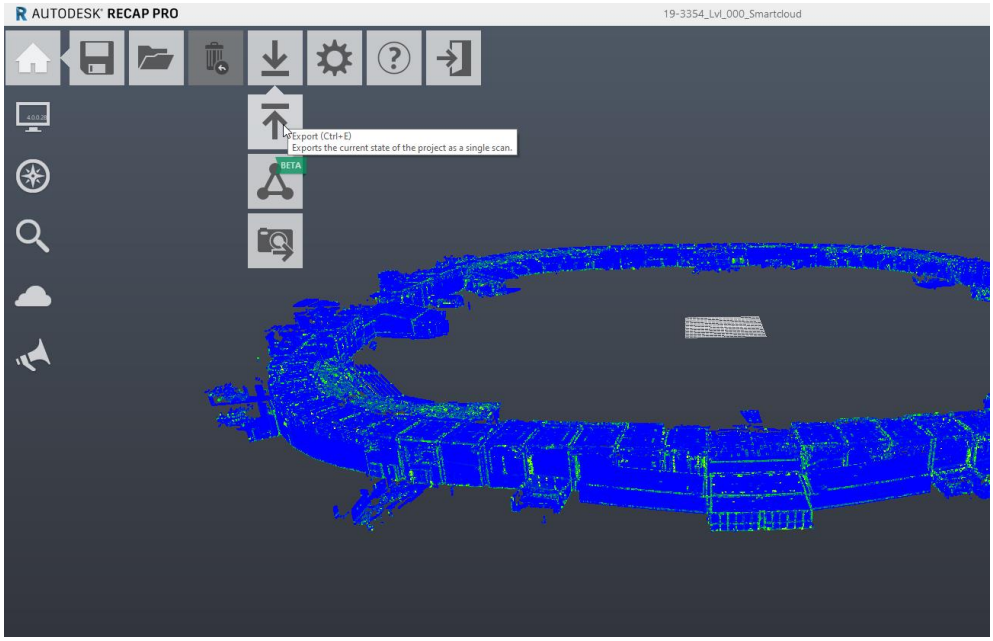
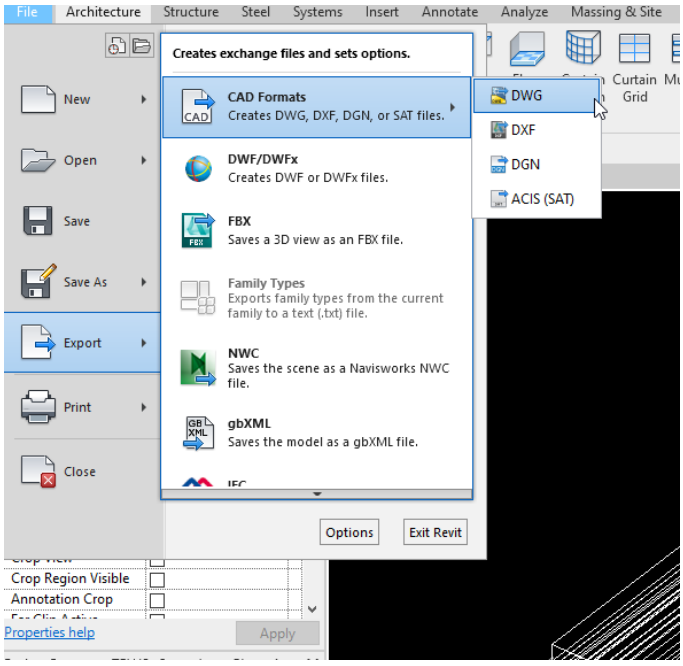
[Z]Verify Instructions

Prepare Files

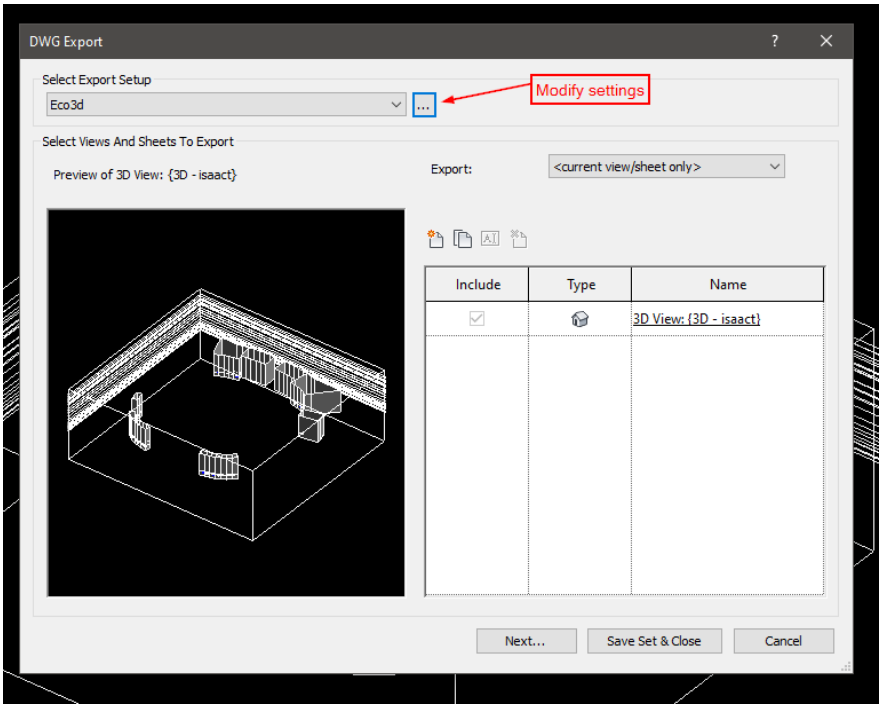
1. E57 file
    a. Open point cloud (.rcs) directly into Recap program
    b. Export file using drop down menu to select E57 (.e57) file format

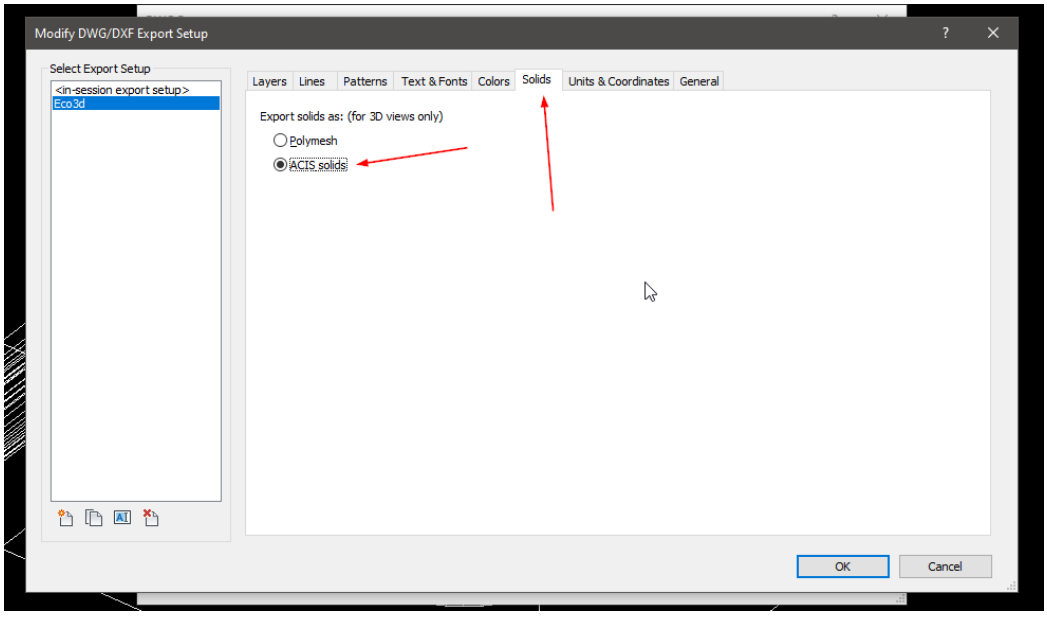


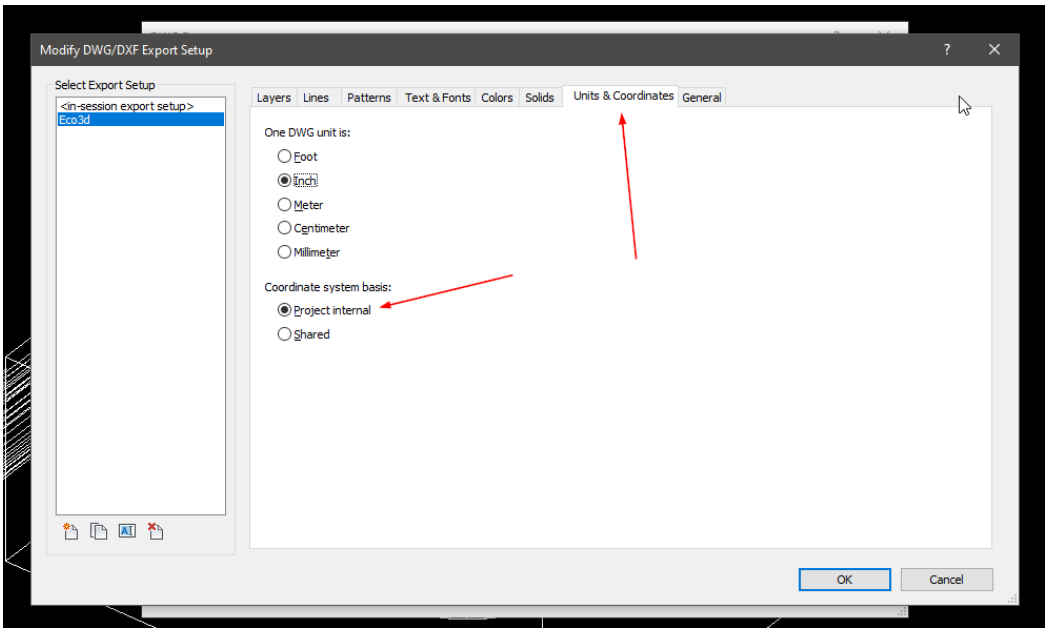
    c. Save in known location
2. FBX file
    a. Open Revit model and isolate desired elements – use section box to narrow down region
    b. Export model to DWG (.dwg) file



i. Modify settings for proper exporting
    1. Note: if using a shared coordinate system, you must change the export coordinates to shared



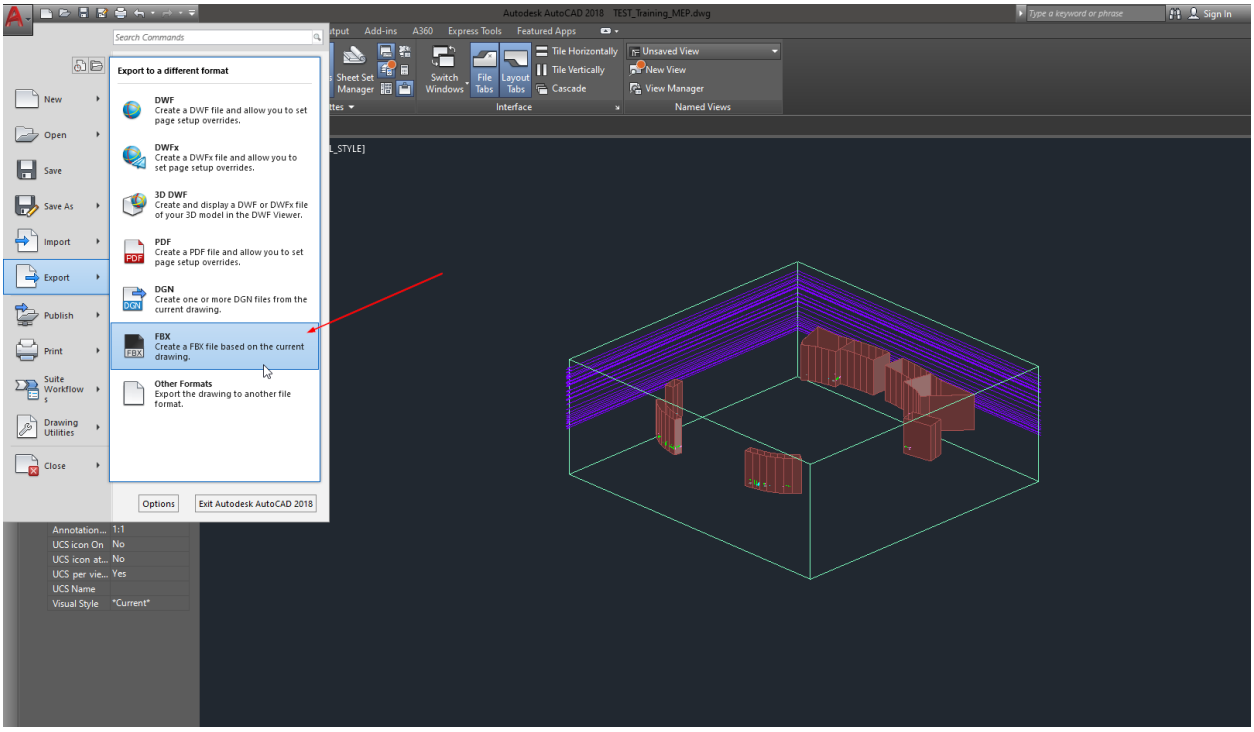




ii. Open newly exported file in **AutoCad 2018**

c. Export from DWG to FBX (.fbx)

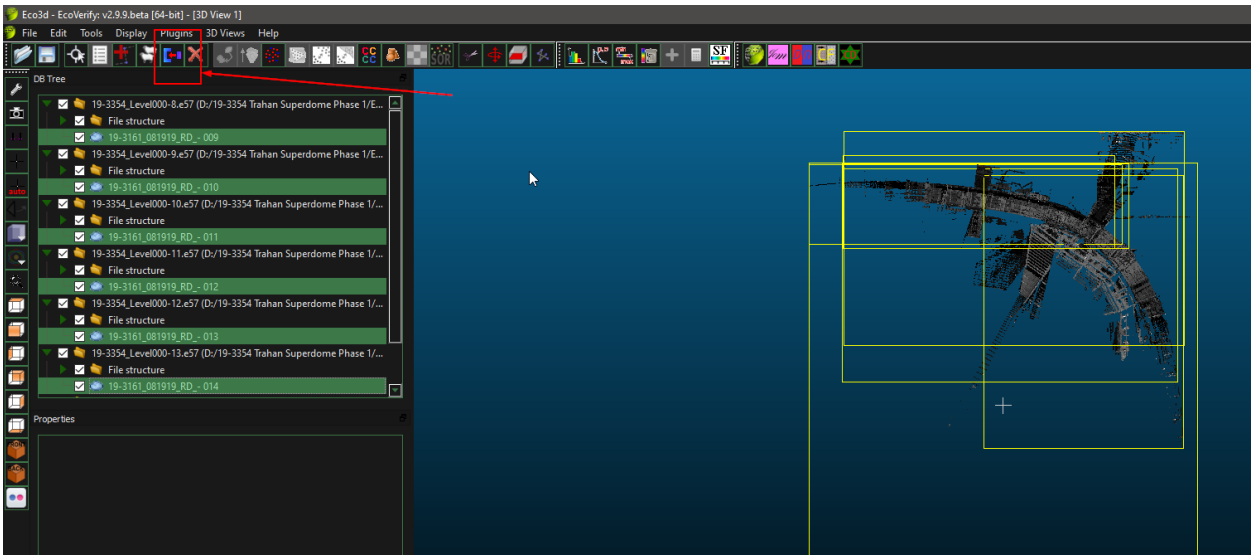
i. Save file in known location with appropriate naming



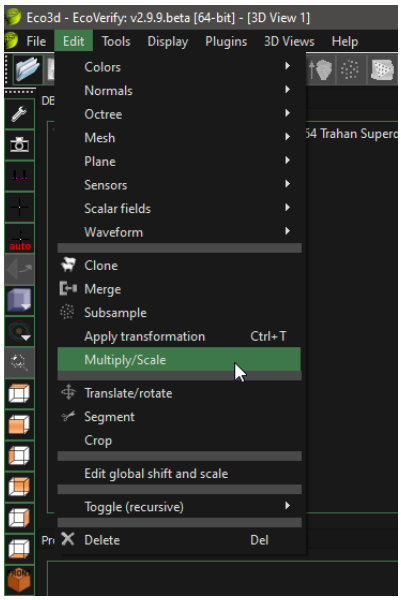
CLOUD COMPARE / [Z]VERIFY

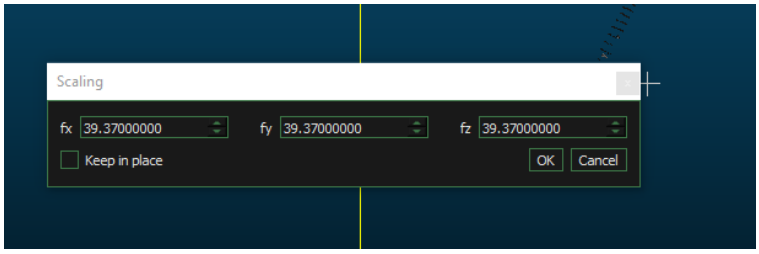
Note: CC has NO undo function, if an error is made the files must be deleted and the process restarted from the beginning

3. Load E57 files
    a. Open files in the program or drag and drop into the main work area
    b. Merge files
        i. Select all E57 files WITHOUT folders and use the merge function

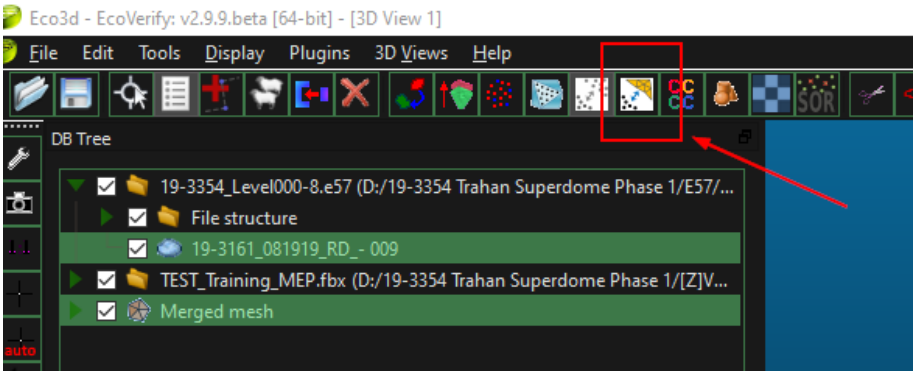


        ii. Remove excess folders if necessary
    c. Scale the merged E57 file to a factor of **39.37** in all axis with the “keep in place” box **UNCHECKED**
        i. Desired file must be selected

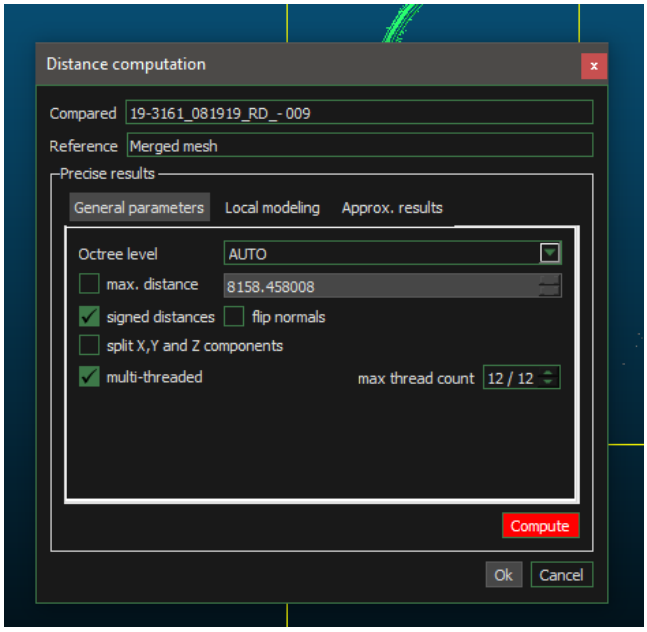




4. Load FBX file
    a. Repeat the same opening and merging process used in steps 3a-3b. Do not scale the FBX file.
5. Cloud compare the merged mesh to the merged E57 files
        i. You will end up comparing these 2 times
    b. Select both the mesh and the E57 file together and use the compare function on the top toolbar

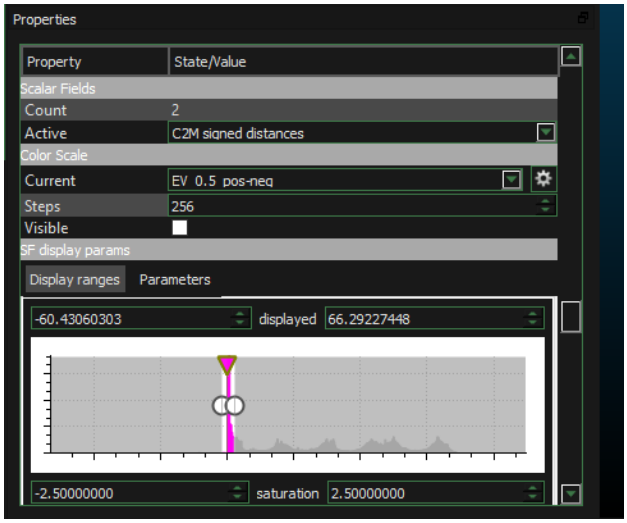


    c. Select COMPUTE to compare the objects for a second time – *this may take a while*



    d. Select OK to complete the cloud compare
    e. Select the E57 file and change “Color Scale” to a positive negative scale
        i. EV_0.5_pos-neg
        ii. Check the “Visible” box below the scale to display the scale range on the right hand side of the screen for reference

iii. Bring in the range using the control grips to narrow down the view of the file

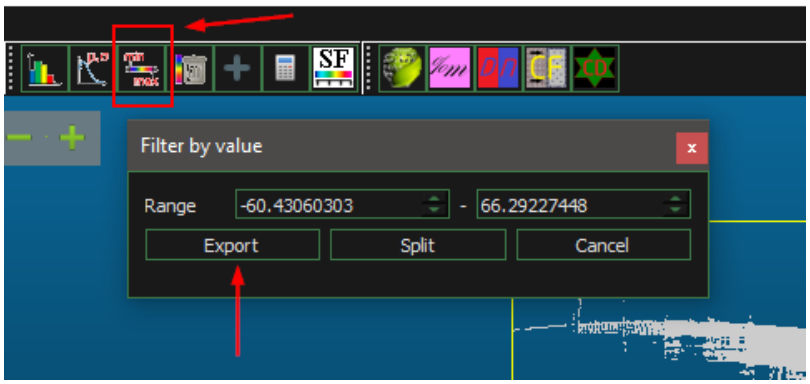


f. Narrow down the display range to remove excess data using “Filter Points by Value”

i. Standard range: -7 – 7

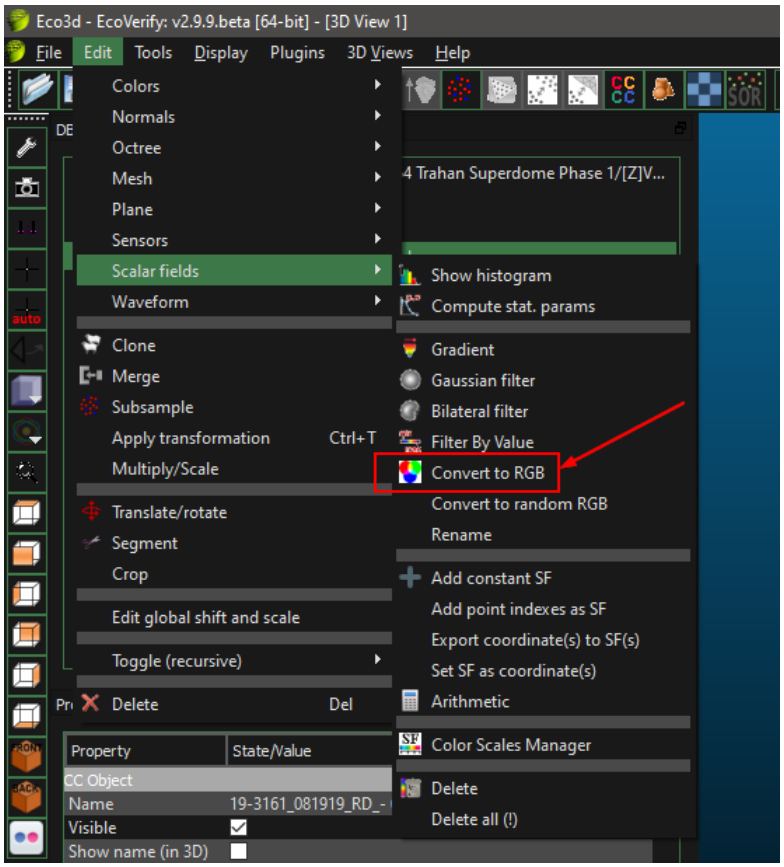
1. This range will display up to 7 units off the cloud
2. Range may differ based on project needs

ii. Select EXPORT to create a new point cloud based on the filtered values

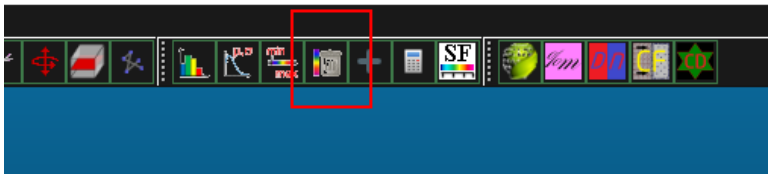


RECAP/POINT CLOUD CREATION

6. Convert cloud to RGB and prepare for exporting
    a. Select new cloud and “Convert to RGB”
        i. Do **NOT** mix with existing colors

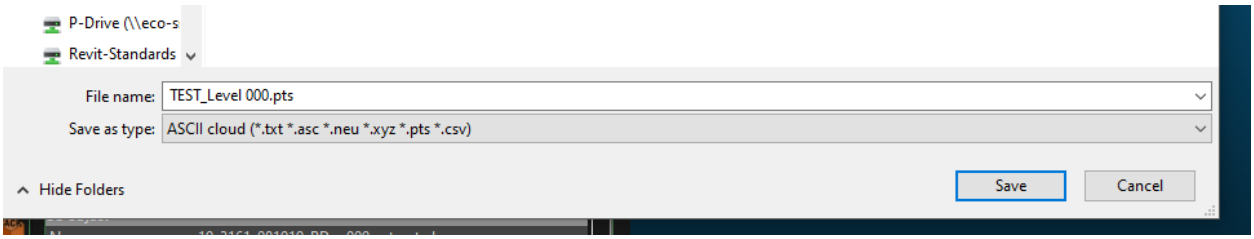


    b. Delete current scalar field until model loses all color
        i. Cloud should be entirely white
            1. *Note that in the properties there is no longer an option for a color scale or a visibility range*



    c. Save new RGB file as a PTS (.pts) file

i. Name the file and give the suffix as .pts



ii. Click OK, no need to change any settings

7. Open Recap program
    a. From the home page, select “scan project” and name appropriately
        i. Ensure the project is saving to the proper location
        ii. Select proceed
    b. Select files to import
    c. Change the units to “international inch” and import files

d. “index scans”

e. “launch project”

Cloud Compare Software:

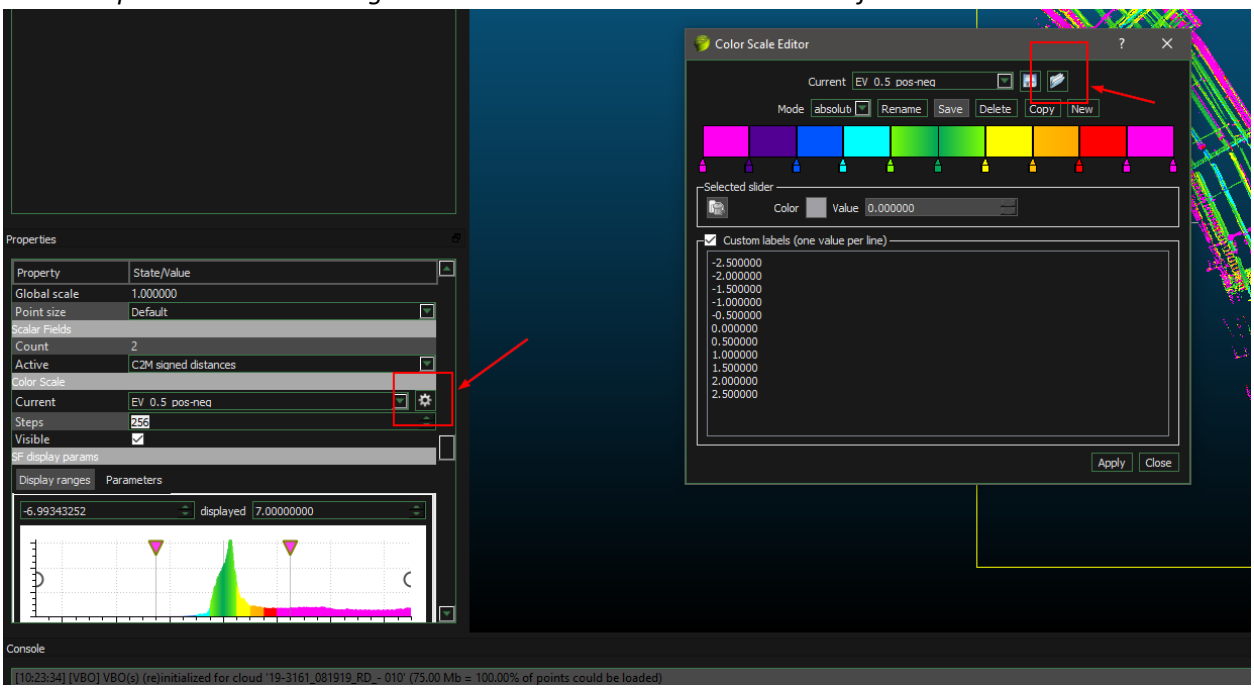
P:\Technology_R+D_Charles\Charles\2. CloudCompare\2. CloudCompare\CloudCompare

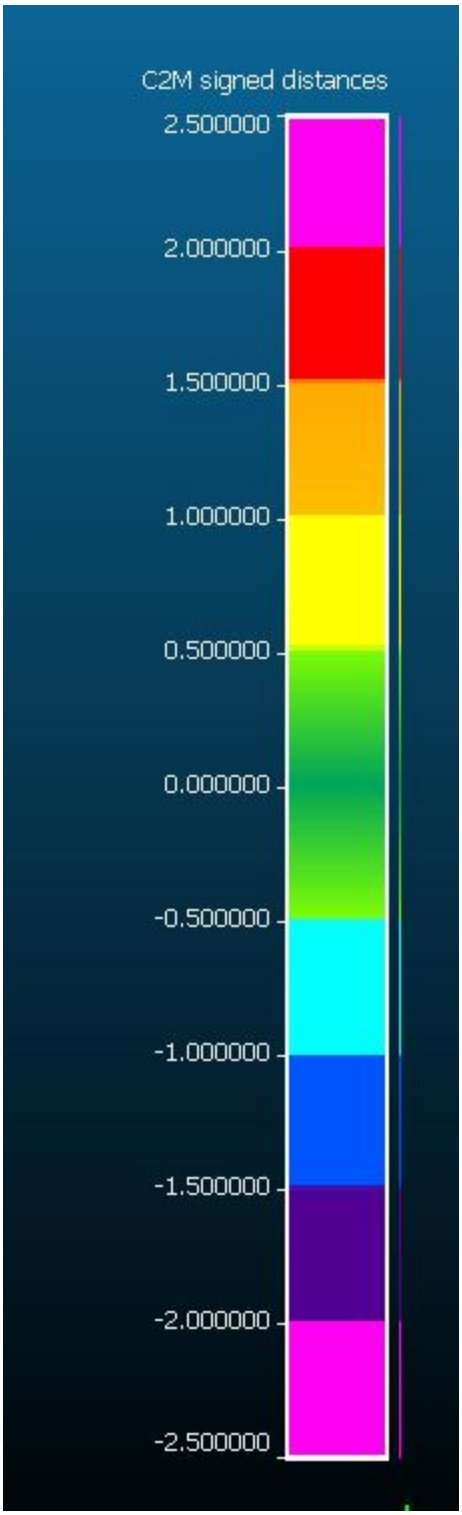
Copy entire folder and save it to your local drive

Positive Negative Scales:

P:\Technology\Primary Software\Cloud Compare\Color Scales\EcoVerify_XML\Positive-Negative Scales

Open color scale settings and OPEN new color scale to load into file




C2M signed distances
2.500000
2.000000
1.500000
1.000000
0.500000
0.000000
-0.500000
-1.000000
-1.500000
-2.000000
-2.500000