

Working with Bathymetry

- Loading Surveys
- Horizontal Projection
- Vertical Datums
- Merging Datasets

Name

- AfterDatumConversion
- 0.75m_Contour.xyz
- 3364_0409_ft_MLW.xyz
- Channel_Survey_NJ-DEP_0609_ft_MLW
- Coastal_Relief_Model_II_m_msl.pts
- Field_Team_Measurements_0809_m_N
- LIDAR_ft_NAVD.xyz

SMS 13.0.5 (64-bit) - [untitled.sms]

File Edit Display Data Vertices Breaklines Triangles Scatter Window Help

X: Y: Z: S: Vx: Vy:

Project

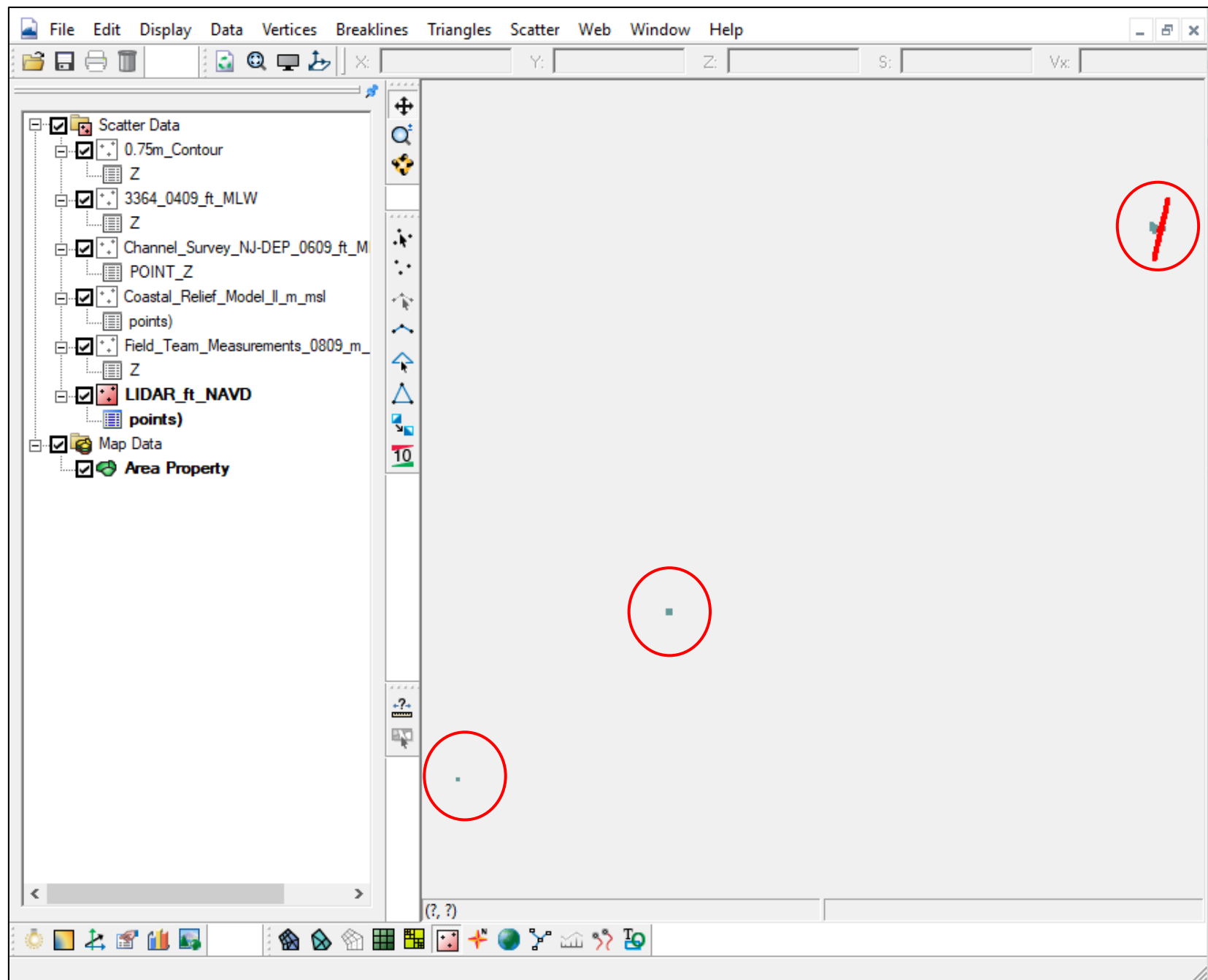
- Scatter Data
 - 3364_0409_ft_MLW
 - Z
 - Channel_Survey_NJ-
 - Z
 - Coastal_Relief_Mc
 - Z
- Map Data
 - Area Property

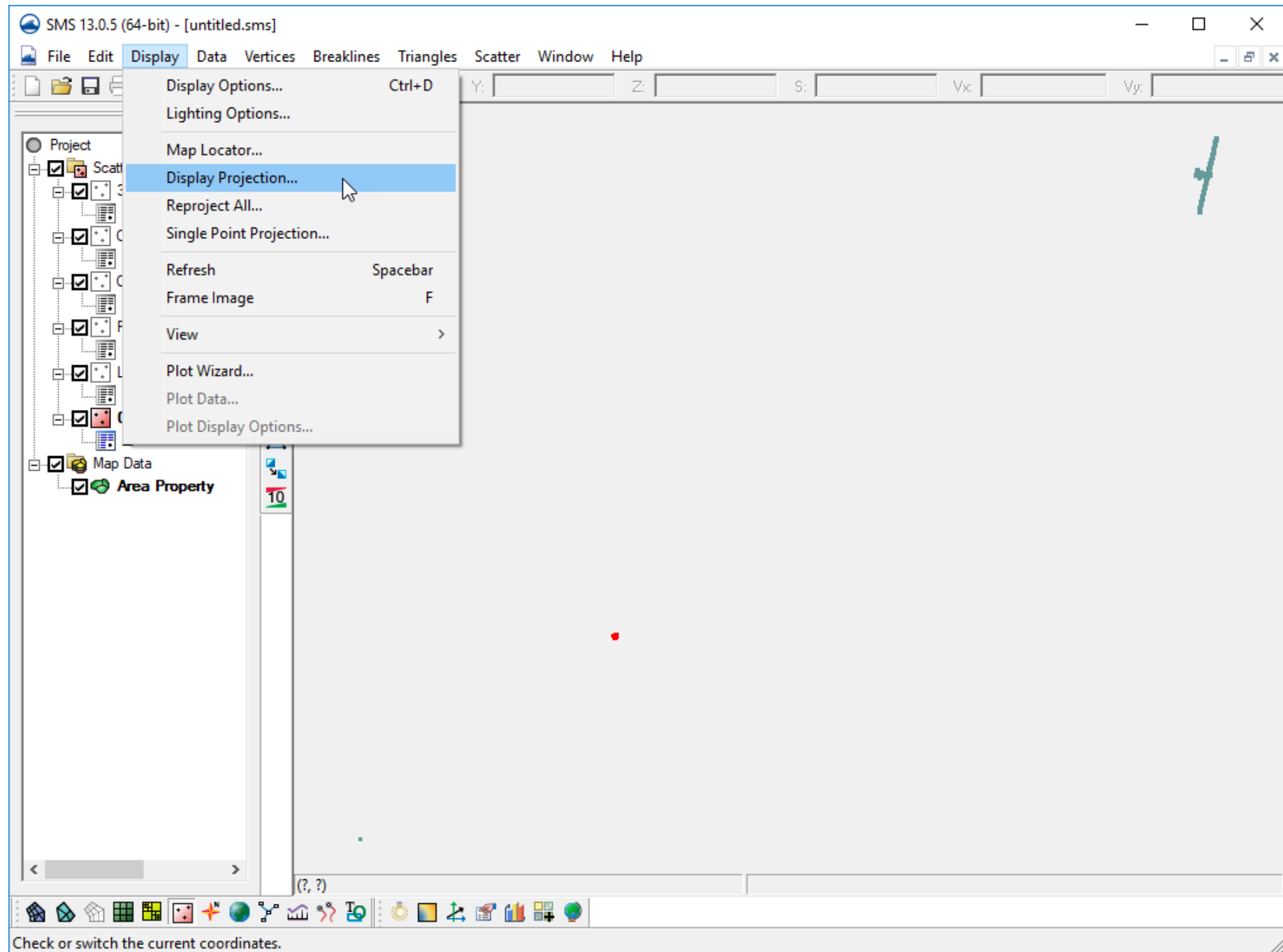
Info

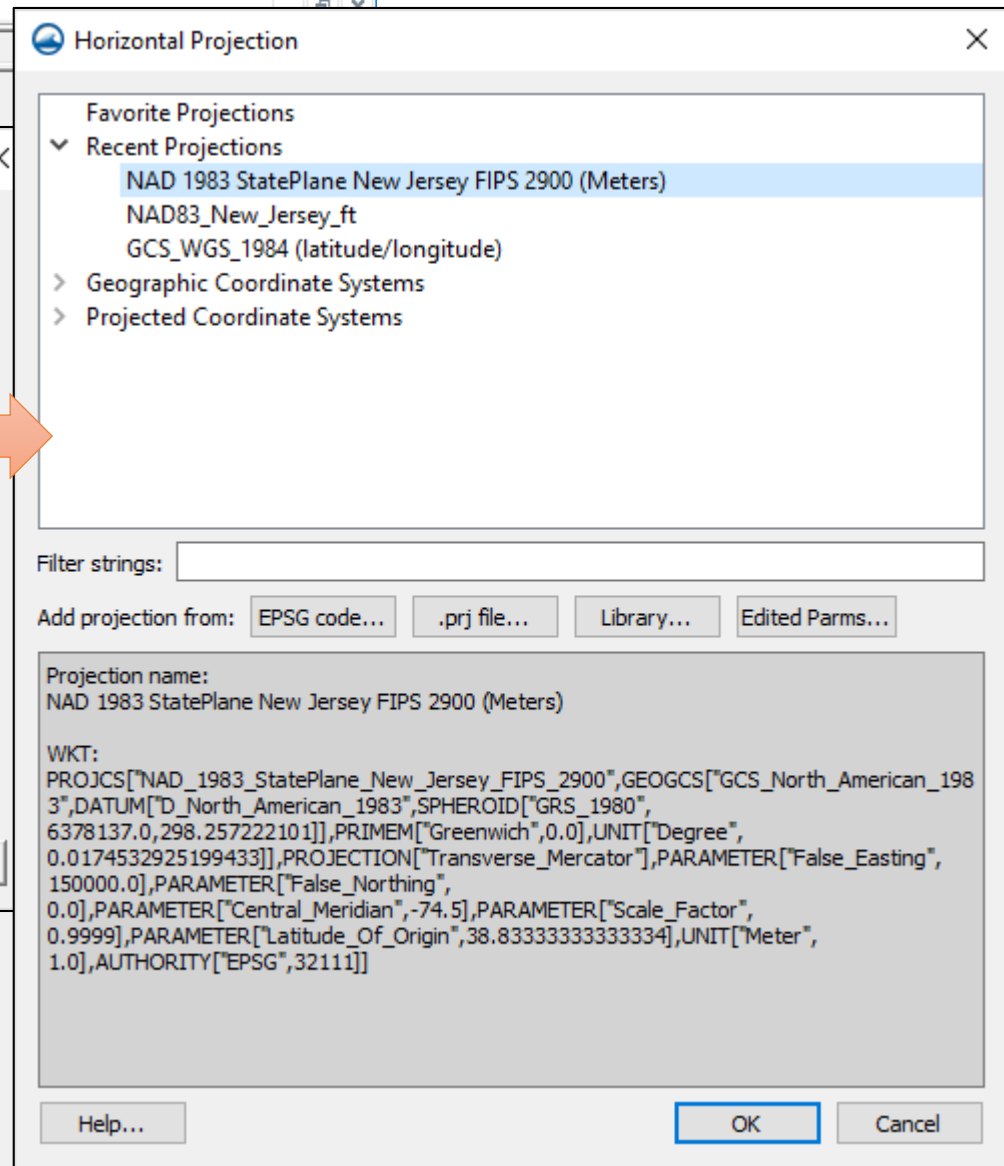
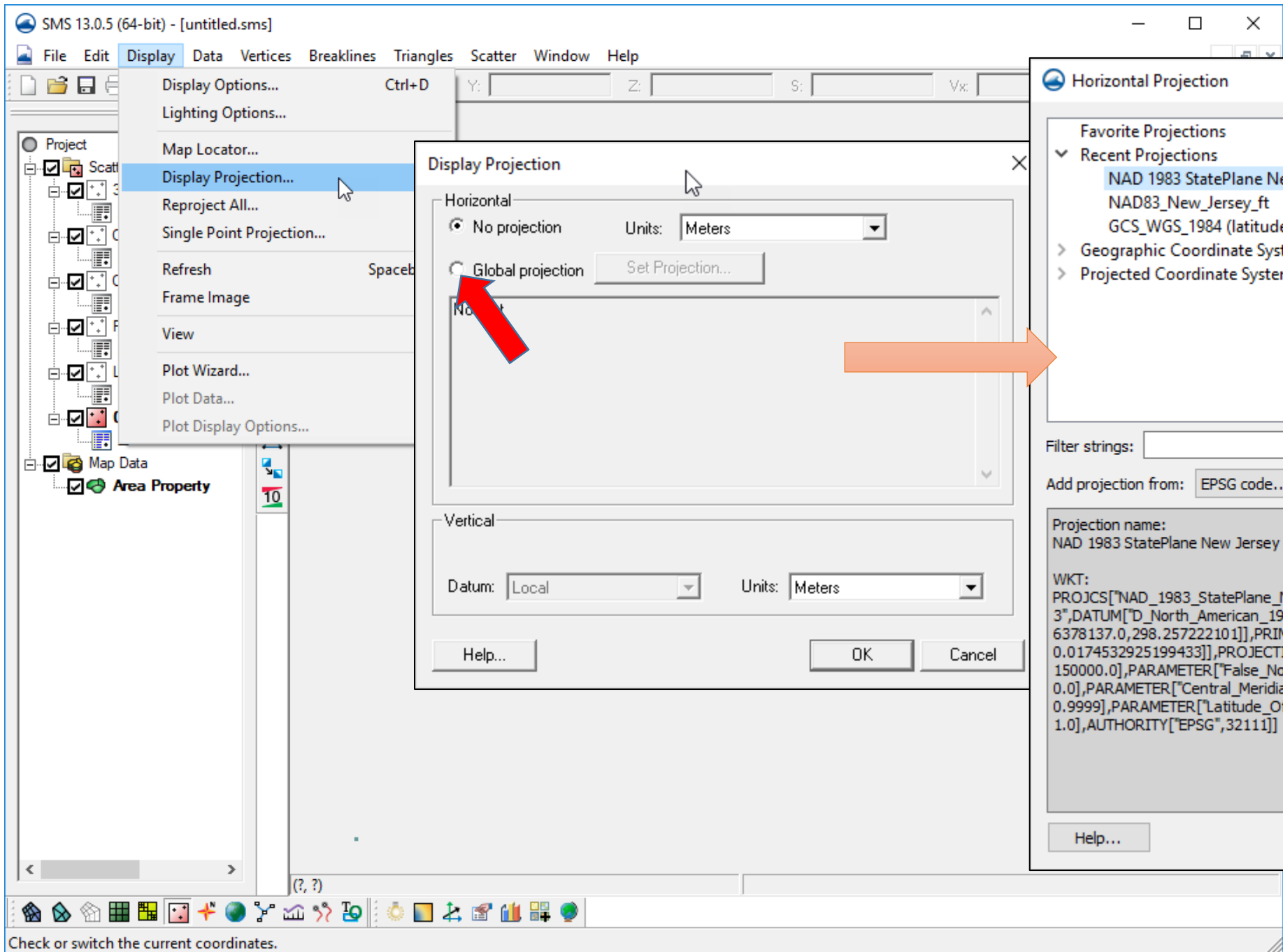
112662 duplicate data points were found in the file and were removed.

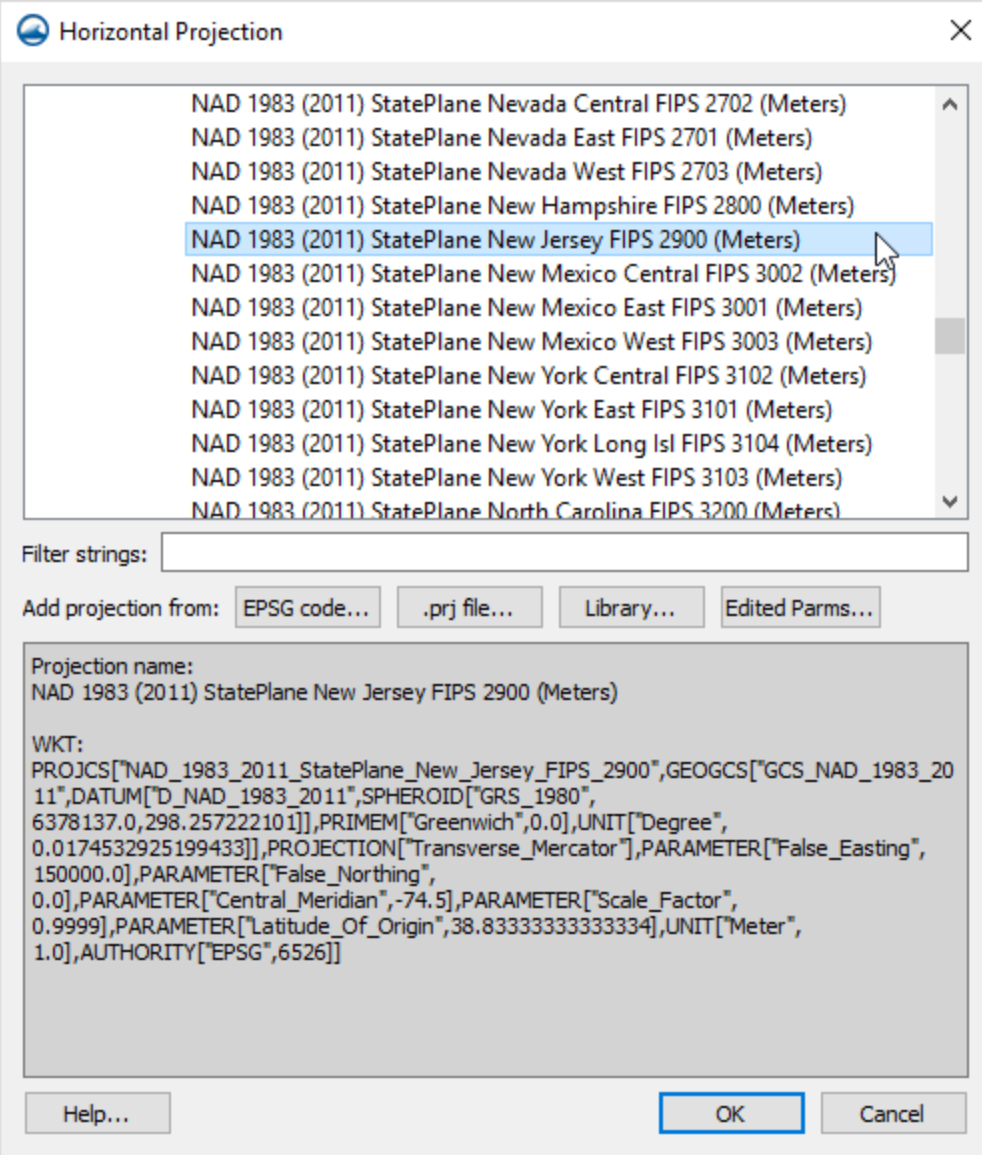
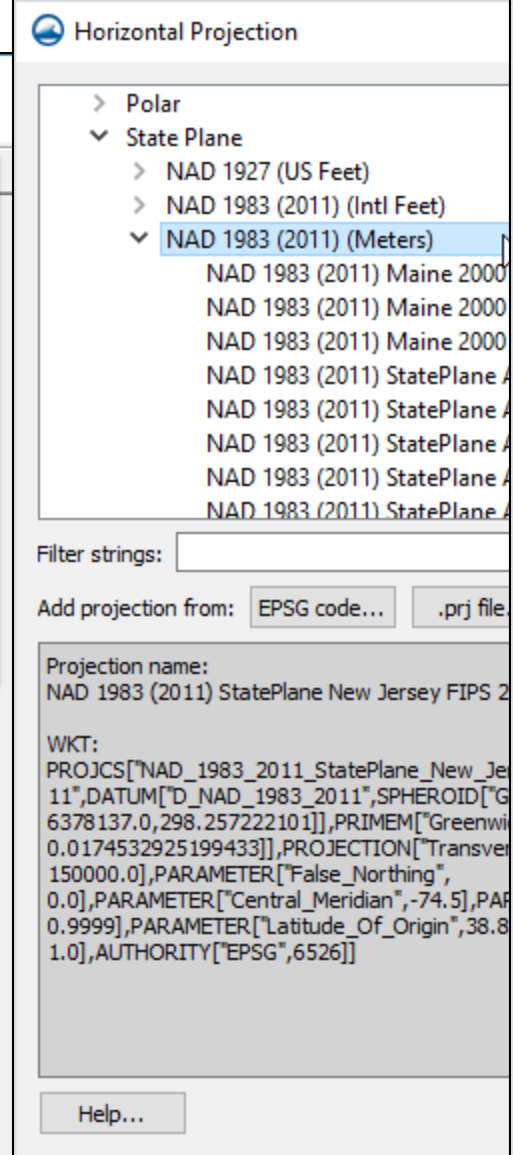
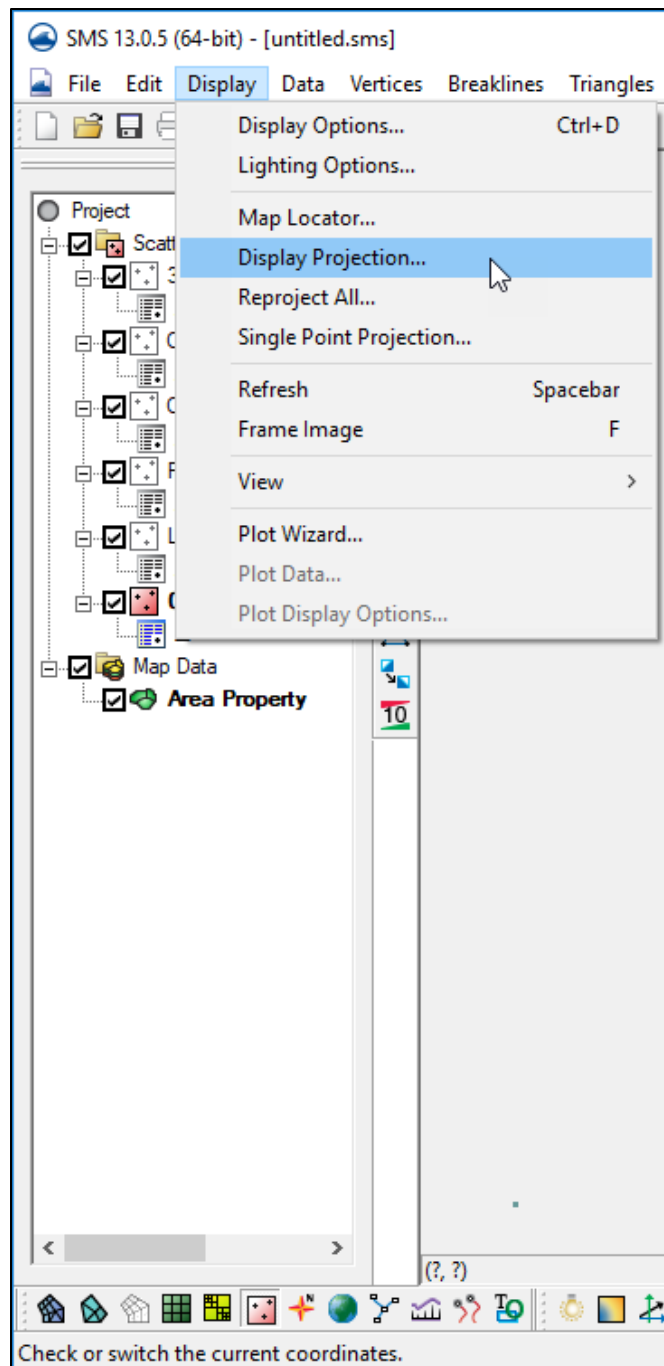
OK

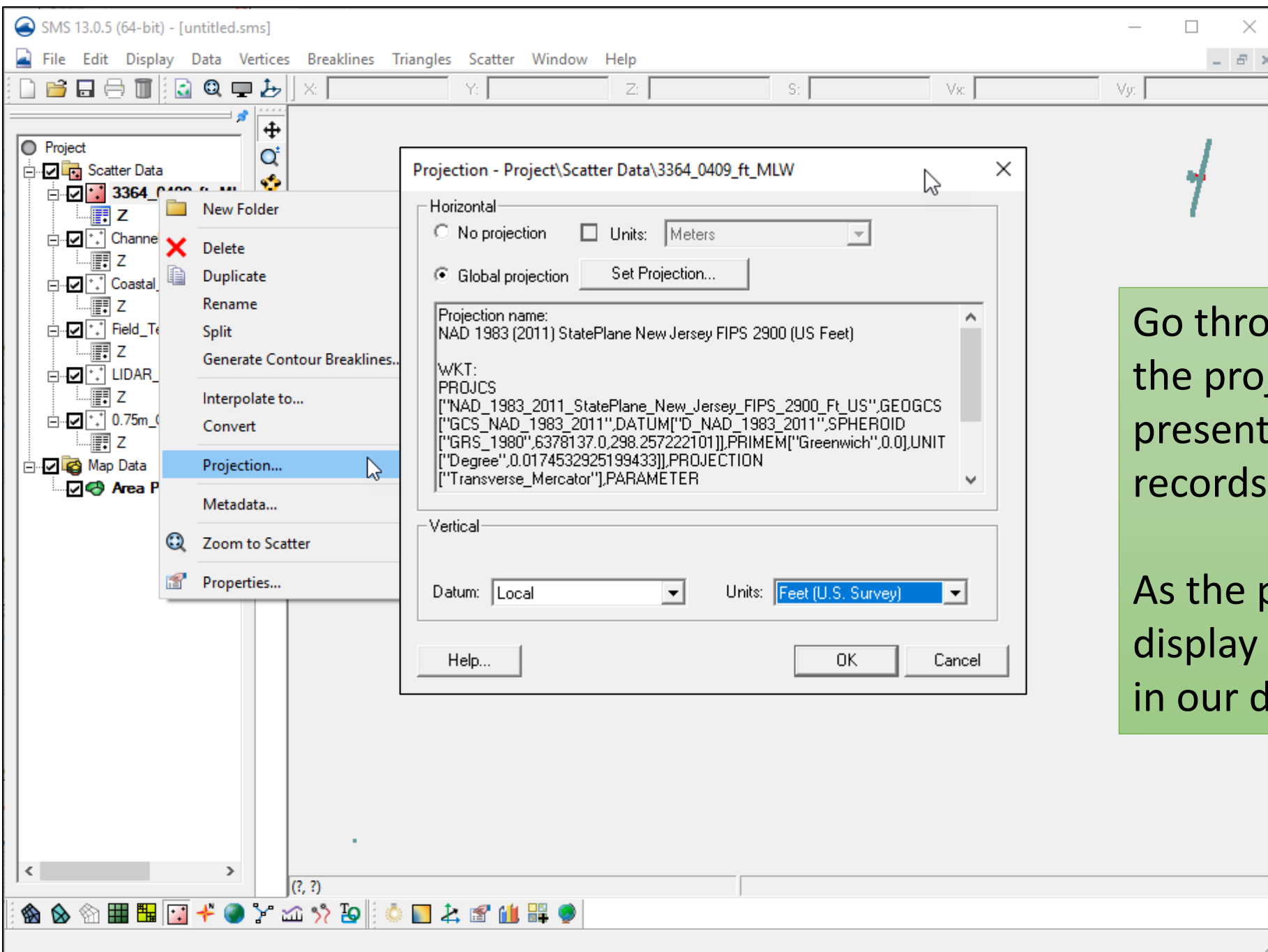
Creating vector datasets...







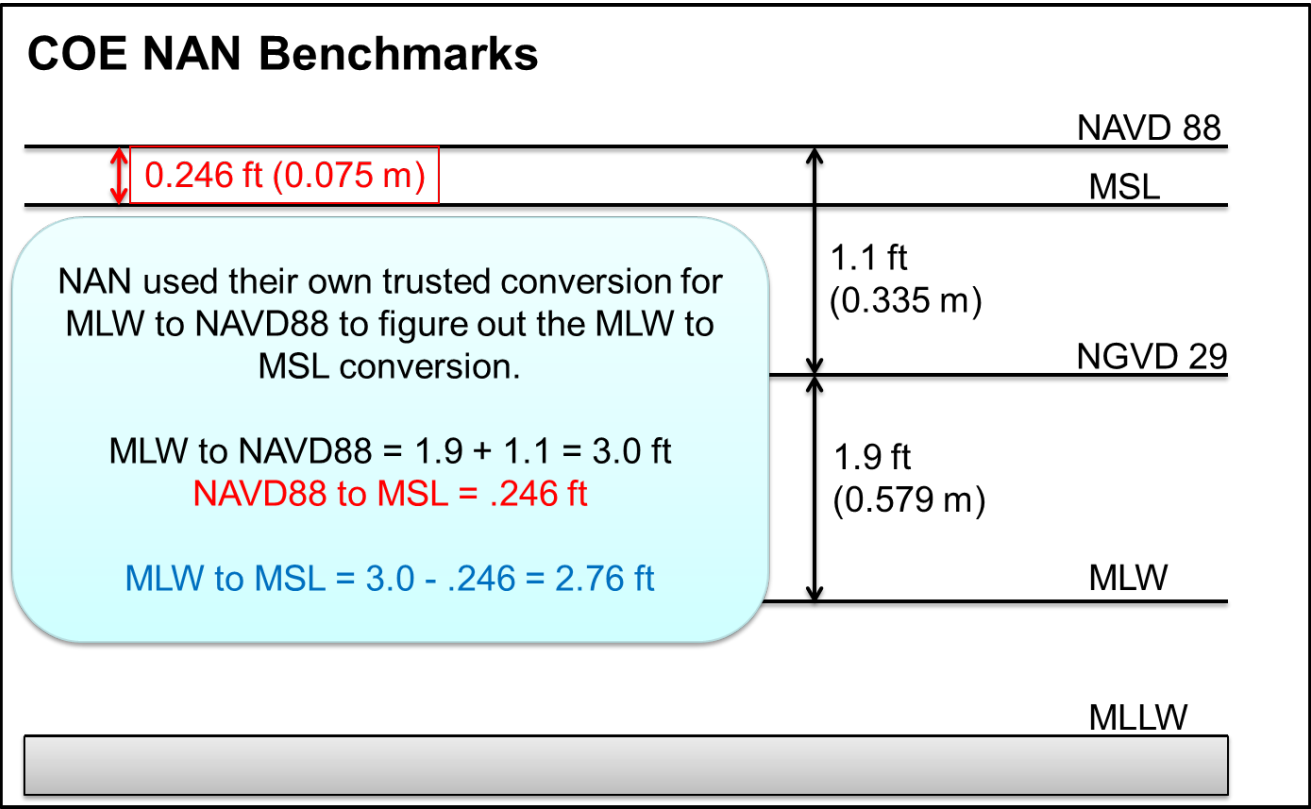


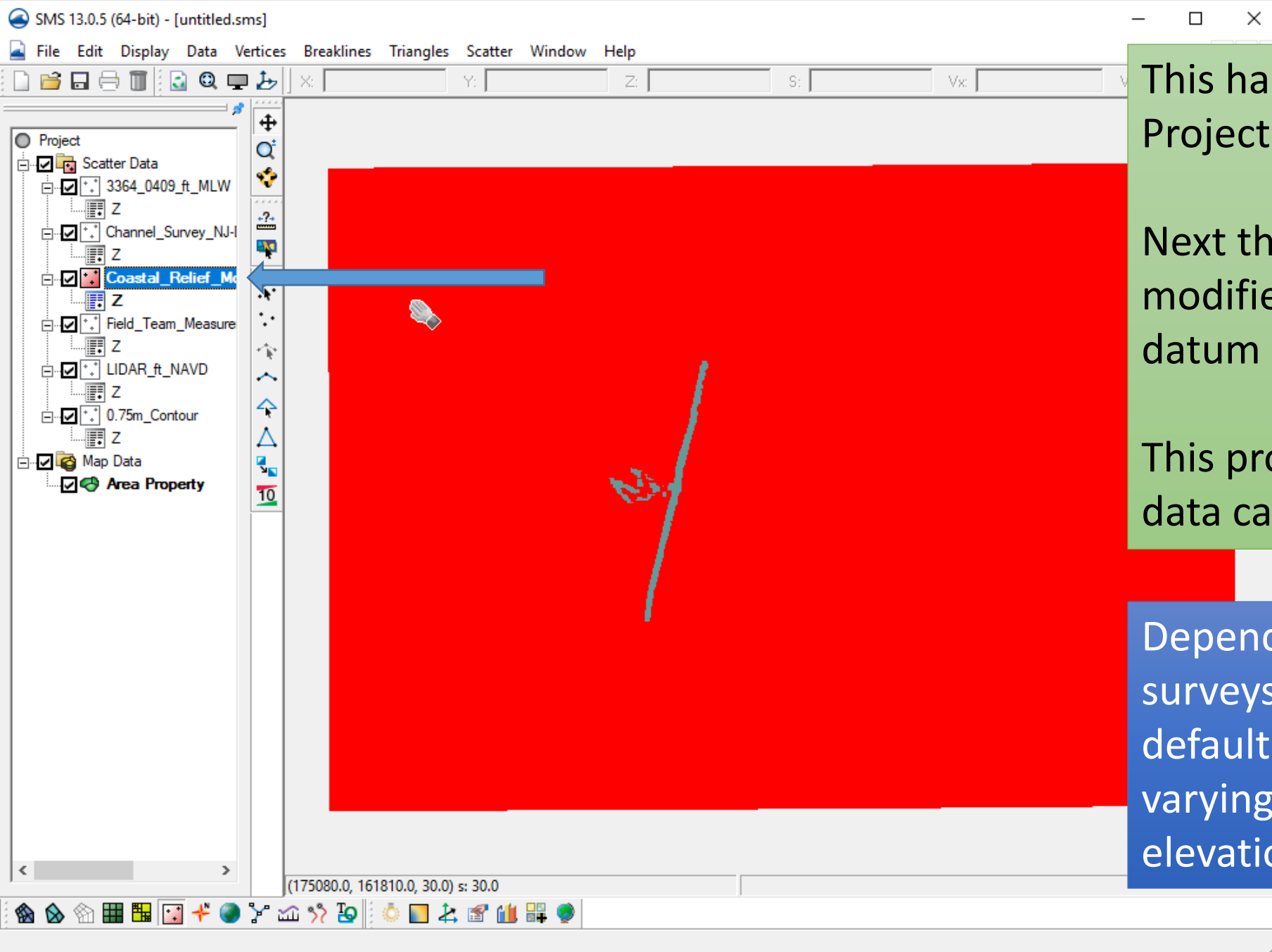


Go through each dataset and set the projection to the system it is presently in according to our records (next slide).

As the projections are set, the display will alter showing them in our desired Display Projection.

Dataset	Horizontal Projection	Horizontal Units	Vertical Datum	Vertical Units	Convert to MSL (ft)	Convert to MSL (m)
0.75m_Contour.xyz	SP NJ	m	MSL	m	0	0
3364_0409_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.76	0.841
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.76	0.841
Coastal_Relief_Model_II_m_msl.pts	Lat Long	degrees	MSL	m	0	0
Field_Team_Measurements_0809_m_NAVD.xyz	SP NJ	m	NAVD88	m	-0.246	-0.075
LIDAR_ft_NAVD.xyz	SP NJ	ft	NAVD88	ft	-0.246	-0.075





This has modified the Horizontal Projection of the selected files.

Next the datums must be modified so there is a common datum of the final scatter set.

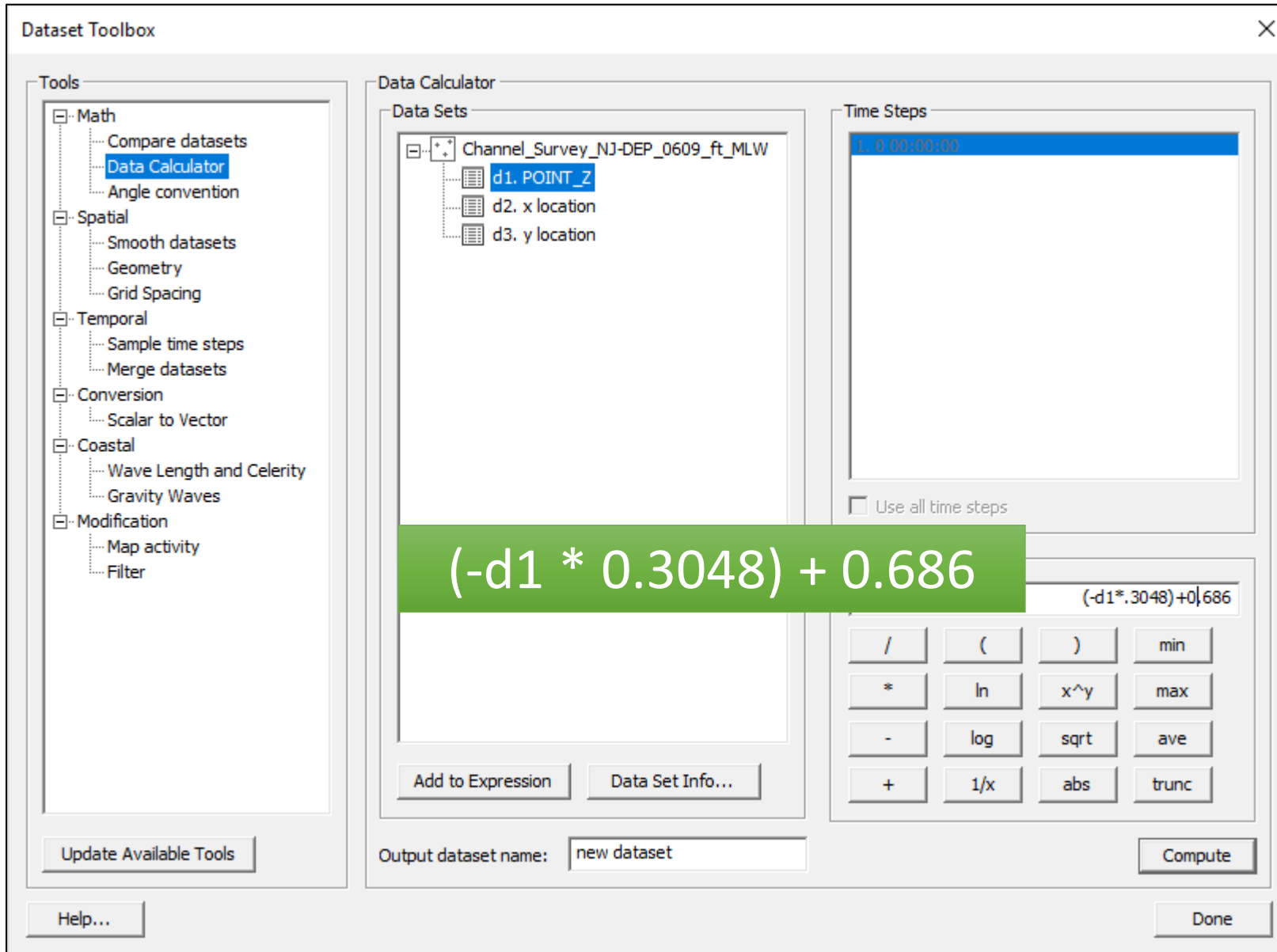
This process is done through the data calculator.

Depending on the order the surveys were brought in, the default scalar dataset can have varying names (ie, POINT_Z, elevation, z, etc)

0.75m_Contour.xyz	Elevations to Depths, No other change needed
3364_0409_ft_MLW.xyz	Elevations to Depths, Convert feet to meters, MLW to MSL
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	Elevations to Depths, Convert feet to meters, MLW to MSL
Coastal_Relief_Model_II_m_msl.pts	Elevations to Depths, No other change needed
Field_Team_Measurements_0809_m_NAVD.xyz	Elevations to Depths, Convert NAVD to MSL
LIDAR_ft_NAVD.xyz	Elevations to Depths, Convert feet to meters, NAVD to MSL

Dataset	Horizontal Projection	Horizontal Units	Vertical Datum	Vertical Units	Convert to MSL (ft)	Convert to MSL (m)
0.75m_Contour.xyz	SP NJ	m	MSL	m		
3364_0409_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.76	0.841
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.76	0.841
Coastal_Relief_Model_II_m_msl.pts	Lat Long	degrees	MSL	m		
Field_Team_Measurements_0809_m_NAVD.xyz	SP NJ	m	NAVD88	m	-0.246	-0.075
LIDAR_ft_NAVD.xyz	SP NJ	ft	NAVD88	ft	-0.246	-0.075

Example Datum conversion



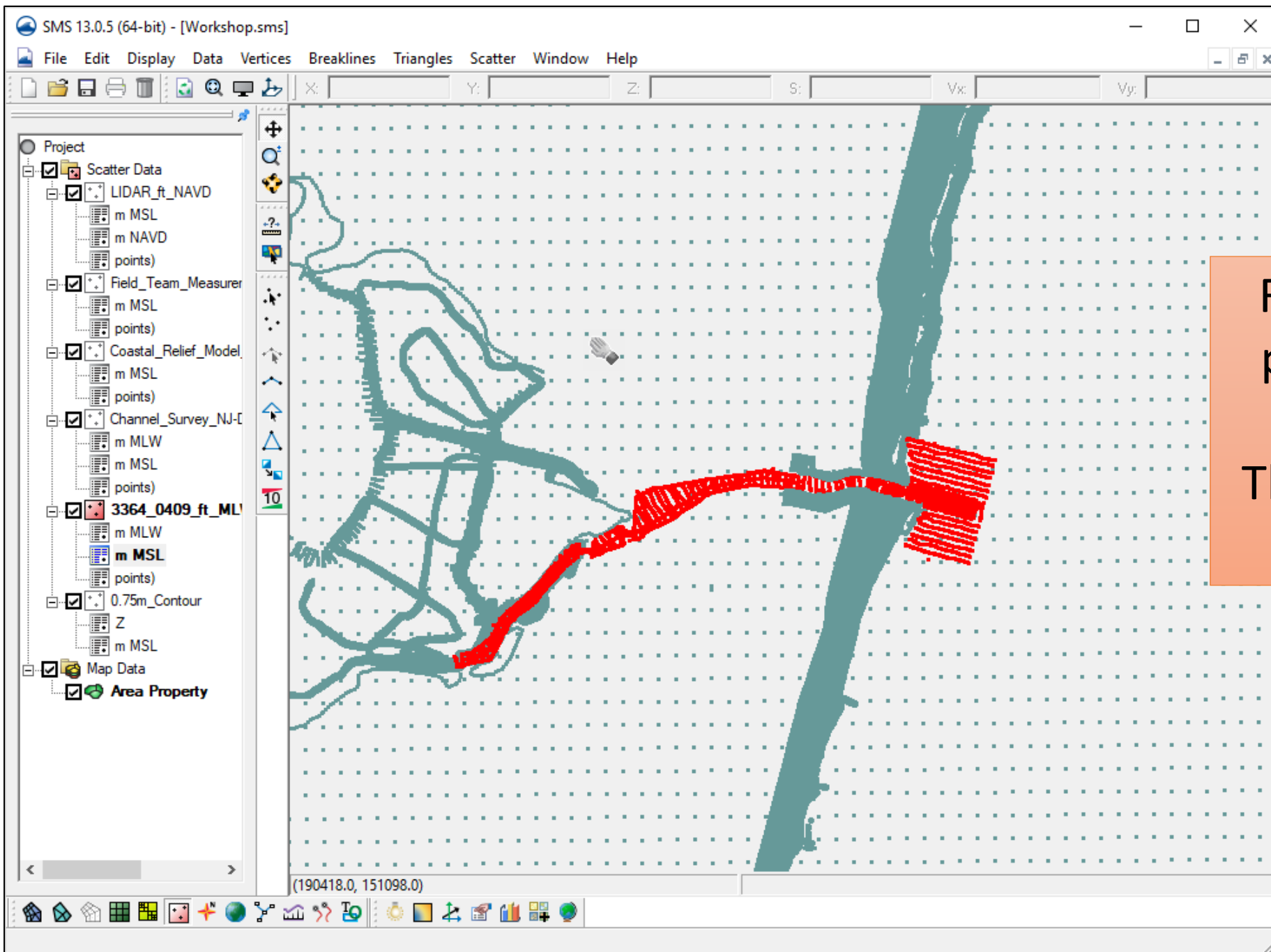
Channel Survey must have the following changes:

- 1) Flip sign (elevation to depths)
- 2) Convert feet to meters (multiply by 0.3048)
- 3) Add (or subtract) datum conversion (ex. from MLW to MSL, + 0.686)

They can be combined in one step or separated into separate steps.

I recommend separate until you are comfortable with this.

The combined (one-step) conversion is shown to the left.



Remember to save
project frequently.

There is no UNDO in
SMS

Merge all but Coastal Relief datasets together

The screenshot displays the SMS 13.0.5 (64-bit) - [Workshop.sms] interface. The main window shows a map with a grid of points. The 'Scatter' menu is open, and the 'Merge Sets' option is selected. The 'Merge Scatter Sets' dialog is open, showing a list of scatter sets to be merged. The 'Merge Report' dialog is also open, showing the results of the merge operation.

Scatter Options...

- Merge Sets
- Assign Point Name

Merge Scatter Sets

Select scatter sets to merge

Priority	Scatterset	Merge	Dataset
1	LIDAR_ft_NAVD	<input checked="" type="checkbox"/>	m MSL
2	Field_Team_Measurements...	<input checked="" type="checkbox"/>	m MSL
3	Coastal_Relief_Model_II_m_...	<input type="checkbox"/>	m MSL
4	Channel_Survey_NJ-DEP_0...	<input checked="" type="checkbox"/>	m MSL
5	3364_0409_ft_MLW	<input checked="" type="checkbox"/>	m MSL
6	0.75m_Contour	<input checked="" type="checkbox"/>	m MSL

Select All Deselect All Move up Move down

Merged scatter set options

Name: Merged surveys

☐ Delete original scatter sets

Overlapping region options

☒ Merge all scatter points

☐ Delete lower priority scatter points

☒ Maintain triangulation

Help... OK Cancel

Merge Report

Input	vertices
Channel_Survey_NJ-DEP_0609_ft_MLW	2006
Field_Team_Measurements_0809_m_NAVD	176695
LIDAR_ft_NAVD	977751
0.75m_Contour	732
3364_0409_ft_MLW	5729
Output	
Merged surveys	1162877

Deleted Points

36 points deleted due to duplicate point tolerance.

Options Used

Input scattersets/functions

Channel_Survey_NJ-DEP_0609_ft_MLW/m MSL
Field_Team_Measurements_0809_m_NAVD/m MSL
LIDAR_ft_NAVD/m MSL
0.75m_Contour/POINT_Z
3364_0409_ft_MLW/m MSL

Merging all points

Duplicate point tolerance: 0.1

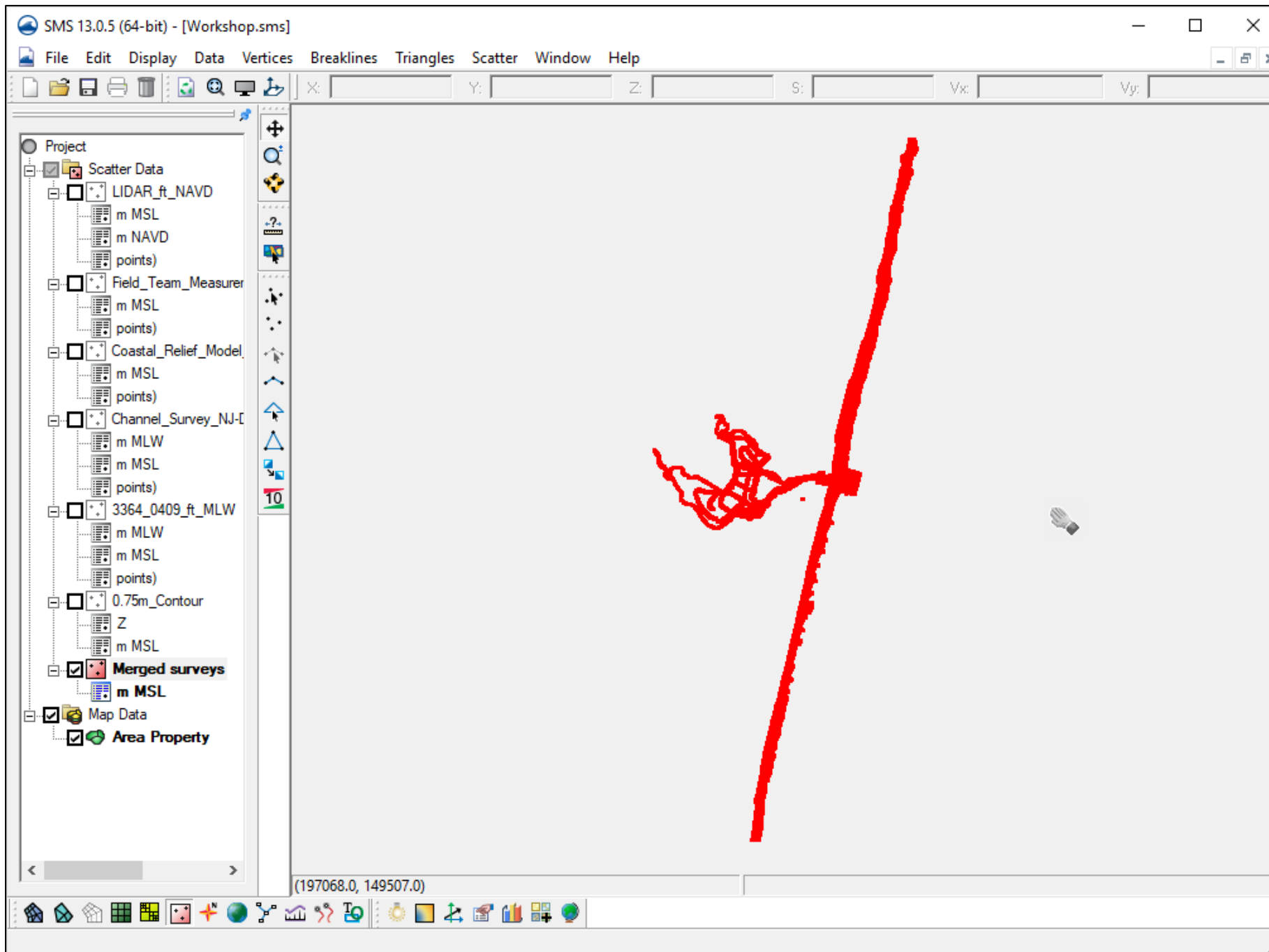
Help

Project

- Scatter Data
 - LIDAR_ft_NAVD
 - m MSL
 - m NAVD
 - points)
 - Field_Team_Measurements_0809_m_...
 - m MSL
 - points)
 - Coastal_Relief_Model_II_m_msl
 - m MSL
 - points)
 - Channel_Survey_NJ-DEP_0609_ft_M...
 - m MLW
 - m MSL
 - points)
 - 3364_0409_ft_MLW
 - m MLW
 - m MSL
 - points)
 - 0.75m_Contour
 - Z
 - m MSL
- Map Data
 - Area Property

Merged surveys

- m MSL



Remove triangulated elements where no points exist

File Edit Display Data Vertices Breaklines Triangles Scatter Web Window Help

Triangulate
Optimize Triangulation
Select Thin Triangles
Select Long Triangles
Process Boundary Triangles...

Interpolate to Grid
Interpolate to Cartesian Grid
Interpolate to Quadtree
Interpolate to Scatter...
Interpolate to Map

Scatter Options

Thin Triangles
Select thin triangle aspect ratio: 0.001

Long Triangles
Max. edge length: 500.0
☐ Delete long triangles
☒ Select long triangles

Individual Points
☐ Retriangulate voids when deleting

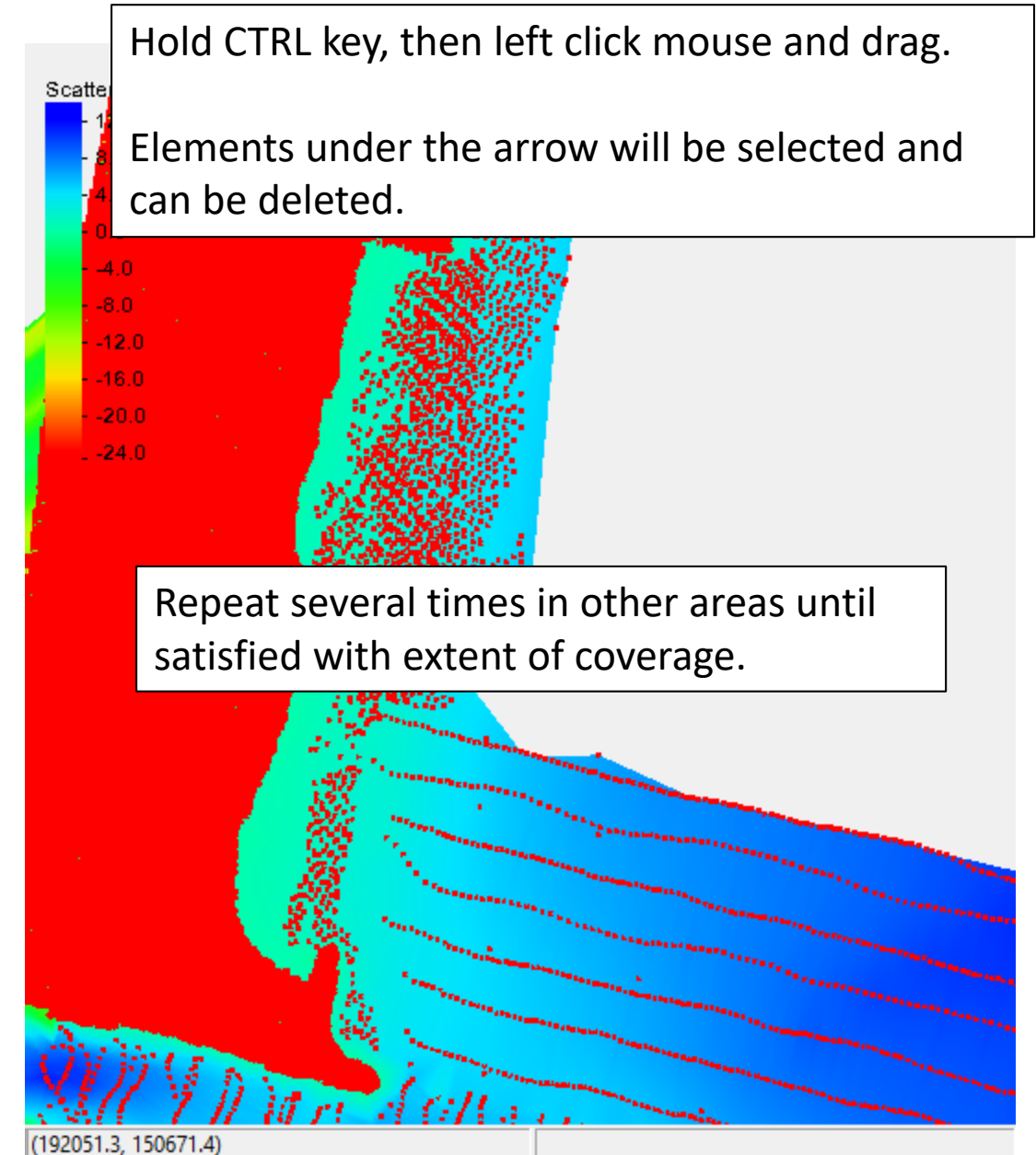
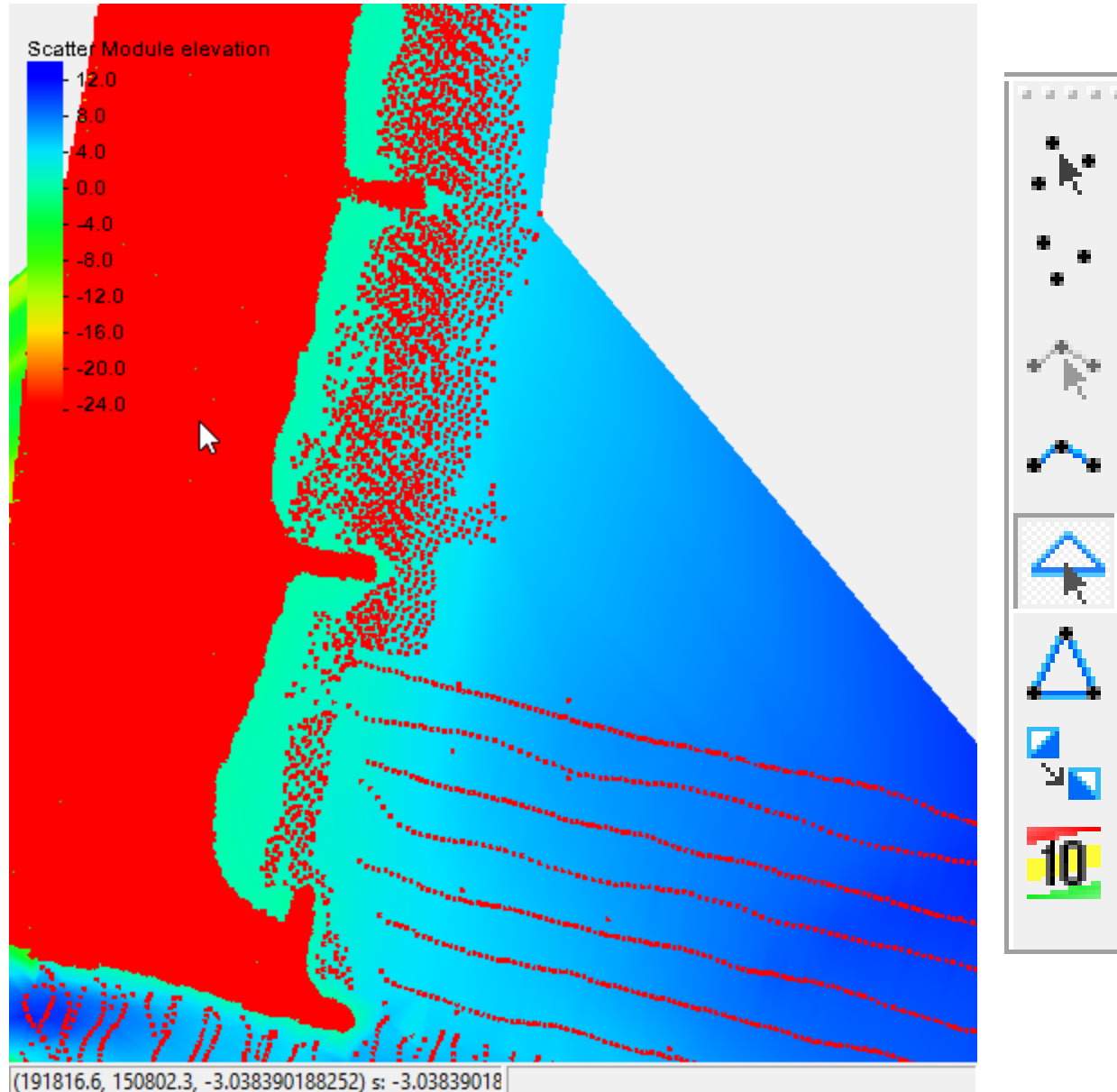
Help...

Scatter Module Elevation

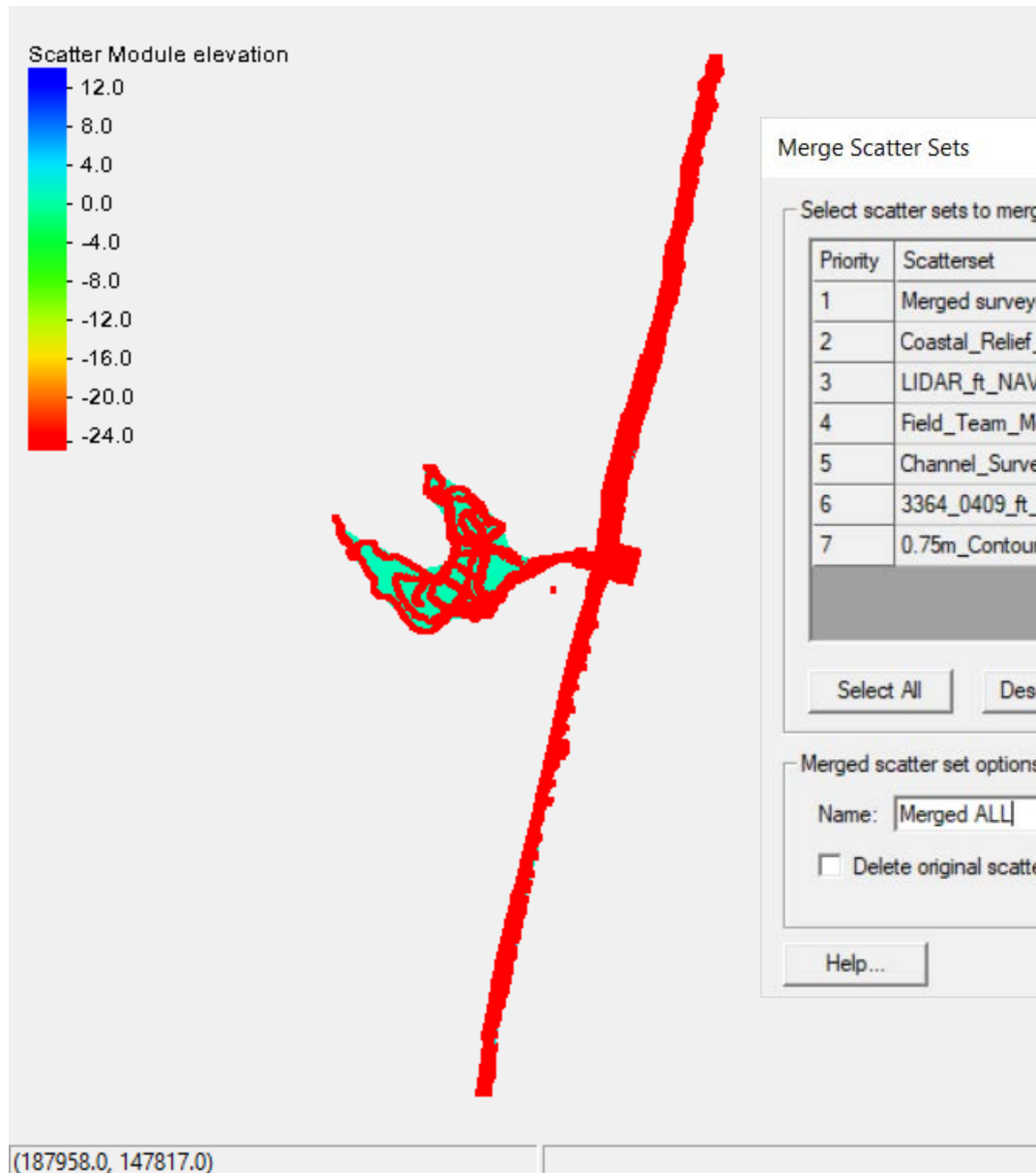
10.6
7.2
3.8
0.4
-3.0
-6.4
-9.8
-13.2
-16.6
-20.0

This removes many, but others can be removed manually

Manually remove elements before next merge of datasets



Merge this dataset with Coastal Relief dataset – WITH Priority to this one



Merge Scatter Sets

Select scatter sets to merge

Priority	Scatterset	Merge	Dataset
1	Merged surveys	<input checked="" type="checkbox"/>	m MSL
2	Coastal_Relief_Model_II_m_...	<input checked="" type="checkbox"/>	m MSL
3	LIDAR_ft_NAVD	<input type="checkbox"/>	m MSL
4	Field_Team_Measurements...	<input type="checkbox"/>	m MSL
5	Channel_Survey_NJ-DEP_0...	<input type="checkbox"/>	m MLW
6	3364_0409_ft_MLW	<input type="checkbox"/>	m MLW
7	0.75m_Contour	<input type="checkbox"/>	Z

Select All Deselect All Move up

Merged scatter set options

Name:

☐ Delete original scatter sets

Overlapping region

☐ Merge all scatter sets

☒ Delete lower priority

☒ Maintain priority

Help... OK

