**Step to Update RIV package until July 2023:**

How: Download riverstage data, interpolate new river stage data to MODFLOW grid, and generate updated RIV package

1) Download new river data (after 2022) using the convolution script provided by sspa:

* No need to change the optimized convolution parameters.
* "C:\100HR3-Rebound\model\_packages\hist\_2014\_2023\riv\**00\_Download\_RiverStage\_Data.R**"
* "C:\100HR3-Rebound\model\_packages\hist\_2014\_2023\riv\00\_RiverStage\_daily.csv"

2) Convert river stage to gauge data.

* Copy the daily river stage file (00\_RiverStage\_daily.csv") to "**01\_RiverStage\_to\_GaugeData.xlsx**", worksheet “RiverStage”, columns highlighted in yellow (E through M).
* Fill in the blanks for columns A through D (they all have functions built-in so autocomplete is smooth).
* Reproduce the pivot table with the updated data from RiverStage in worksheet Monthly\_Average.
  + Pivot Table should include SP, and GAUGES + PRD. Don’t filter SP column >0 just yet.
  + Watch for order of gauges under Values, make sure to set to Average, Rows should have the sum of the values, and columns is SP. One the pivot table is generated with these settings, then you can click on Column Labels and make Label Filter (SP) >0.
* In GaugeData worksheet, extend functions until end of your data (Oct 2023)
  + make sure the calculations look right (data hasn’t changed based on your updated pivot table for dates you already had).
* Export GaugeData worksheet as 01\_GaugeData\_Oct2023.dat
  + Copy the data from GaugeData worksheet (12 rows) to text editor and then save as .DAT

3) Interpolate gauge data

* Run "**02\_Create\_InterpolatedRiverStage.py**" (using Python2) to interpolate and get rs at all control points along the river segment in 100-HR-3 Area.
  + Input files:  
    " RiverStationPoints.dat" and “01\_GaugeData\_Oct2023.dat”
  + Output file: “02\_InterpolatedRiverStageOct2023.out”
* Copy the content from "02\_InterpolatedRiverStageOct2023.out" to "**03\_RiverCells.xlsx**", worksheet “stage”
  + Note: only station ids 1577 to 2387 should be copied over from \*.out to “stage” worksheet because those are in the area of interest for 100HR3.
  + Note: In “Cells” carefully **update SP** to the ones you’re interested in (yellow highlighted row points to change in SP). It takes manual work to update SPs in this worksheet correctly, about 89,034 rows per SP. Make sure you extend VLOOKUP equation for Stage column (so it encompasses the new columns):
    - =MAX(VLOOKUP(G178070,Stage!$A$2:$HA$812,(H178070+4),FALSE),(E178070+0.00001))
  + Export for SP 204 to 214 (Jan 2023 to Oct 2023) as "model\_packages\hist\_2014\_2023\riv\RiverCSV\03\_River\_new2023.csv".
  + Note: I updated headers to start from SP 1 in Jan 2014, making 2023 dataset be SP109 to 115.
* Run python script to concatenate data and assign the optimized conductance values: **04\_update\_riv\_conductance.py**:
  + Input file 1: River dataset Jan 2014 until Dec 2022: RiverCSV/River\_sp97to204\_2014\_2022\_for\_GWV.csv (updated SP to start with SP 1 until SP 108 in script)
  + Input file 2: RiverCSV/03\_River\_new2023.csv (SP 109 to 115 : 2023 dataset)
  + Output file: RiverCSV/ 04\_River\_2014\_2023\_correctK.csv
* Using **GW Vistas** to import the rs data to generate riv package.
  + Import the new modflow project (with updated DIS package)
  + BCs> River
  + BCs > Delete > Clear All
  + BCs > Import > Text File
  + Model > MODFLOW > Packages > Create RIV
  + Model > MODFLOW > Create Datasets