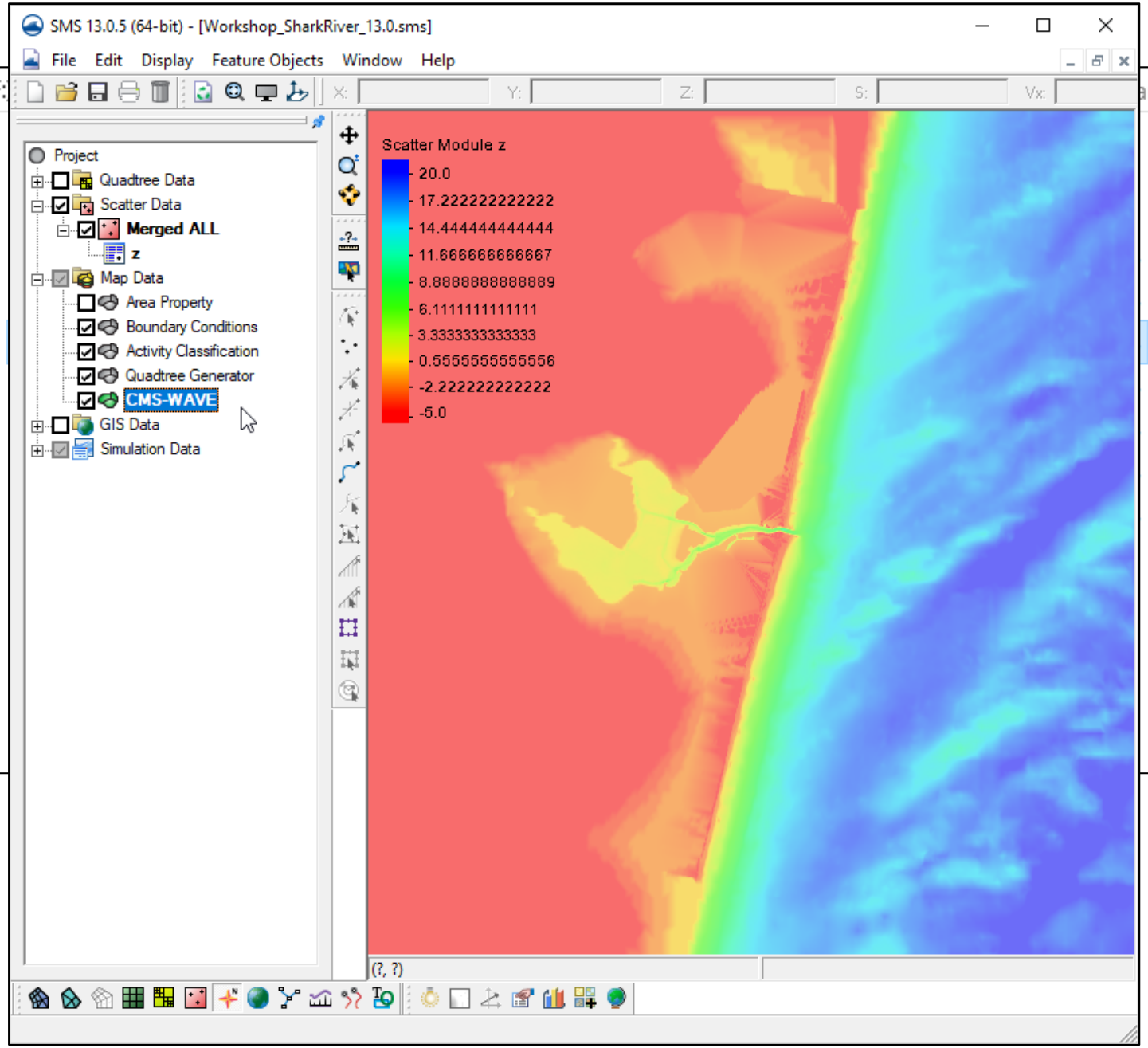
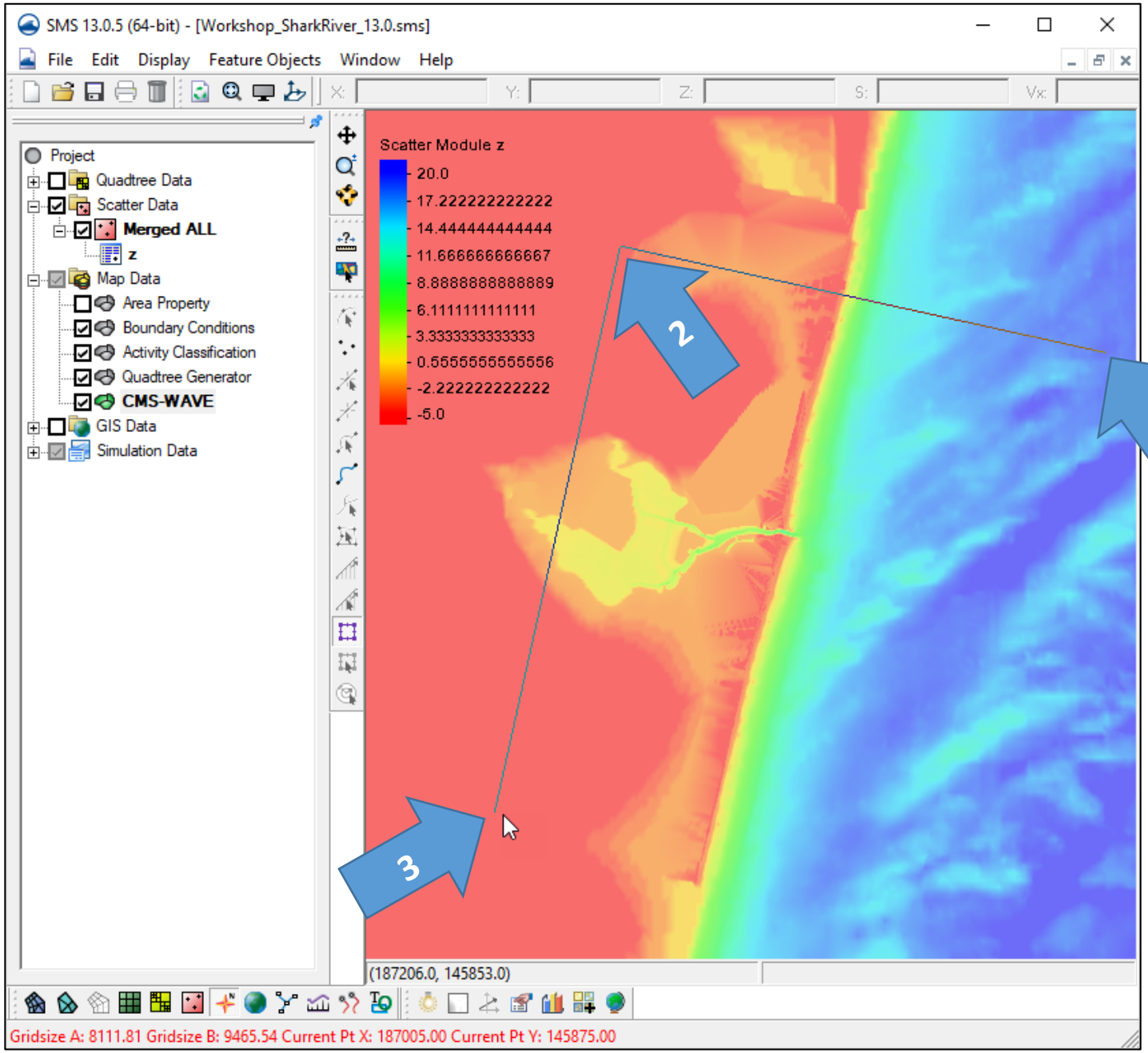
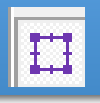
# Day 4

- Presentations
  - CMS-Wave grid creation
  - CMS-Wave Spectra and Model Control
- Demo
  - Creating CMS-Wave grids
  - Creating Wave Spectra from bulk criteria
  - Importing Wave Spectra information from Wave Gauge/Buoy/WaveNet
  - Export/Launch CMS-Wave
  - Steering – Interactive CMS-Flow and CMS-Wave




- Load project from previous work
  - Files can be found in Day4/1-afterDay3 folder
- Right click on “Map Data”
  - New Coverage
  - Models | CMS-Wave type

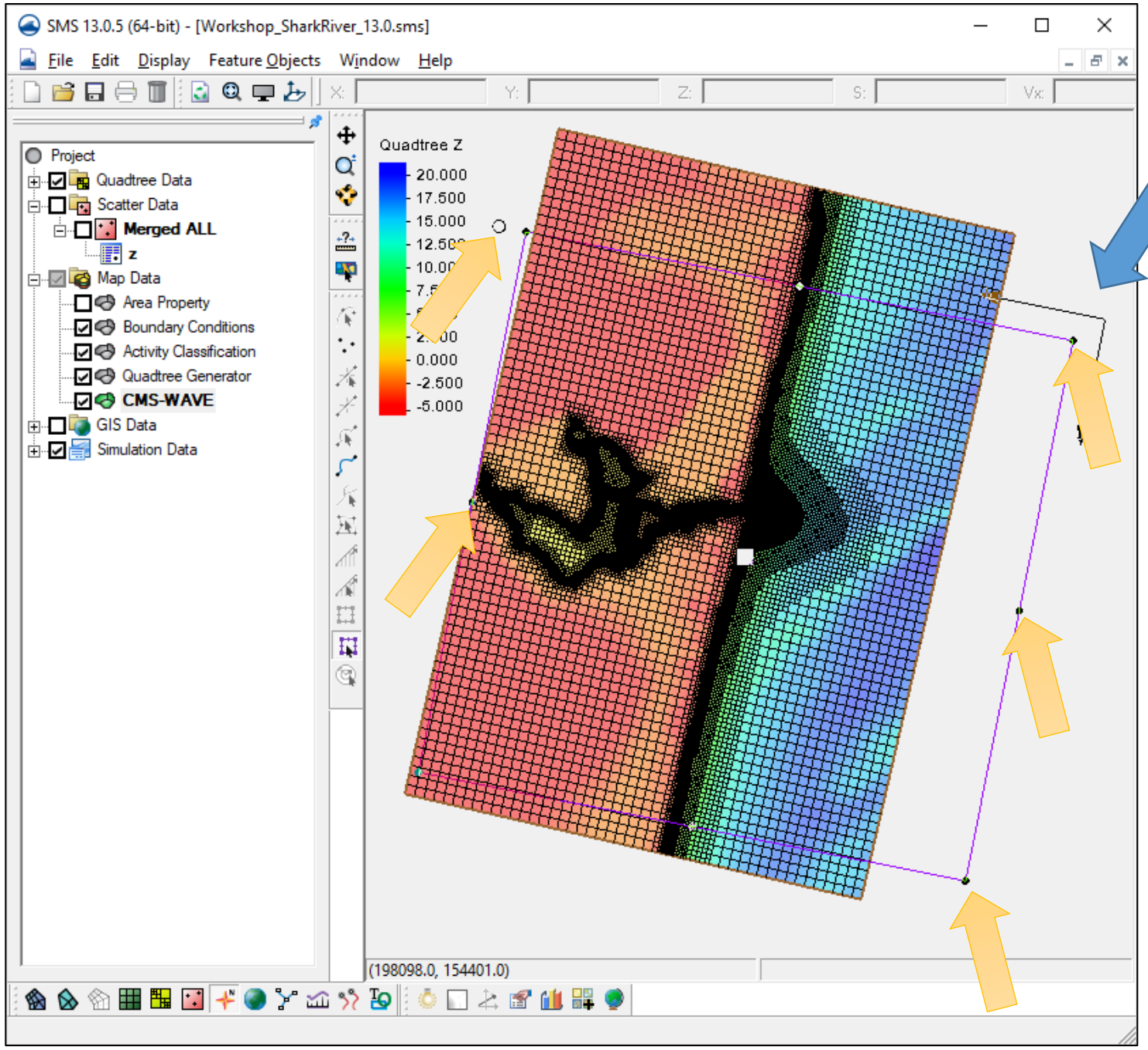



- Select CMS-Wave
- Select Create Grid Frame tool 

- Define domain of CMS Wave grid by clicking three points –
- Starting offshore (1) moving toward shoreline (2), then other corner on land side (3)

- Note: Order MUST be correct

- Accuracy not required, we can edit afterward.

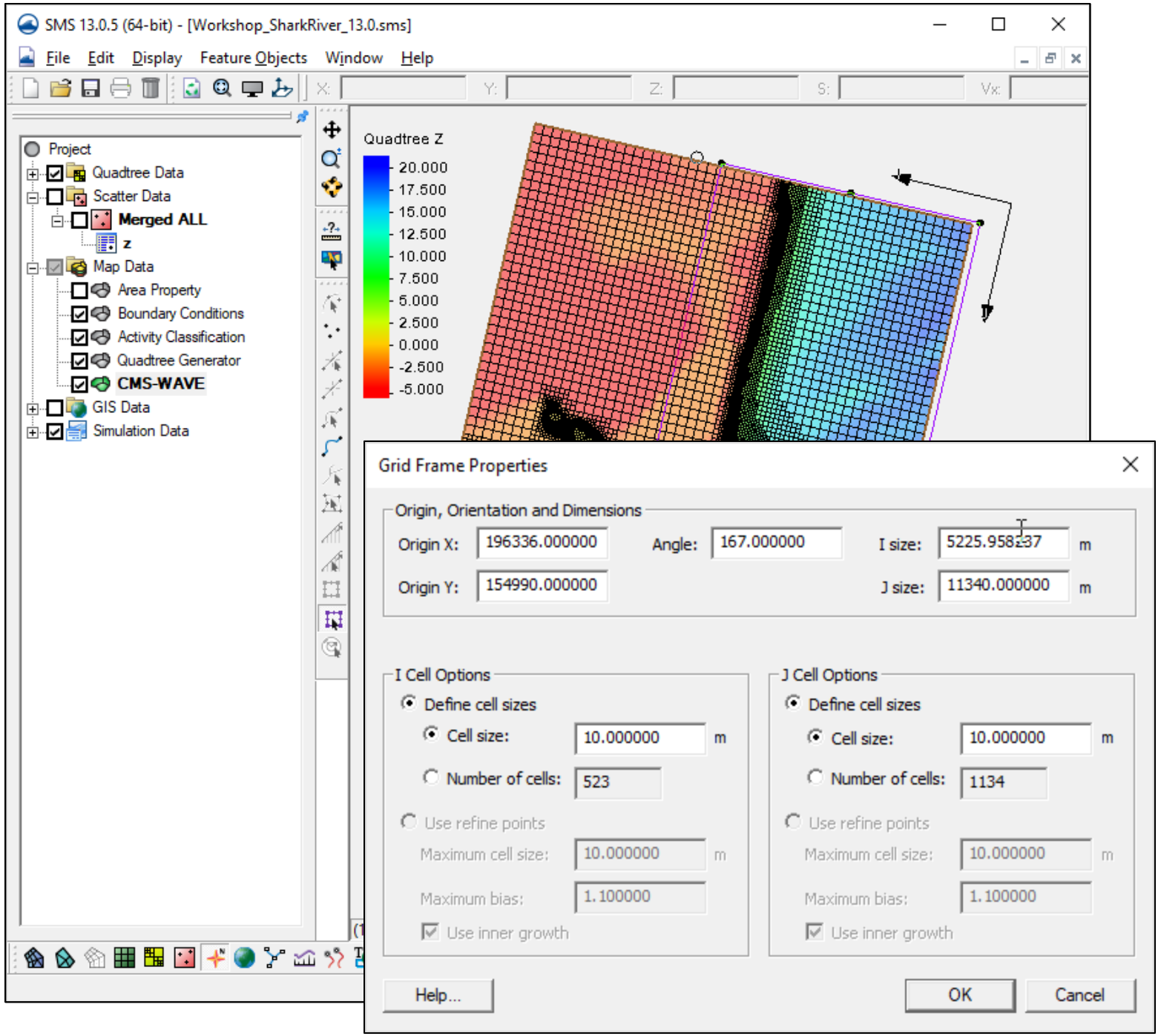



- Click Select Grid Frame tool

- Click frame selector
- You can now resize with corner or edge center points
- You can rotate around IJ Axis with handle

- Make sure to SAVE frequently as you go along.

Note: the location of the IJ Triad. I-direction is directed onshore.

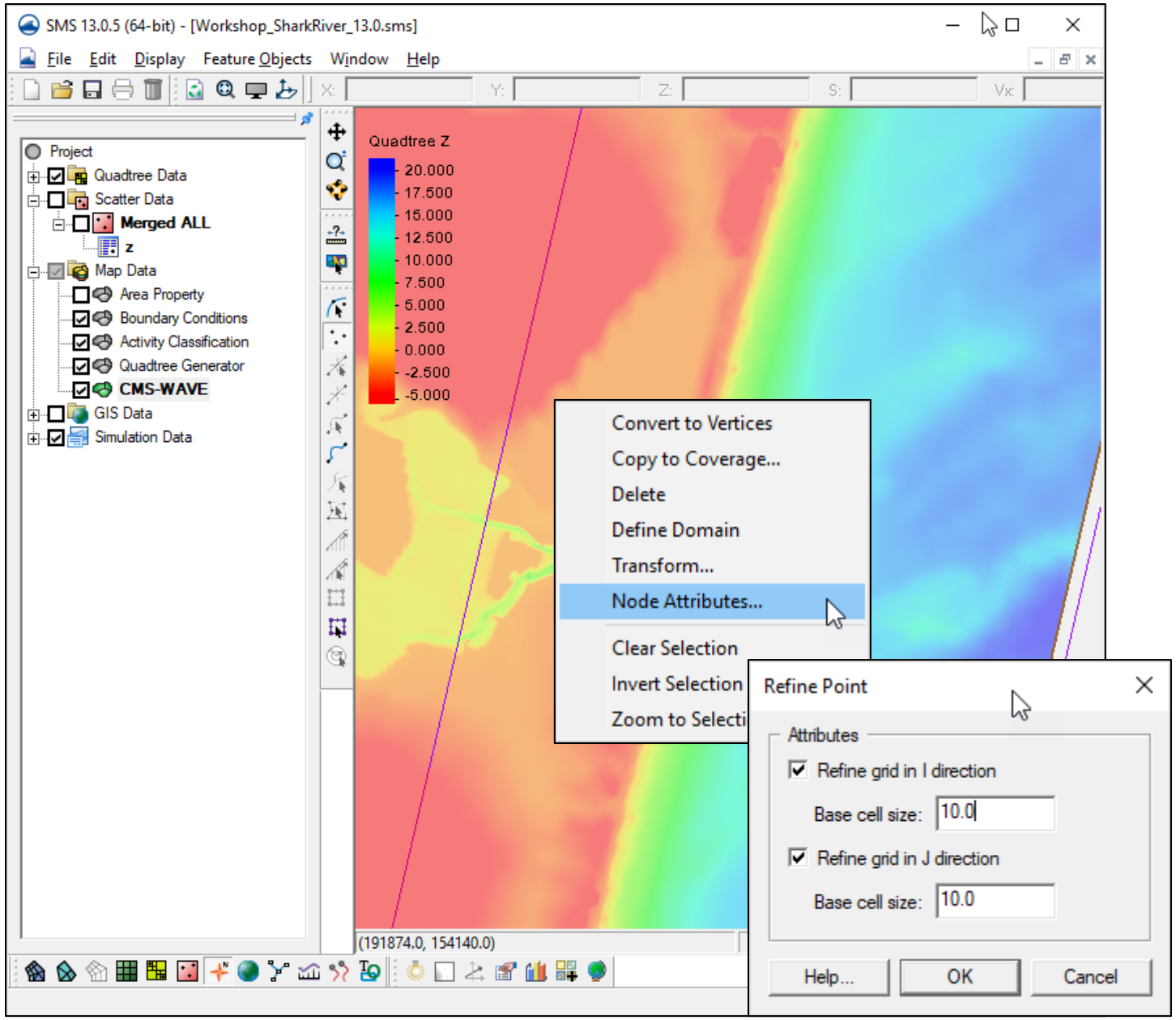



- Many times, we make the Wave Grid the same size or just a little larger than the Flow grid, unless the flow grid is very large.

- Turn off Scatter visibility
- Turn on Quadtree visibility

- Back side does not need to match the flow if the wave energy will most likely be dissipated.

# Define locations for finer resolution

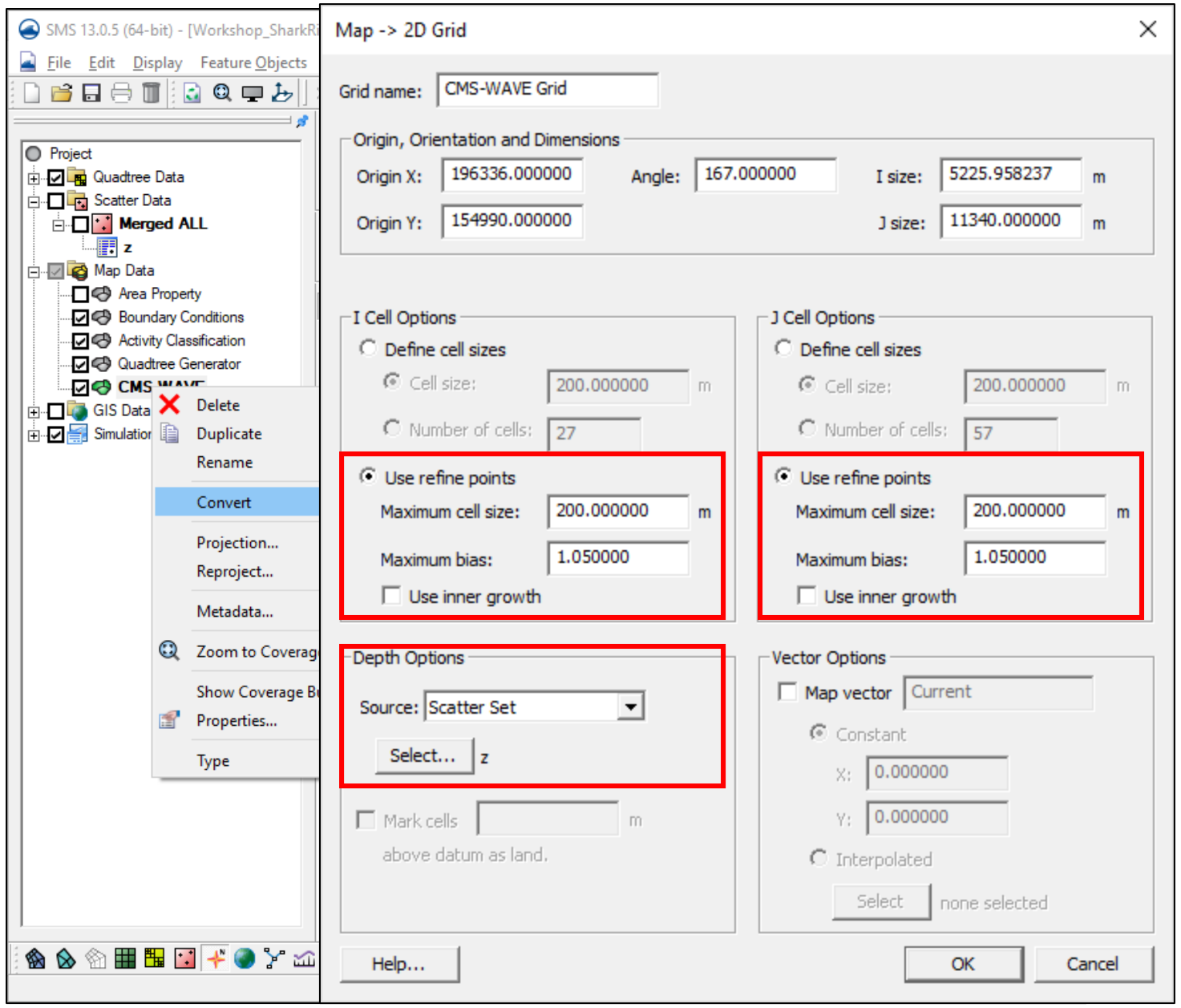



Resolution for Cartesian Grids is done with “refine points”.

- Create feature points.
- Then select | right-click and set node attributes

- You can set refinement in:
  - I-direction
  - J-direction
  - Both
- Refinement starts at feature point center and increases outward.

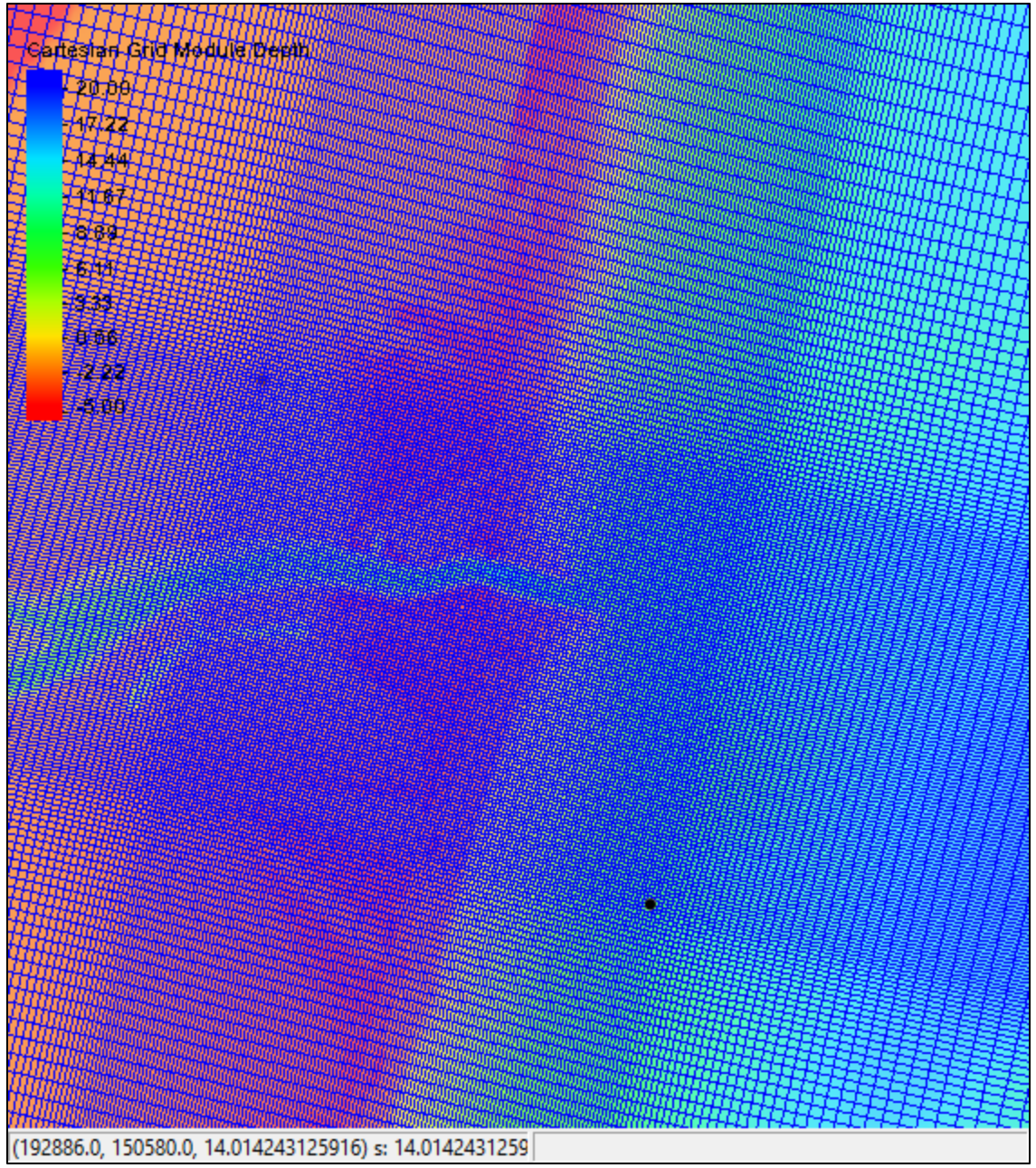
# Create Cartesian Grid



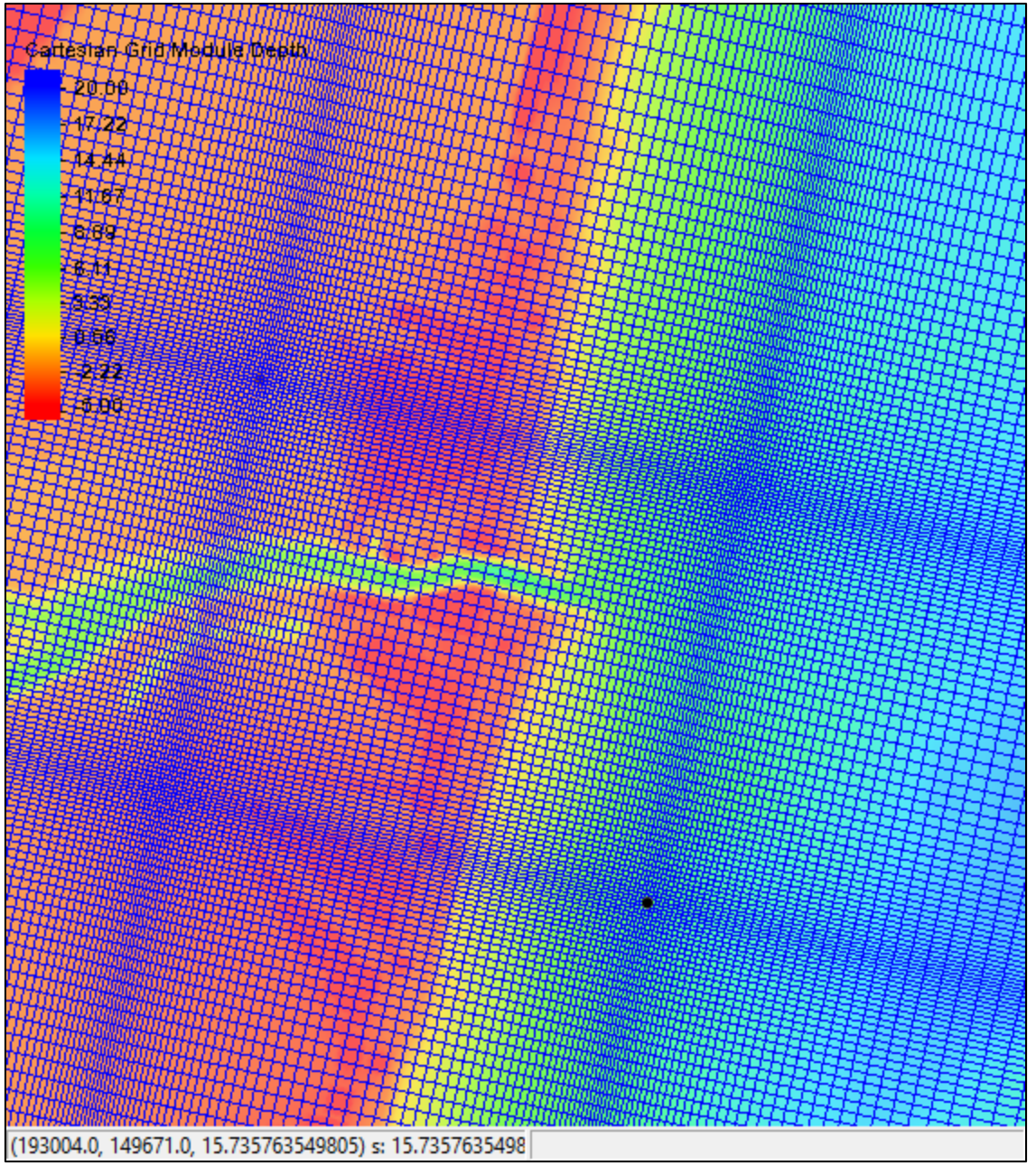

- Right-click on CMS-Wave coverage in data tree
- Convert | Map -> 2d Grid

- Use refine points
- Maximum cell size – the size of the largest cells away from refine points.
- Maximum bias – determines how fast the increase in cell size away from refine points.
- Use inner growth – Unchecked, keeps cell resolution small until the next/last refine point.

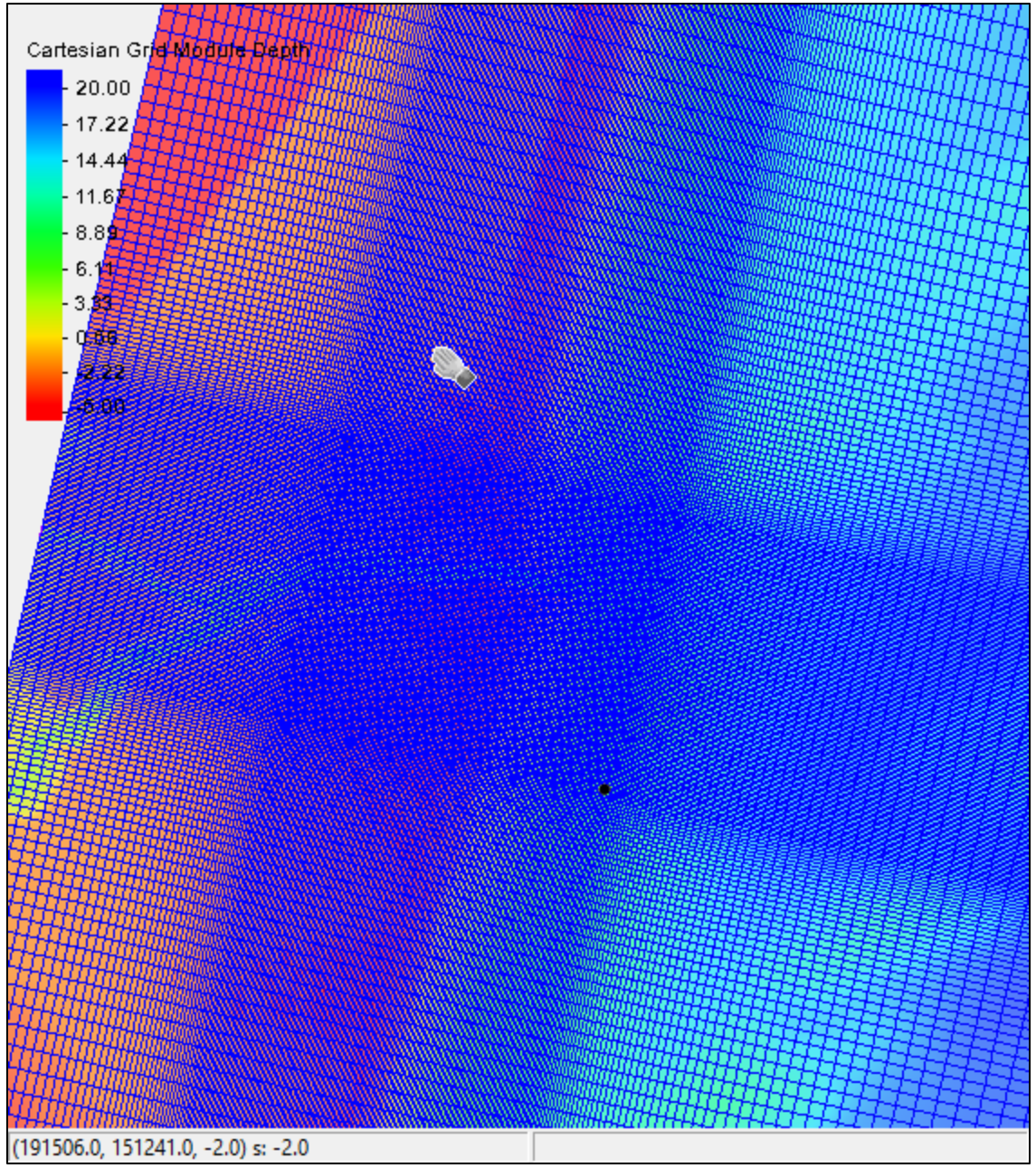
Inner Growth - unchecked



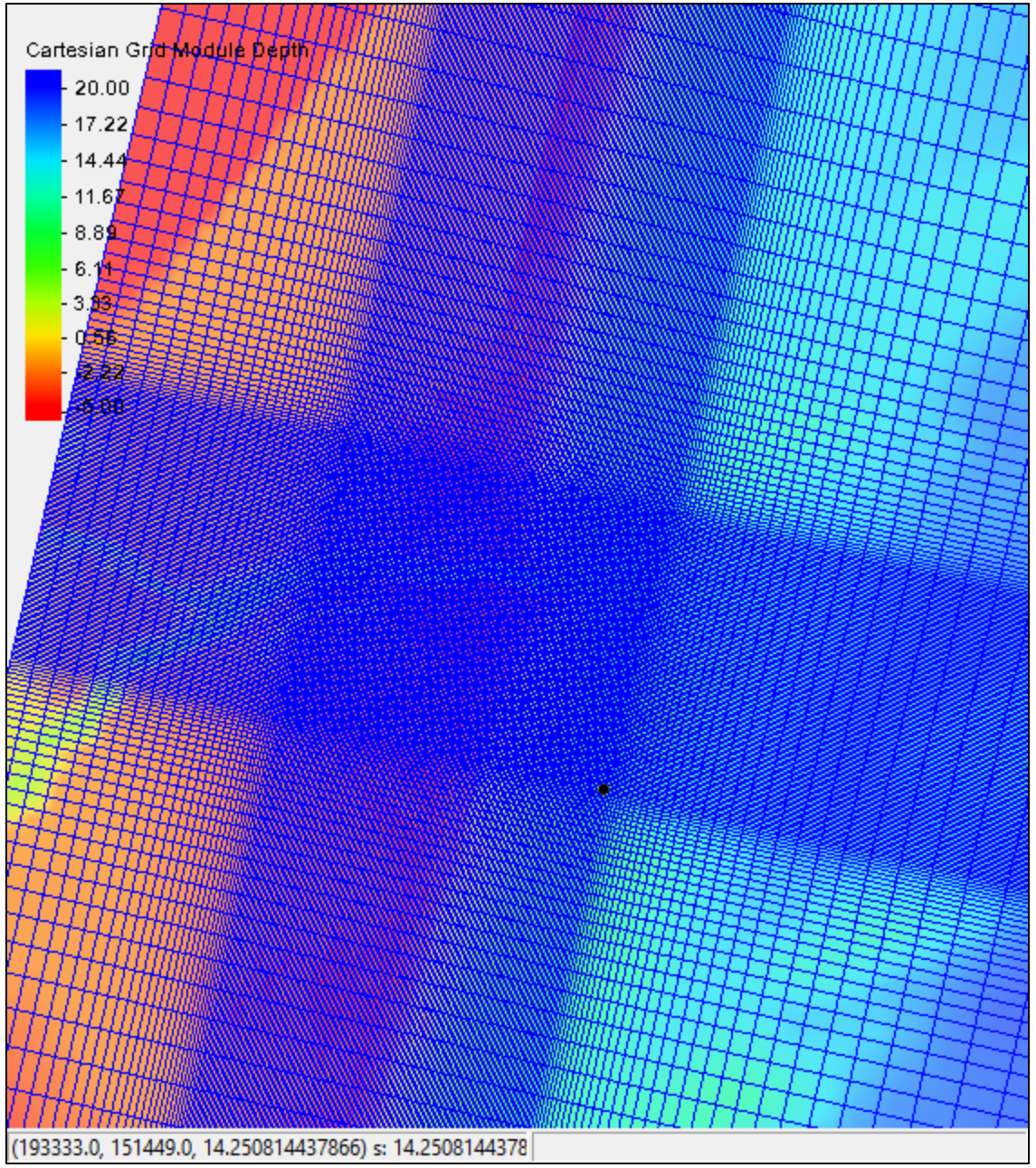

Inner Growth - checked



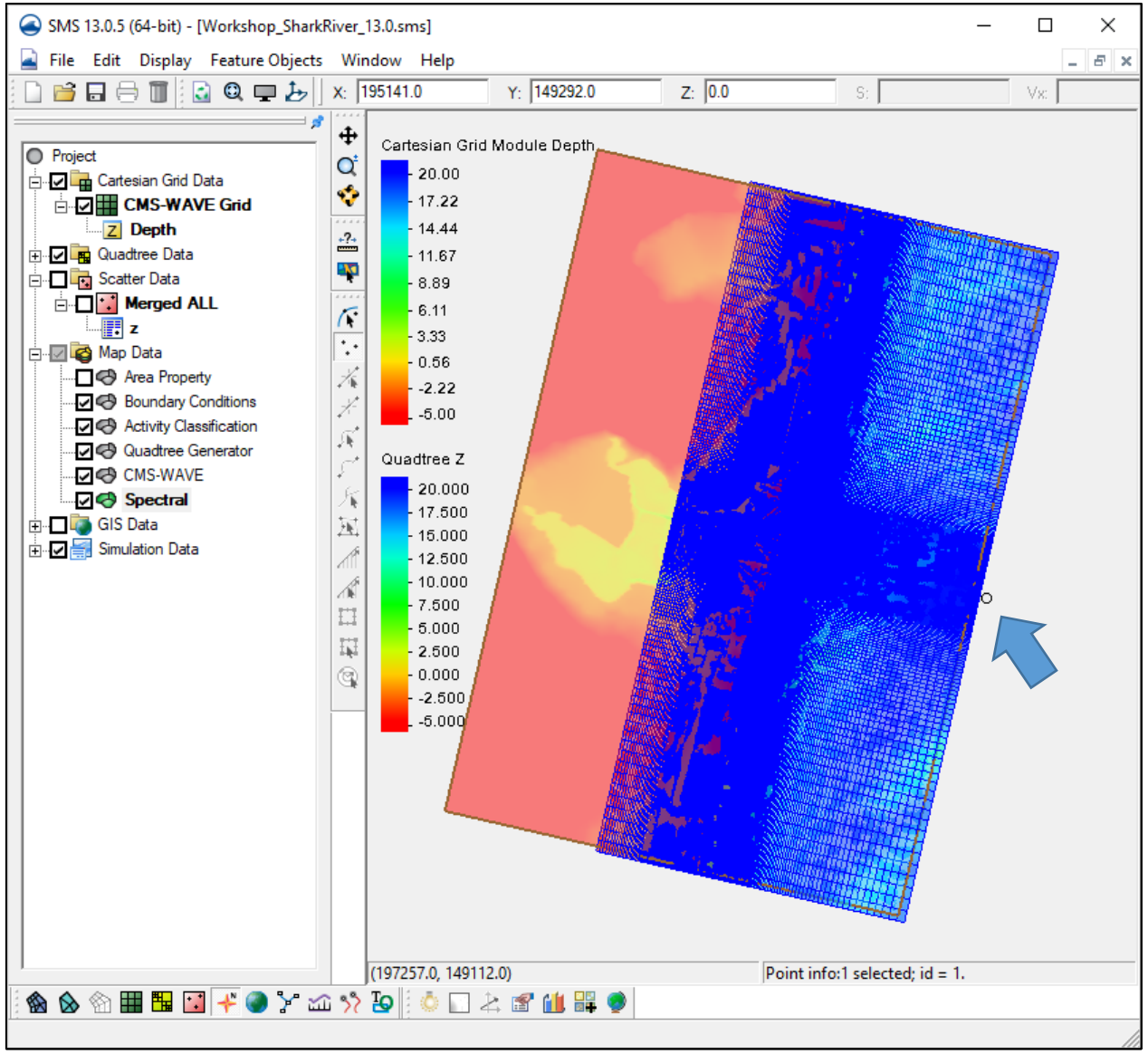
Bias – 1.05




Bias – 1.10



# Spectral Input

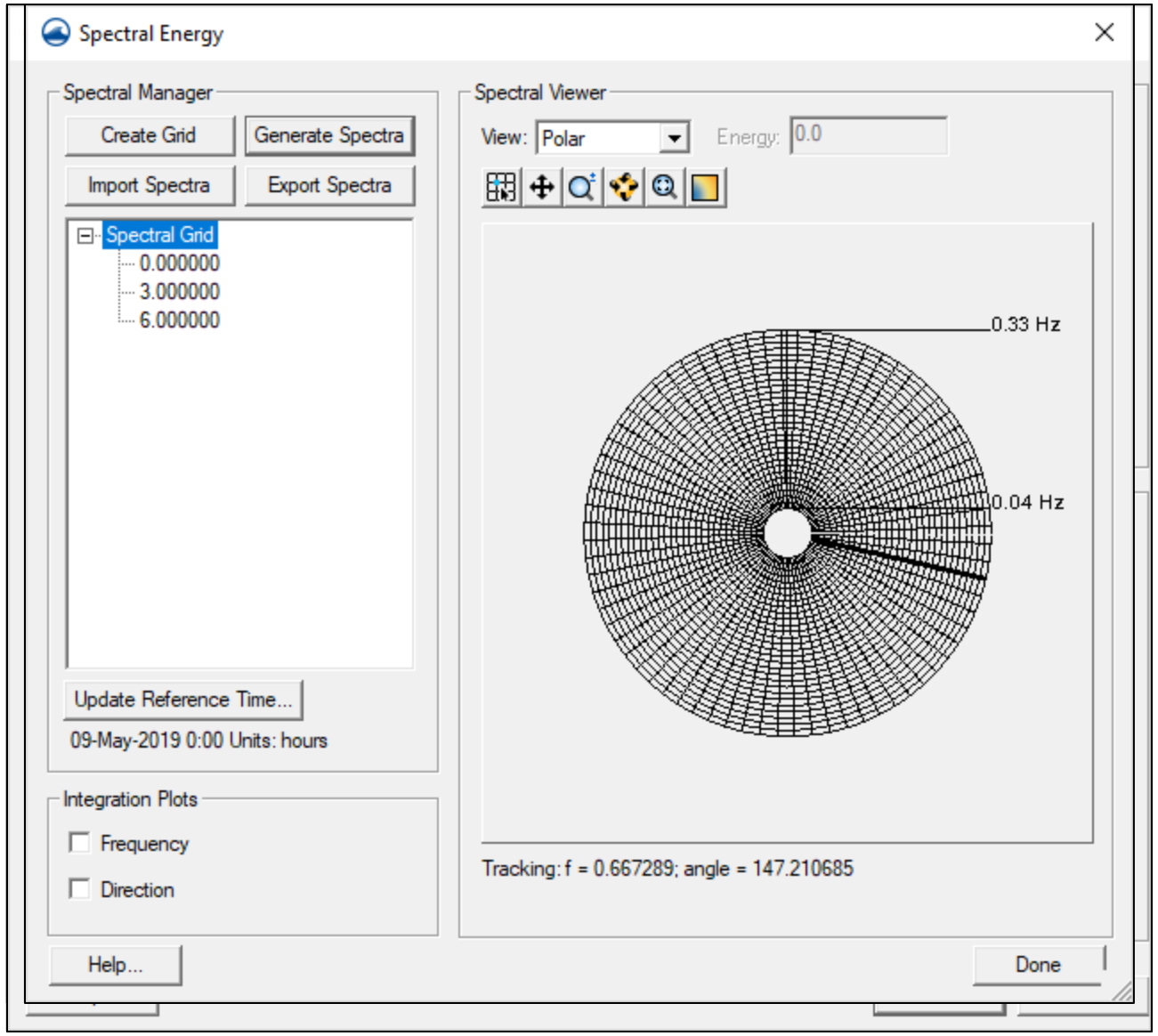



Project files saved at this point in – Day4/2-afterWaveCreate folder

- Turn on display of Quadtree grid to see both

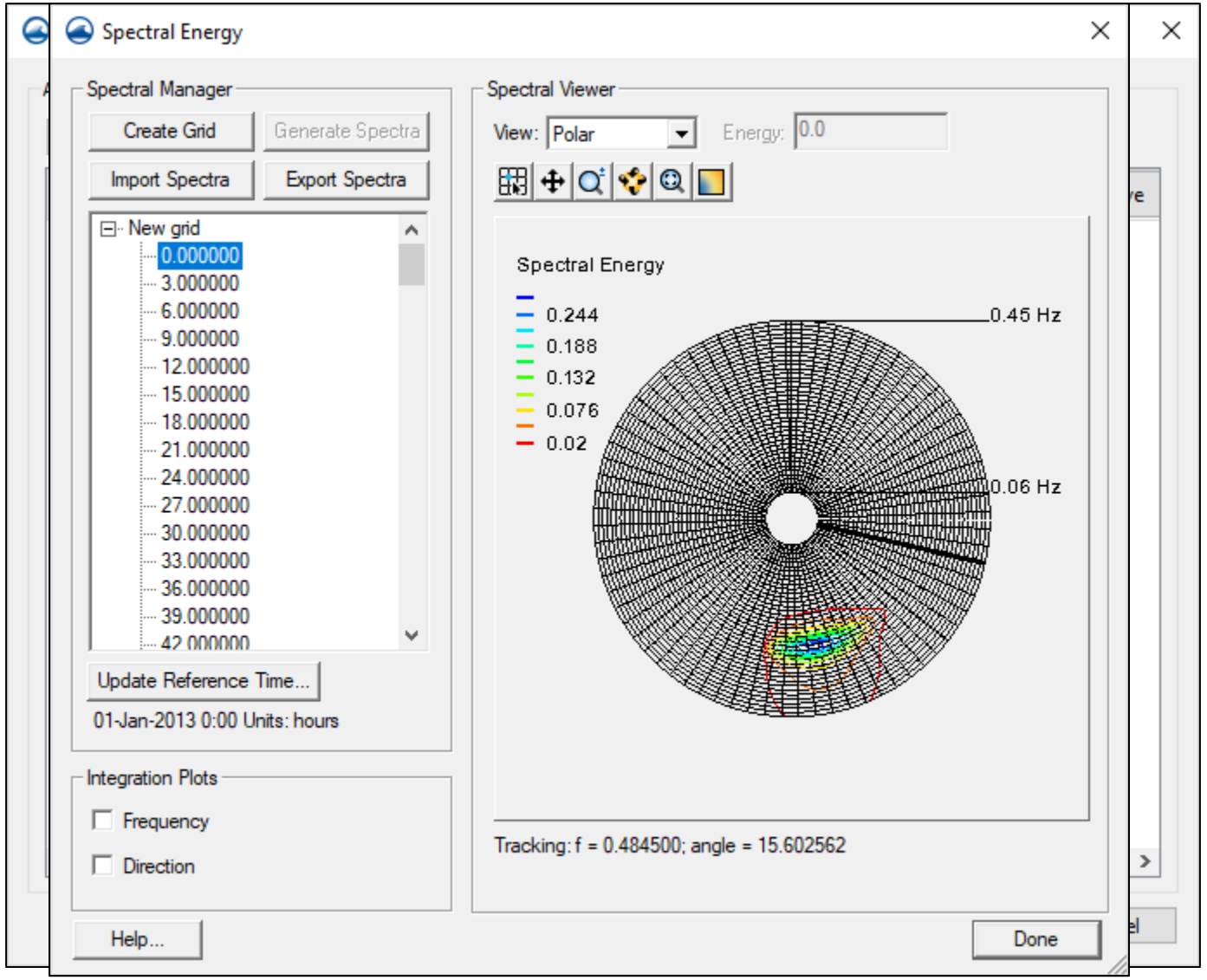
- Add Spectral Coverage to Map Module
  - Right-click on “Map Data”
  - New Coverage
  - Generic | Spectral
- Add Feature Point for spectral information (normally middle of offshore edge)

# Simple Spectral Input




- Select point
- Right-click | Node Attributes
- Click Create Grid
  - Enter 167 degrees
  - Select “Local”
  - Click OK
- Click OK on Spectral Energy Grid dialog
- Click Generate Spectra
  - Enter Spectral Parameters
  - Enter offshore depth (~20 m)
  - Click Generate

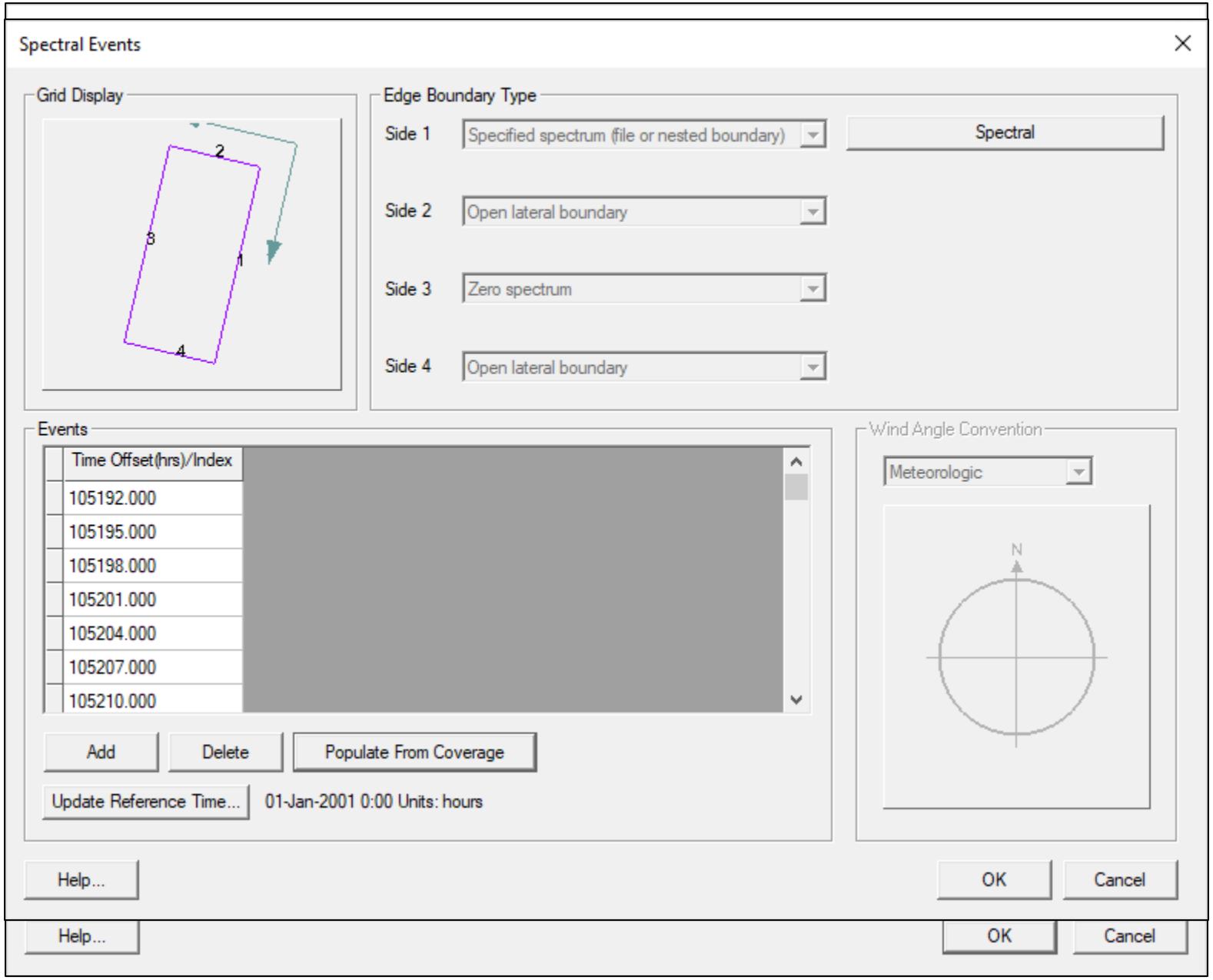
# Spectral Input from Gauge/WaveNet




There are tools to take information from gauges and buoys (CDIP/WW3/NDBC) and put in correct CMS-Wave format. We will discuss some of these in the Advanced Webinar.

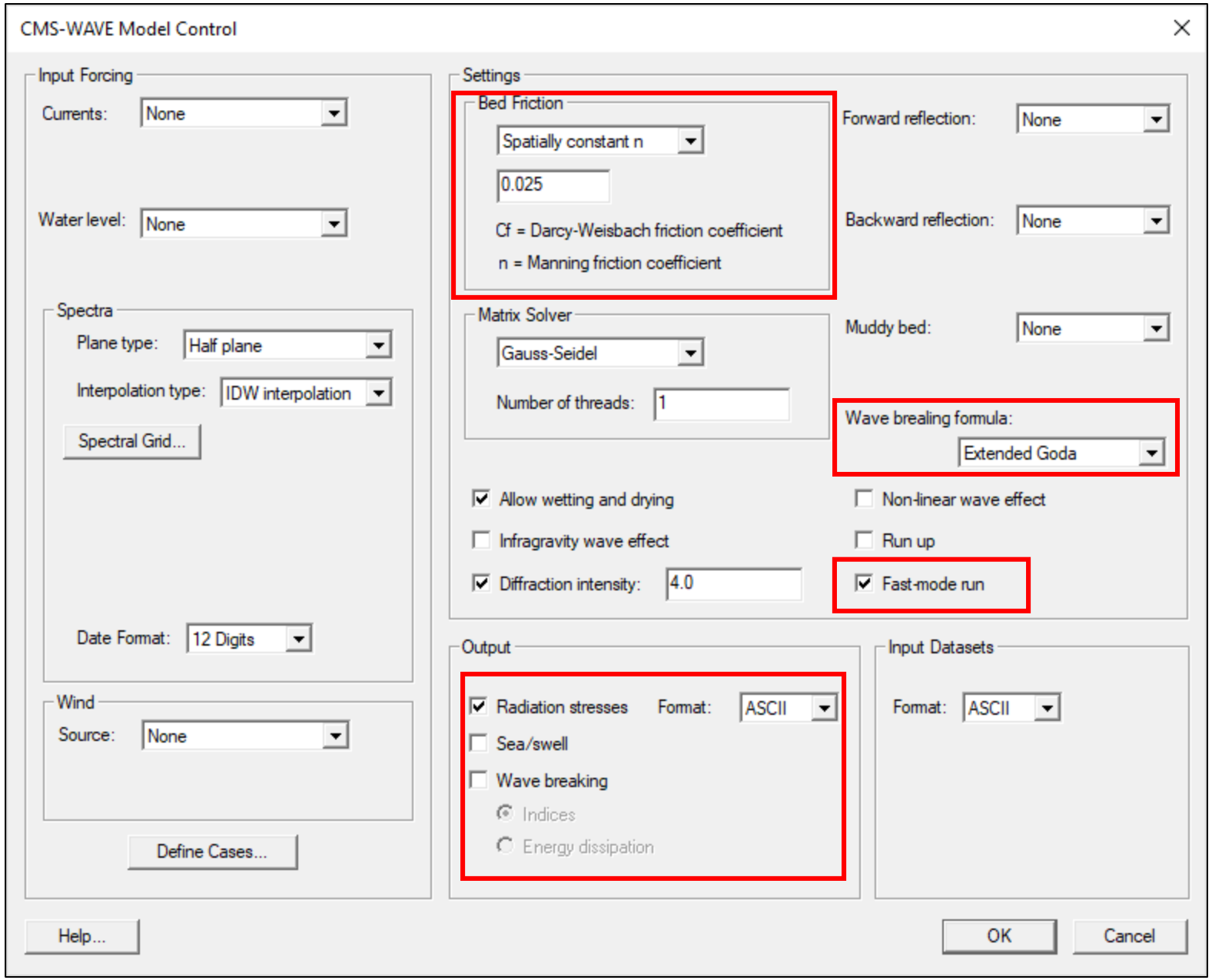
- Import Spectra
  - CMS-Wave (*.eng) file
  - Choose .eng file from “WaveSpectra” folder
  - Import
  - Click OK on “Open Files” box
  - Enter 167.0 for degrees

# CMS-Wave Model Control




- Left click on CMS-Wave grid to select it
- CMS-WAVE menu option appears
- Under CMS-WAVE, choose Model Control
- Click Spectral Grid under Spectra section, and click OK
- Click Define Cases at bottom left
  - For Side 1, choose “Spectral” Coverage
  - Update reference time to start date of run (1/1/2001)
  - Populate From Coverage
  - Click OK

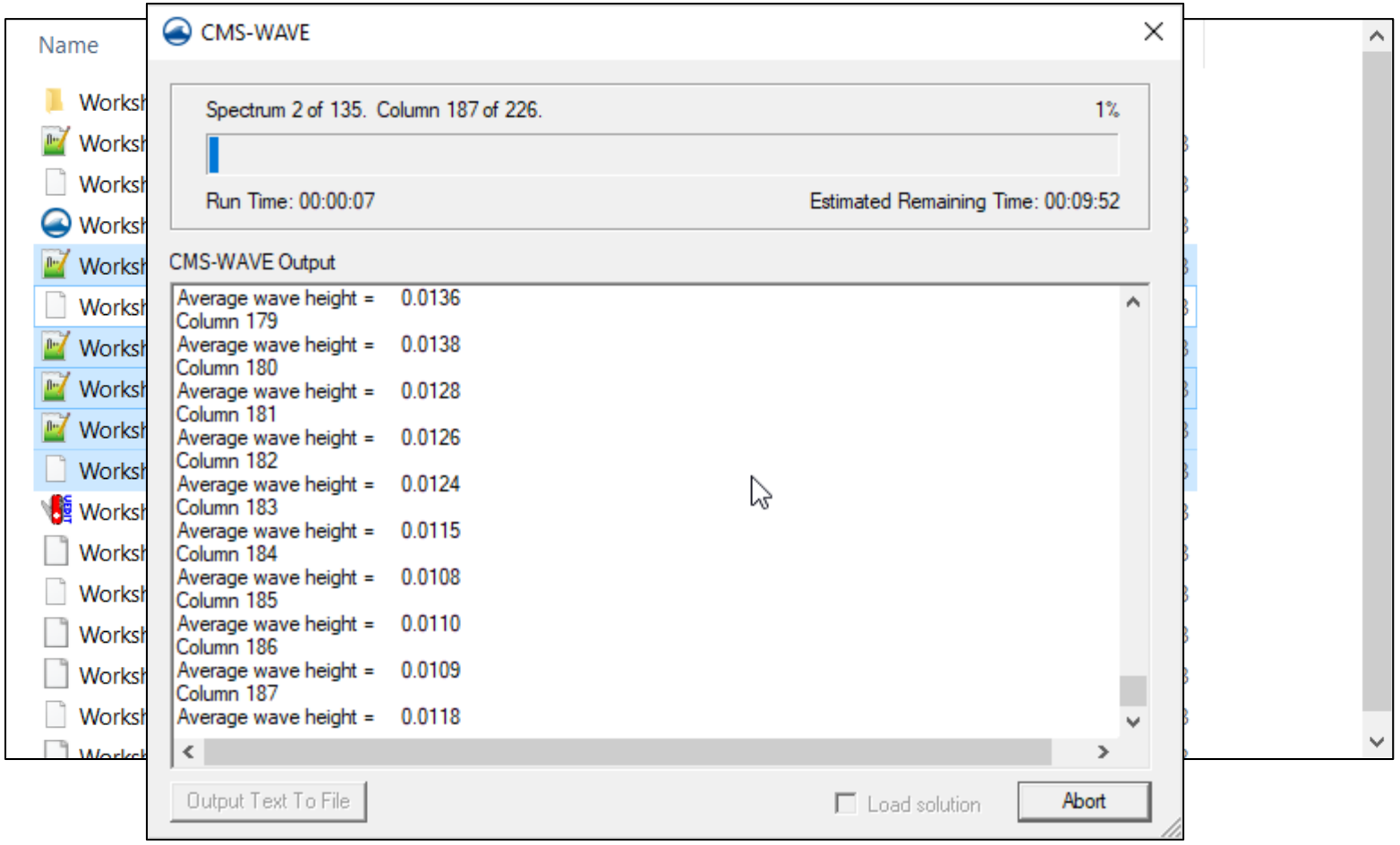
# CMS-Wave Model Control




Modify options in Model Control as desired

- Bottom Friction type/value
- Wave breaking type
- Fast mode ON|OFF
- Extra output datasets

Click OK




Save Project

Export CMS-Wave Files

- CMS-Wave menu | Export

Launch CMS-Wave

- CMS-Wave menu | Launch