The results of these R scripts are validated by showing that the NSE Daily Calculated is the same between these scripts and an Excel Model. That file is titled CrossCheckRWetBeaver\_8\_27\_24.xlsm. These scripts perform well in many locations, but this direct comparison of the Excel Model and R only exists for Wet Beaver Creek. Open CrossCheckScriptWetBeaver.R and run the whole script. The results object can be viewed, and it is seen that the nseD (NSE Daily) is 0.02314085. That will match the NSE Daily seen in in Cell F1 of the Flow\_data sheet of CrossCheckRWetBeaver\_8\_27\_24.xlsm.

The changes I made to the CrossCheckRWetBeaver\_8\_27\_24.xlsm include the following:

The first occur on the paste\_daymet\_data\_here sheet.

* **AG-AK:** Used PI() instead of a rounded 3.1415 in the calculations
* **D-J:** Added variables for the temperature and precipitation bias and slope adjustments for GridMet data. Note: Even when these were hard coded, the formulas only applied to the first row so the slope and bias adjustments were not being applied correctly.
  + David add notes here
* **BB:** I added a rounding argument to Percent.Rank() which kept more decimals
* **BE5 through BF7:** I added functionality for jrange to be a variable
* **BE:** Changed the multiplication by 0.167 to division by (2\*jtemp)
* **BJ:** Changed the formula so there are never a hock of 0.
* **BR5:** I changed the 180 to be the whole folded aspect formula: =ABS(180-ABS(BS5-225))
* **CA-CC:** The calculations for the second line onward were referencing Runoff instead of Adjusted Runoff.

Next, the changes I made to the Flow\_data sheet:

* **K6:** Added jrange as a variable in the top panel. This is referenced by BF5 in paste\_Daymet\_data\_here.
* **M:** Pasted in new stream gauge data. Using the ScrapeGaugeData.R file, I scraped the data, and formatted it so the gaps would be NA’s.
* **N:** I changed the formula so if the value from column **M** was NA, it goes blank.