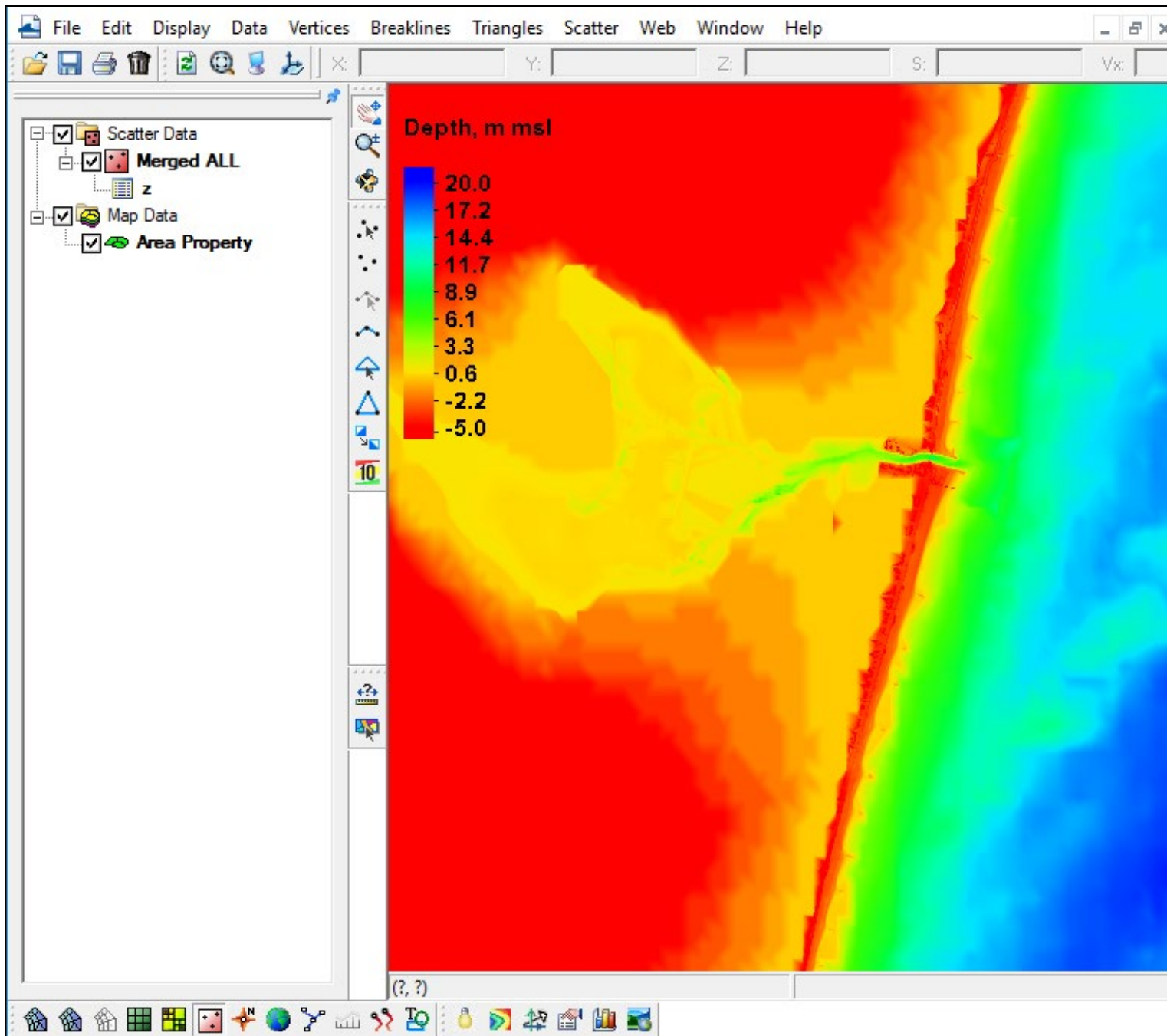
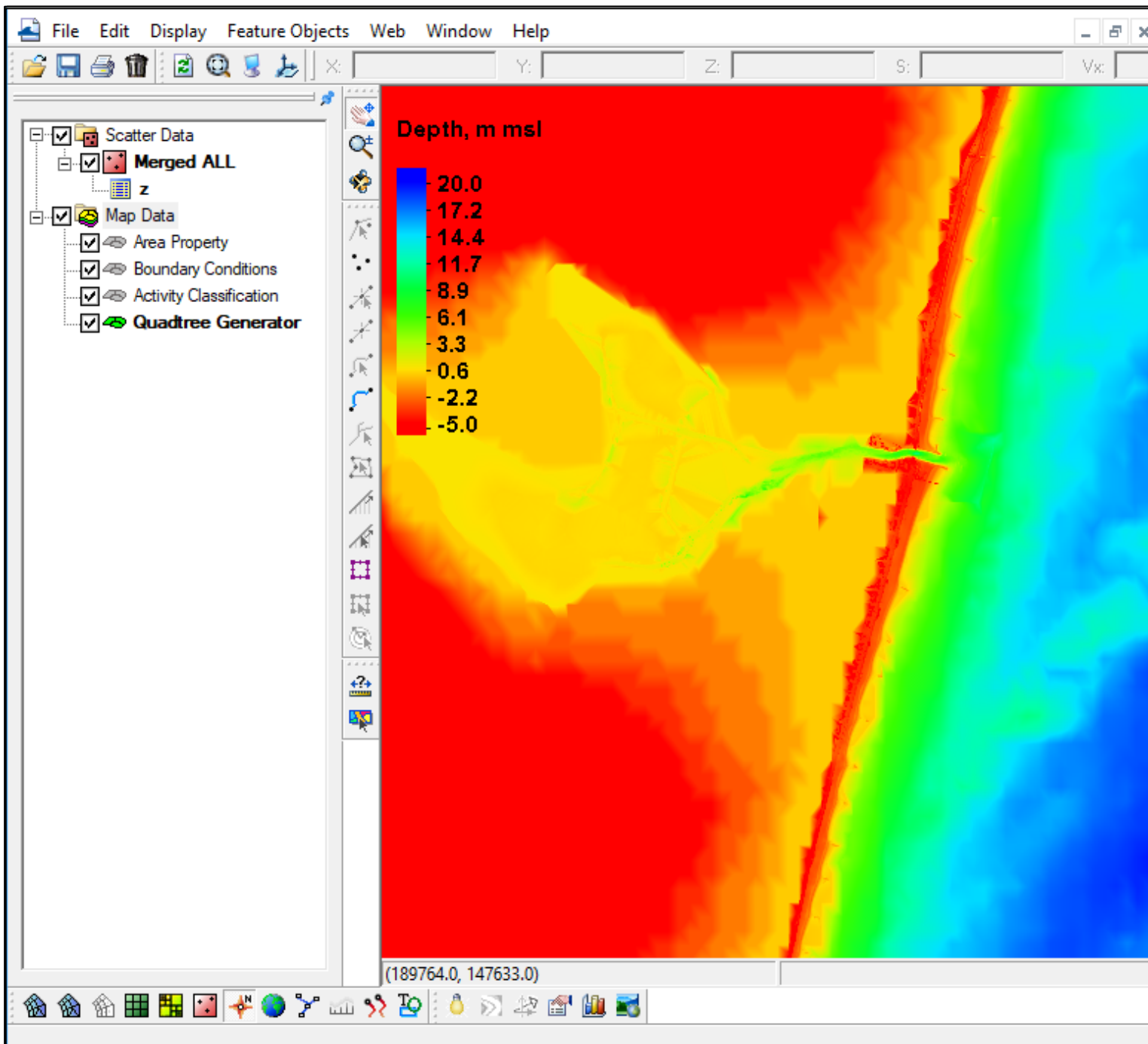


Creating a CMS simulation

- Load Bathymetry Scatterset/SMS Project
- Develop Grid Domain
- Activity Dataset (Land/Water)
- Build Quadtree or Cartesian grid frame
- Boundary Conditions



Old survey datasets in project are not necessary once the final merged bathymetry is set. Others can be removed from project.

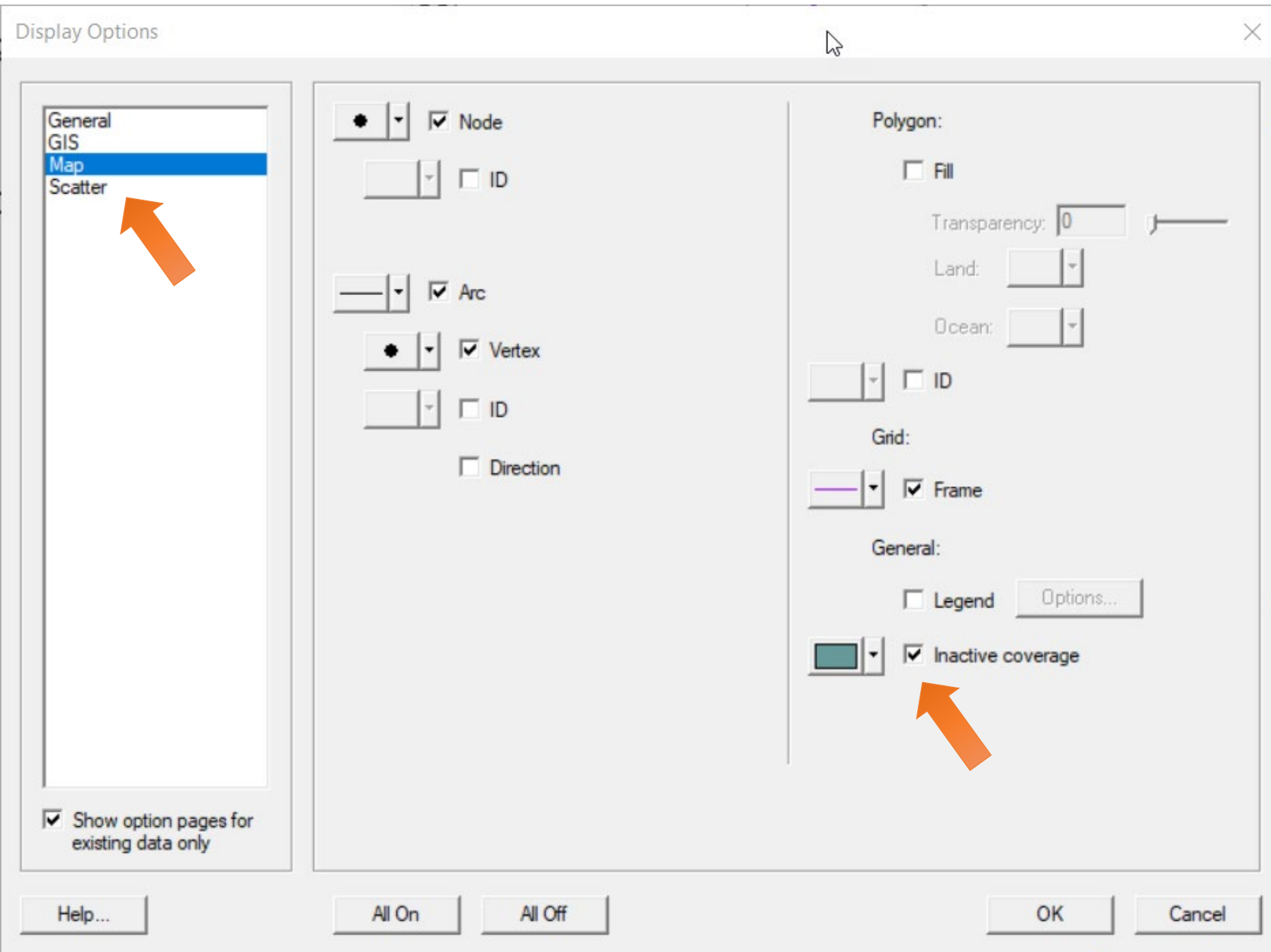


Add New Coverages for CMS

- Models | CMS-Flow | Boundary Conditions
- Generic | Activity Classification

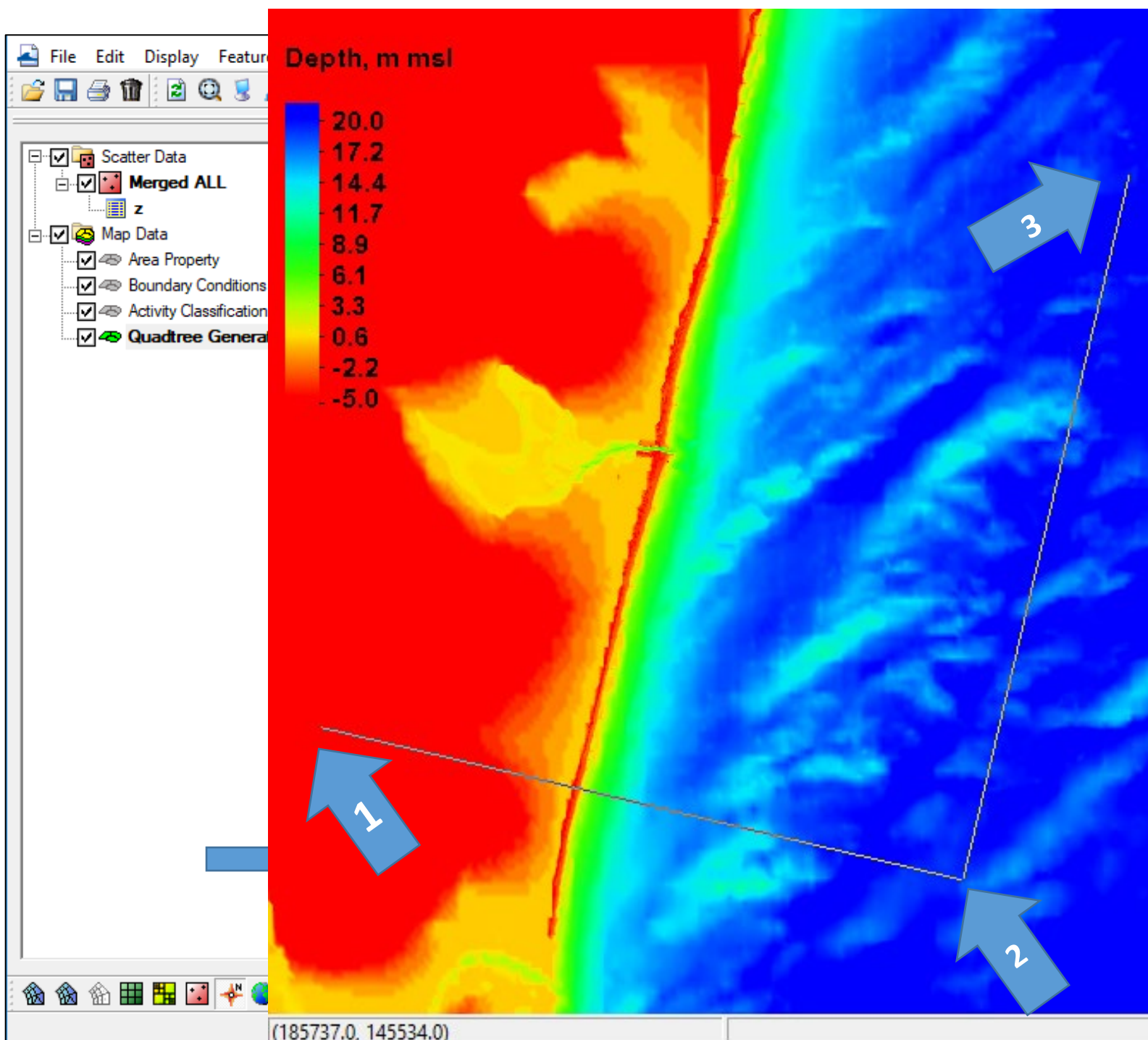
Depending on whether you want to use a Quadtree or Cartesian grid, choose one of the following:

- Generic | Quadtree Generator
- Generic | CGrid Generator



Since there are several coverages that will be used from the Map Module, we will want to see some of the information from other coverages while we work on some others.

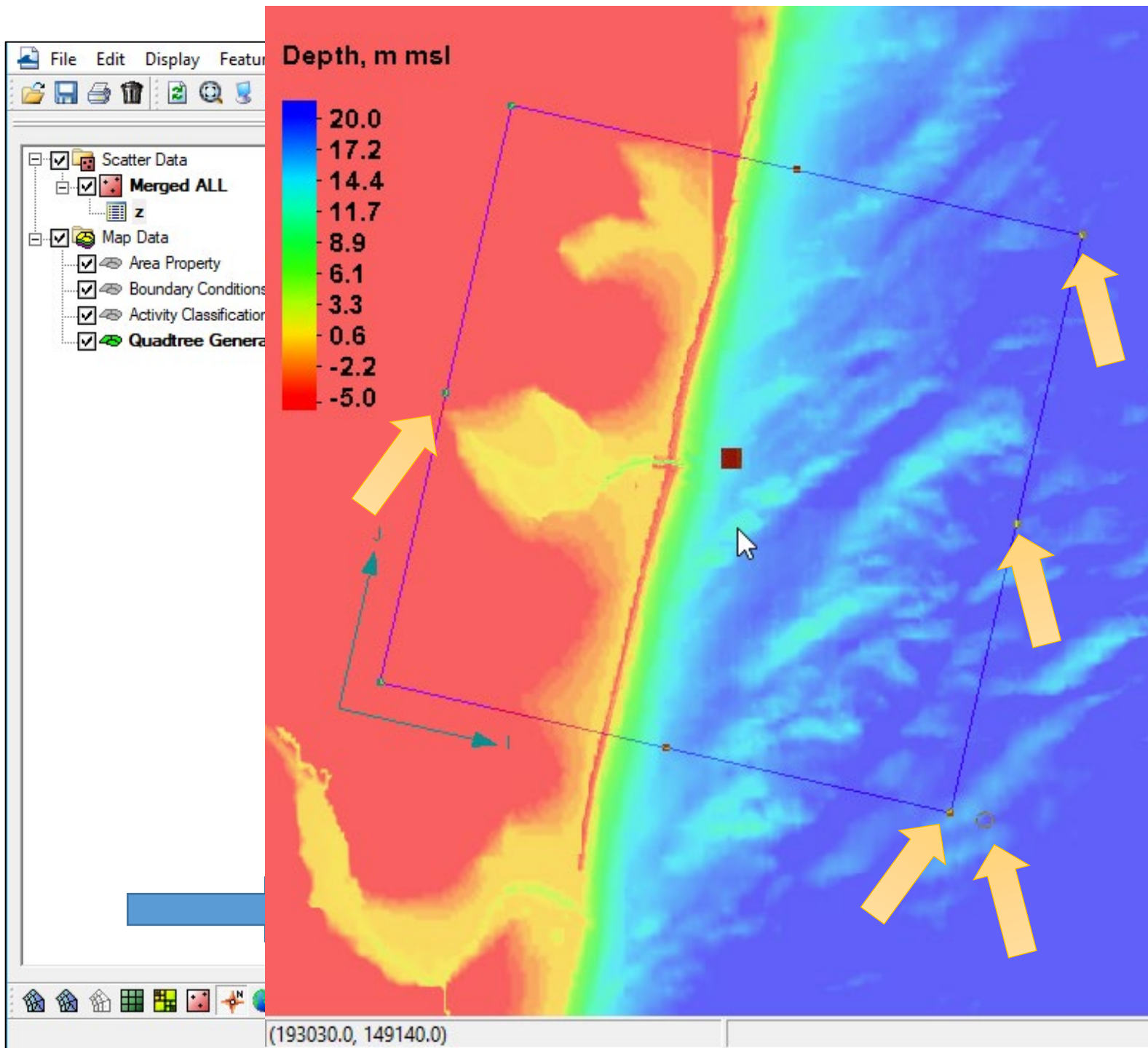
- To enable this, choose Display | Display Options
- Click Map from the options on the left, then place a check in the box named “Inactive coverage” from the options on the right.



- Select Quadtree/CGrid Generator Coverage
- Select Create Grid Frame tool

- Define domain of CMS grid by clicking three points (order or extreme accuracy is not necessary)

- Grid Frame is built but may be partially hidden from view by filled display contours.
- Making contours semi-transparent can help.



- 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.

Grid Frame Properties

Origin, Orientation and Dimensions

Origin X: 186200.000000 Angle: 347.000000 I size: 7630.000000 m

Origin Y: 145780.000000 J size: 11100.000000 m

I Cell Options

☒ Define cell sizes

☒ Cell size: 10.000000 m

☐ Number of cells: 763

☐ Use refine points

Maximum cell size: 10.000000 m

Maximum bias: 1.100000

☒ Use inner growth

J Cell Options

☒ Define cell sizes

☒ Cell size: 10.000000 m

☐ Number of cells: 1110

☐ Use refine points

Maximum cell size: 10.000000 m

Maximum bias: 1.100000

☒ Use inner growth

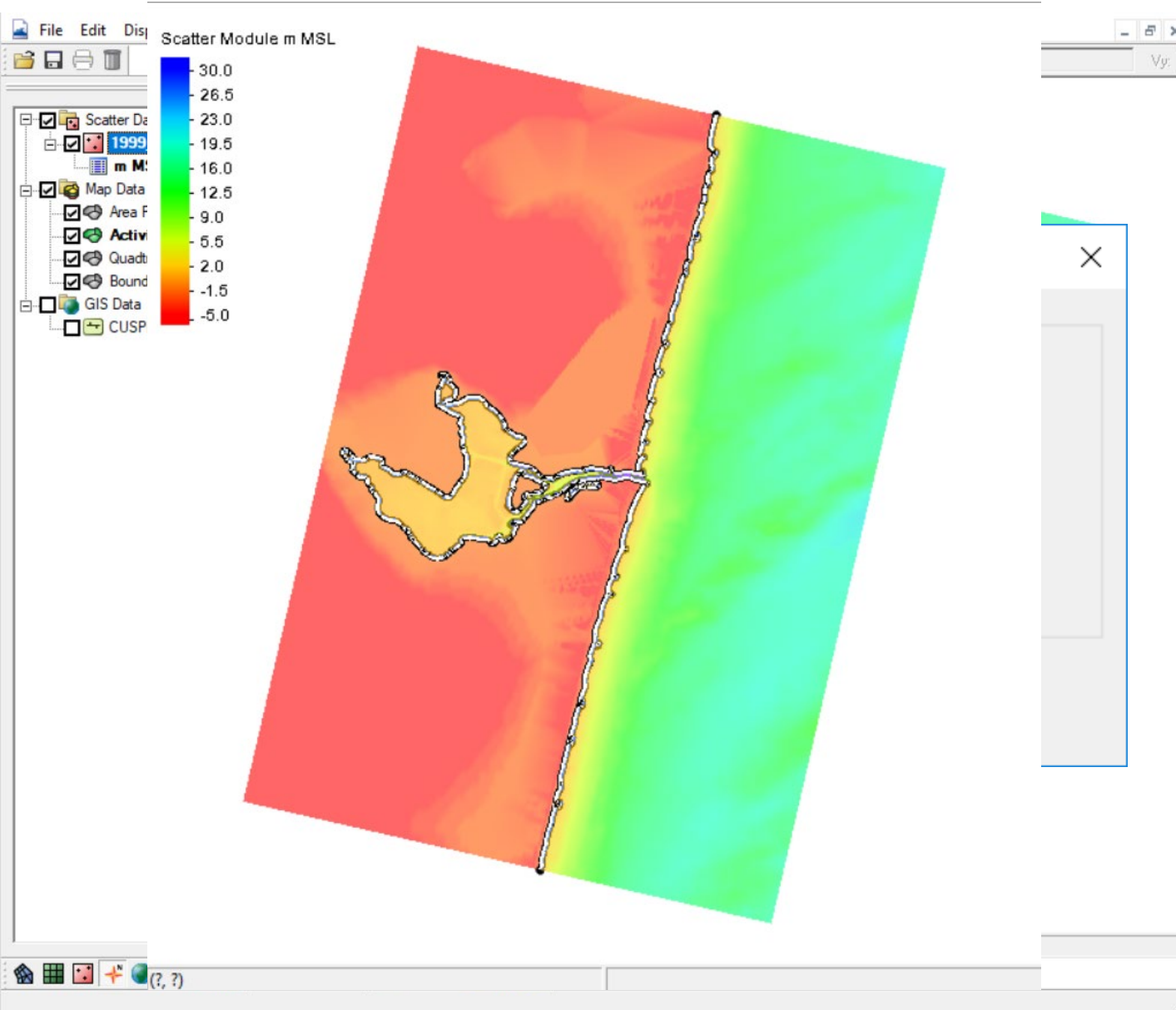
Help... OK Cancel

- Double Clicking the Grid Frame selector will bring up a property dialog.
- After experimenting with the handles and rotating, enter the values as shown in the top section only.

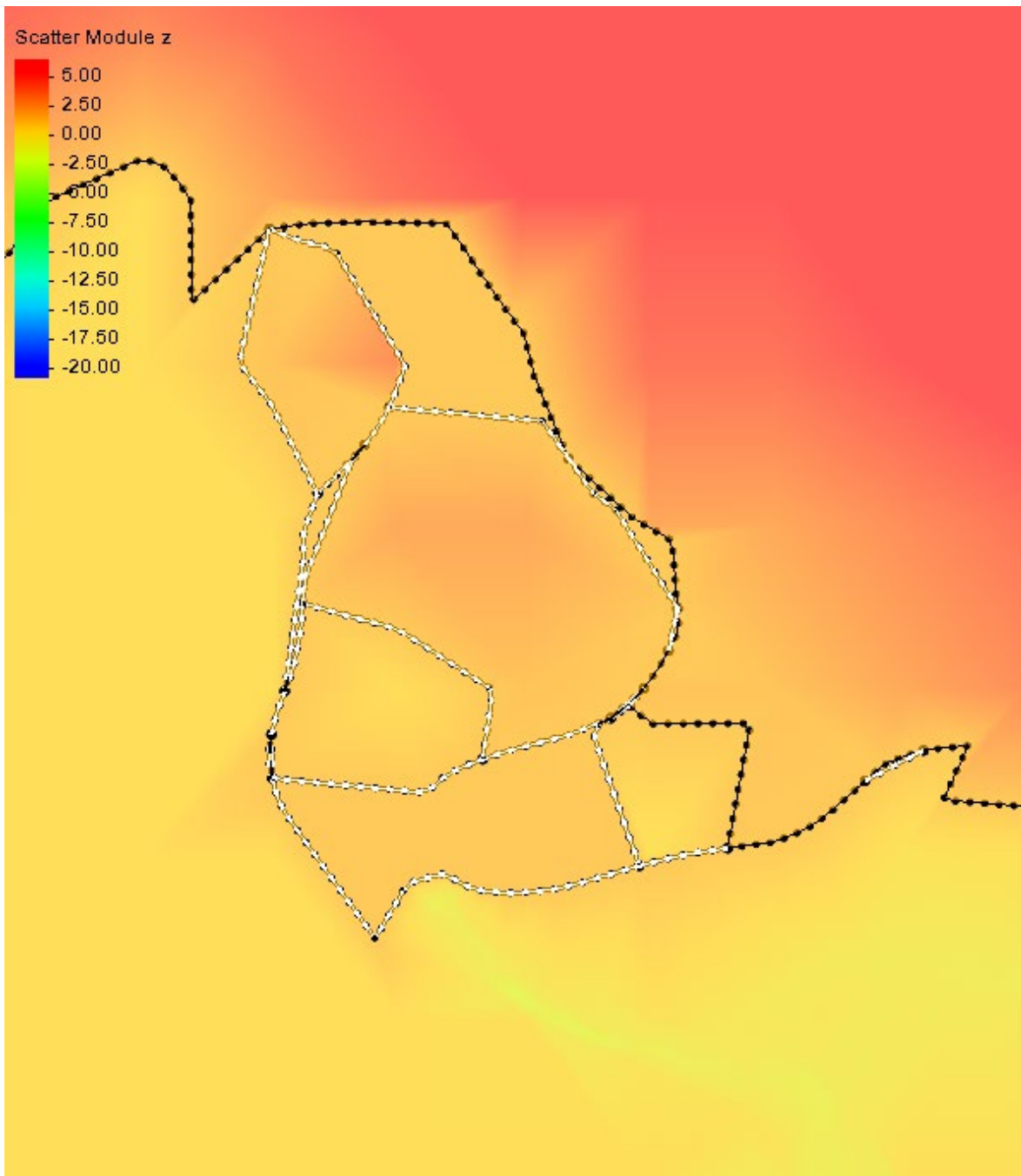
- This defines the exact origin, I and J extents and rotation angle to our desired area.

- We will come back later to add resolution for telescoping or Cartesian grids.

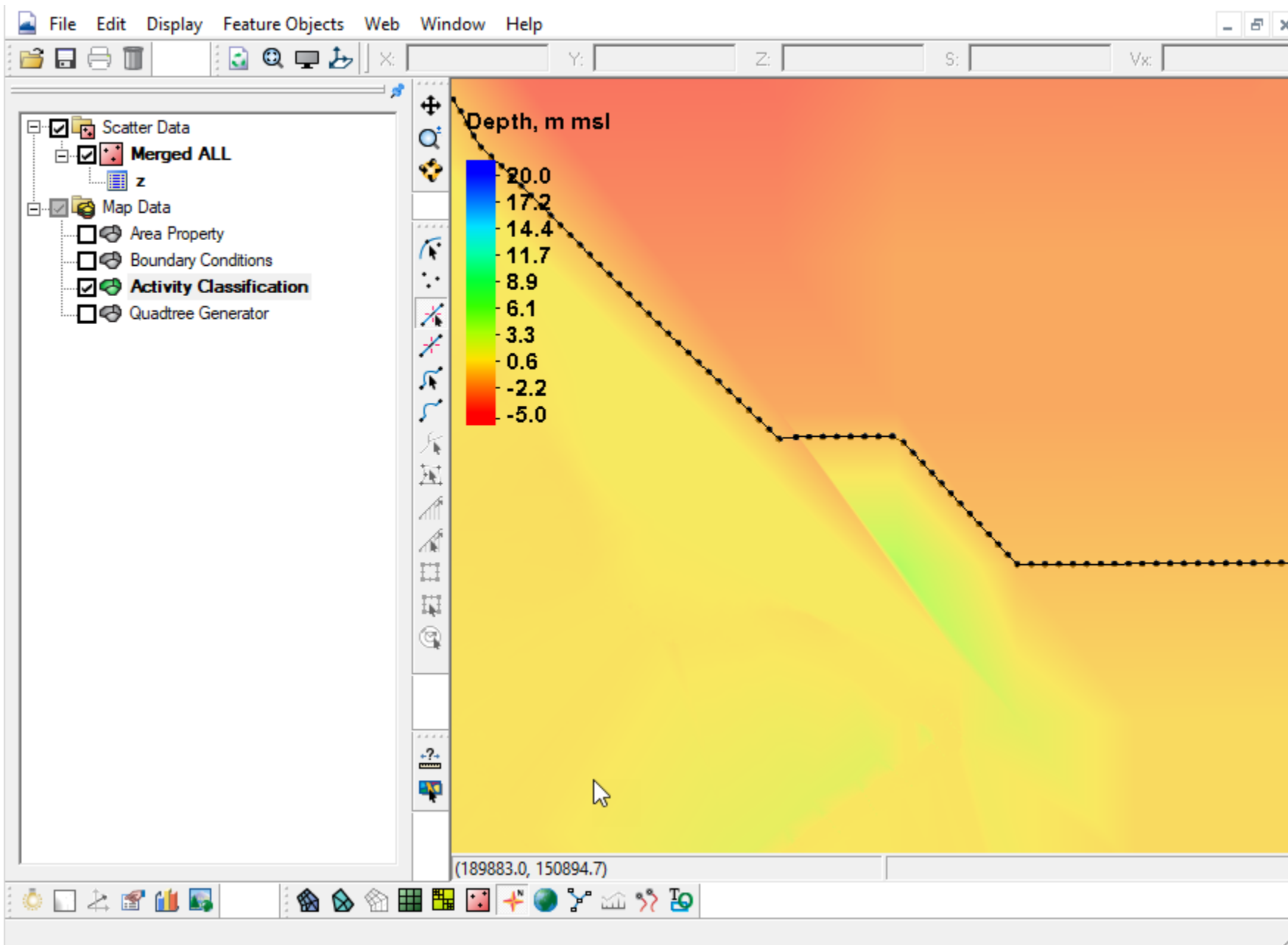
Next, we define the Land/Water interface with the Activity Classification coverage.



- Click the *Activity Classification* coverage in the Data Tree
- Right Click your final bathymetry dataset in the scatter module.
- Choose "Convert | Scatter Contours → Map"
- Destination coverage should be "Activity Classification"
- Elevation = 0 m
- Spacing = 10 m
- Note: Using 0.0 is just an example. Realistically, you would consider the tidal range and other factors when determining the land/water interface.



- Usually after the previous steps, you will need to clean up excess feature arcs.
 - Click the Feature Arc selection tool. 
 - Click the first arc you wish to remove, then click subsequent arcs while holding the Shift key down to multi-select and delete.
 - Continue for your entire domain area.
-
- To pan your screen while selecting, hold the F2 key down and drag with your mouse, then release and keep selecting.



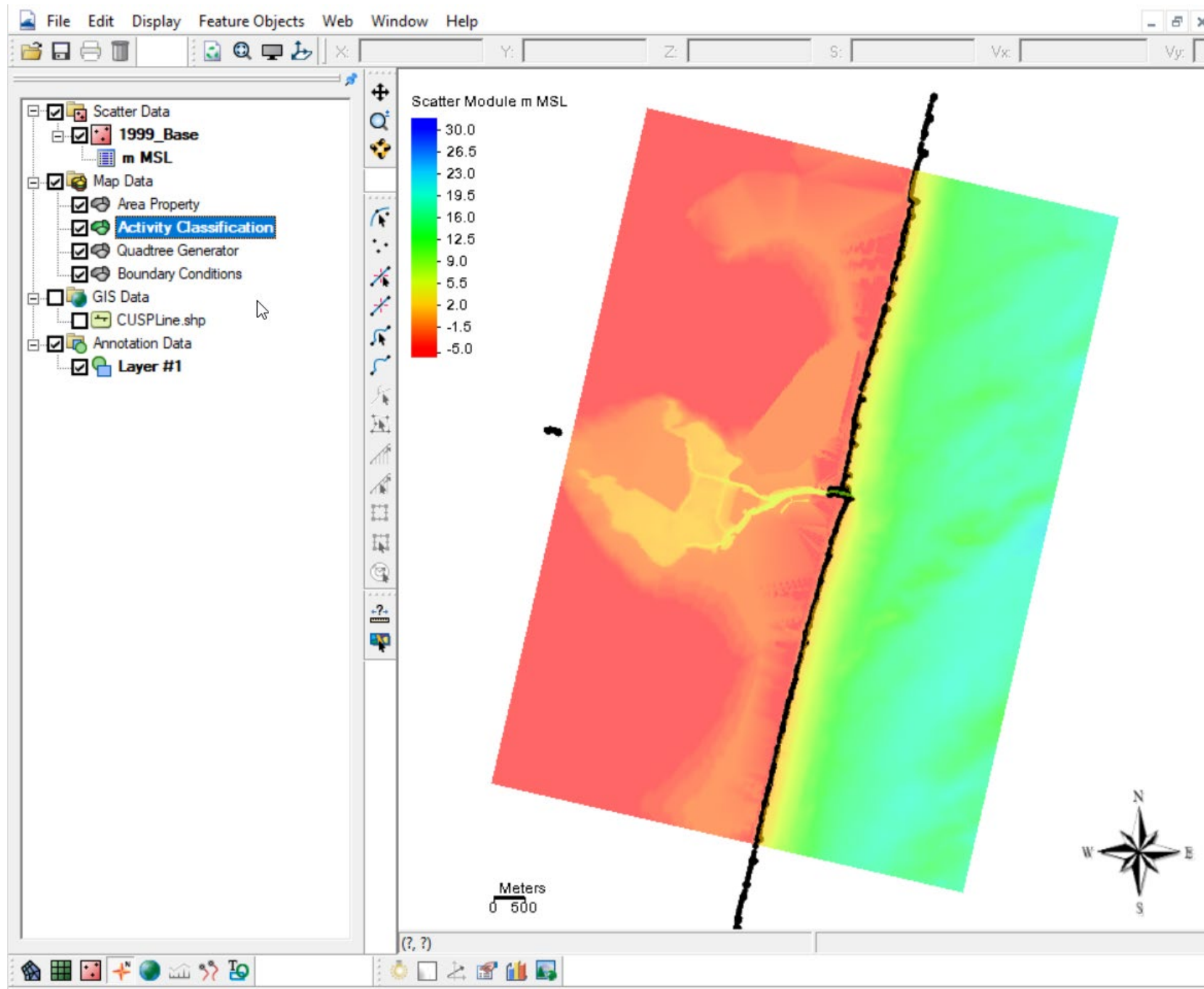
- If you want to remove some sharp angles or other points from the boundary arc, select feature vertices with the tool. 
- Once selected, hit the delete key to simplify the feature arc.

Additional way to bring in a shoreline from a Coastline database

The screenshot shows the NGS Home web application interface. At the top, there is a navigation bar with links: NGS Home, About NGS, Data & Imagery, Tools, Surveys, and Science & Education. A search bar is located on the right. Below the navigation bar, there is a map area with various tool icons (pan, zoom, download, etc.) and a 'Download' button. A tooltip indicates: 'Drag mouse across map to define a download rectangle'. A file explorer window is overlaid on the map, showing the 'Shoreline' folder. The file explorer has tabs for File, Home, Share, and View. The 'File' tab is active, showing a list of files in the 'Shoreline' folder. The files are:

Name	Date modified	Type	Size
CUSP_metadata.html	11/13/2018 3:34 PM	Chrome HTML...	68 KB
CUSPLine.dbf	11/13/2018 3:34 PM	DBF File	141 KB
CUSPLine.prj	11/13/2018 3:34 PM	PRJ File	1 KB
CUSPLine.shp	11/13/2018 3:34 PM	SHP File	13 KB
CUSPLine.shx	11/13/2018 3:34 PM	SHX File	1 KB

The 'CUSPLine.shp' file is highlighted with a red box. A blue text box on the right side of the image states: 'The ArcGIS shape file can be directly loaded into SMS for part of the coastline arcs.'

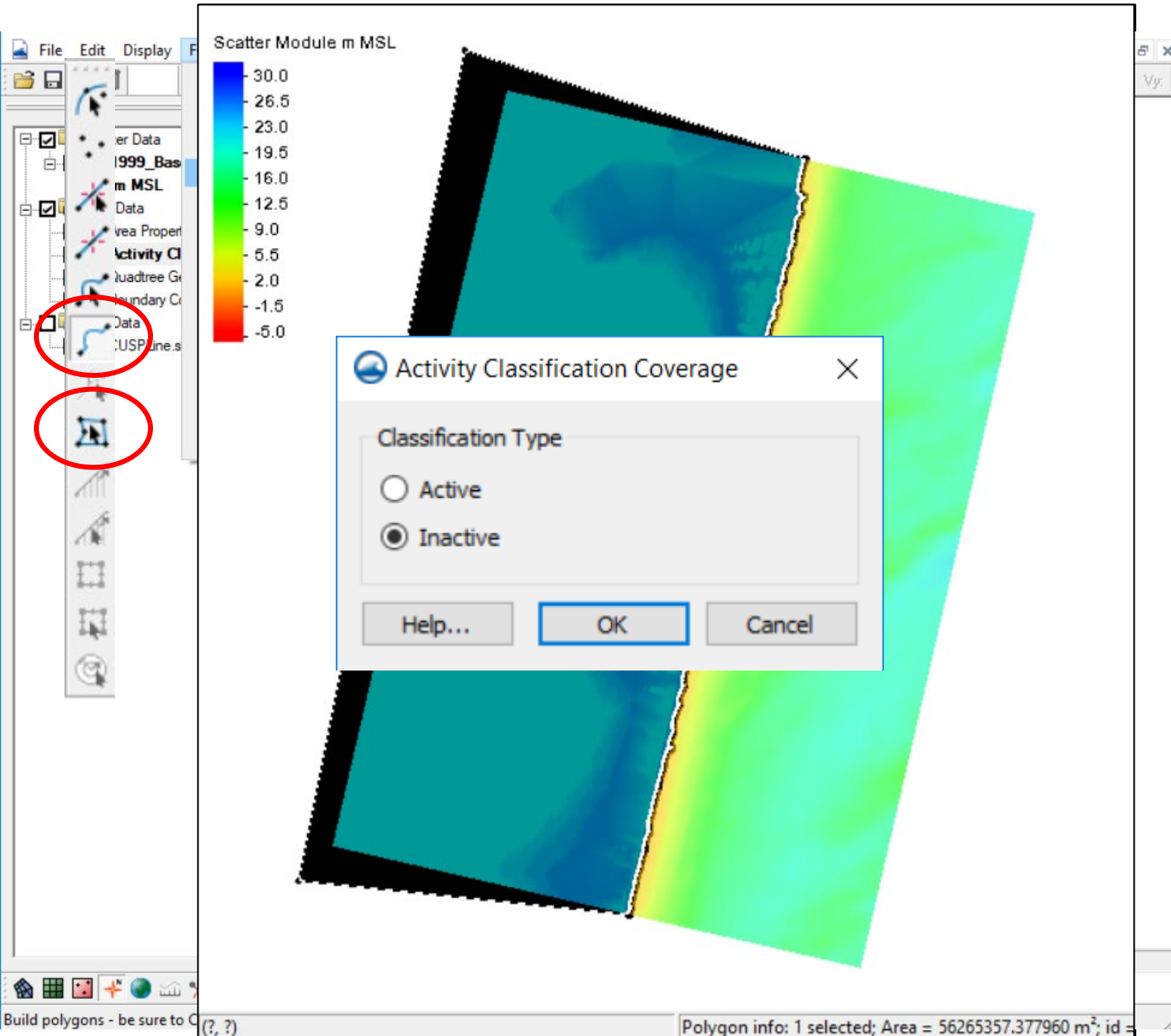


If you have an elevation dataset in the shape file to match with the coastline, it can be selected.

We will just click Finish

This is an older set of files without the full bay area. The files included in the HandsOn are complete.

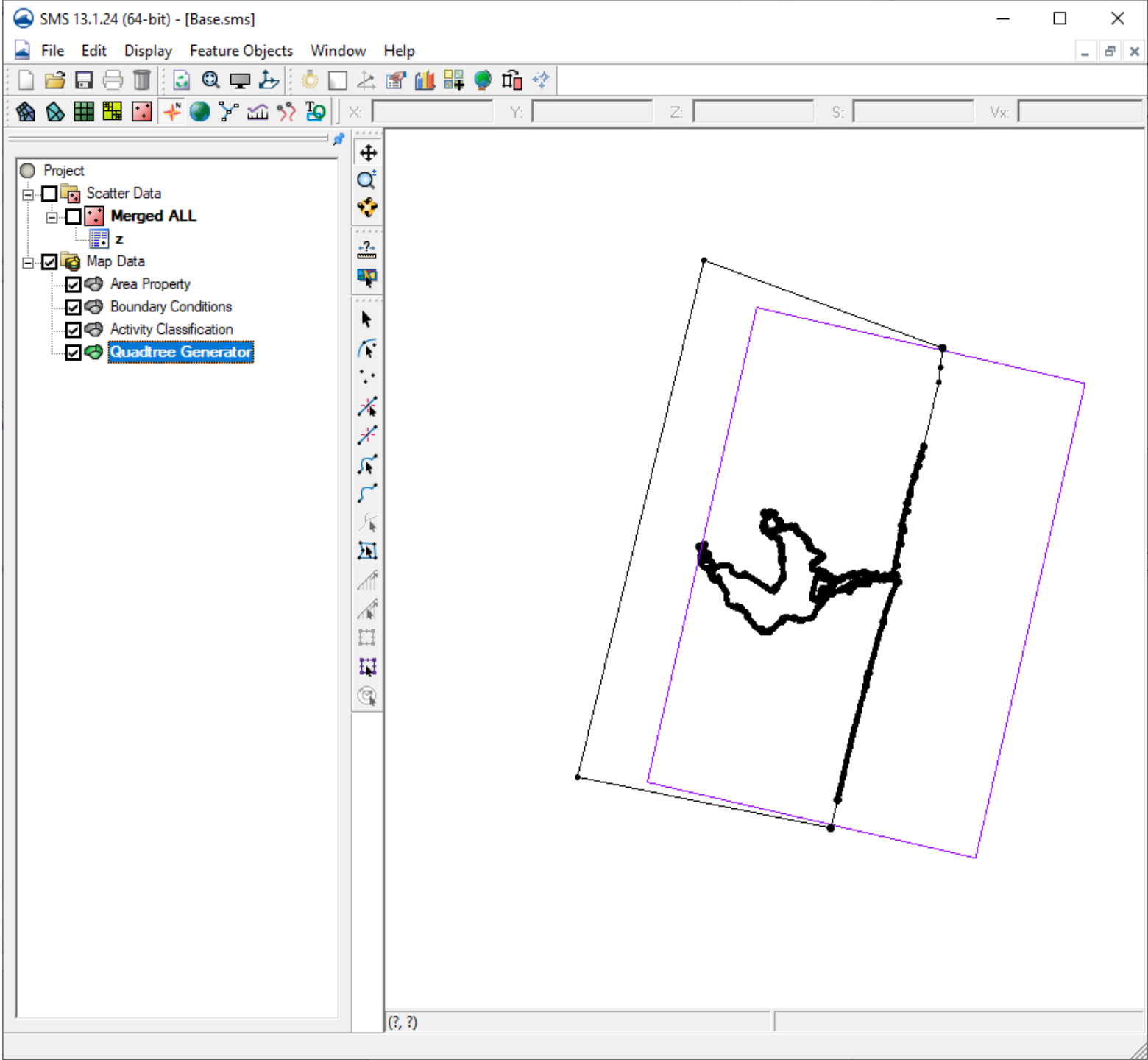
Create a polygon with coastlines to define the “land” (non-computational) area.



- With the *Activity Classification* coverage selected and active.

- Choose the Create arc tool and enclose the polygon using the existing end points of the coastline arc.

- Choose “Feature Objects | Build Polygons”
- Click the Select Polygon tool and click the land polygon.
- Right-click, then choose “Attributes” and make sure Inactive is specified for a Land area.



- Nothing has to be exact right now.
- All of this will show up better once the Quadtree or Cartesian grid has been constructed.

- Be sure and save your project. This project has been saved in the “Workshop/Initial/Aftercoastline” Folder as “Base.sms” for use in future steps.