# 05_IF-Histograms

## Create Google Earth cover of PRISM – 01_ARRAY_PRISM_4.0km.NV.xlsx

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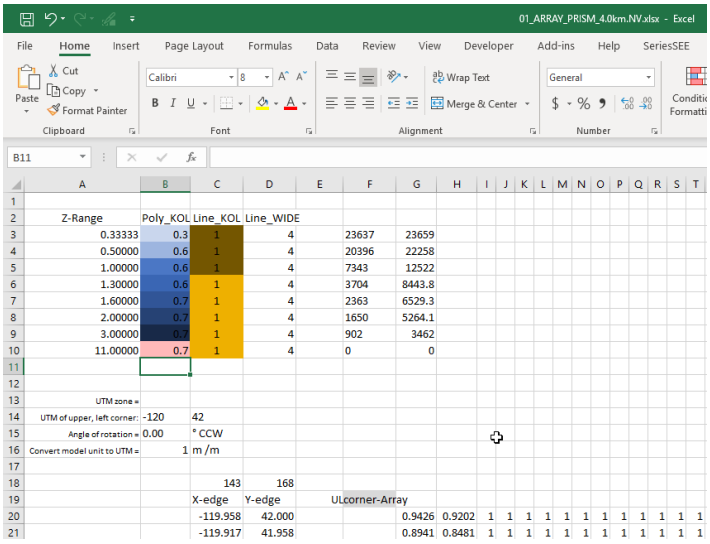
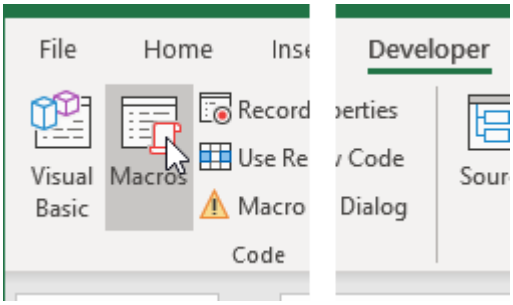
| Open files, KMLmakeARRAY.GridPoly.v2.xlsm and 01_ARRAY_PRISM_4.0km.NV.xlsx | ***.xlsm** contains macros for rendering PRISM output as a KML file. |
| Activate file 01_ARRAY_PRISM_4.0km.NV.xlsx.<br><br>Page PRISM_4km should be active. |  |
| Select Developer tab on ribbon,<br><br>Select “Macros” (**Alt+F8**) |  |

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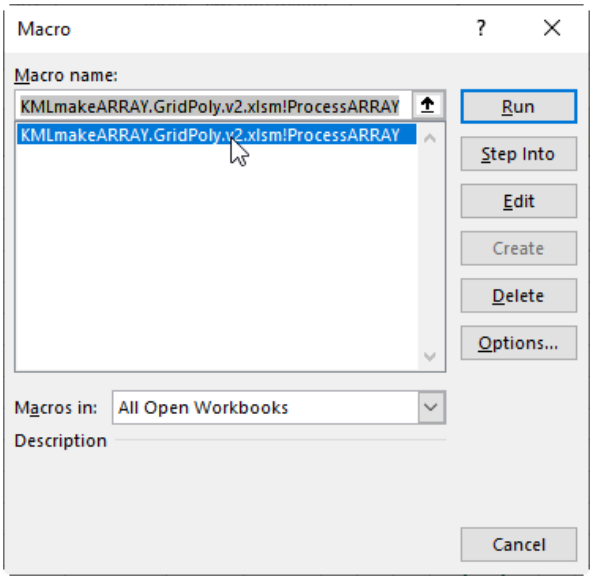
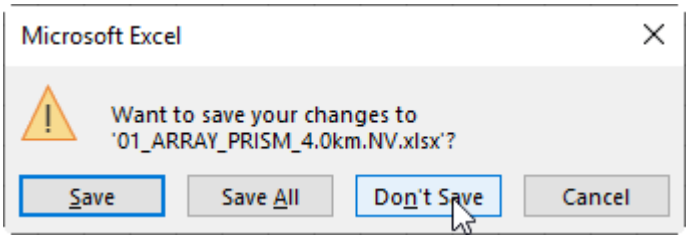
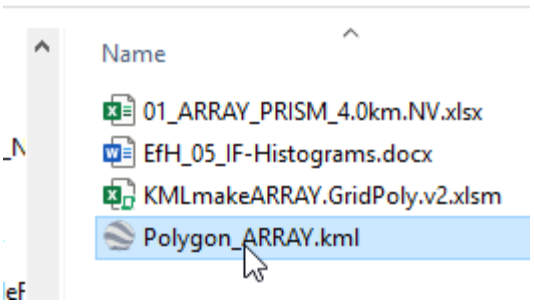
| "Macro" form will appear.<br><br>Select macro, "KMLmakeARRAY.GridPoly.v2.xlsm!ProcessARRAY"<br><br>Double-click selection, or<br>Click Run, or<br>Hit Return/Enter. |  |
| Exit Excel without saving anything. |  |
| Open Polygon_ARRAY.kml with Google Earth. |  |

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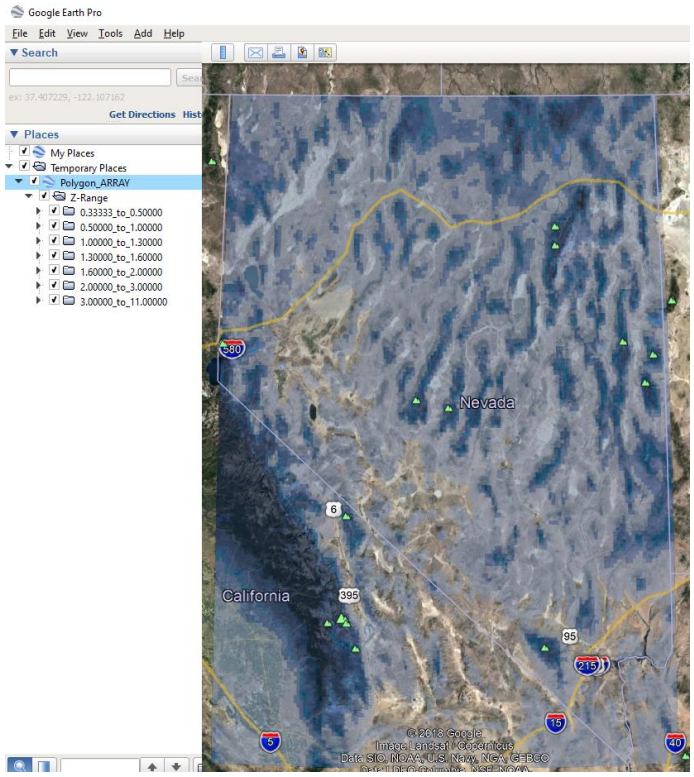
| Precipitation for Nevada displayed as shaded areas. |  |

Dynamically subsample PRISM output with OFFSET and MATCH functions.
Limit statistics to a focused study area.

## Subsample with OFFSET and MATCH – 01_ARRAY_PRISM_4.0km.NV.xlsx

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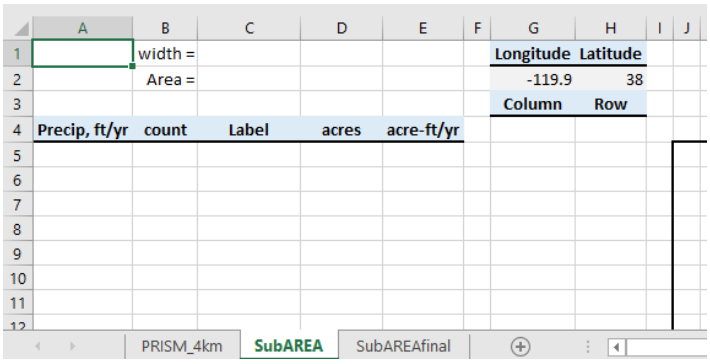
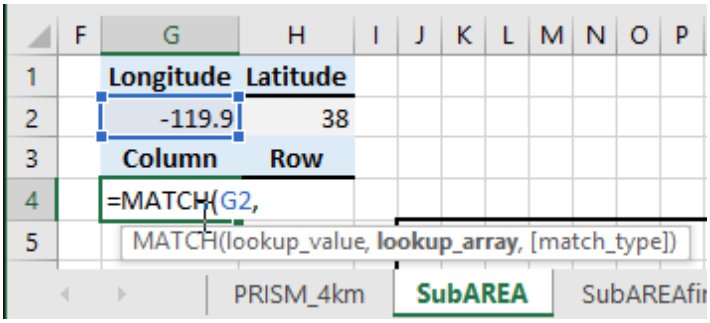
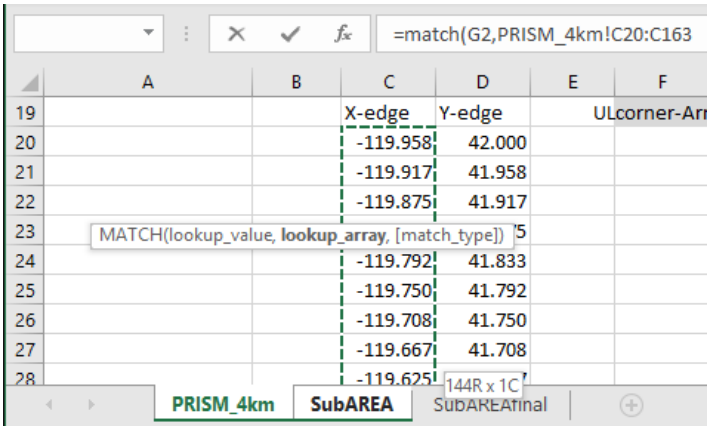
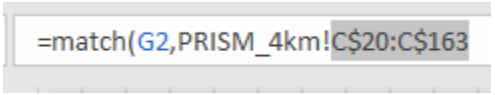
| Open file,<br>01_ARRAY_PRISM_4.0km.NV.xlsx<br><br>Select page SubAREA. |  |
| Start MATCH function in cell G4.<br><br>Select G2 for lookup_value. |  |
| Select page PRISM_4km for lookup_array.<br><br>Select range PRISM_4km!C20:C163. |  |
| Toggle reference (F4) so that columns are relative and rows are absolute. |  |

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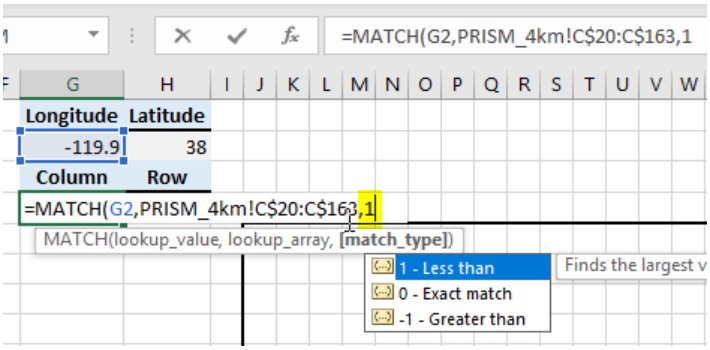
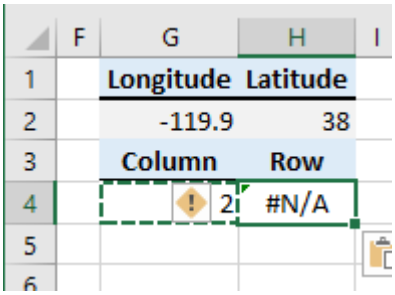
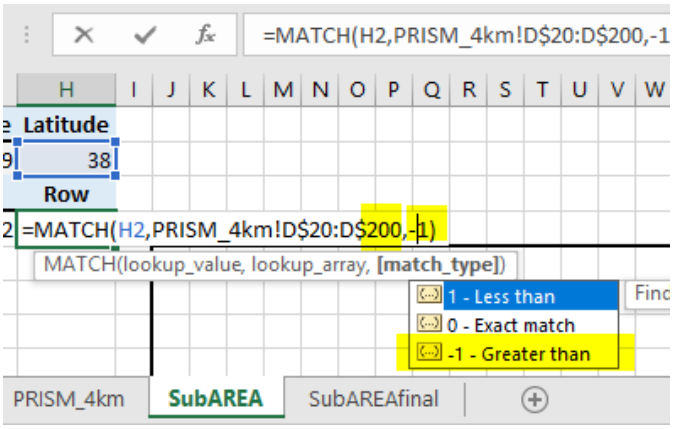
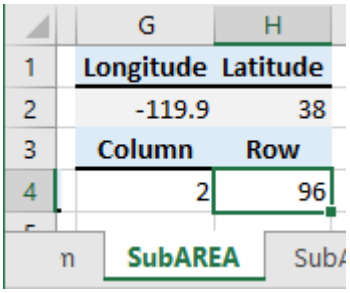
| Specify match_type as 1.<br><br>This is appropriate for an approximate match in an ascending sequence of values. |  |
| Copy cell G4,<br><br>Paste special, Formulas in cell H4. |  |
| Type F2 to open cell H4 for editing.<br><br>Extend range from 163 to 200.<br><br>Reverse match_type criteria by changing **1** to **-1**.<br><br>This is appropriate for an approximate match in a descending sequence of values. |  |
| Row and column offsets are reported in cells **G4** and **H4**. |  |

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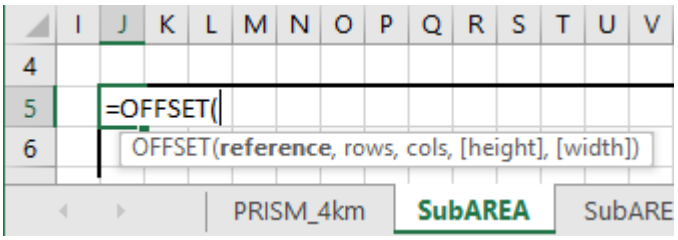
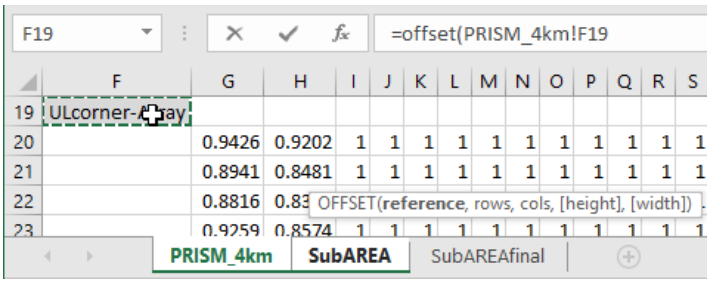
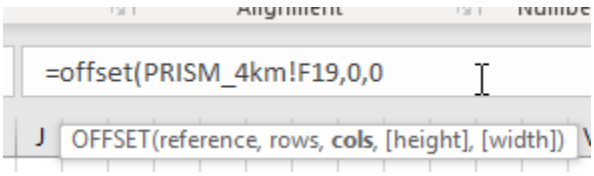
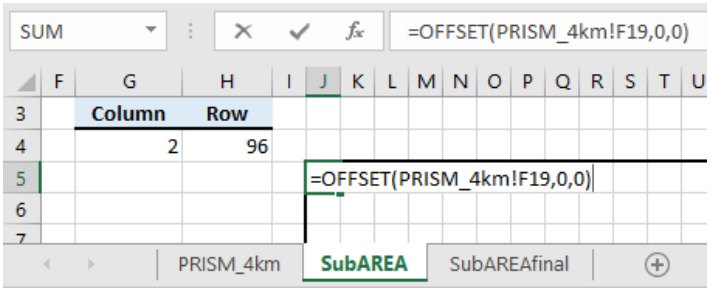
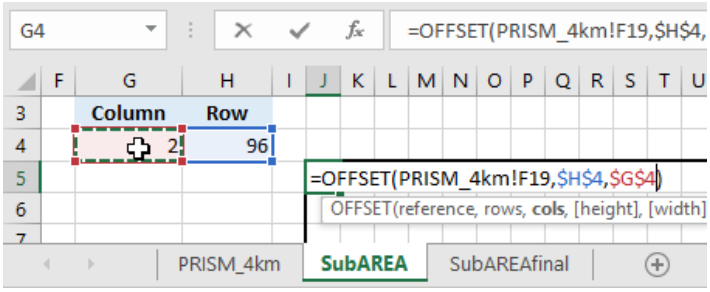
| Start OFFSET equation in cell SubAREA!J5. |  |
| Select cell PRISM_4km!F19 on leftmost page PRISM_4km. |  |
| Specify "**,0,0)**" to complete the offset equation.<br><br>Type return/Enter. |  |
| Type F2 to open cell **J5** for editing. |  |
| Replace rows with **$H$4**.<br><br>Replace cols with **$G$4**.<br><br>**NOTE:**<br>*Toggle absolute/relative references with F4.* |  |

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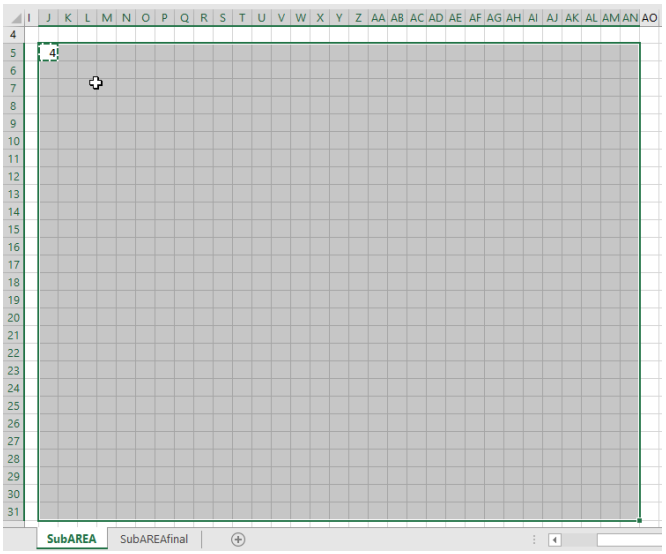
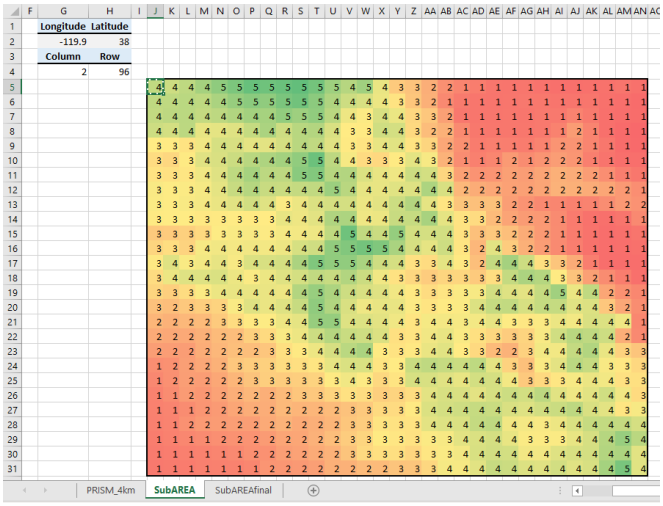
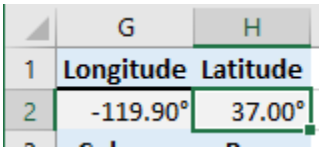
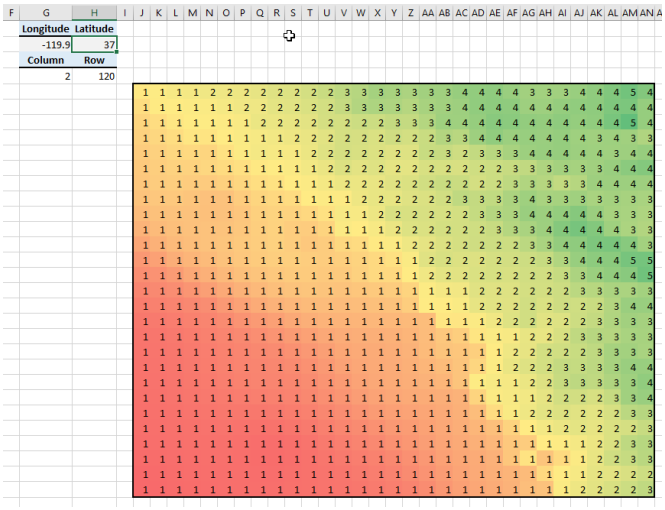
|---|---|
| Copy equation in cell **J5**.<br><br>Paste special as formulas to range **J5:AN31**. |  |
| Apply first color scale from Conditional Formatting to the range **J5:AN31**. |  |
| Change latitude in cell **H2** from<br><br>38° to 37°.<br><br>  <br><br>Array changes in response to revised row offset.<br><br>**NOTE:**<br>*Number format is "0.00°" in range G2:H2.* |  |

Build histogram and sum cumulative precipitation volumes with COUNTIF and SUMIF functions.

## Apply COUNTIF and SUMIF – 01_ARRAY_PRISM_4.0km.NV.xlsx

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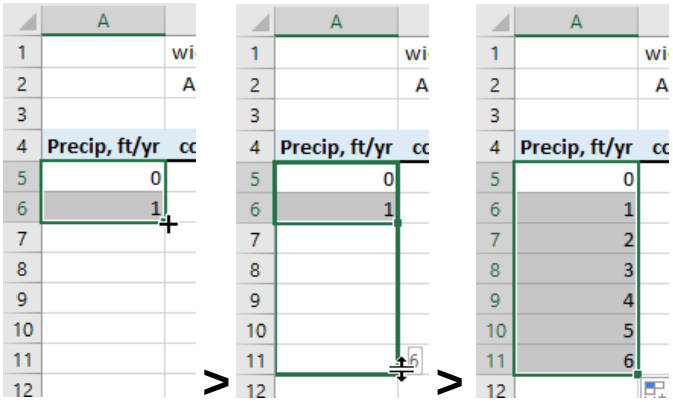
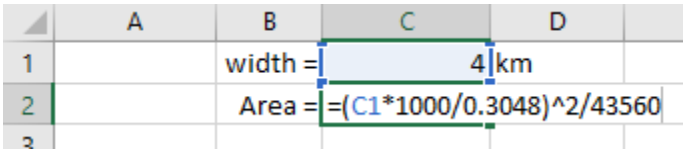
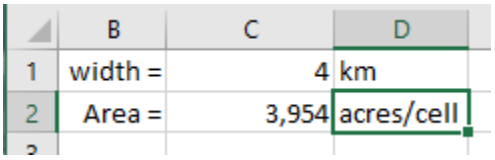
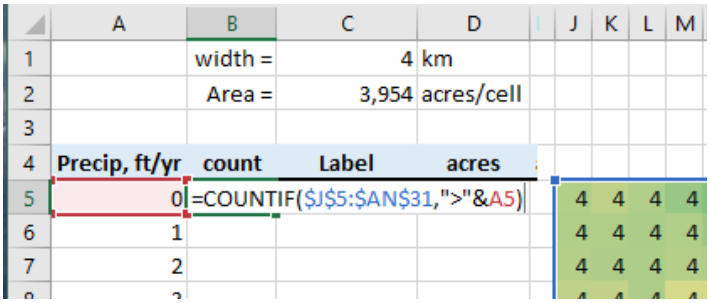
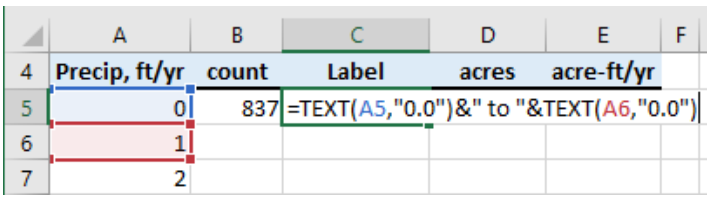
|---|---|
| Enter 0 and 1 in cells **A5** and **A6**.<br><br>Select range **A5:A6**.<br><br>Grab lower, right corner of selected range.<br><br>Pull down to **A11** and release.<br><br>1-ft bins of precipitation are defined in range **A5:A11**. |  |
| Compute nominal area of PRISM cells in **C2**, =(C1*1000/0.3048)^2/43560<br><br>**NOTE:**<br>*Constant area is approximate.*<br>*Node spacing is 0.042°, so*<br>*Area = cos(Latitude) * 5303.8 acres/cell.* |  |
| Specify units in cell **D2**," acres/cell" |  |
| Count cells where annual precipitation exceeds value in column **A**.<br><br>Enter "=COUNTIF($J$5:$AN$31,">"&A5)" in cell **B5**.<br><br>IF condition defined with concatenated text, ">"&A5, which is ">0".<br><br>Range **$J$5:$AN$31** refers to dynamically sample array from the previous exercise. |  |
| Define label for histogram.<br><br>TEXT function controls format of labels.<br><br>e.g., A break of 1.1023453 appears as "1.1" with the example format. |  |

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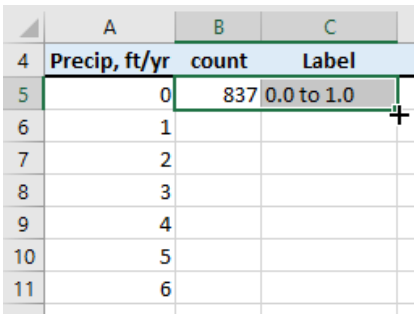
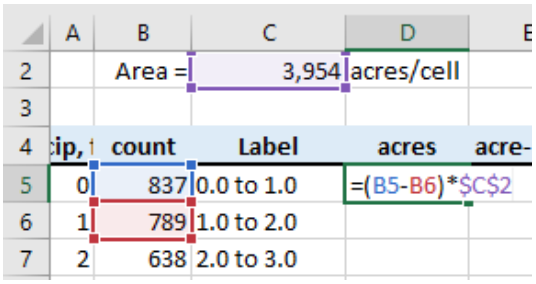
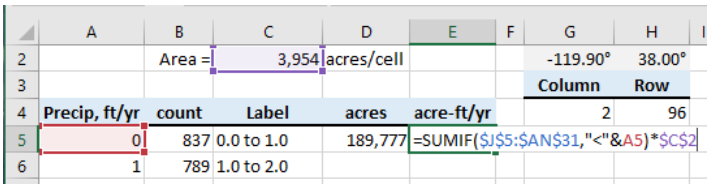
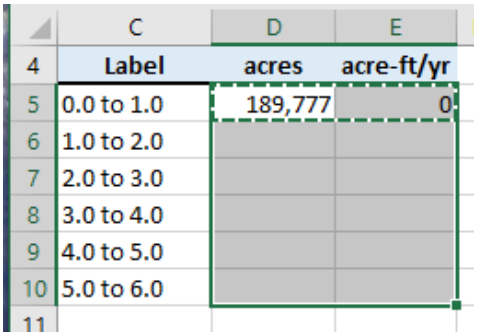
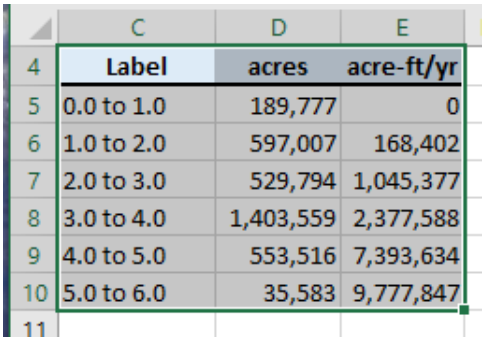
| Copy equations in range **B5:C5**.<br><br>Paste to range **B5:C11**.<br><br>Delete equation in **C11**. |  |
| Compute acres in precipitation bins.<br>Difference cell counts in the 0-1 ft/yr bin.<br><br>Add “=(B5-B6)*$C$2” in cell **D5**. |  |
| Compute cumulative acre-feet of precipitation below a threshold rate.<br><br>Add “=SUMIF($J$5:$AN$31,"<"&A5)*$C$2” in cell **E5**.<br><br>IF condition defined with concatenated text, “<”&A5, which is “>0”. |  |
| Copy equations in range **D5:E5**.<br><br>Paste to range **D5:E10**. |  |
| Select range **C4:E10**. |  |

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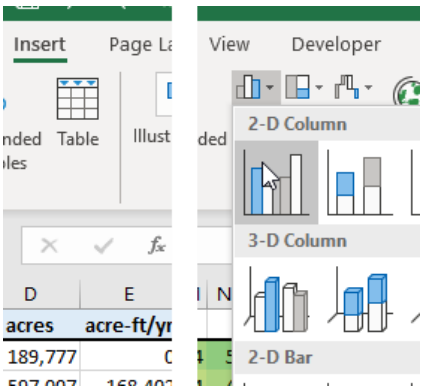
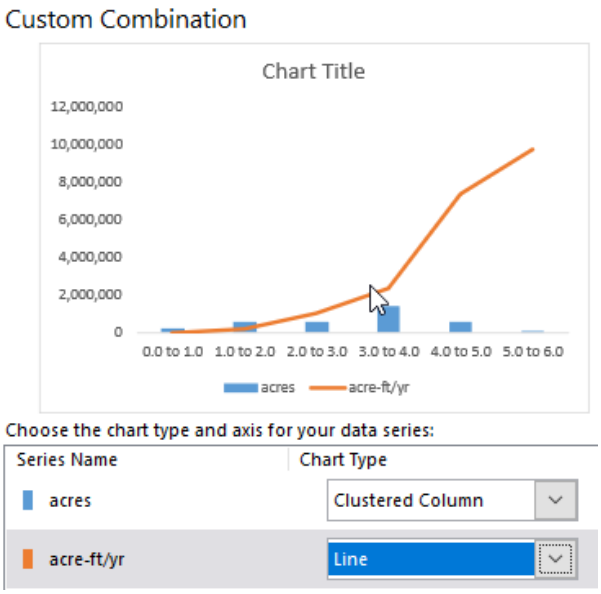
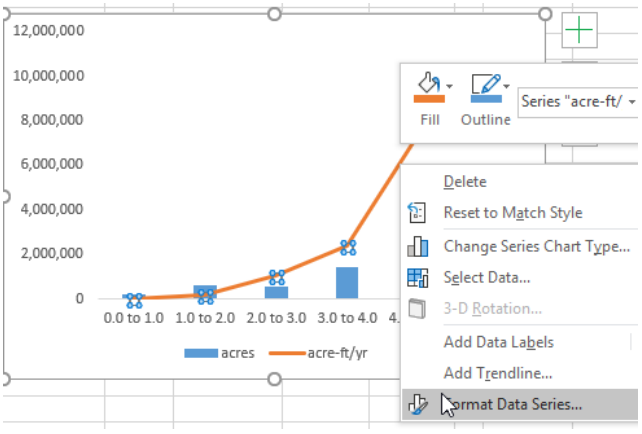
| Insert a clustered column chart. |  |
| Select “Acre-ft/yr” series.<br><br>Change chart type to line. |  |
| Select “Acre-ft/yr” series.<br><br>Right-click and select “Format Data Series…” option. |  |

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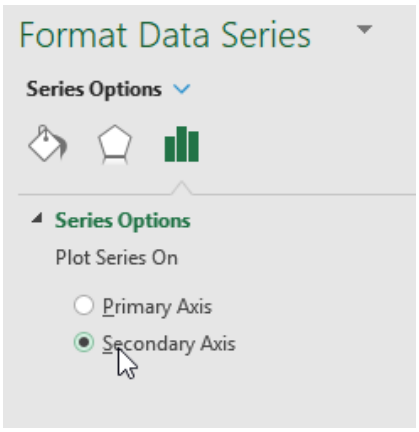
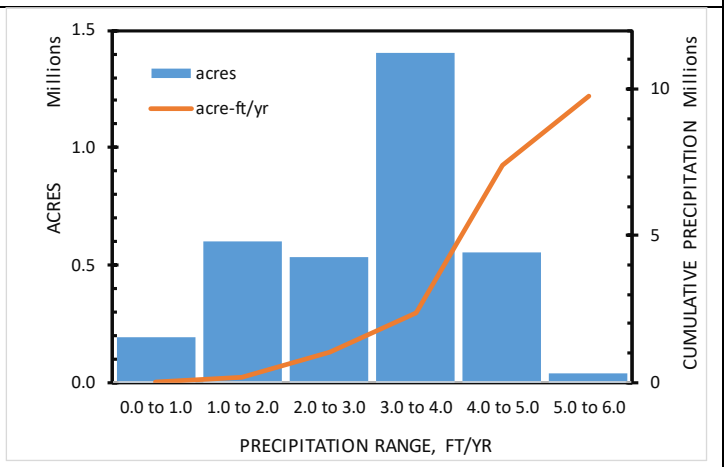
| Assign “Acre-ft/yr” series to Secondary Axis. |  |
| Histogram of precipitation and cumulative precipitation chart after some formatting. |  |