WORKING WITH BATHYMETRY

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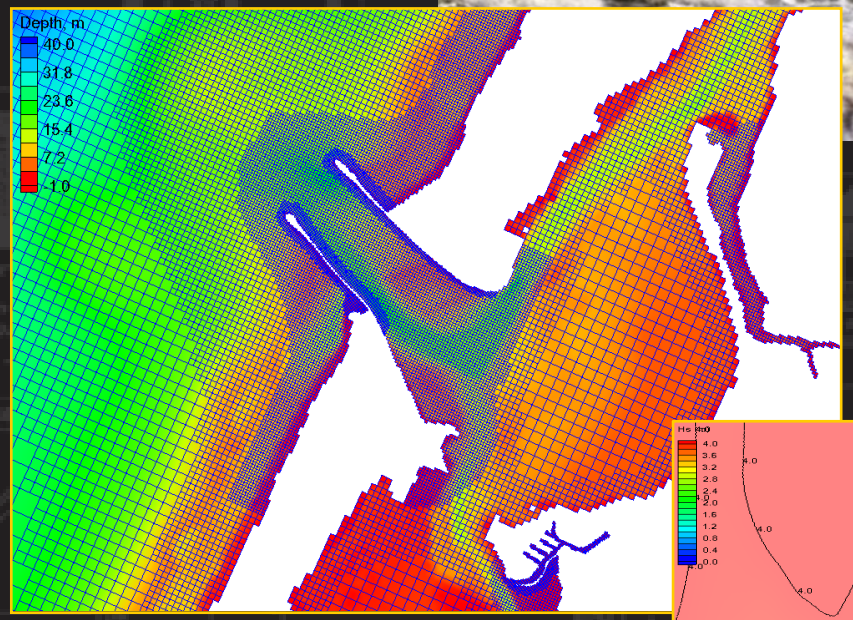

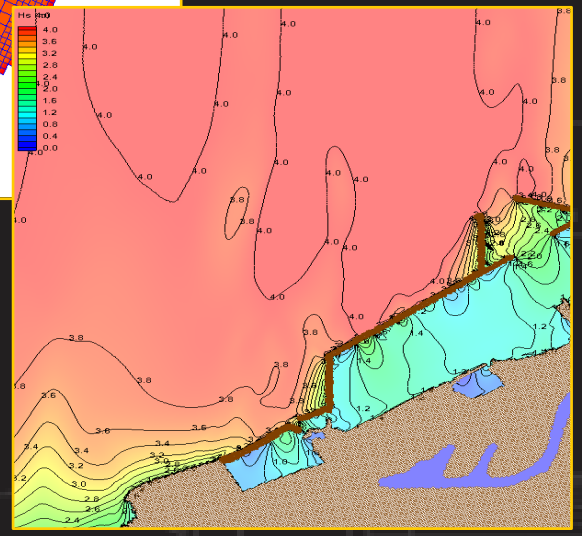

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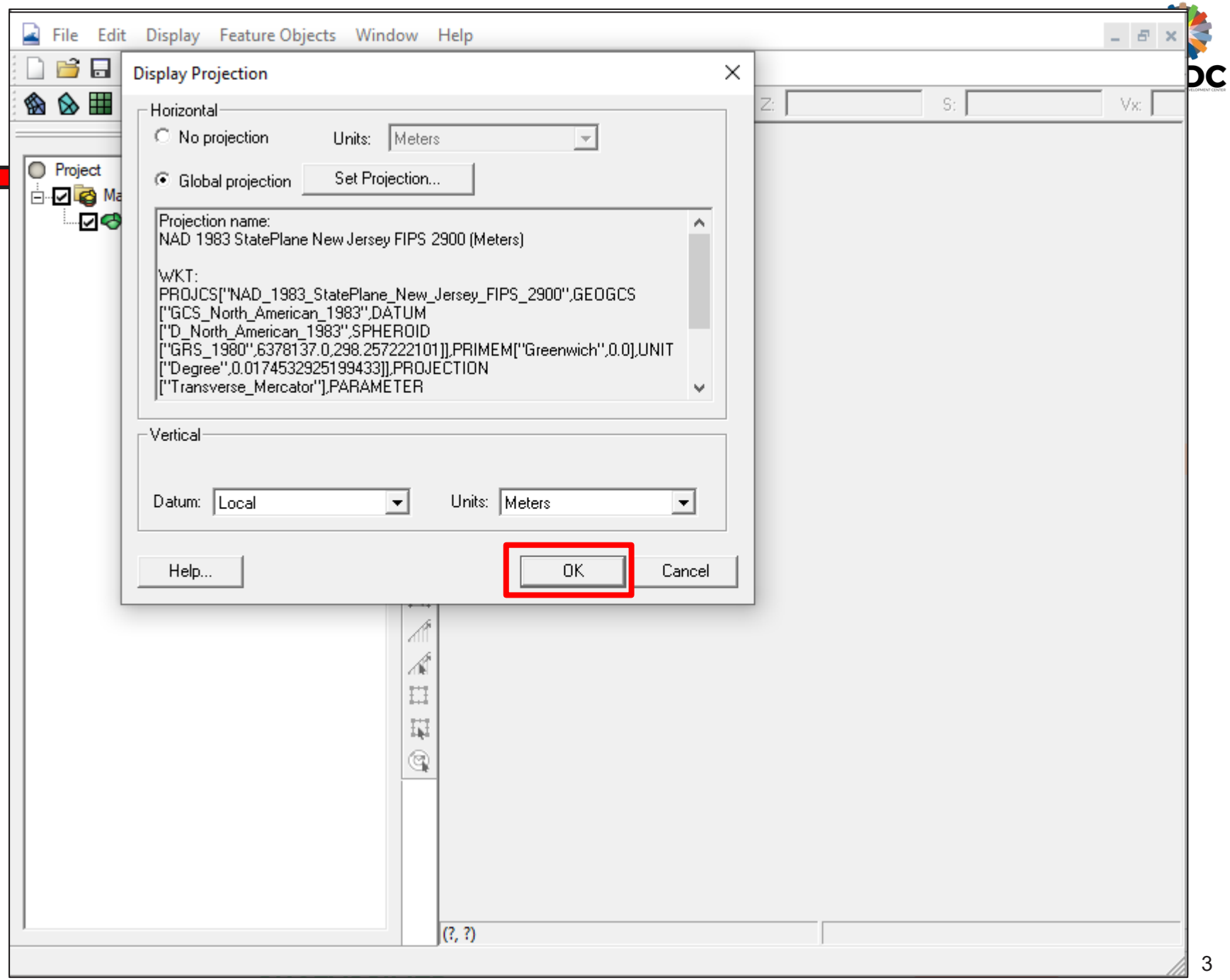
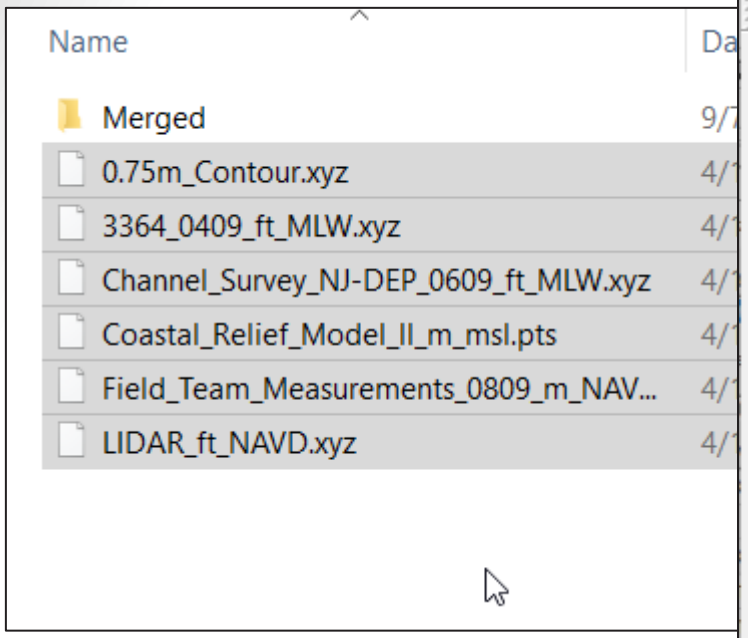
CIRP

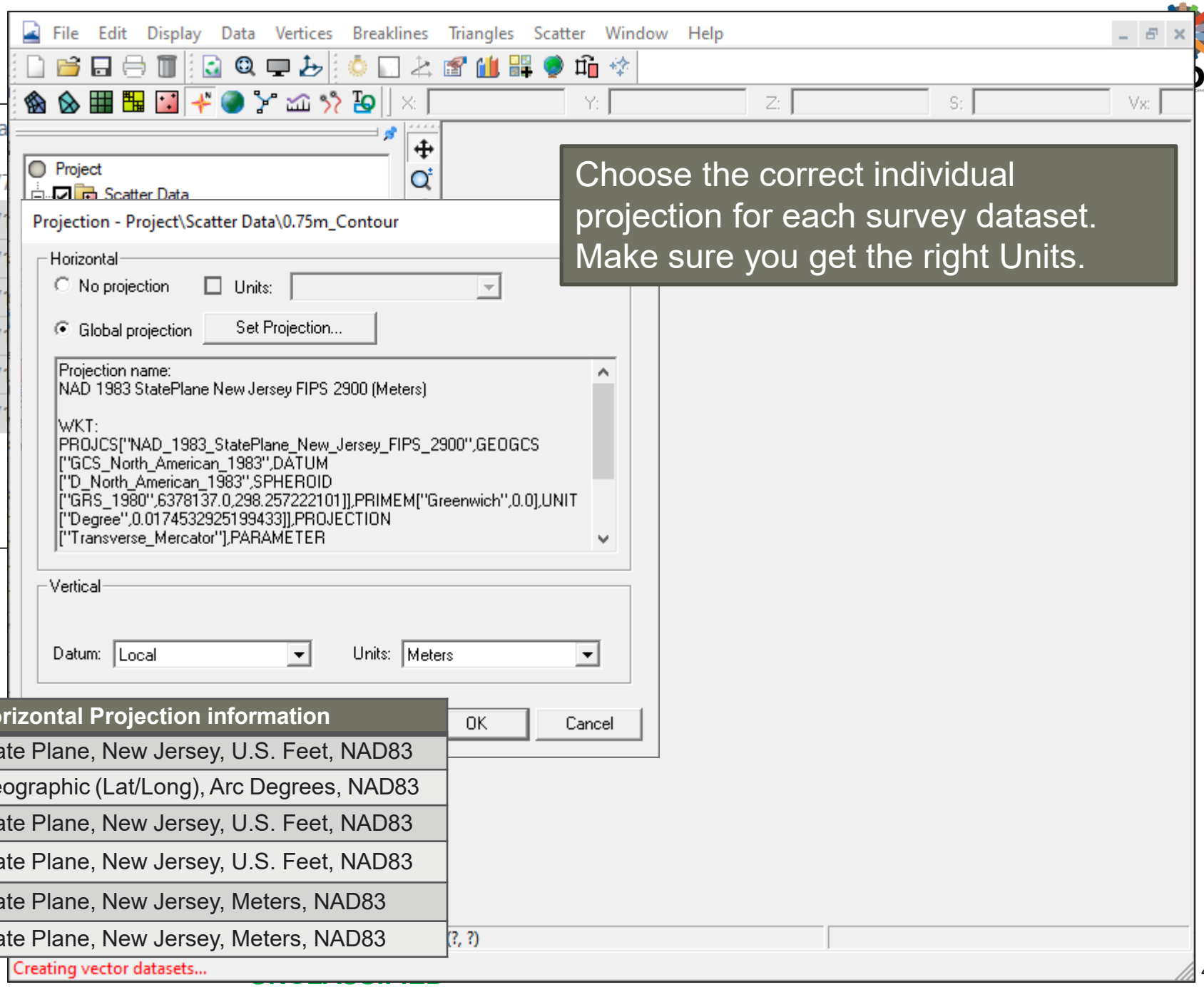
Working with Bathymetry topics

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

Setting primary projection for the Project.

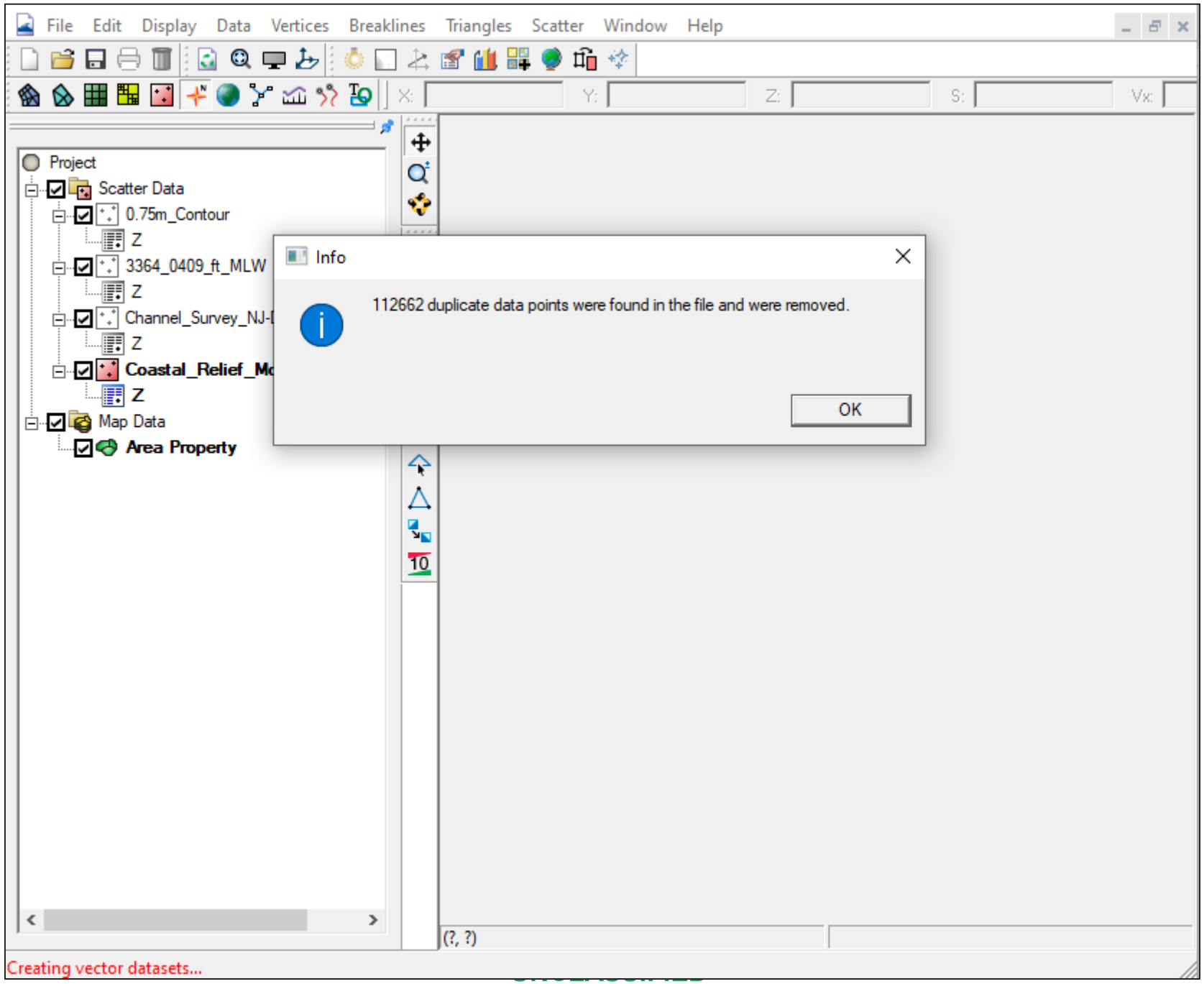


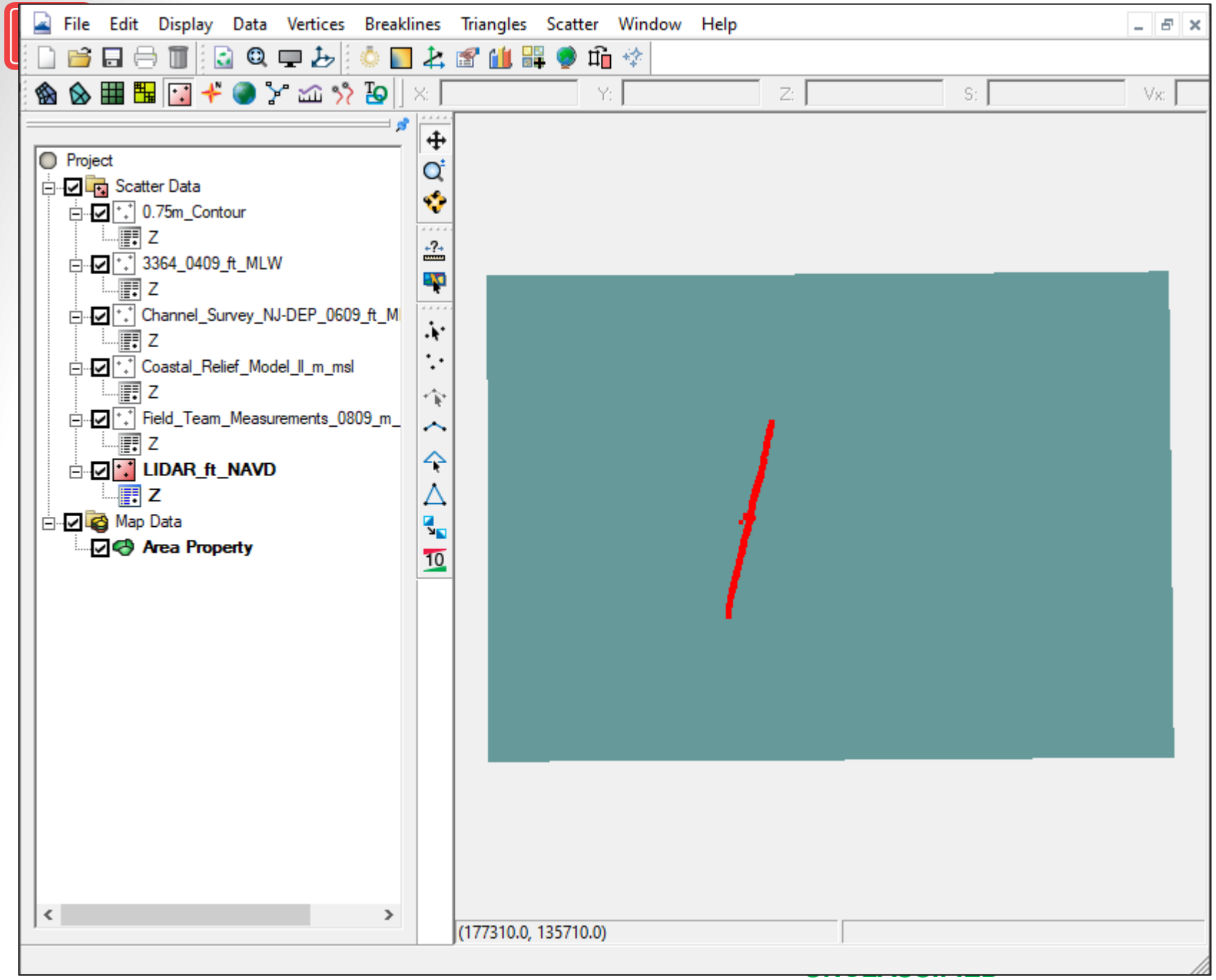




Choose the correct individual projection for each survey dataset. Make sure you get the right Units.

Filename	Horizontal Projection information
Channel_Survey_NJ- DEP_0609_ft_MLW.xyz	State Plane, New Jersey, U.S. Feet, NAD83
Coastal_Relief_Model_ll_m_msl	Geographic (Lat/Long), Arc Degrees, NAD83
3364_0409_ft_MLW.xyz	State Plane, New Jersey, U.S. Feet, NAD83
LIDAR_ft_NAVD	State Plane, New Jersey, U.S. Feet, NAD83
Field_Team_Measurements_0809_ m_NAVD.xyz	State Plane, New Jersey, Meters, NAD83
0.75m_Contour	State Plane, New Jersey, Meters, NAD83


File Edit Display Data Vertices Breaklines Triangles Scatter Window Help
X: Y: Z: S: Vx:
Project
Scatter Data
0.75m_Contour
Z
3364_0409_ft_MLW
Z
Channel_Survey_NJ-
Z
Coastal_Relief_M
Z
Map Data
Area Property
Info
112662 duplicate data points were found in the file and were removed.
OK
(?, ?)
Creating vector datasets...

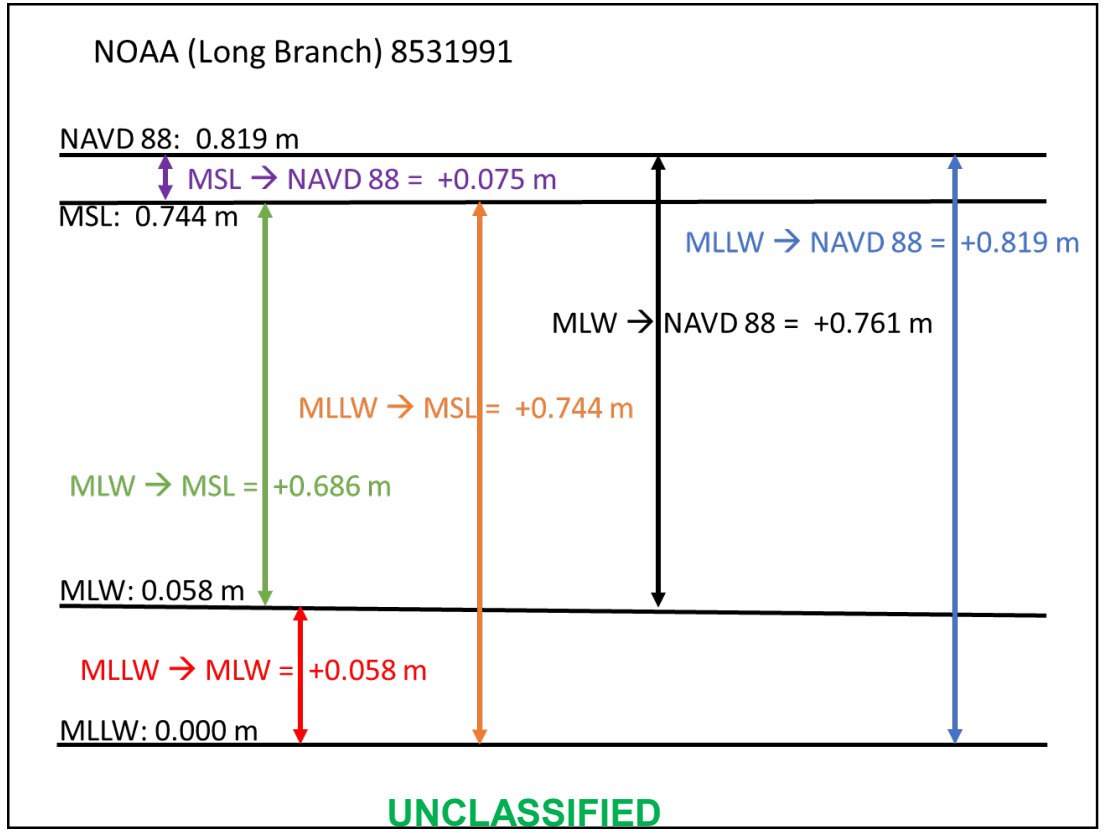


This has modified the Horizontal Projection of the selected files.

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.

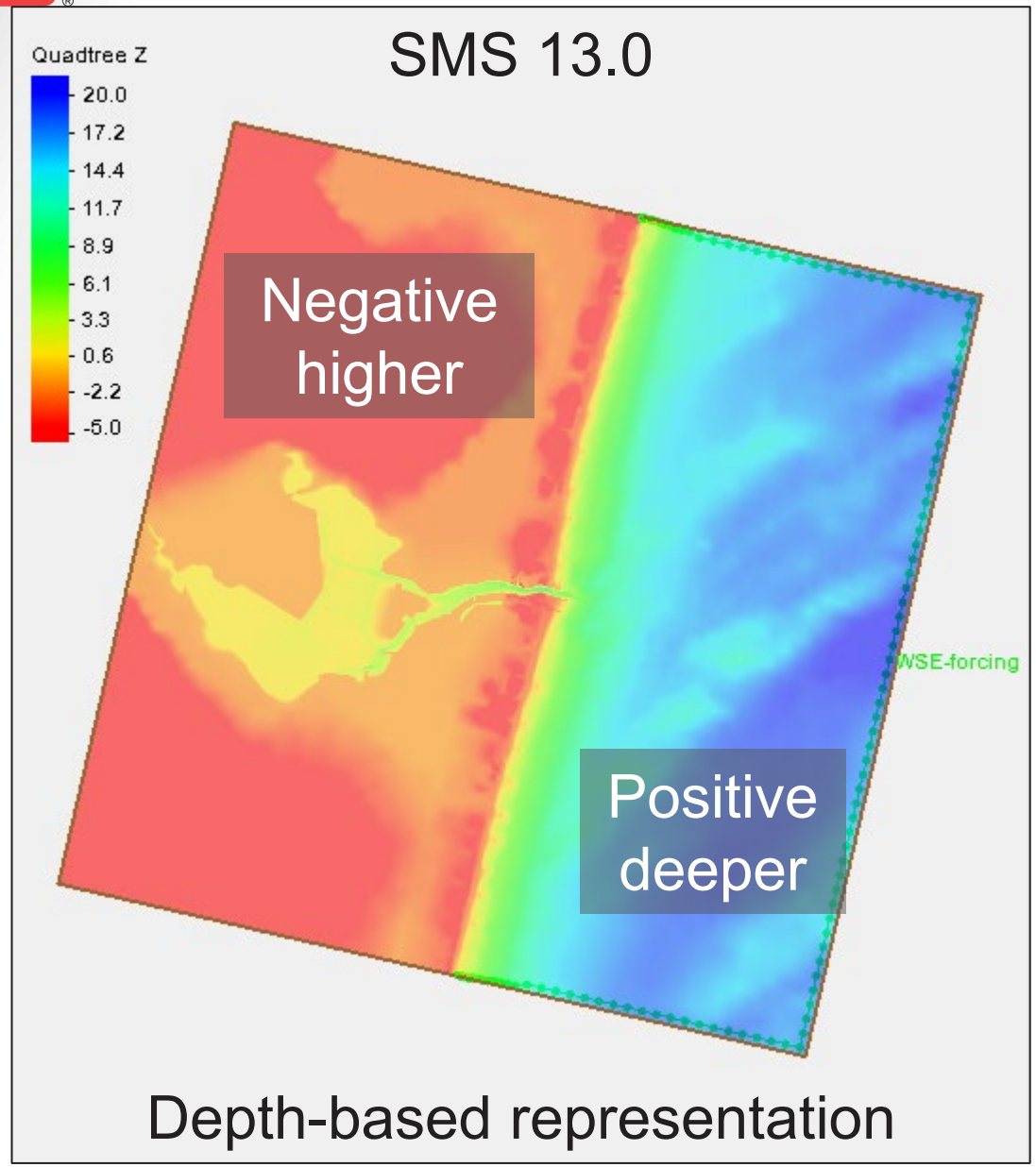
Dataset	Horizontal Projection	Horizontal Units	Vertical Datum	Vertical Units	Convert to MSL (ft)	Convert to MSL (m)
0.75m_Contour.xyz	SP NJ	m	MSL	m	0	0
3364_0409_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.25	0.686
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.25	0.686
Coastal_Relief_Model_ll_m_msl.pts	Lat 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



UNCLASSIFIED

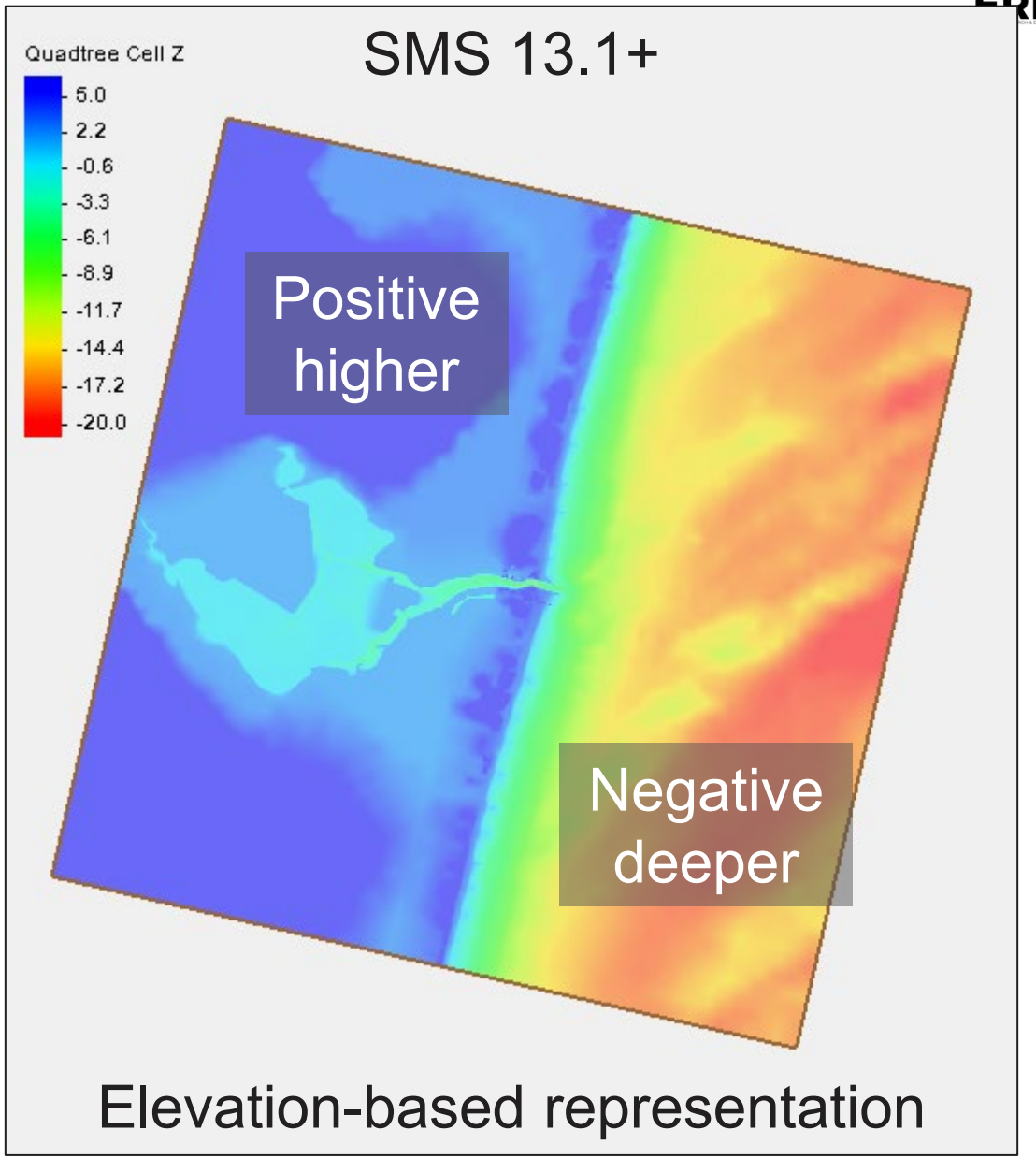
SMS changes from 13.0 to 13.1 and after

SMS 13.0



Depth-based representation

SMS 13.1+



Elevation-based representation

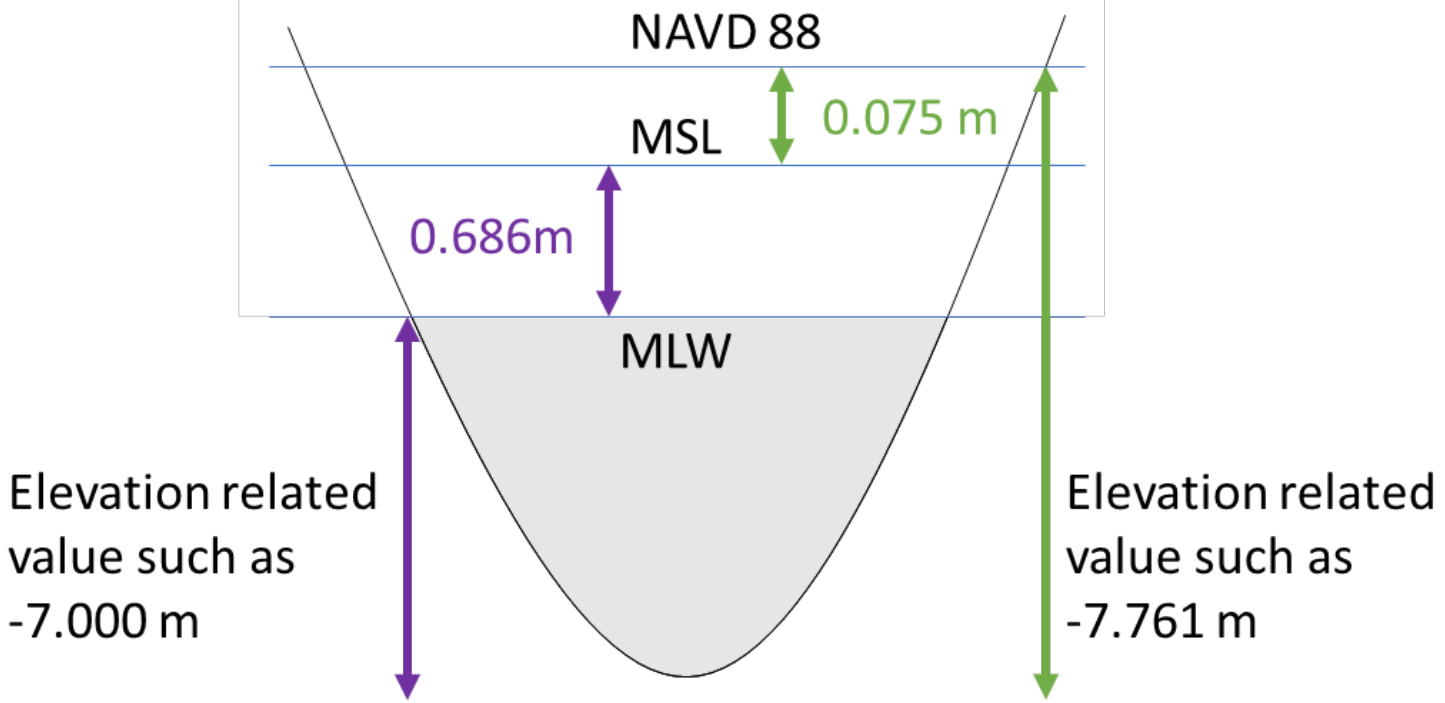
Because all these survey files are already Positive UP, no change to the sign is needed

0.75m_Contour.xyz	No change needed
3364_0409_ft_MLW.xyz	Convert feet to meters, MLW to MSL
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	Convert feet to meters, MLW to MSL
Coastal_Relief_Model_ll_m_msl.pts	No change needed
Field_Team_Measurements_0809_m_NAVD.xyz	Convert NAVD 88 to MSL
LIDAR_ft_NAVD.xyz	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	2.25	0.686
Channel_Survey_NJ-DEP_0609_ft_MLW.xyz	SP NJ	ft	MLW	ft	2.25	0.686
Coastal_Relief_Model_ll_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

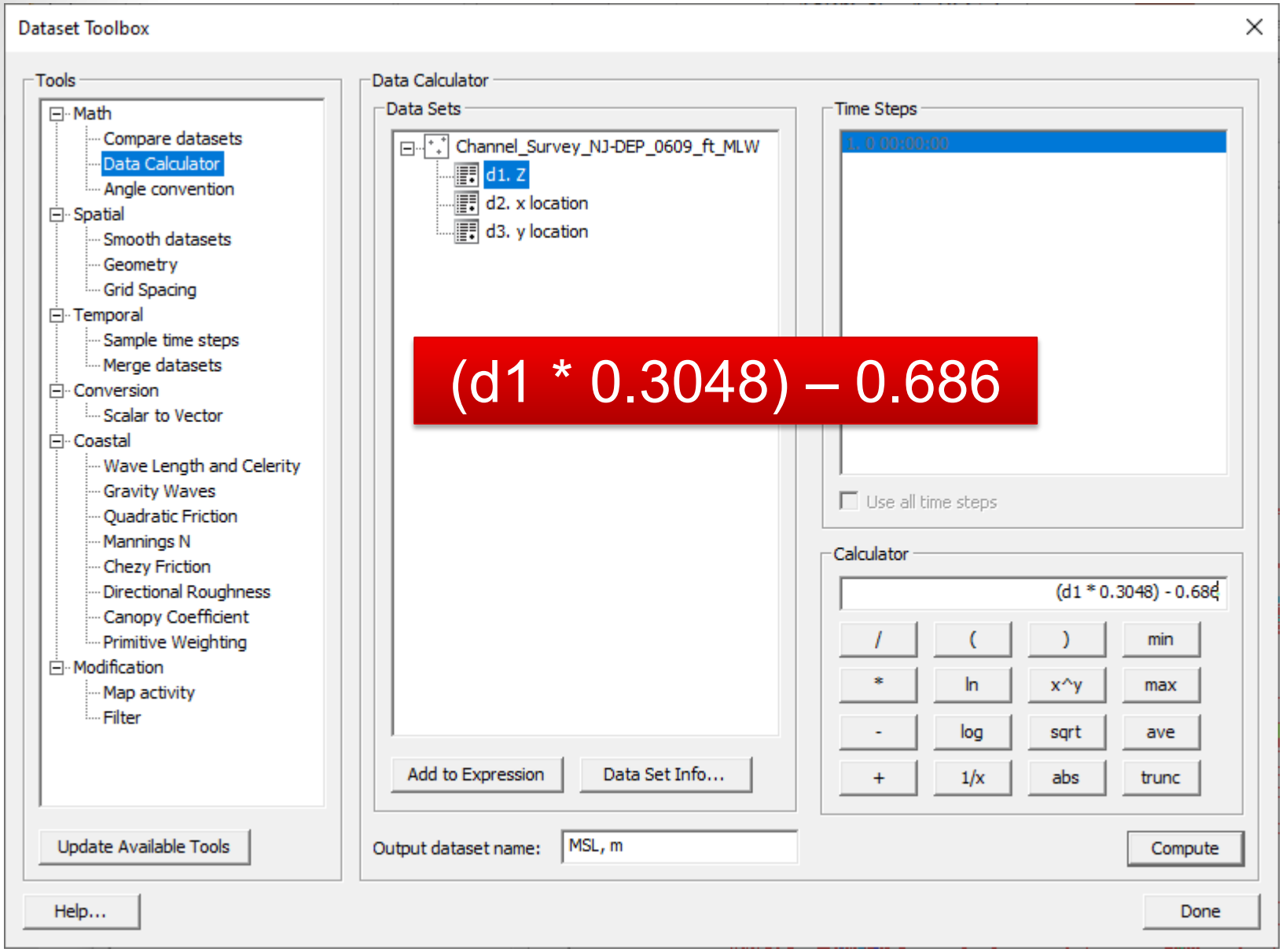
It can be confusing to determine whether to add or subtract the datum from the original values. The diagram below should help.

- Moving from the lower MLW to the higher MSL datum means the value must be deeper (more negative in this case). Working with elevations means we must **subtract** to get a more negative value.
- Moving from the higher NAVD88 to the lower MSL datum means the value must be shallower (less negative). We must **add** to get a less negative value.



- MLW to MSL = value – correction = -7.000 – 0.686 = -7.686 m
- NAVD88 to MSL = value + correction = -7.761 + 0.075 = -7.686 m

Example Datum conversion



(d1 * 0.3048) – 0.686

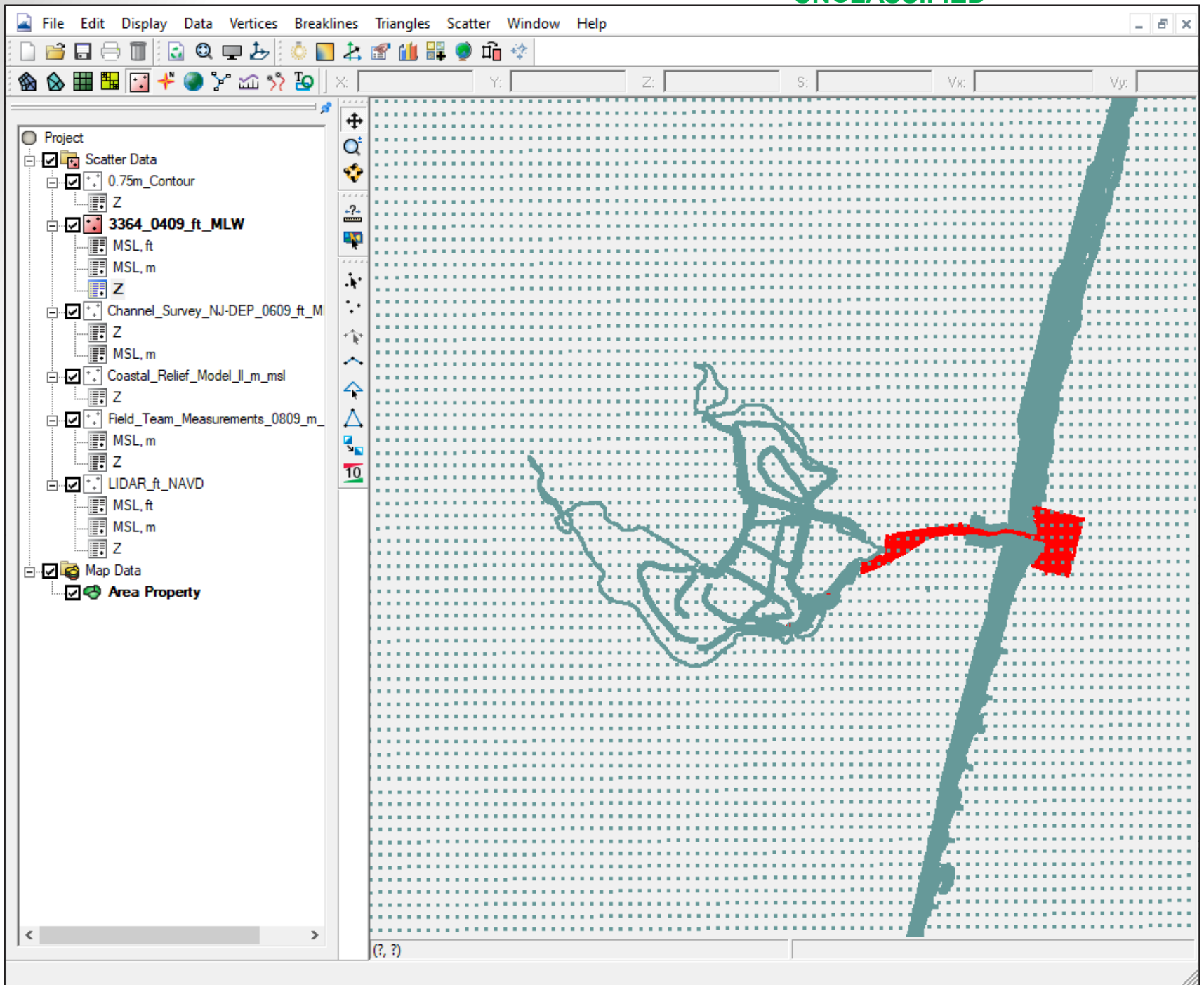
Channel Survey must have the following changes:

1) Convert feet to meters (multiply by 0.3048)
2) 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 steps until you are comfortable with this.

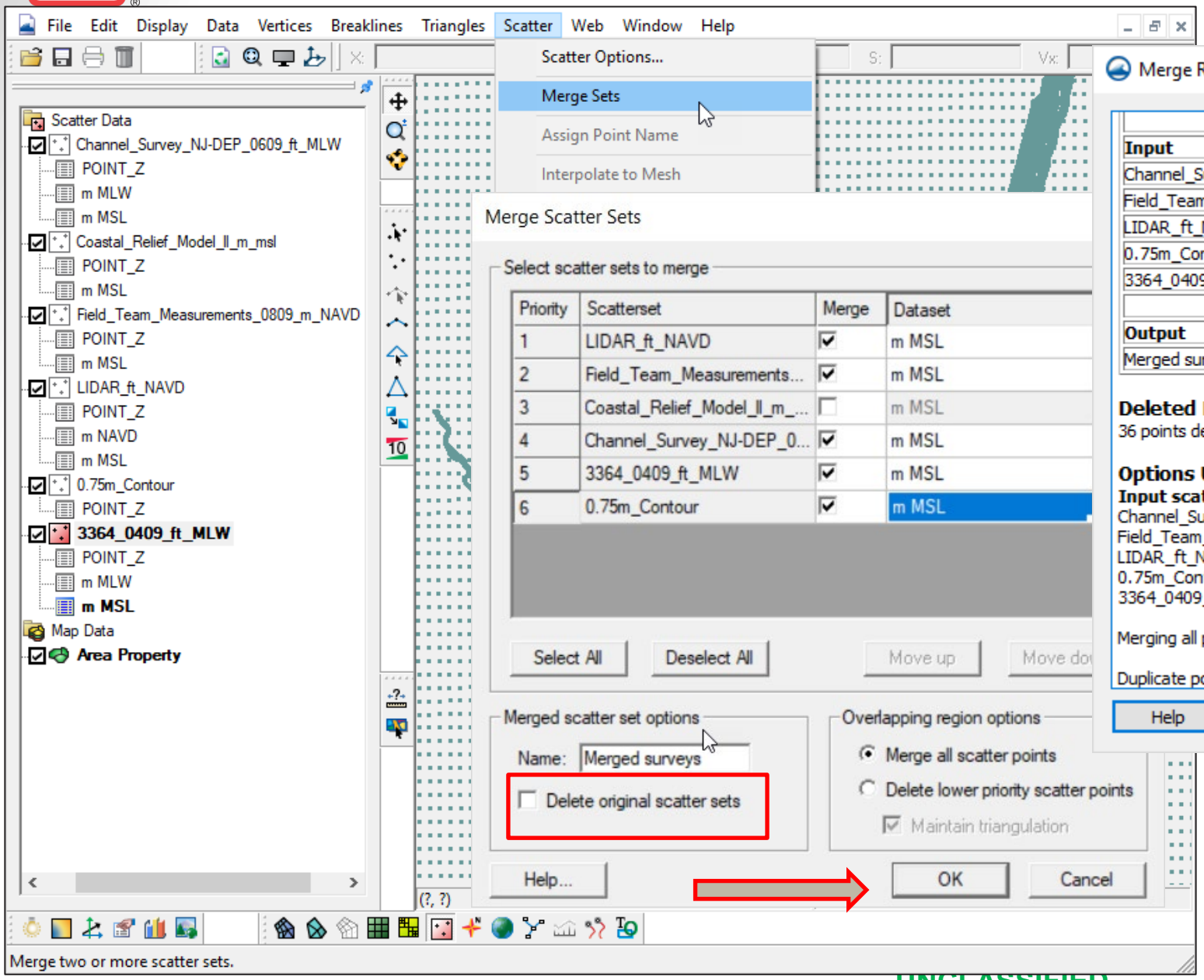
The combined (one-step) conversion is shown to the left.

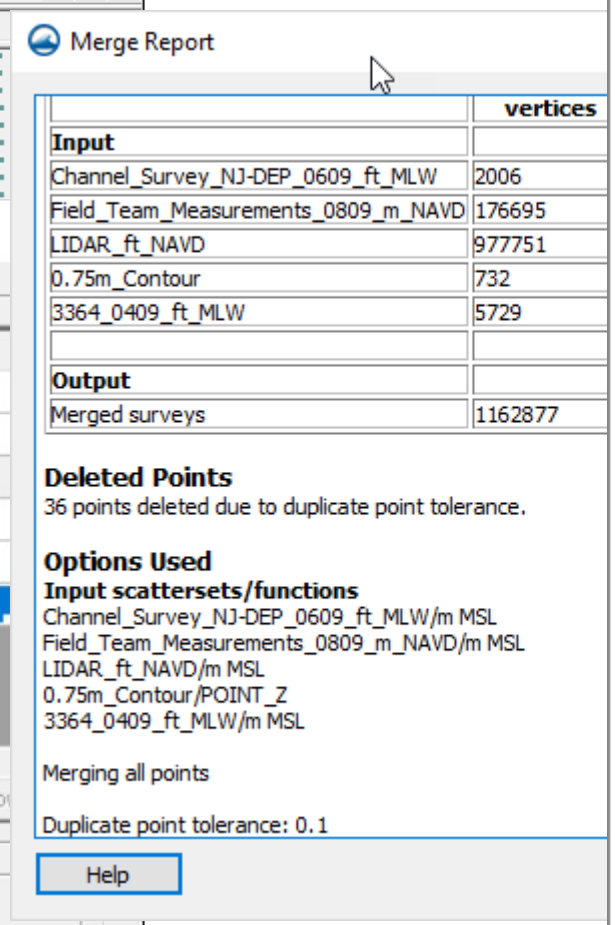


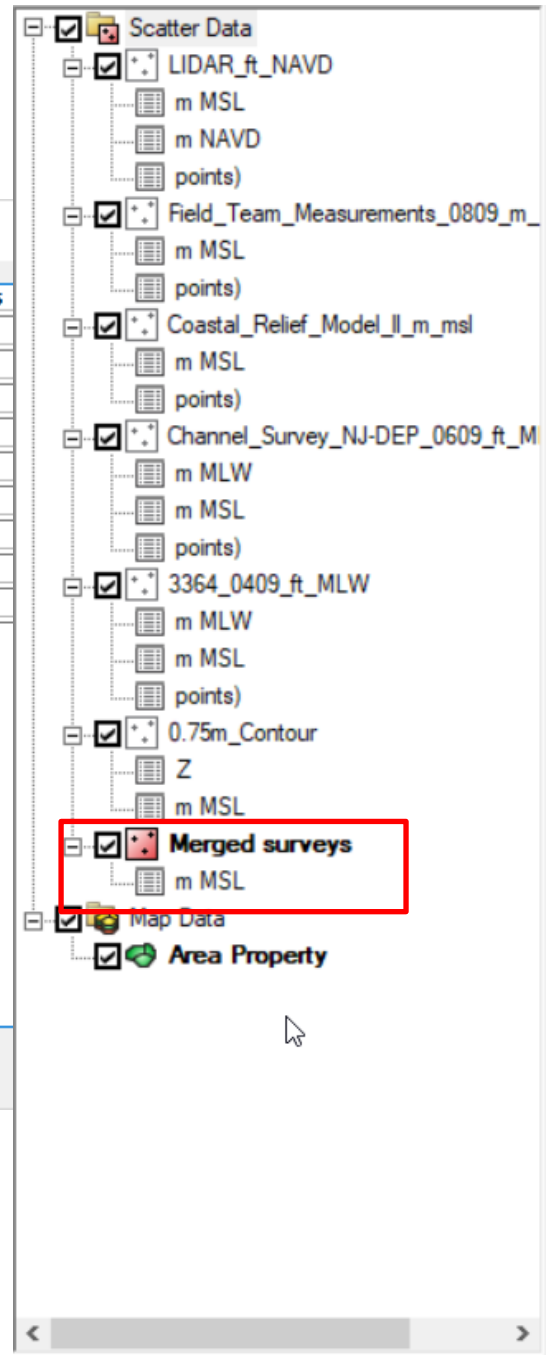
Remember to save project frequently.

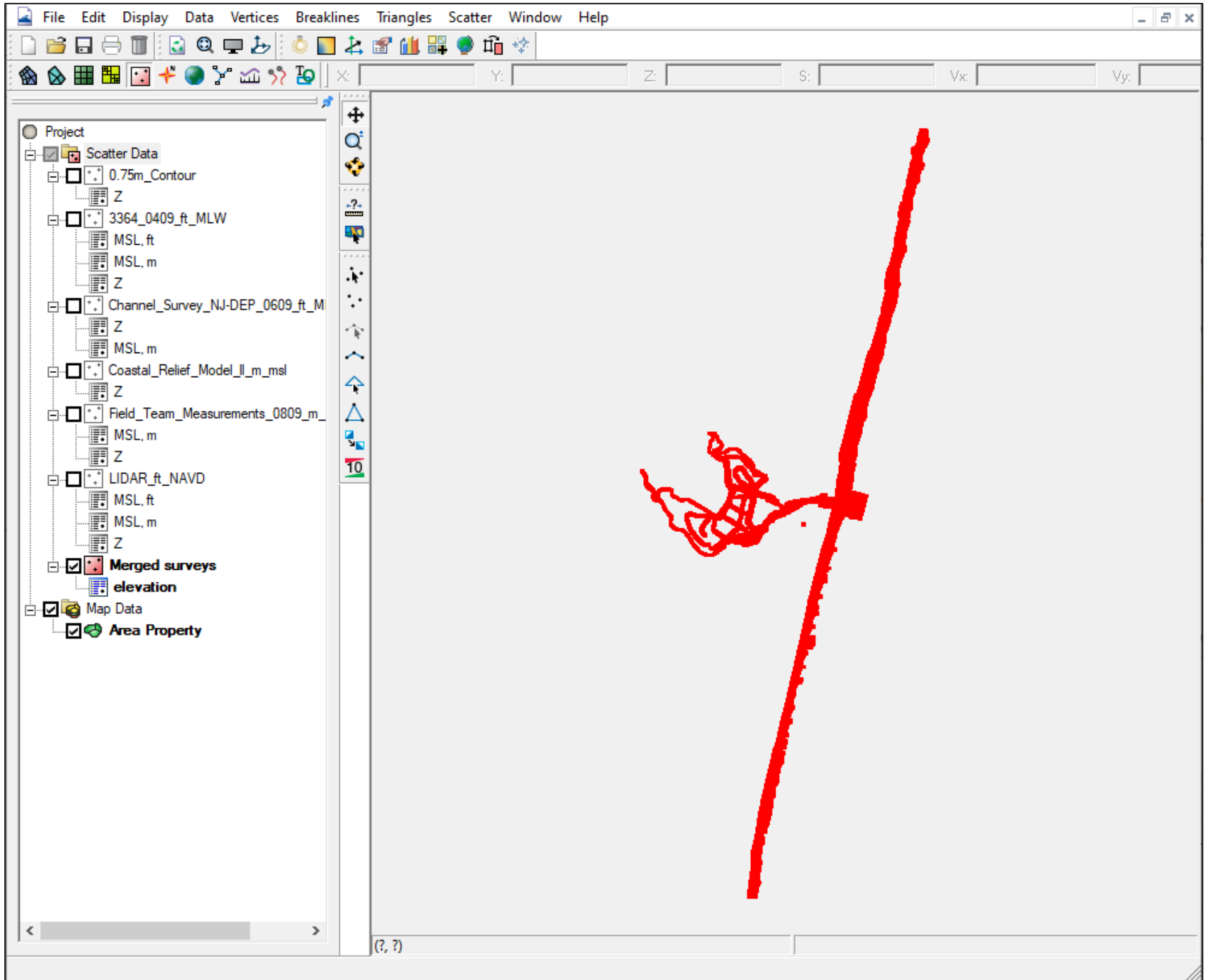
There is no UNDO in SMS

Merge all but Coastal Relief datasets together

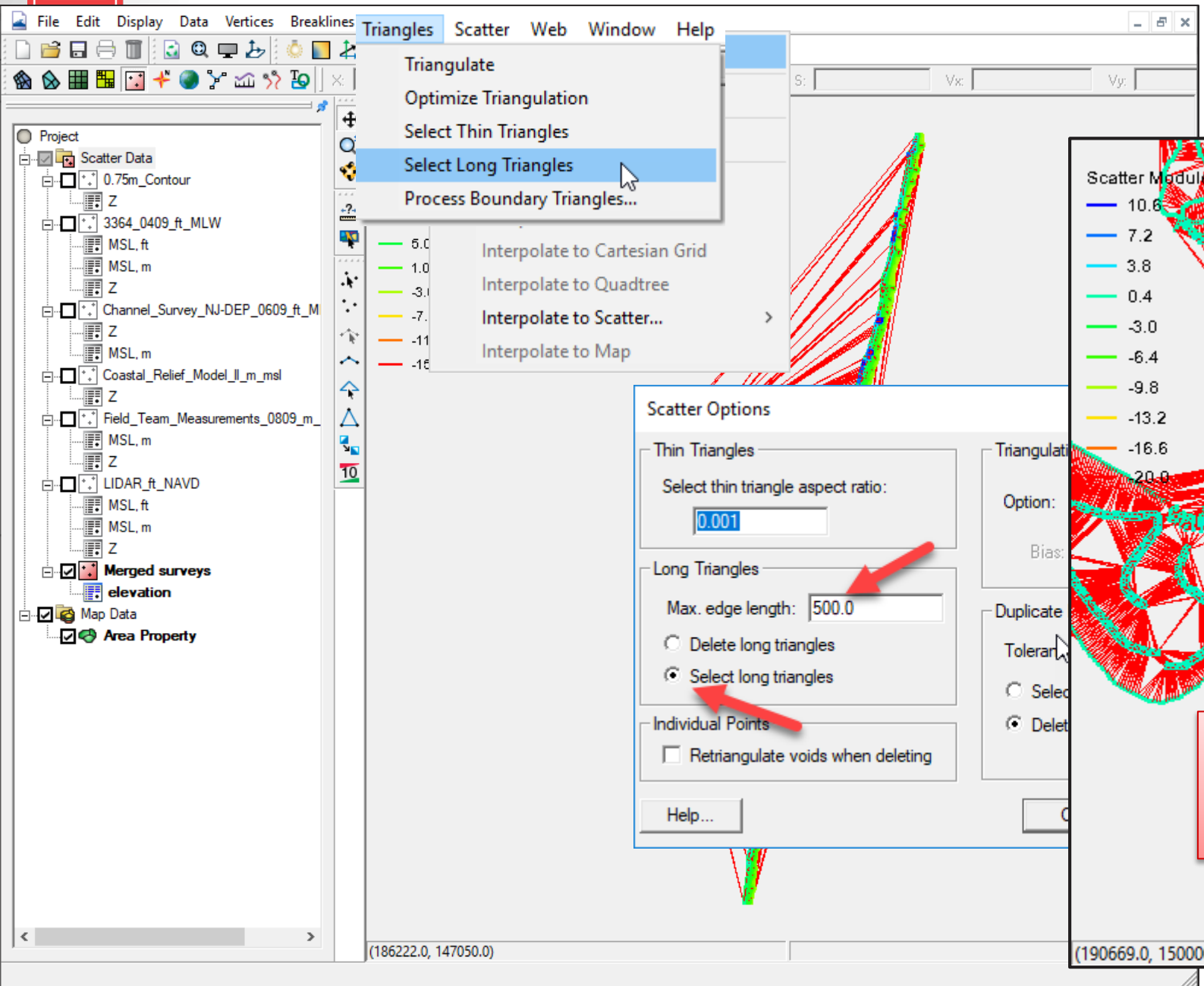


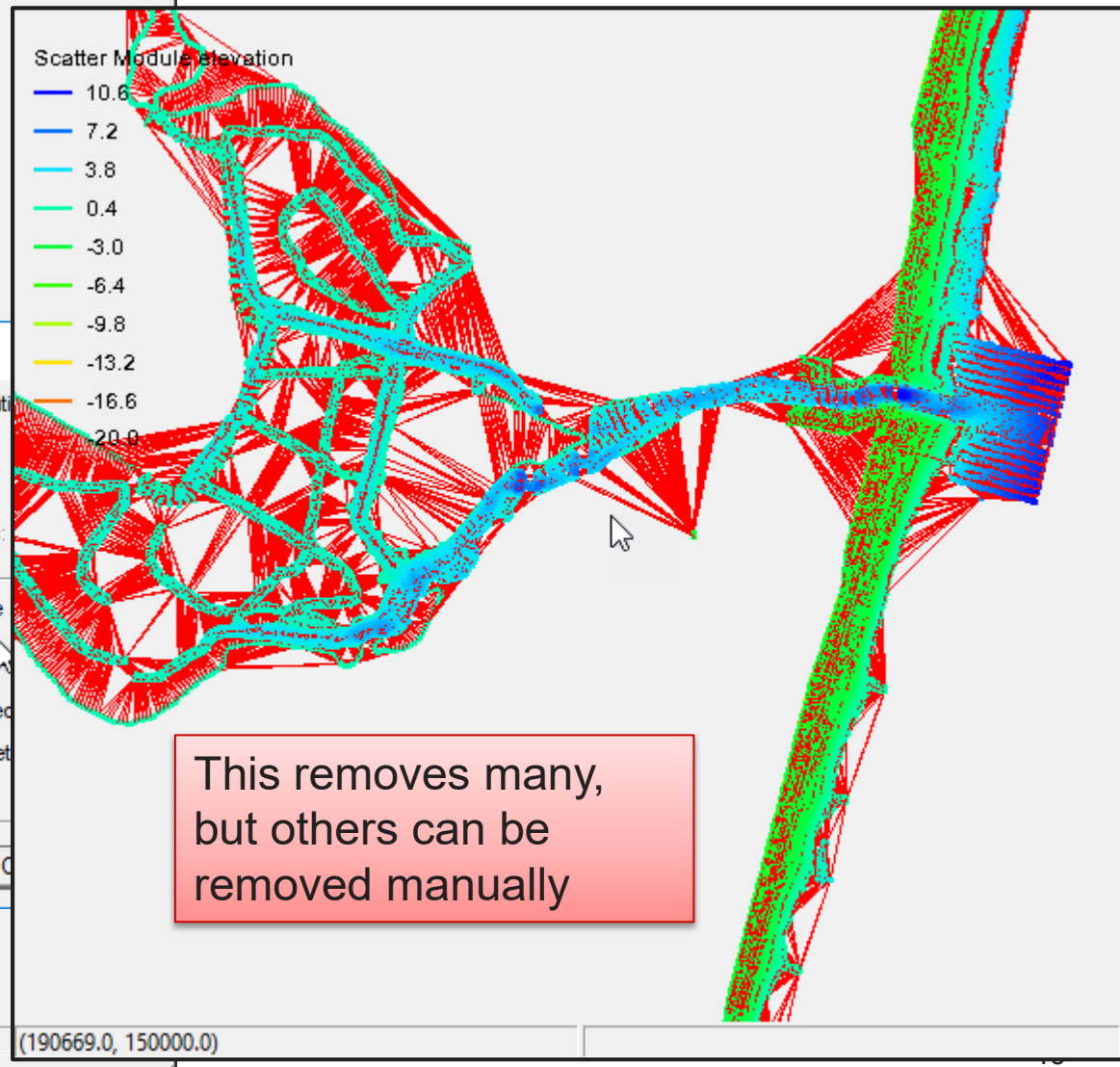




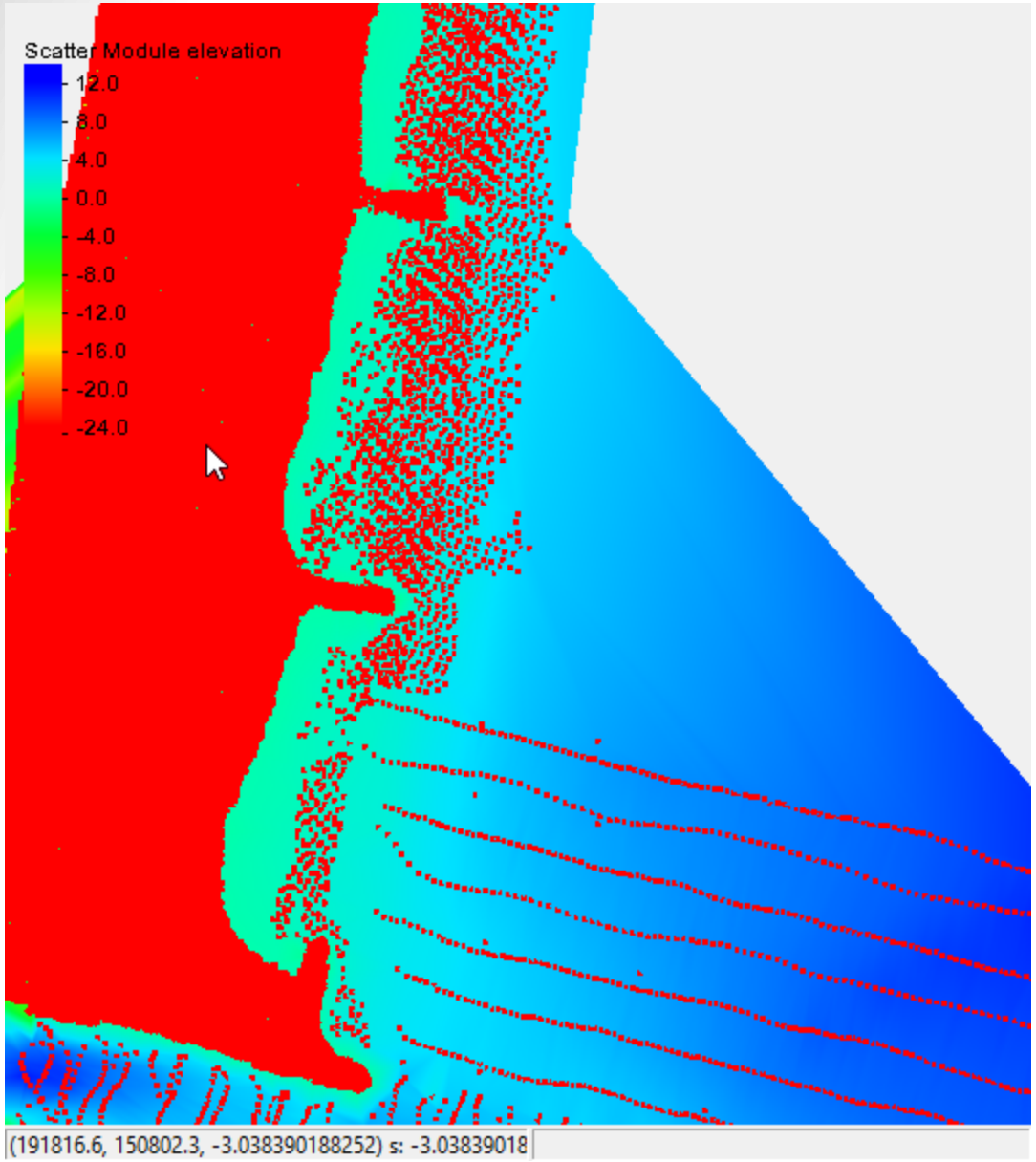

File Edit Display Data Vertices Breaklines Triangles Scatter Window Help
X: Y: Z: S: Vx: Vy:
Project
Scatter Data
0.75m_Contour
Z
3364_0409_ft_MLW
MSL, ft
MSL, m
Z
Channel_Survey_NJ-DEP_0609_ft_M
Z
MSL, m
Coastal_Relief_Model_ll_m_msl
Z
Field_Team_Measurements_0809_m_
MSL, m
Z
LIDAR_ft_NAVD
MSL, ft
MSL, m
Z
Merged surveys
elevation
Map Data
Area Property
10
(?, ?)

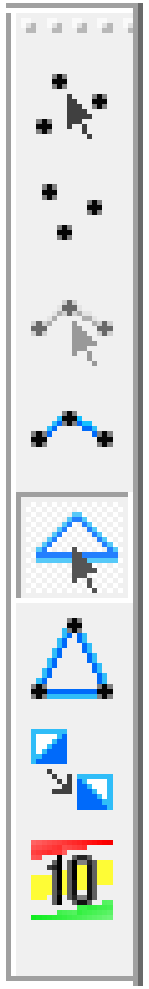
Remove triangulated elements where no points exist





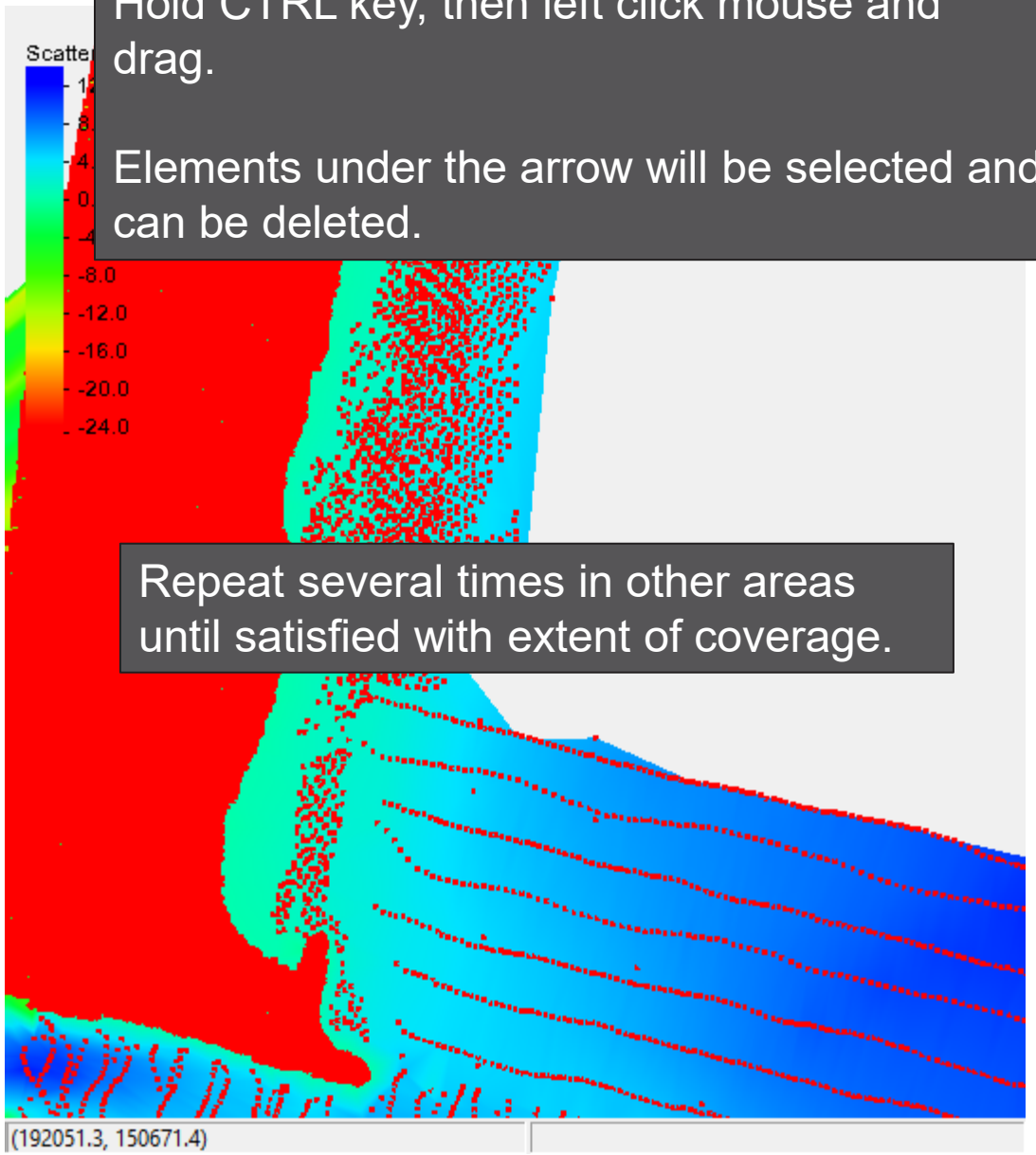
Manually remove elements before next merge of datasets





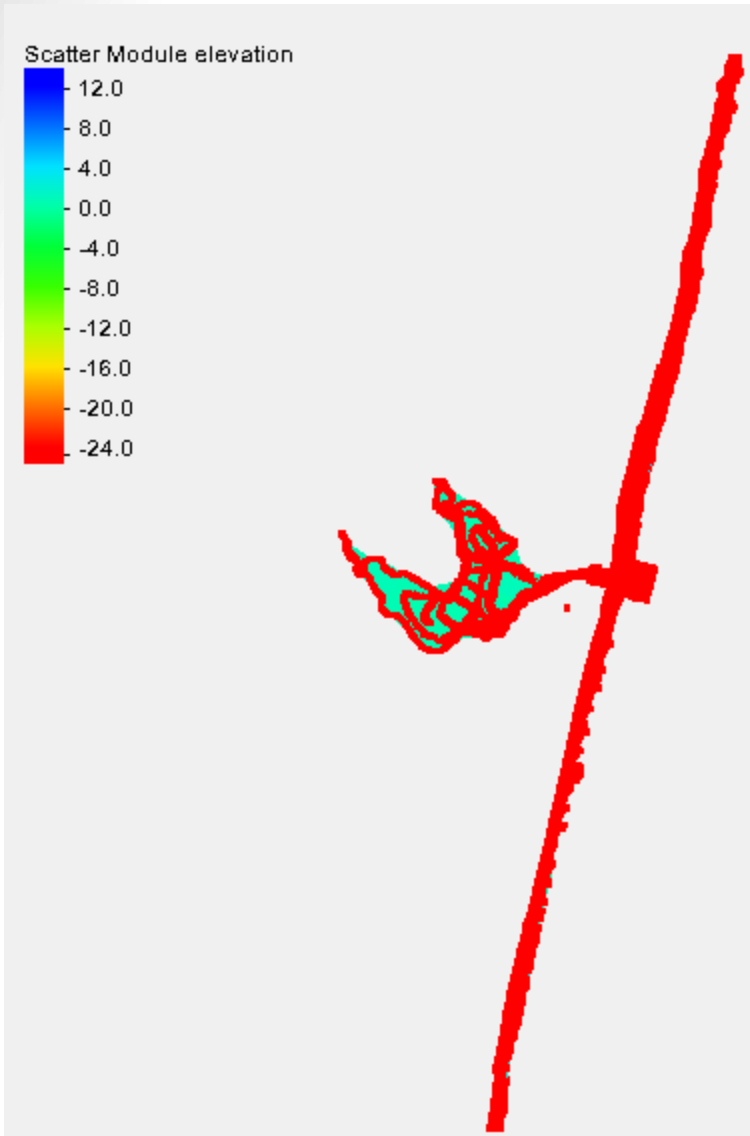
Hold CTRL key, then left click mouse and drag.

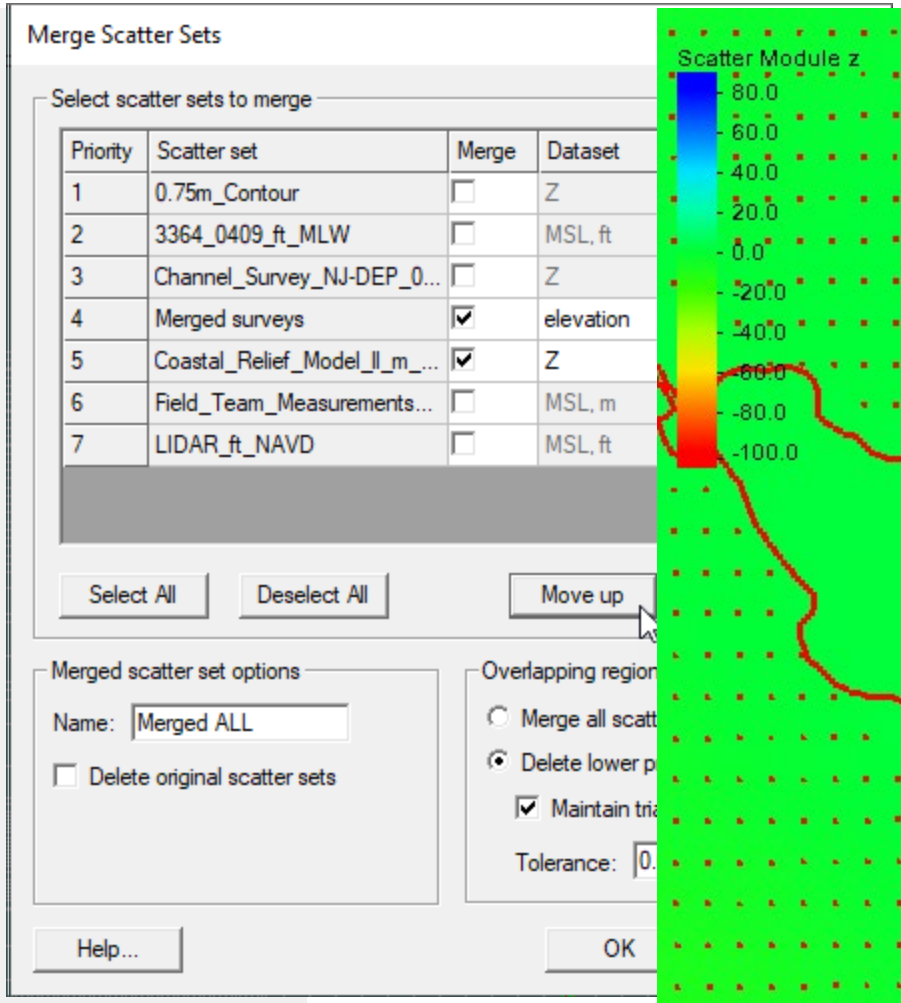
Elements under the arrow will be selected and can be deleted.

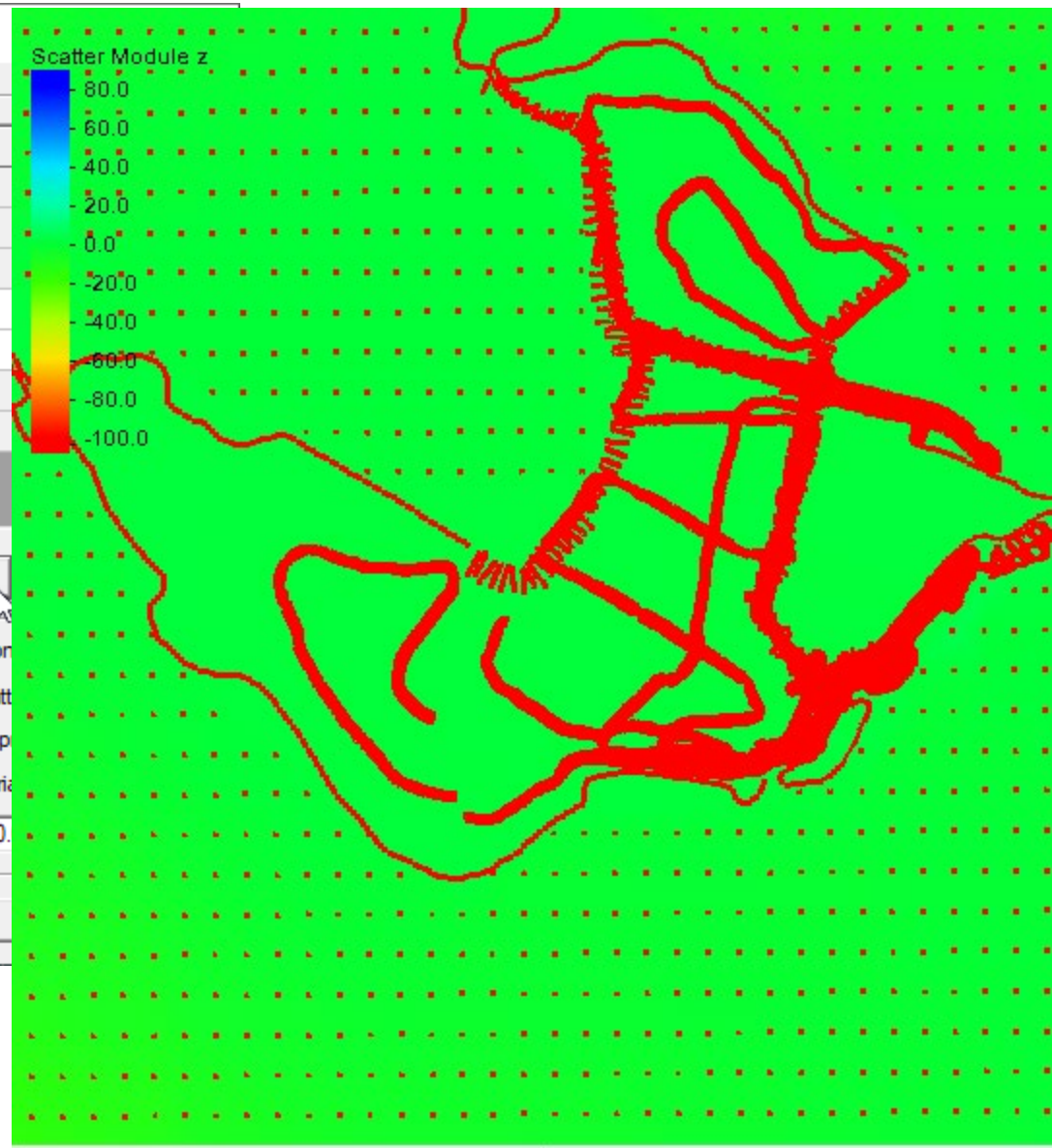


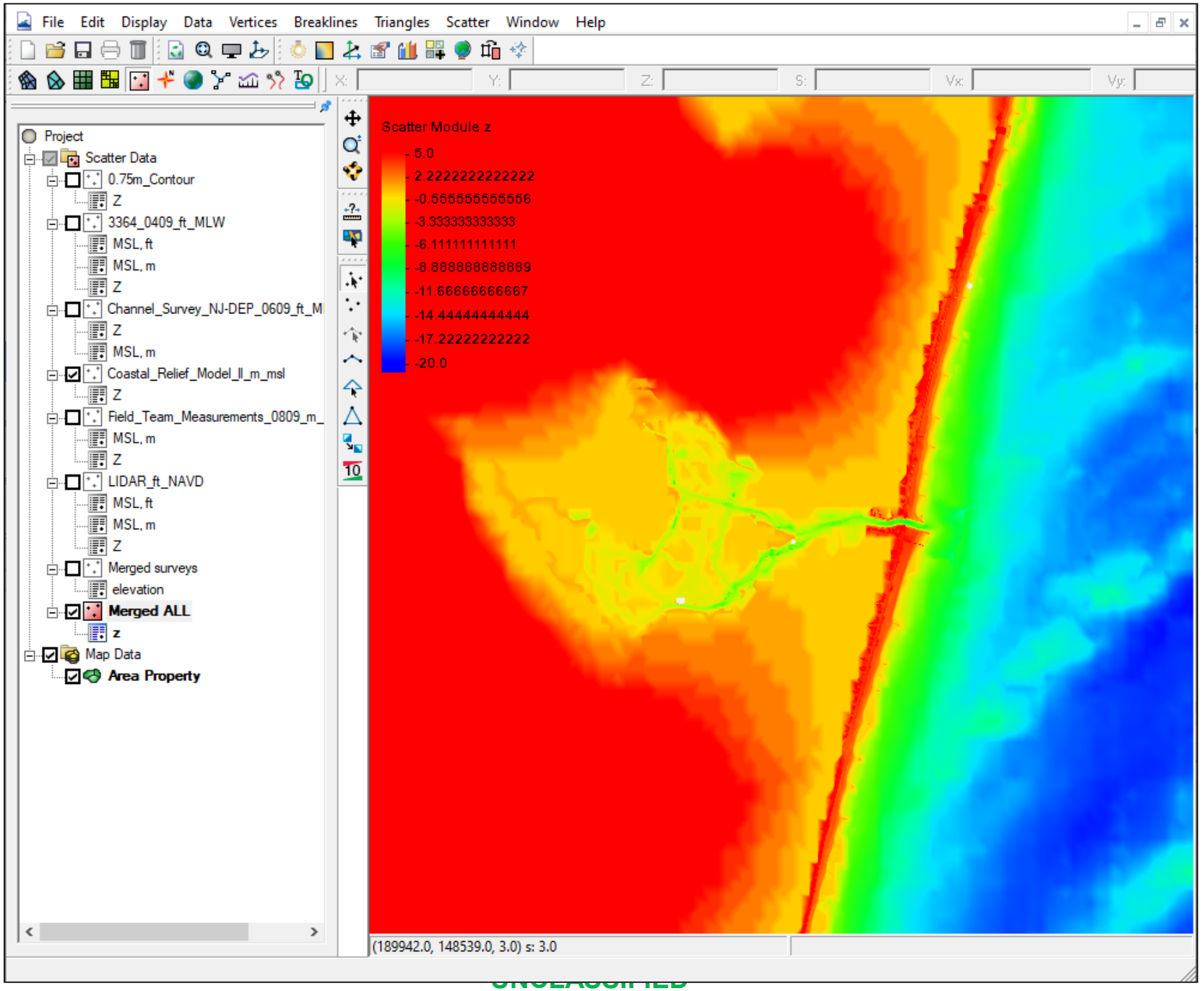
Repeat several times in other areas until satisfied with extent of coverage.

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








File Edit Display Data Vertices Breaklines Triangles Scatter Window Help
X: Y: Z: S: Vx: Vy:
Project
Scatter Data
0.75m_Contour
Z
3364_0409_ft_MLW
MSL, ft
MSL, m
Z
Channel_Survey_NJ-DEP_0609_ft_M
Z
MSL, m
Coastal_Relief_Model_ll_m_msl
Z
Field_Team_Measurements_0809_m_
MSL, m
Z
LIDAR_ft_NAVD
MSL, ft
MSL, m
Z
Merged surveys
elevation
Merged ALL
z
Map Data
Area Property
Scatter Module z
5.0
2.2222222222222
-0.555555555556
-3.333333333333
-6.111111111111
-8.888888888889
-11.66666666667
-14.44444444444
-17.22222222222
-20.0
(189942.0, 148539.0, 3.0) s: 3.0

QUESTIONS?

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