from 10 to 110 rows.	Differs
33	ChartAutoXY.xlsm	Row	Chart 3\R32C10\?	Irrigation	Categories changed from 110 to 110 rows.	Values changed from 11110 to 110 rows.	Differs
37	ChartAutoXY.xlsm	Row	Chart 2\R1C9\1	Metered	Categories changed from 222110 to 110 rows	Values changed from 222110 to 110 rows.	Differs
38	ChartAutoXY.xlsm	Row	Chart 2\R1C9\1	Irrigation	Categories changed from 10 to 110 rows.	Values changed from 10 to 110 rows.	Differs
40	ChartAutoXY.xlsm	Row	Chart 2\R1C9\1	Predevelopment discharge	Categories changed from 10 to 110 rows.	Values changed from 10 to 110 rows.	Differs
44	ChartAutoXY.xlsm	Sheet1	Chart 2\R6C7\2	Return flow	Categories changed from 110 to 110 rows.	Values changed from 10 to 110 rows.	Differs
45	ChartAutoXY.xlsm	Sheet1	Chart 2\R6C7\2	Predevelopment discharge	Categories changed from 99110 to 110 rows.	Values changed from 999110 to 110 rows.	Differs
46	ChartAutoXY.xlsm	Sheet1	Chart 1\R21C7\1	Domestic	Categories changed from 7 to 110 rows.	Values changed from 13 to 110 rows.	Differs
47	ChartAutoXY.xlsm	Sheet1	Chart 1\R21C7\1	Metered	Categories changed from 110 to 110 rows.	Values changed from 10 to 110 rows.	Differs
48	ChartAutoXY.xlsm	Sheet1	Chart 1\R21C7\1	Irrigation	Categories changed from 110 to 110 rows.	Values changed from 4 to 110 rows.	Differs
49	ChartAutoXY.xlsm	Sheet1	Chart 1\R21C7\1	Return flow	Categories changed from 110 to 110 rows.	Values changed from 2 to 110 rows.	Differs
50	ChartAutoXY.xlsm	Sheet1	Chart 1\R21C7\1	Predevelopment discharge	Categories changed from 110 to 110 rows.	Values changed from 10 to 110 rows.	Differs

Figure 2.—Example workbook that summarizes series where series extent was paired with data range. Default view shows series where extents changed. Chart series that use data ranges in external workbooks are highlighted in red.

The file ExtendChartMACRO.zip contains,

- Macro for fitting series to data ranges in ExtendChartMACRO.v6.xlsm,
- Example files B2_ExtraFRAG.xlsx, B2_OtherWB.xlsx, B2_TestPAGES.xlsx, and ChartAutoXY.xlsm, and
- Explanatory PDF.

Zip file can be downloaded with the following link.

Revisions

September 22, 2023—Revisions through version 6 are initial release.

October 20, 2023—Corrected bug that stopped execution where charts were on independent pages and no charts were embedded on worksheets.

ExtendChartMACRO.v7.xlsm Workbook

The workbook consists of a single control on one page, EXTEND, and most interaction is through the ***Specify Workbooks*** form (Figure 3). The form allows workbooks to be selected, change method of extending ranges, and generate a report of changes in series (Figure 2).
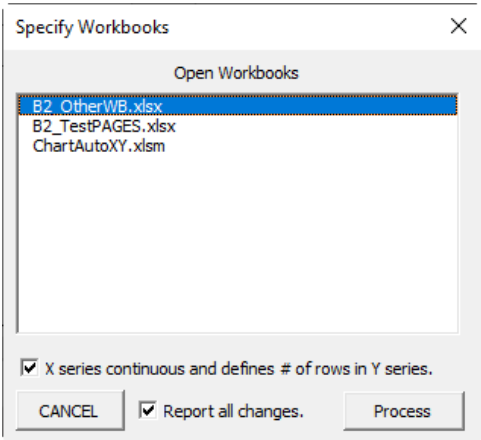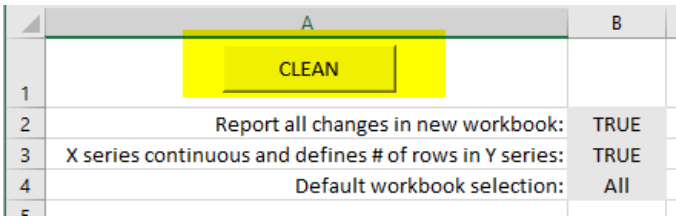

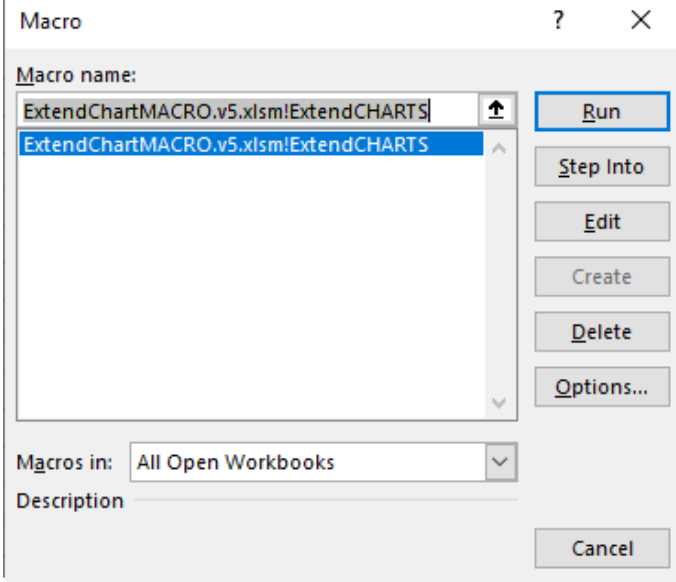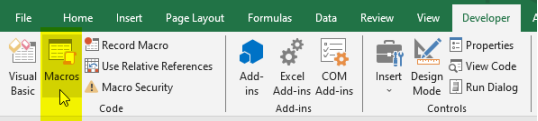**Figure 3.—**Specify Workbooks form for pairing chart series and data ranges.

Launch form

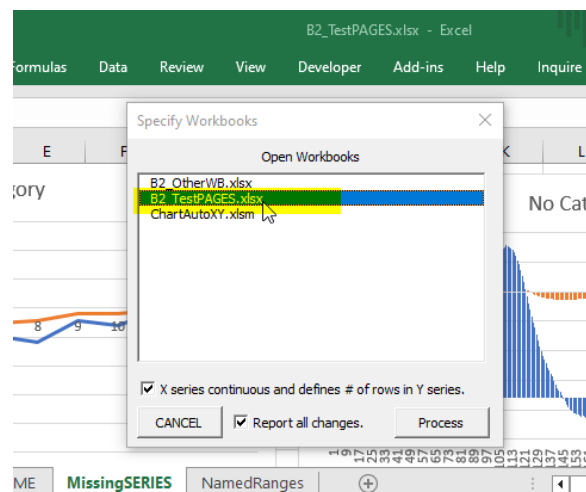|	
Click "CLEAN" button in upper, left corner to launch form.	
Specify Workbooks form also can be launched from the macro form, which is launched with keyboard shortcuts **Alt+F8** or **Alt, L, PM** Or From ribbon on Developer tab Select "**View Macros**" command,	

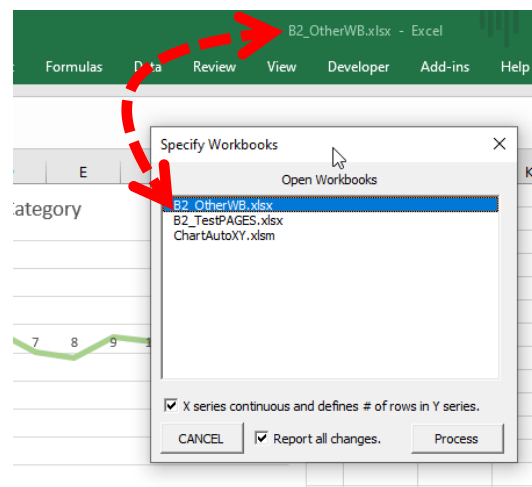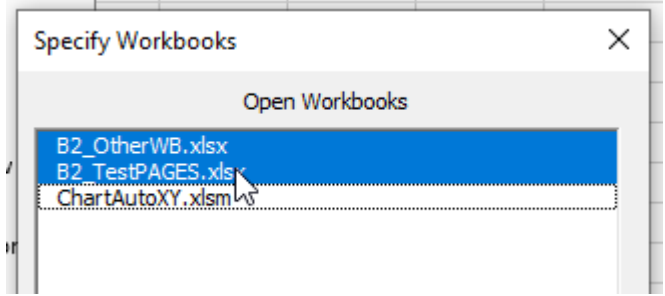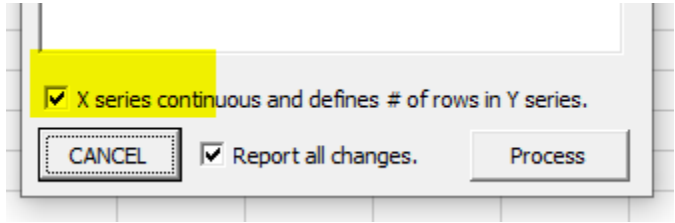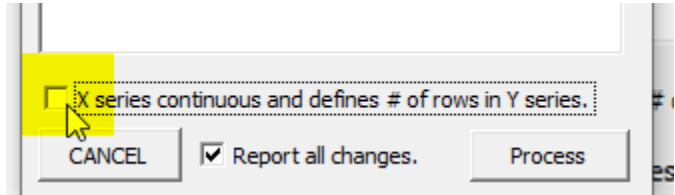|	
Specify Workbooks form will appear and ExtendChartMACRO.v6.xlsm Workbook will disappear.	
All open workbooks other than ExtendChartMACRO.v6.xlsm are listed on the right side of the form. Double-click on a workbook name to activate a workbook with charts to revise.	
Double-clicking another workbook name in the list activates the other workbook.	
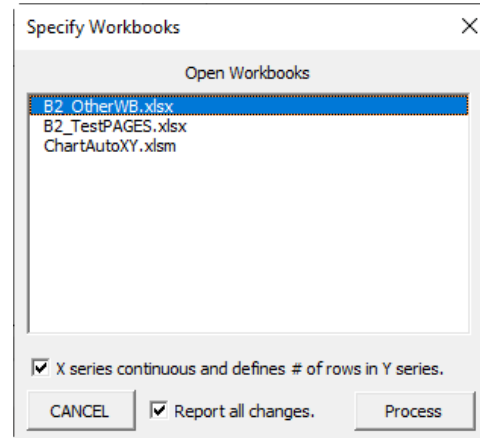
Select multiple workbooks by holding CTRL or SHIFT keys while selecting additional workbooks.	
Checking "X series…" box assumes categories (X) are specified in series equation and all values exist in entire range. Categories (X) are defined by upper cell in series formula & number of filled cells until an empty cell is encountered. Values (Y) are assigned number of rows from length of range for categories (X).	
Unchecking "X series…" box assumes categories (X) might have empty cells in plotted range. Categories (X) are defined by upper cell in series formula & first filled encountered in a column, where starting at the lowermost row (1048576). Values (Y) are assigned with the same process that defines categories (X) extent. Value (Y) and category (X) extents can differ.	
If checked, a summary report of charts, series, and changes is reported in a new workbook (Figure 2).	