COVERAGES, SIMULATIONS, AND MODEL CONTROL

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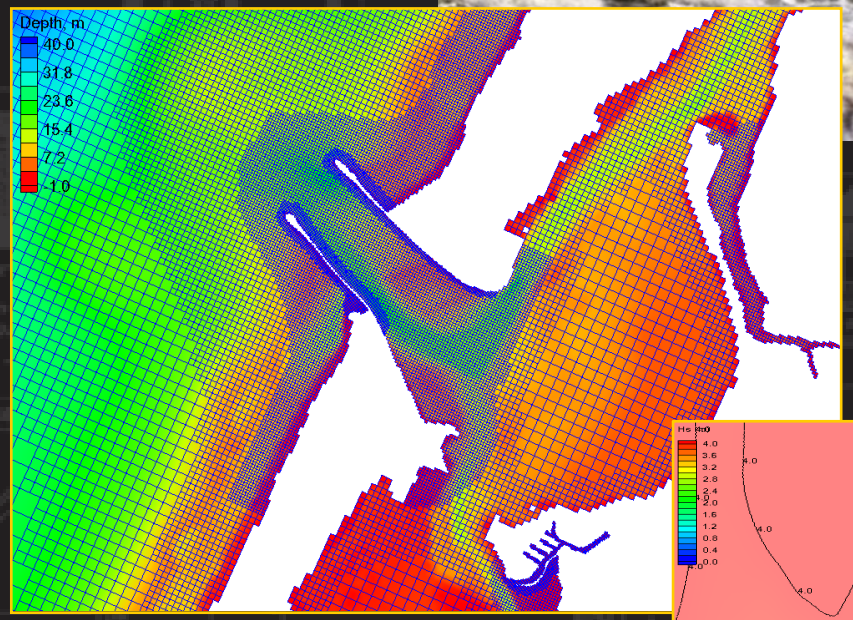

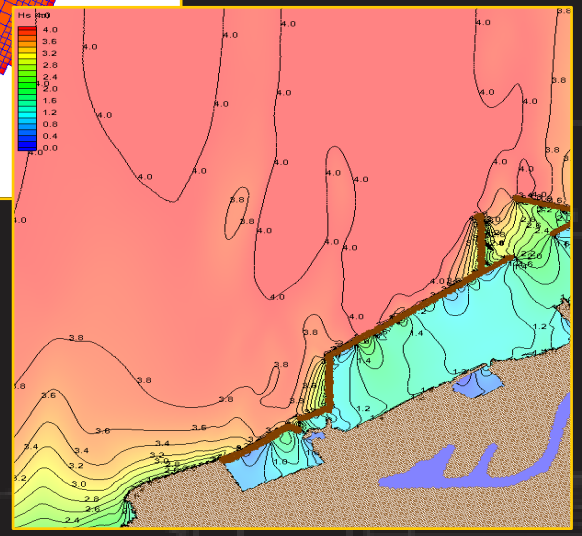

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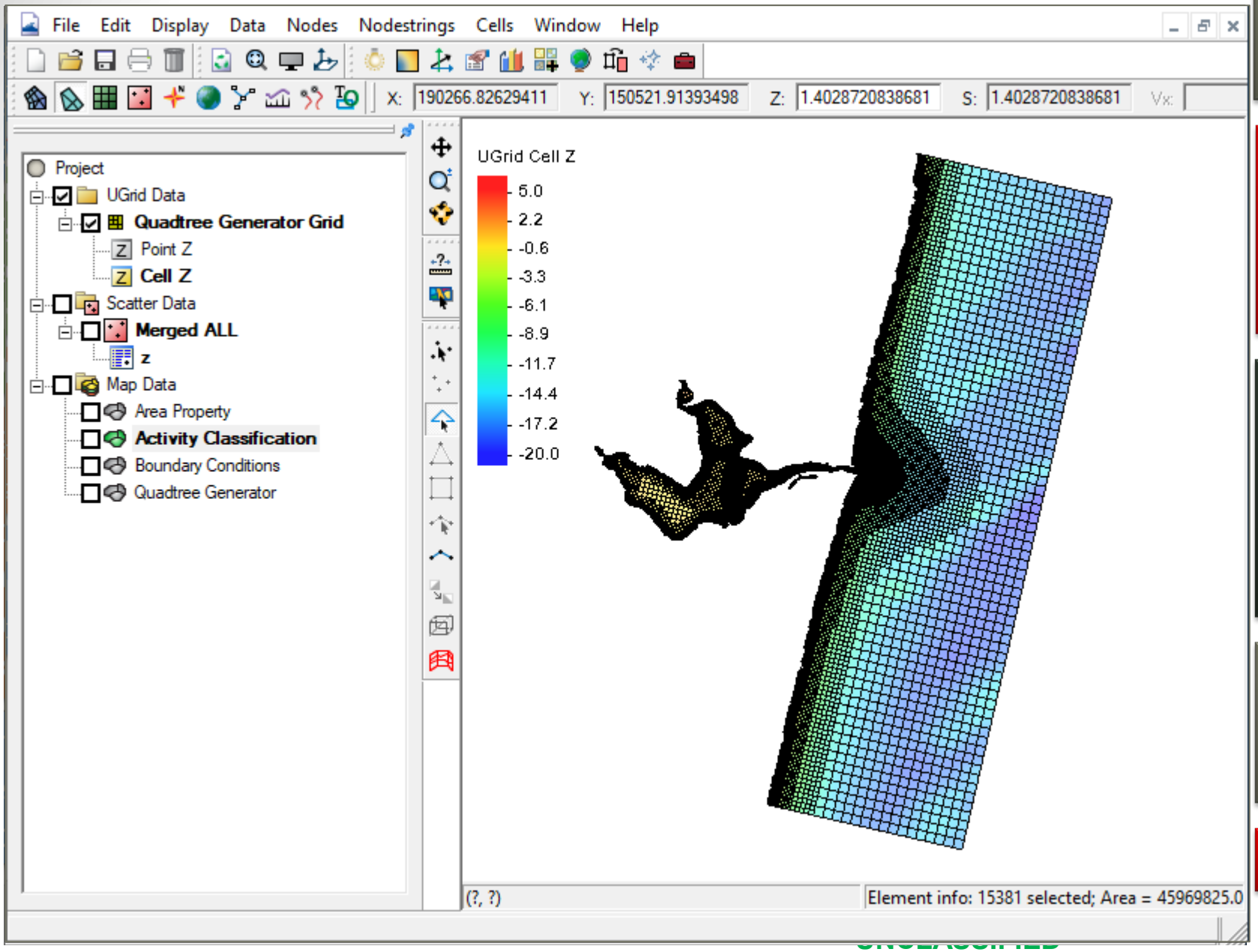
Users can now turn off display of land cells, if desired.



After the quadtree grid has been created, it is converted internally to a UGrid.

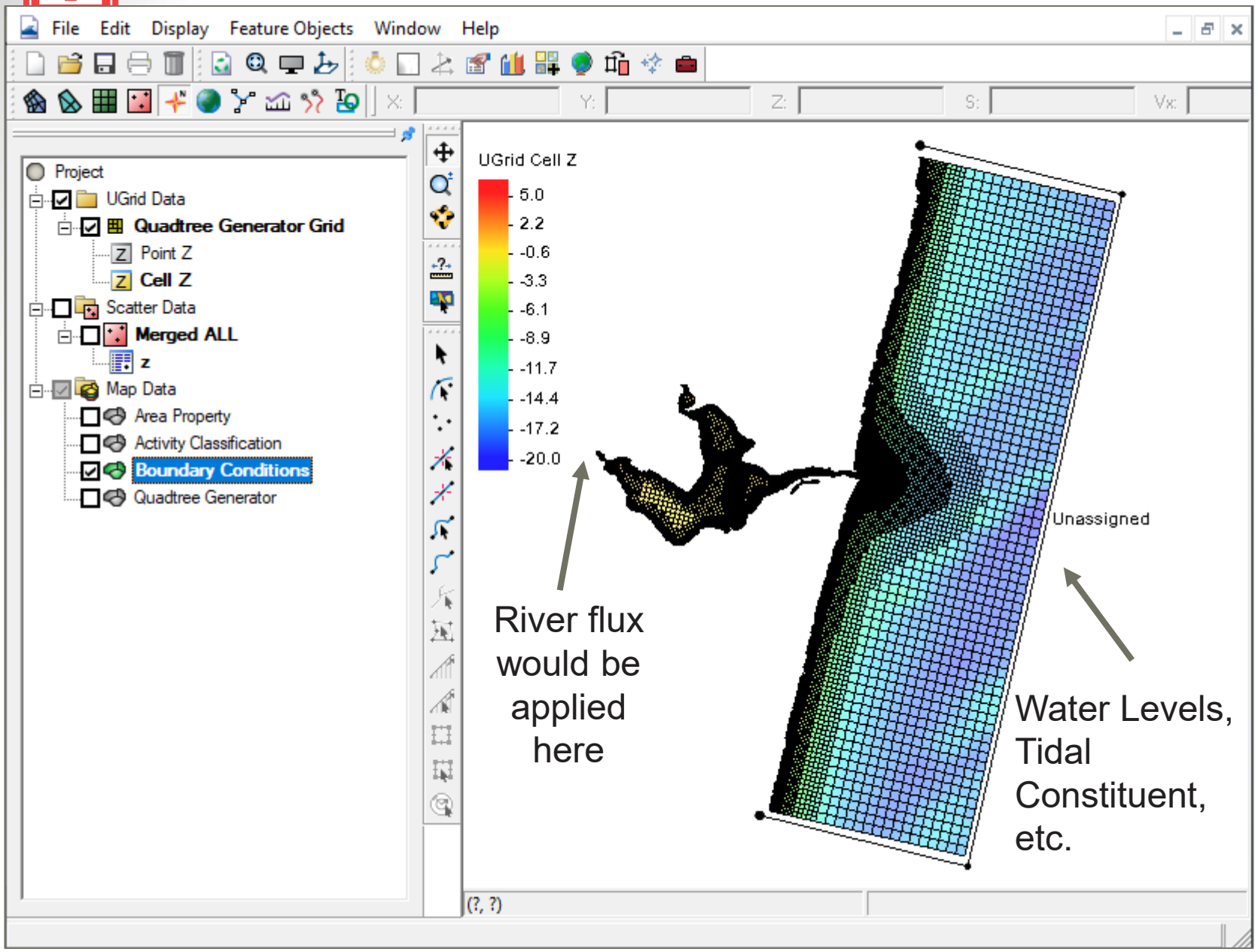
Left-click on the Activity Classification coverage and select the land polygon with the select Polygon tool 

Right-click the selection and choose “Select Intersecting Objects”.
Choose UGrid, Cells, and click the Quadtree grid. Then Click OK.

Right-click the selection and choose “Edit Cell Activity…”.
Choose “Off”, then click OK.

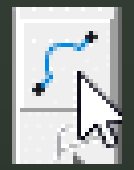
Inactive/Land Cells are now Off.

Next, we define the boundary conditions (forcing).



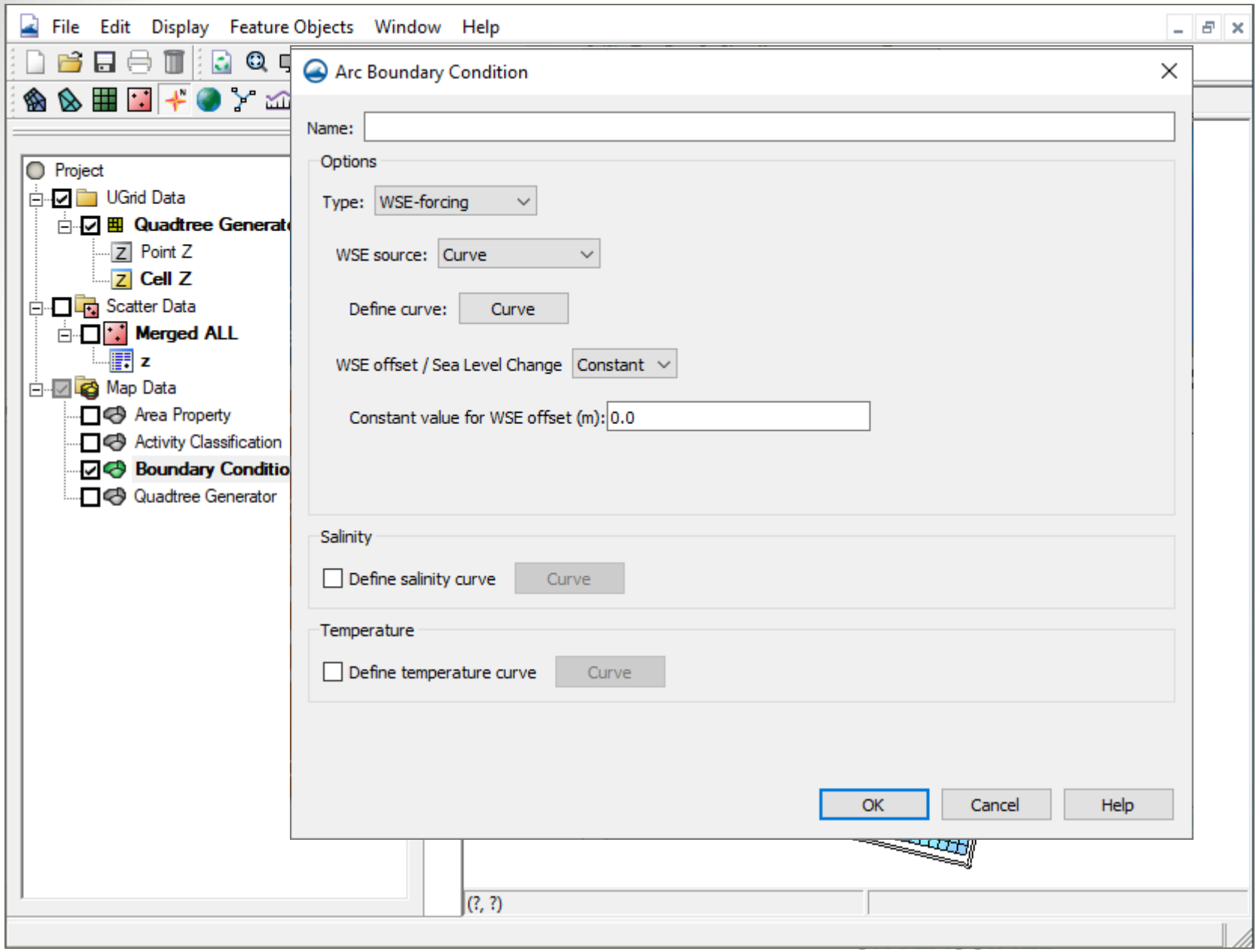
- Boundary forcing comes in from the edges by way of Feature Arcs of specific types.

- Select the *Boundary Condition* coverage, then the Create Feature Arc tool.

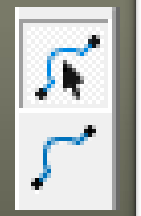


- Click in the approximate location for the type of forcing and create an arc for the boundary condition.

Water Surface Elevation Boundary Condition

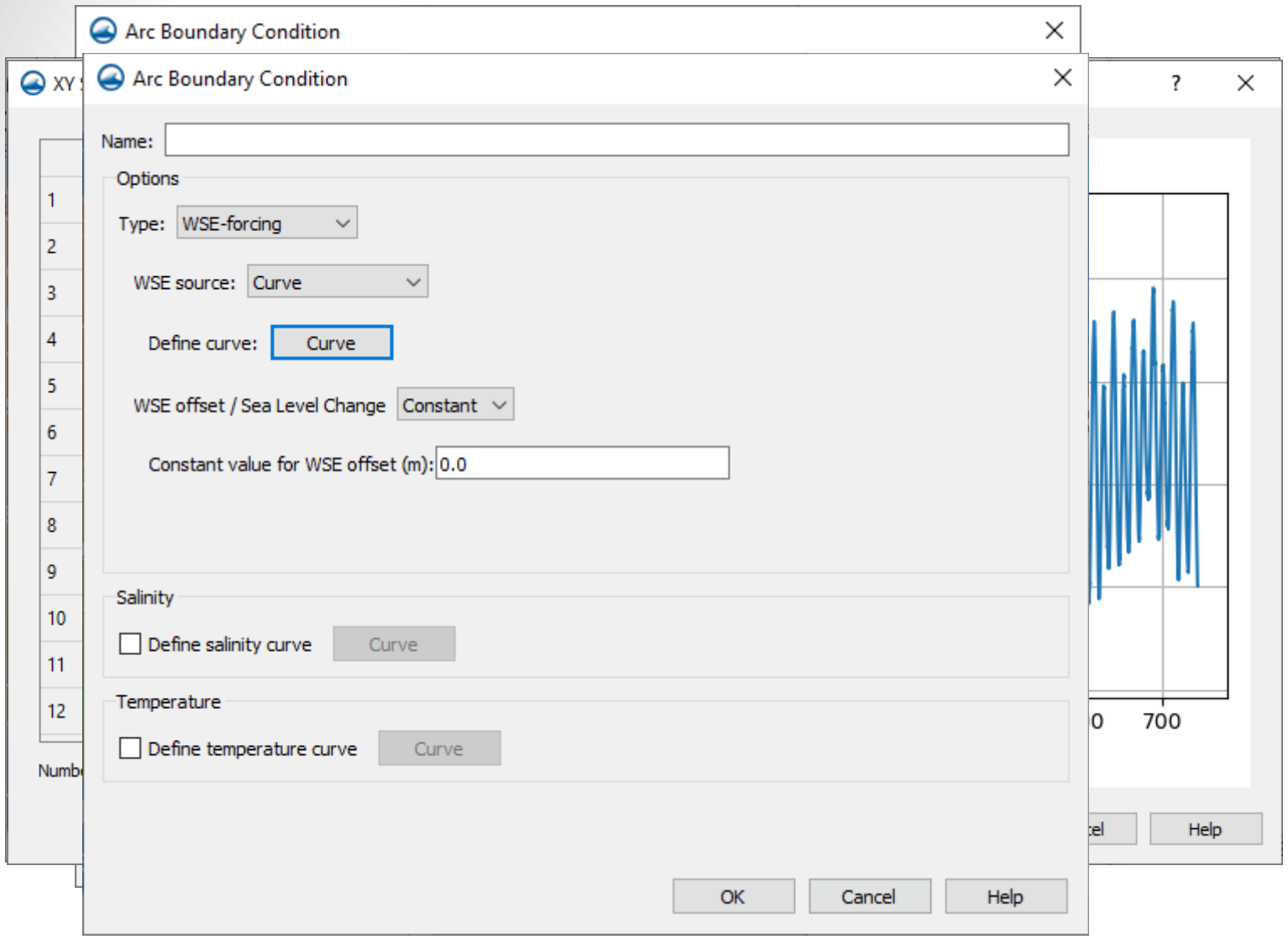


- Select the Select Feature Arc tool.
- Click, right click on the arc created.



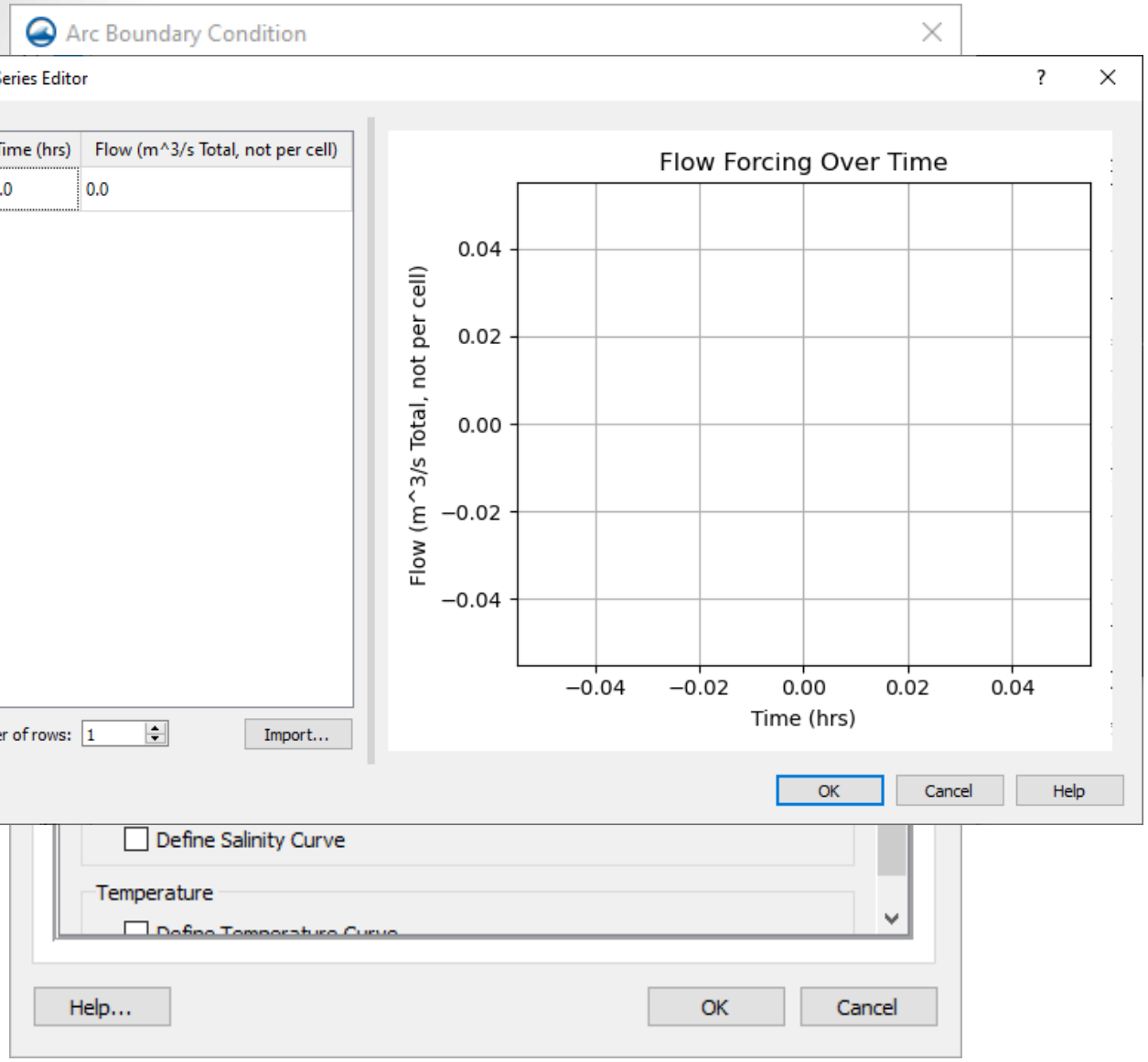
- Choose *Assign Boundary Conditions* and select the appropriate boundary type. Choose the type "WSE-forcing" and for the source, choose "Curve".

Water Surface Elevation Boundary Condition



- Click the “Define curve…” box.
- Enter values for time and elevation. This can be by hand, cut/paste from spreadsheet, or importing a file.
- Let’s import a file with the data.
- Click “Import” and find the file named “WLforcing.xys” which is in the CMS_Grid_Creation directory.
- Click “Open”. Click “Ok” to finish.
- A Name is optional.
- The WSE offset is optional.
- Click OK.

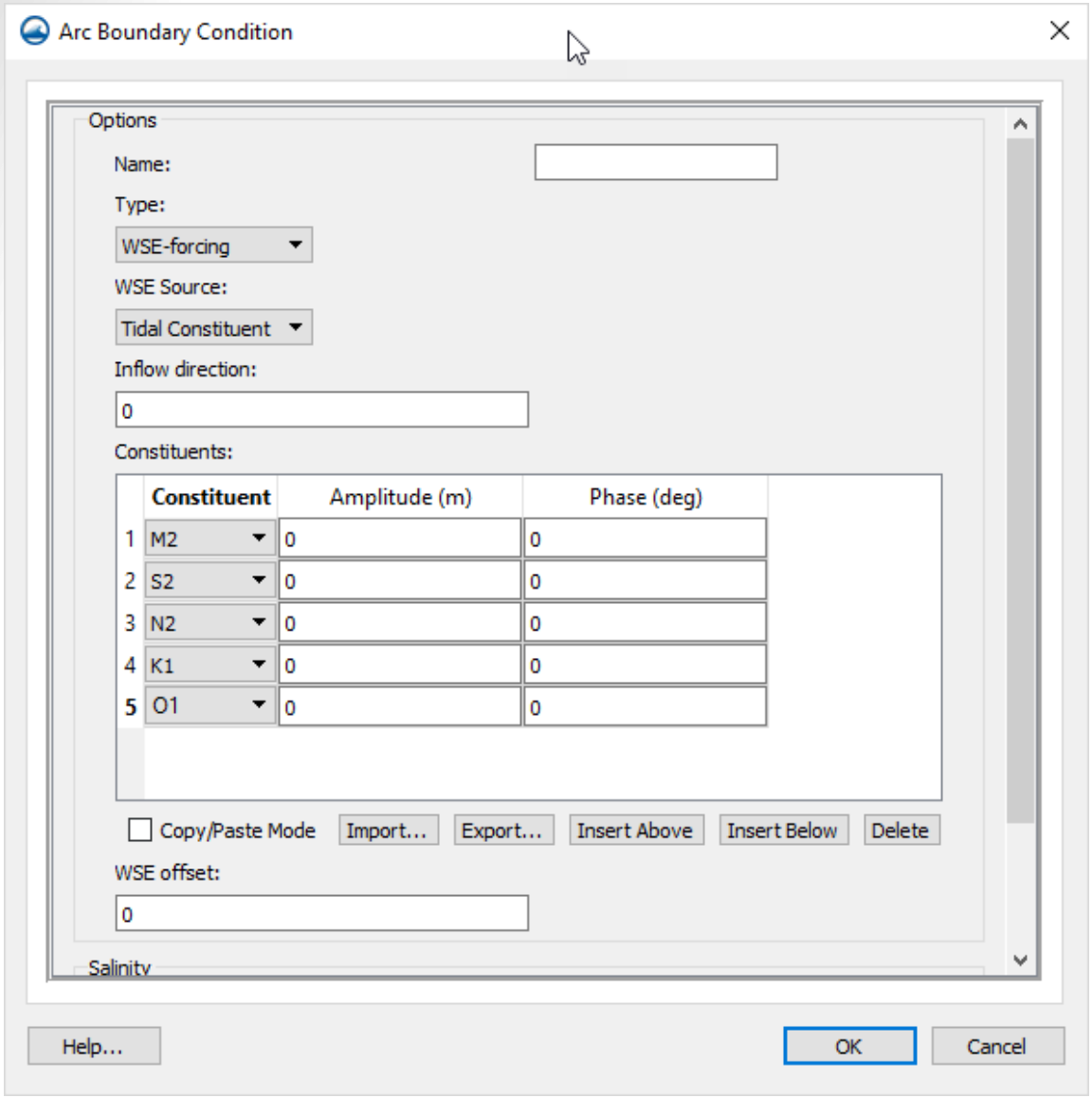
River Flux Boundary Condition (unused now, explanation only)



- For River flux, choose the type “Flow rate-forcing”
- Choose either a “Constant” or “Curve.”
- Note: Flux values differ from previous versions of SMS/CMS. All flux values are Total Flux per arc, and not per cell in the arc.
- The curve is set up the same way as WSE elevation boundary condition.

- A Name is optional.
- Inflow direction should be approximate in degrees clockwise from North. (This will be optional in a future update.)
- The Conveyance coefficient can be modified from the default.

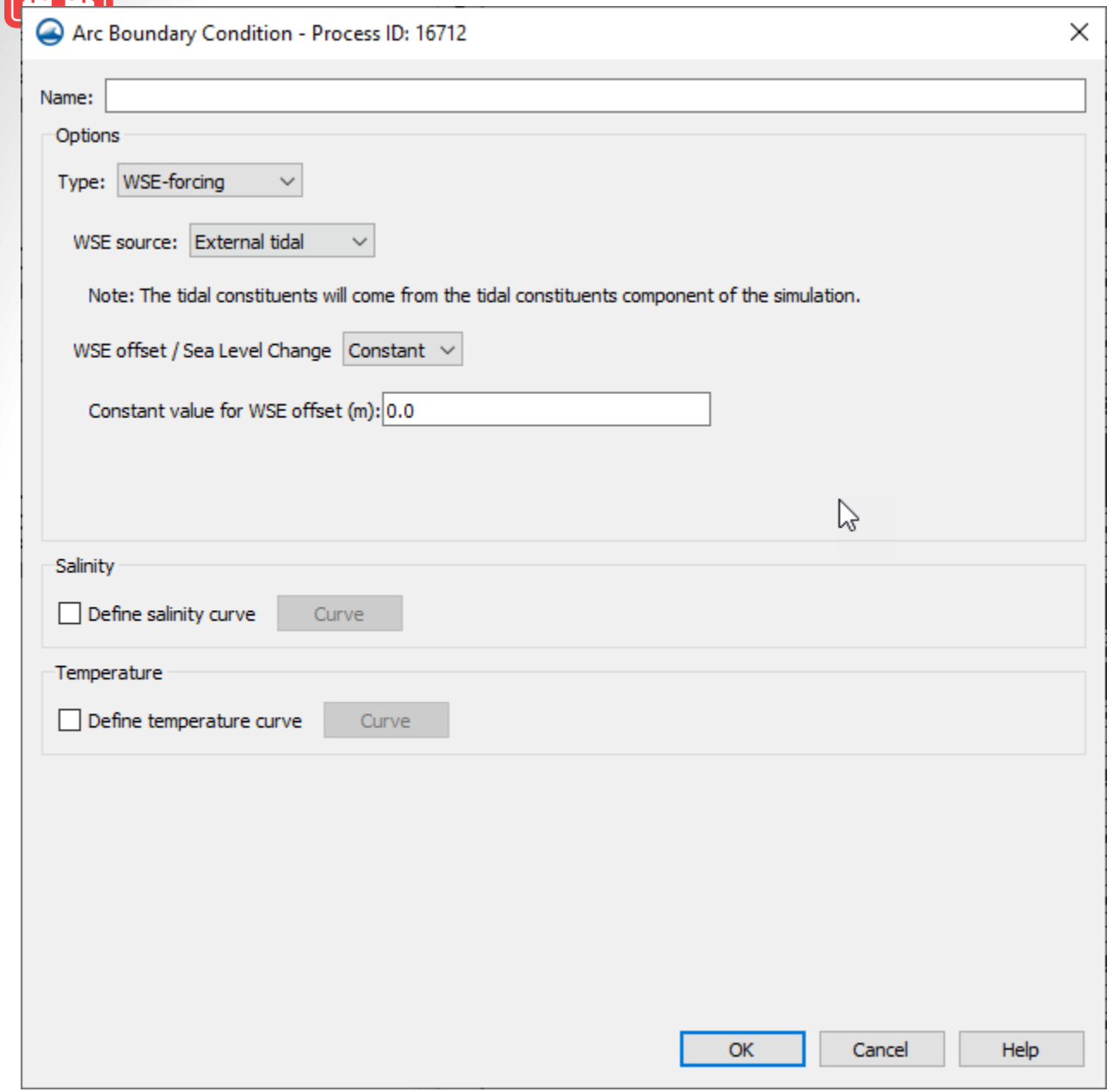
Tidal/Harmonic Boundary Condition



- For Tidal Constituent or Harmonic forcing, select the type “WSE-forcing” and the source as needed. Add rows as needed to represent the constituents desired.
- Harmonic has no temporal connection to the start date/time, Tidal does.

- A Name is optional.
- Inflow direction should be approximate in degrees clockwise from North. (This will be removed in a future update.)
- The WSE Offset is optional.

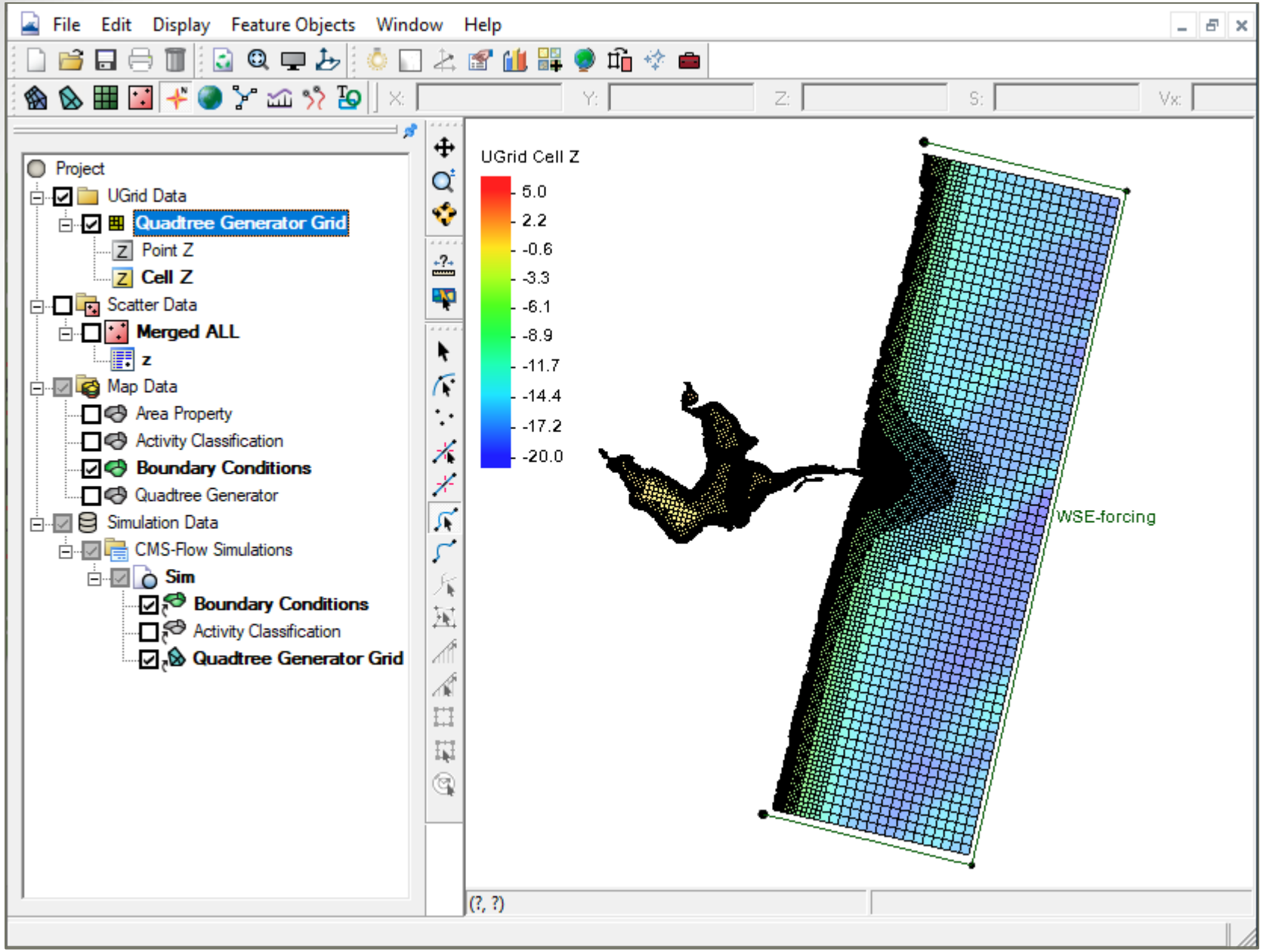
Tidal Database Forcing (External Tidal)



- When you have a larger domain, a simple tidal forcing along the offshore edge may not be adequate because of the phase difference along your boundary.
- In these cases, use forcing from a tidal database such as LeProvost or ADCIRC.

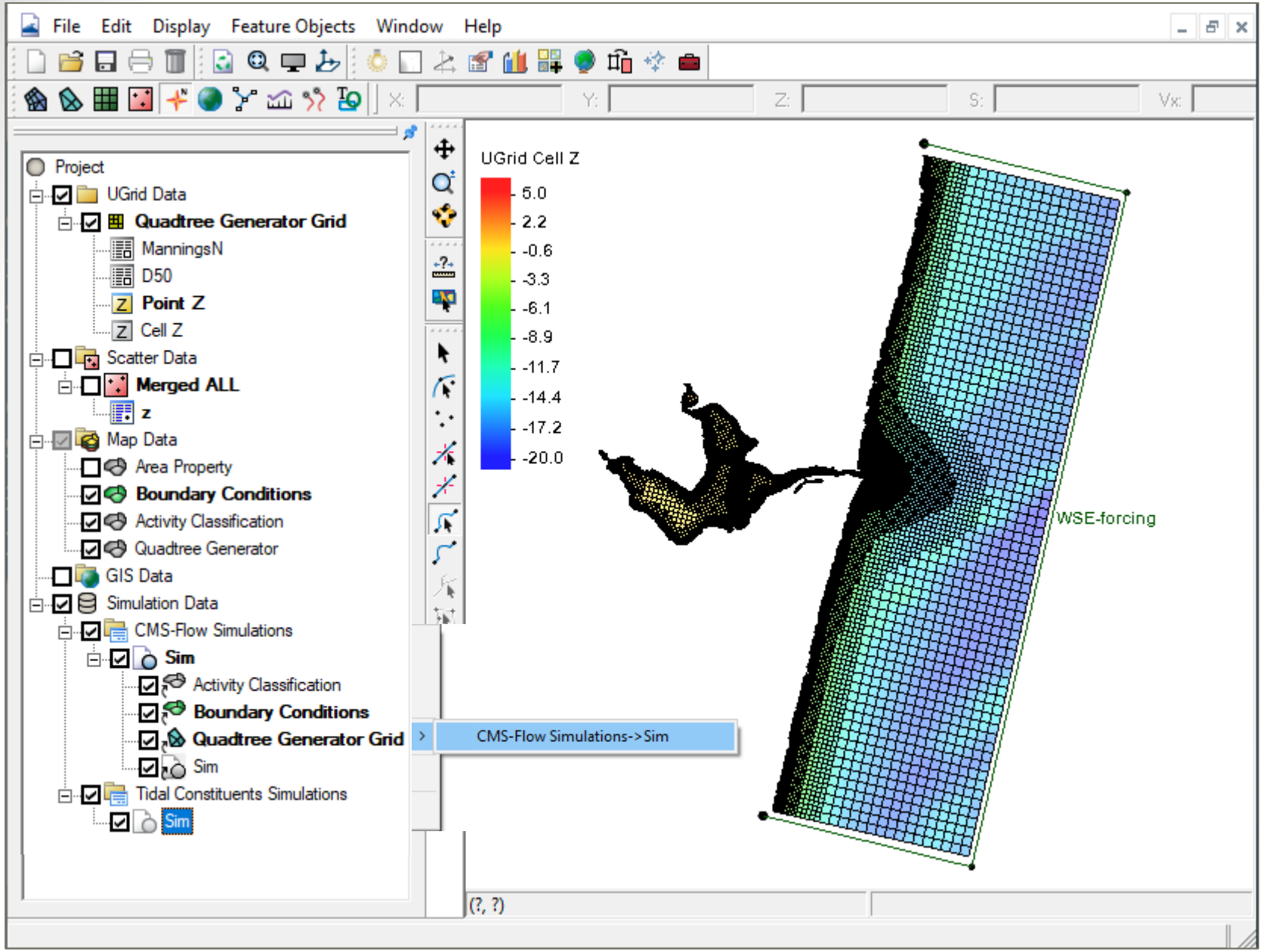
- Other steps must be followed in the Simulation section to enable this type of forcing.

Steps for Running CMS-Flow Create a new simulation



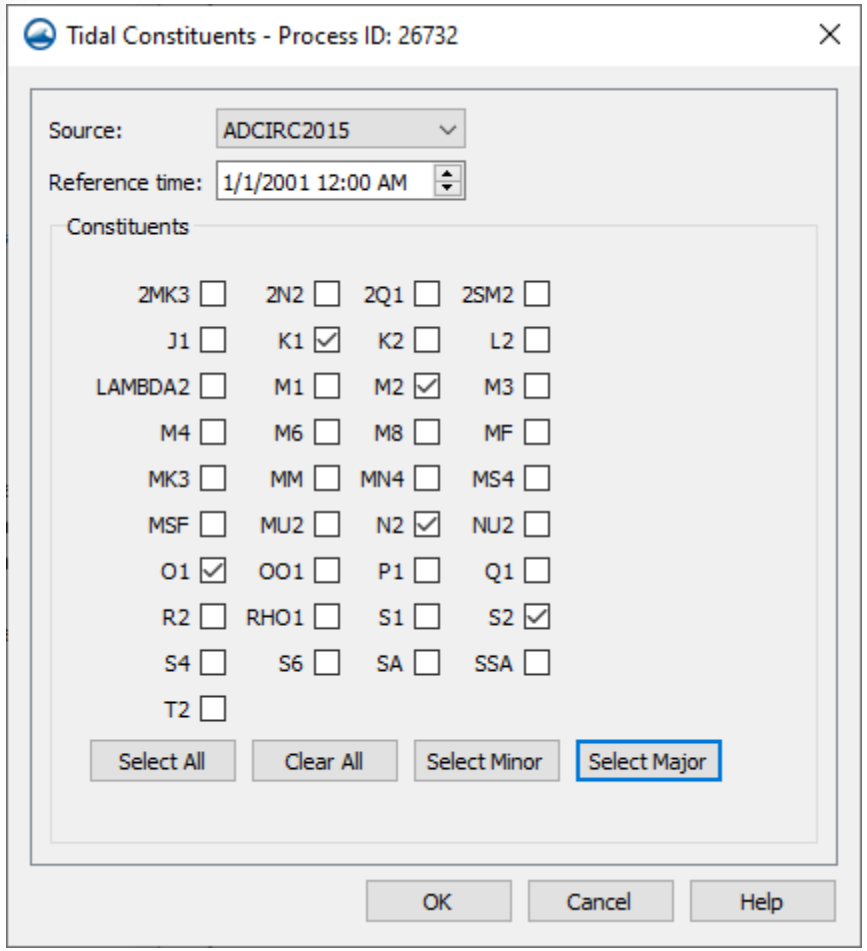
- Right click in open space at bottom of data tree to pull up a dialog.
- Choose ‘New Simulation | CMS-Flow’
- Right click on each object to ‘Apply To’ the simulation
  - Activity Classification
  - Boundary Conditions
  - CMS-Grid (not coverage)

Adding a Tidal Constituent component to simulation.



- If an “External Tidal” boundary condition was selected earlier, another type of simulation component must be added.
- Right click in open space at bottom of data tree and Choose ‘New Simulation | Tidal Constituents’
- Right click on “Sim” and “Apply to” the CMS Simulation

Choose which Database and Tidal Constituents

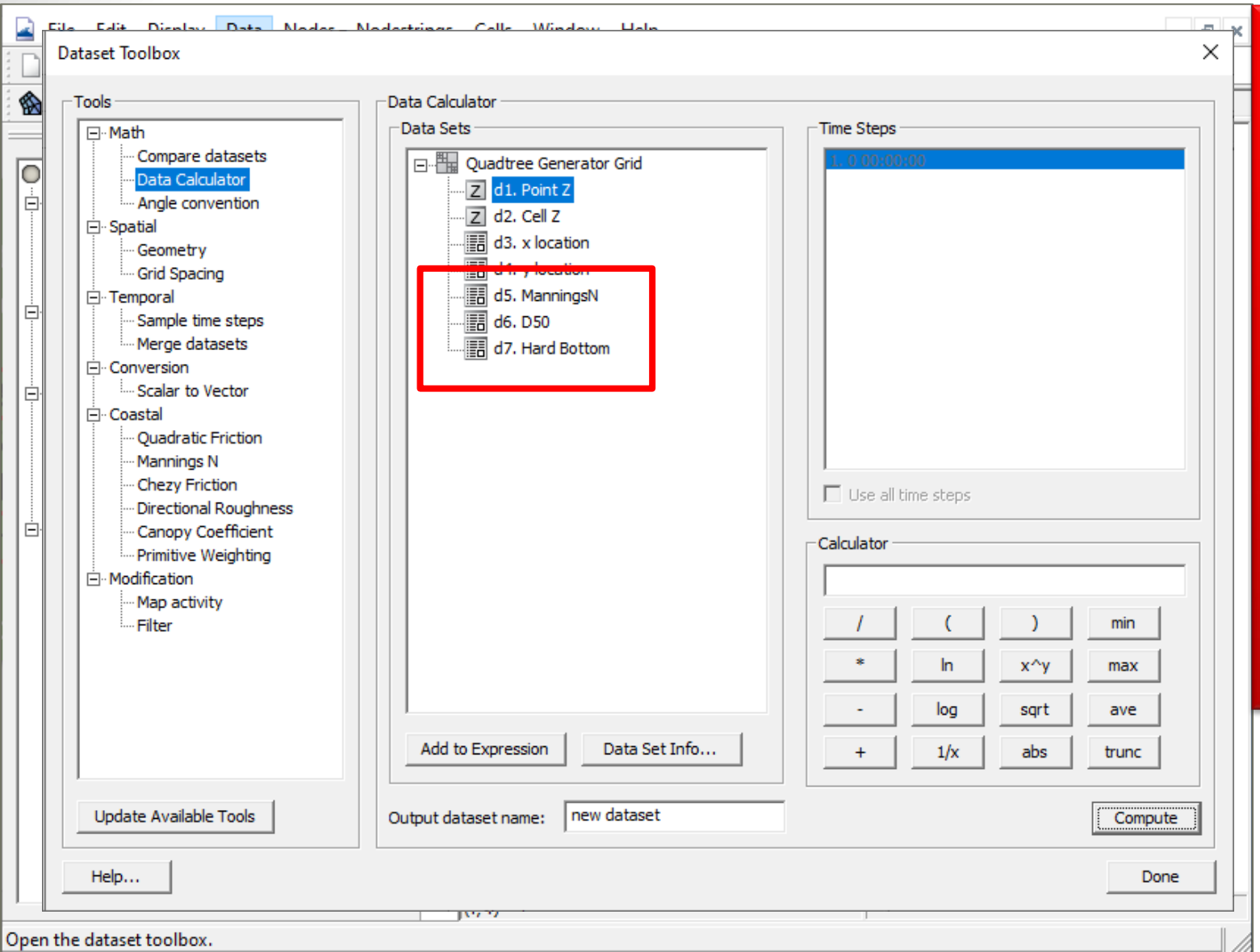


- Right click on the Tidal Constituent “Sim” and choose “Edit Constituents…”
- From Source, choose which database to use.
- Different databases have different constituents to choose from.
- Select the ones that are most important in the are of this project.
- Choose a reference time that is the same as your simulation start time.
- Click OK

This project does not use the Tidal Database, so later steps will not show these items in the simulation area.

Steps for Running CMS-Flow

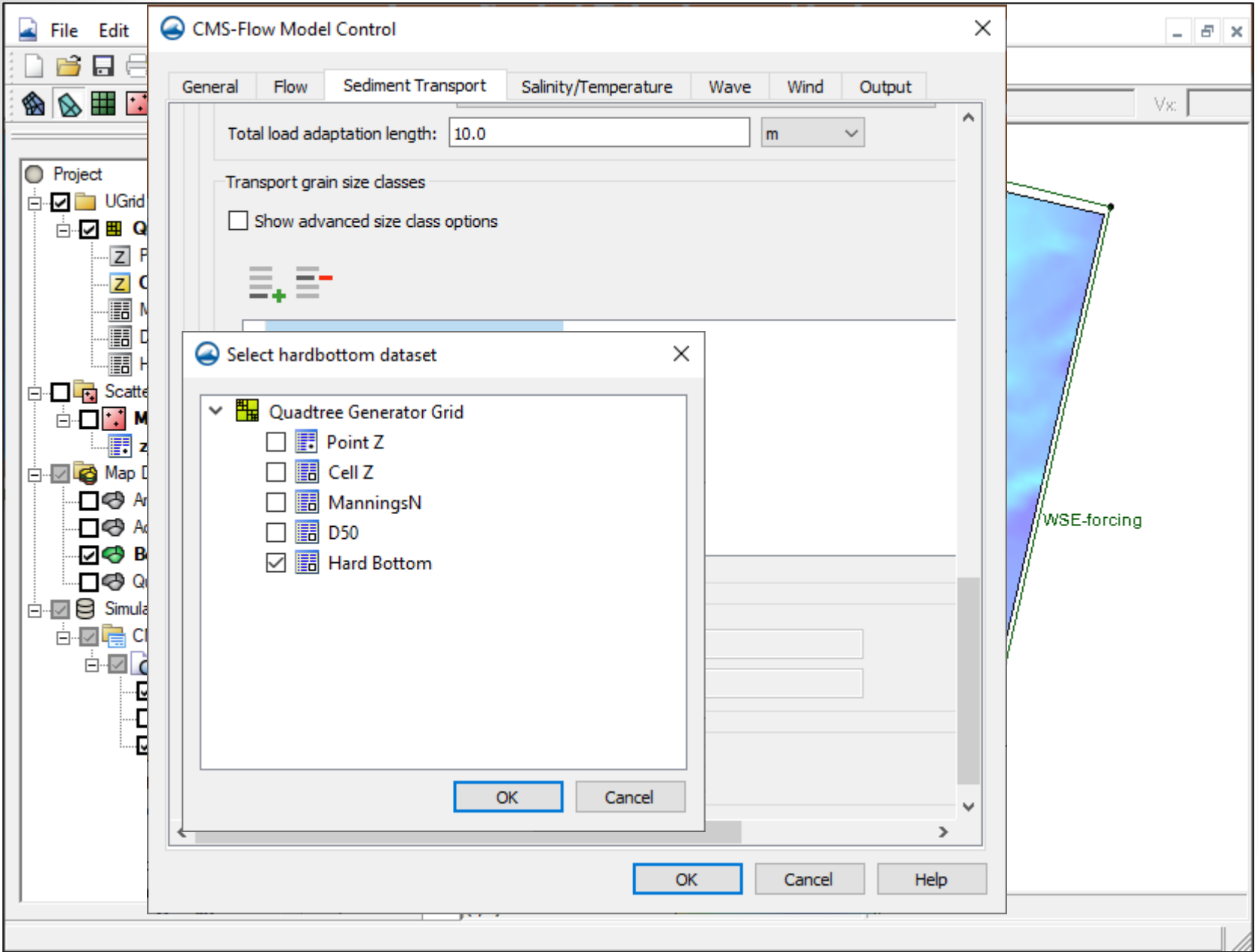
Creating new Datasets for Model Control



- Several datasets should be created to associate with CMS Processes.
- These are:
  - Bottom Friction – 0.025
  - Sediment percentile distribution (D50) – 0.26
  - Hard Bottom designation – -999
- This is done with the Dataset Toolbox | Dataset Calculator

Steps for Running CMS-Flow

Defining Model Control parameters

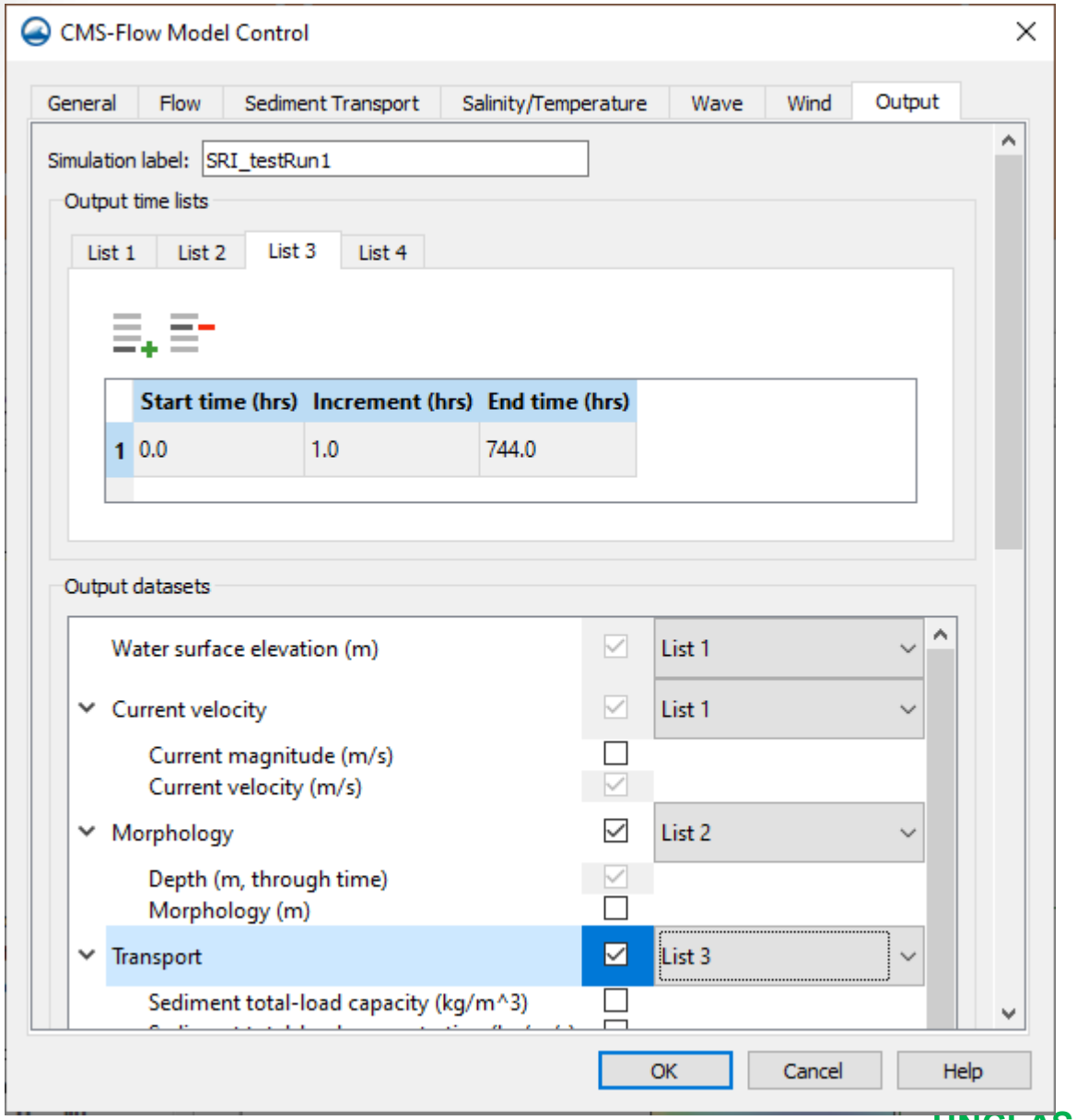


- Rename ‘Sim’ something meaningful (Right click, rename)
- Right click on simulation and choose Model Control.

- Change values as needed on each tab.
- Select the ‘ManningsN’ dataset on Flow tab, then click OK.
- On Sediment Transport tab, scroll to Bed Composition, and assign ‘D50’ dataset to Bed Layer 1.
- Scroll down to bottom of tab to add a Transport grain size
- Add Hard Bottom dataset.

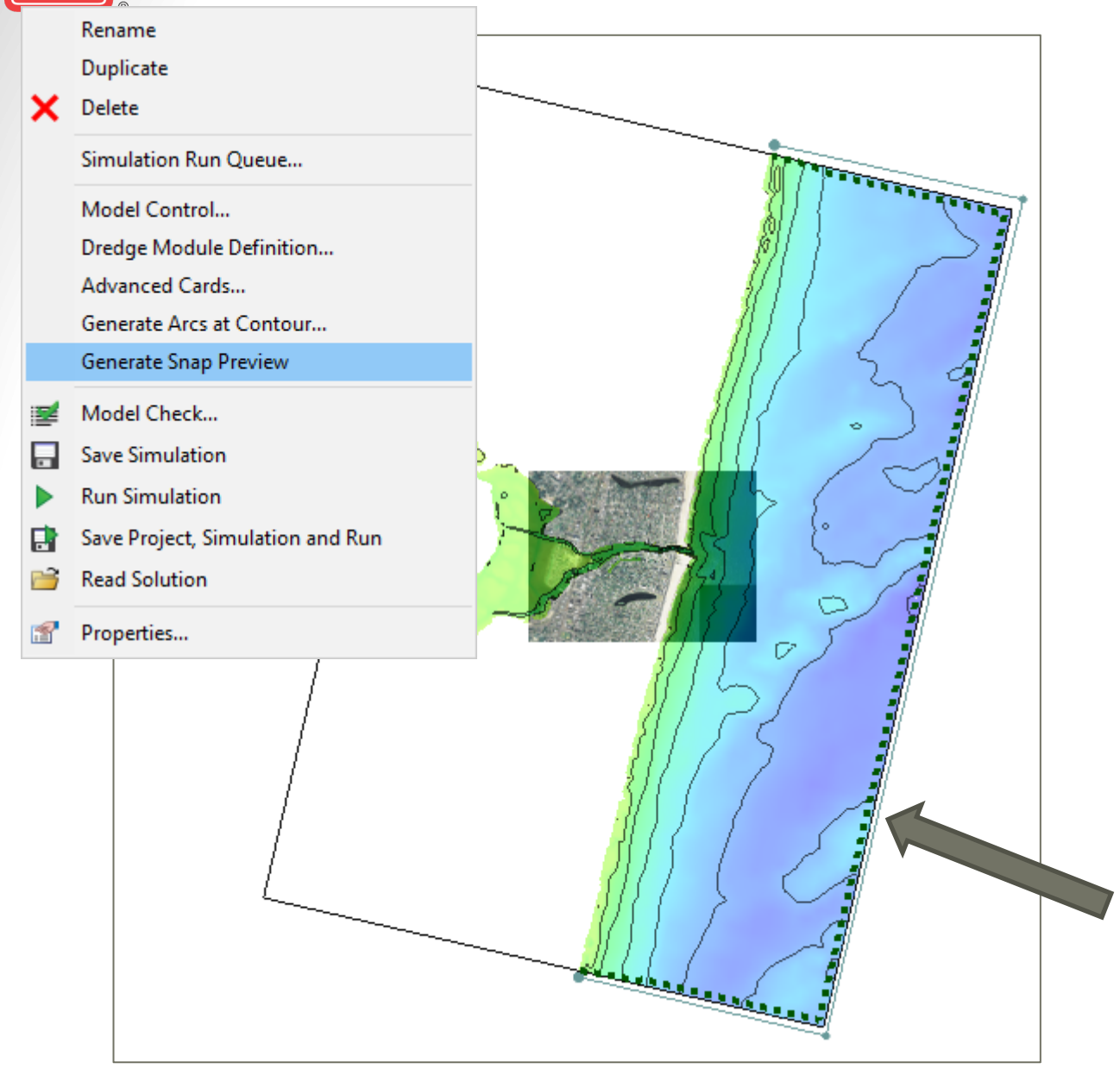
Steps for Running CMS-Flow

Defining Model Control parameters



- Change Simulation label, if desired.
- Change increment and end times for List 1, 2, and 3.
- Change List to use for Morphology and Transport
- Click OK to Exit Model Control

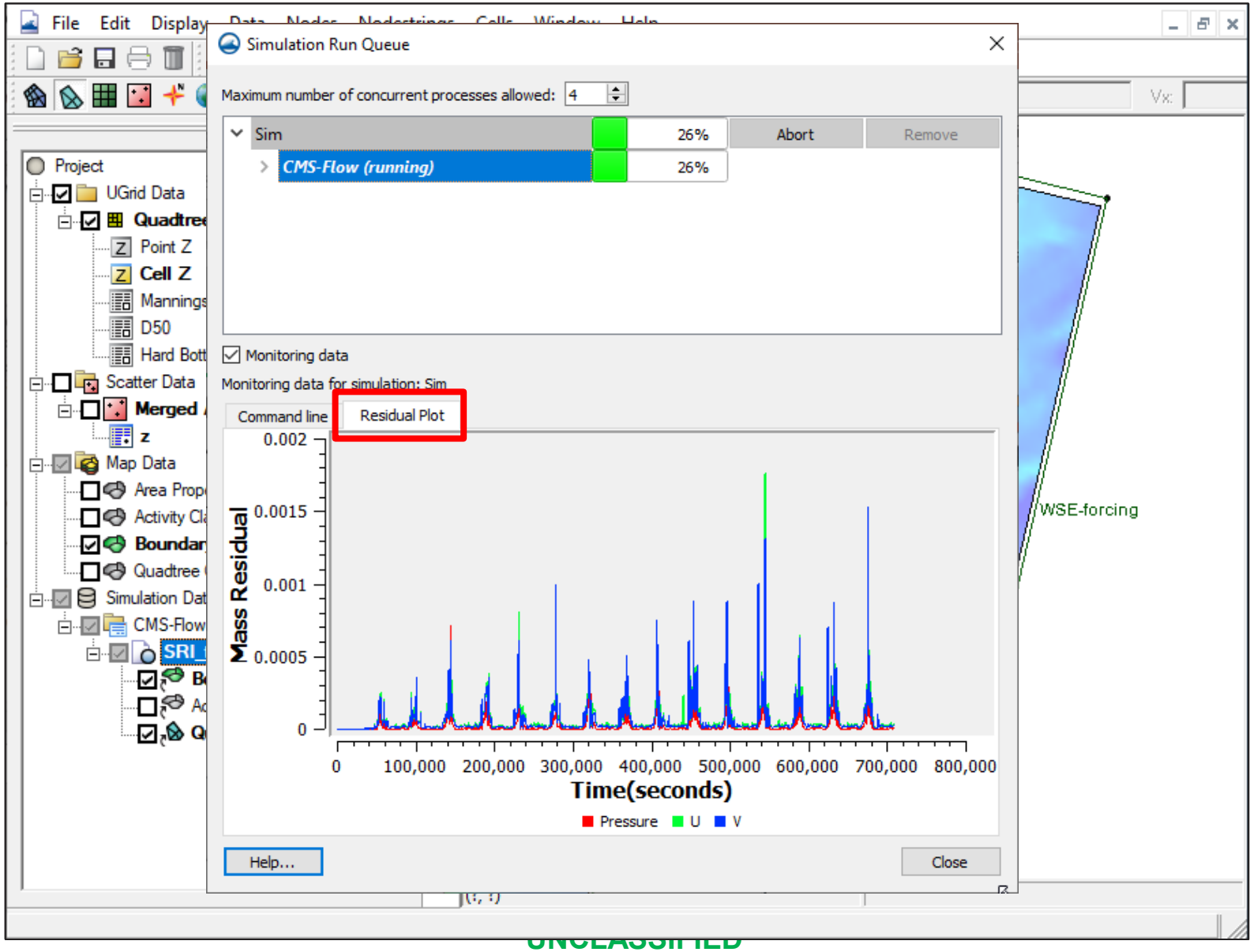
Check to see where Boundary Condition cells are located



- Once Boundary Conditions are linked to the simulation, you can preview which cells will be used to apply the forcing.
- Right-Click on the Simulation in Data Tree and select “Generate Snap Preview”.
- Once it is complete, there should be an indication of the cells for each boundary condition.

Steps for Running CMS-Flow

Save Project, Save Simulation, Run Simulation



QUESTIONS?

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