Section 13: Terrain Prep Tool

Section Objective

Use the Terrain Prep Tool to combine existing digital terrain models (DTMs) into one DTM, divide a DTM into several DTMs, or create a raster surface from a DTM

Class Notes

Terrain Prep Tool

Objective:

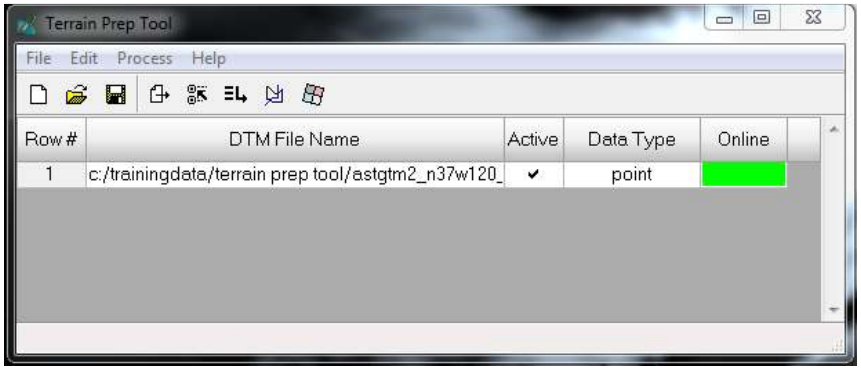
The Terrain Prep Tool combines existing DTMs into one DTM, divides a DTM into several DTMs and creates raster surfaces from DTMs. The purpose of this exercise is to merge the Yosemite DEM into the underlying ASTR derived DEM. This is useful as the Yosemite DEM has been derived from LiDAR and is a higher resolution

Task 1: Split Terrain Files

1. Go to **File > Open Raster Layer**
2. Open ***ASTRGTM2_N37W120_dem.tif***

   We will spit this DEM into 9 Tiles

3. From the Terrain tab, click **Terrain Prep Tool**
4. Click the **Add DTM Files to The List** button
5. Click **Yes** to any warning messages



6. Click **Process > Split**

   The Split DTM dialog appears. This menu allow us to set the number of tiles (x, y) we wish to create. We can also output to a predefined map template if desired

7. Set the **Output Prefix Name** as **astr** and ensure you set the tile to ***.img**. This will name each of the resulting tiles ***astr_1_1.img, astr_1_2.img***, ***astr_1_3.img*** etc.
8. Set the **X** and **Y bins** to **3**

Task 2: Merge Terrain

1. Go to **File > Open > Raster Layer**
2. Open ***Yosemite_DEM.img*** and ***ASTRGTM2_N37W120_dem.tif***
3. Ensure ***Yosemite_DEM.img*** is on top.

   The purpose of this exercise is to merge the Yosemite DEM into the underlying ASTR derived DEM. This is useful as the Yosemite DEM has been derived from LiDAR and is a higher resolution

4. From the Terrain tab, click **Terrain Prep Tool**
5. Click **Add DTM Files to The List** 
6. Select ***Yosemite_DEM.img***
7. Click **OK**
8. Click again on **Add DTM Files to the List** 
9. Select ***ASTRGTM2_N37W120_dem.tif***
10. Click **OK**. Click yes on any warning messages.

    Both DEMs have been added to the Terrain Prep Tool

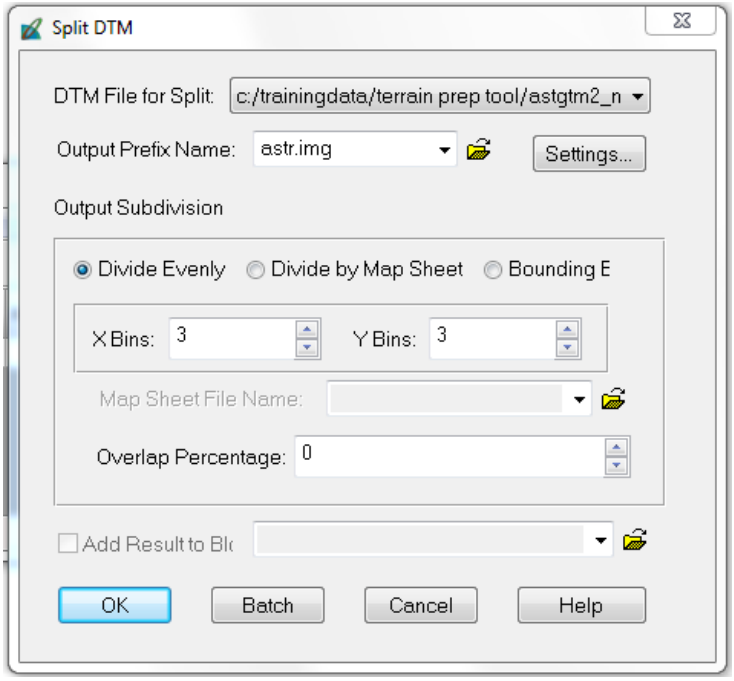
11. Click ***Process > Merge***
12. Name the Output File ***yosem_merge.img***
13. Click the **Settings** button
14. Ensure **Cell Sizes** is set to 10 x 10 metres.
15. This will create a 10 x 10m DEM

    You can set output Horizontal and Vertical projections from this menu also

    .

16. Click **OK** to run the Merge
17. Once the Merge process has completed open the resulting ***yosem_merge.img*** image in the 2D
18. Open a second 2D View and display ***yosem_merge.img*** as relief

    Can you tell where the DEMs have been merged?



19. Click **OK** to run the process
20. Navigate to your outputs directory and assess the resulting tiles

Task 3: Creating a Digital Surface Model from a LAS file.

We will now output a LAS file as a DEM. As this LAS file has not been filtered, the result will be a Digital Surface Model

1. Go to **Terrain tab > Terrain Prep Tool**
2. Click the **Add DTM Files to The List**
3. Navigate to the **Point Clouds** folder and open ***quarry.las***. (You may need to select *.las as the format)
4. Click **Process > Surface**
5. Leave the General tab as is and click the **Rasterization tab**
6. Check **Output DEM ON**
7. Set the cell size to **1.00 x 1.00 meters**
8. Name the file ***quarry_dsm.img***
9. Ensure Surfacing method is **Linear**
10. Ensure Data type is **Float Single**

11. We could all produce Contours and/or Classification. However in this case we will just produce the raster. Click **OK**

    This process will take some time to run

12. Assess the result in a 2D View

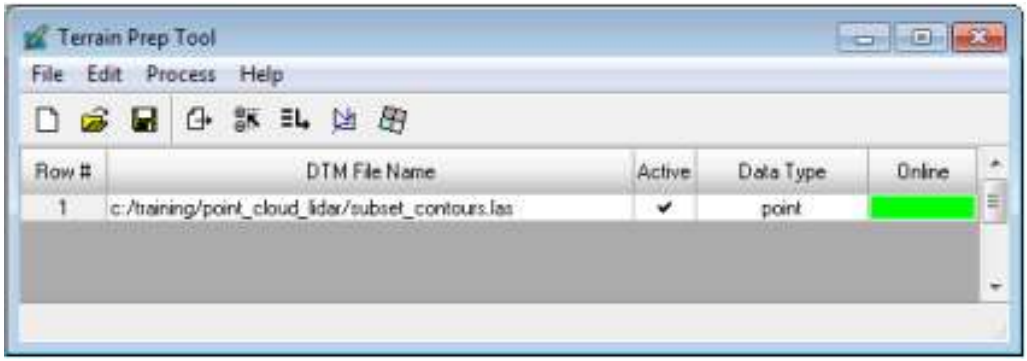
    Can you still identify the buildings and vegetation?

Task 4: Creating Vector Contours

Students will use the Terrain Prep Tool to generate Vector Contours on a subset of the Quarry data. These contours will be visualized and symbolized with the point cloud data.

1. Open ***quarry_subset.las*** in a 2D View
2. Change **Colored by** to **RGB**
3. To find the Terrain prep Tool, go to **Help** tab
4. In the Search Commands field, type ***terrain prep*** and press **Enter**

5. In the search results, click the **Terrain Prep Tool**

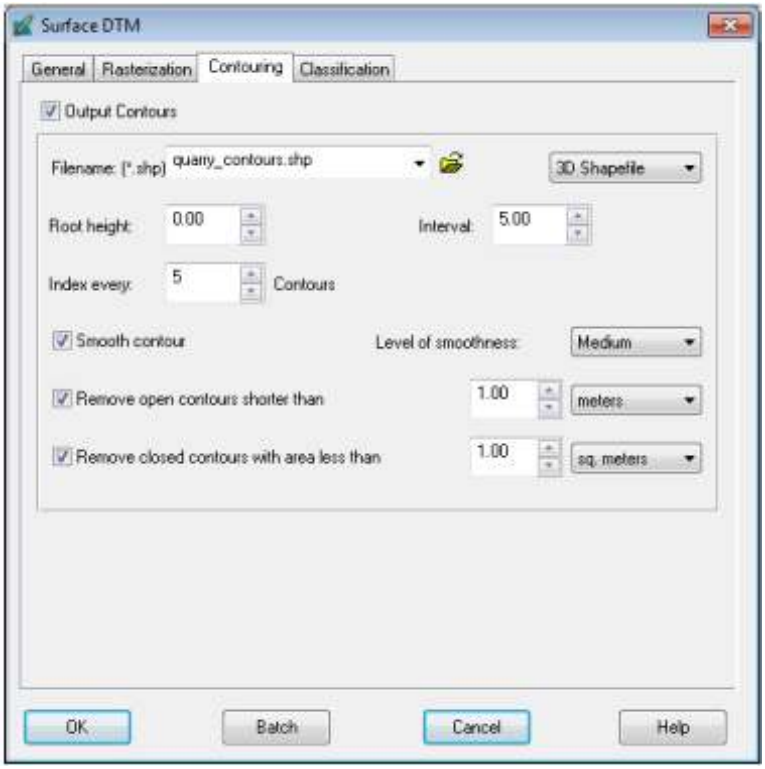


The Terrain Prep Tool opens

6. On the Terrain Prep Tool, click the **Add DTM Files to the list** icon
7. In the **Add DTM from…** dialog, change the Files of Type to **LiDAR (.las)** and select ***subset_contours.las*** Click **OK**

8. The Contouring function is included as part of the Surfacing process, so click the **Surface DTM**  icon

9. Leave everything on the General tab as it is and change to the **Contouring** tab. Check the **Output Contours** checkbox to generate contours



10. For the **Output Filename**, type ***quarry_contours.shp***

11. Check **Smooth Contours**. Change this setting to **High**.

12. Check **Remove open contours shorter than** and **Remove close contours with area less than**. Leave these set to their defaults

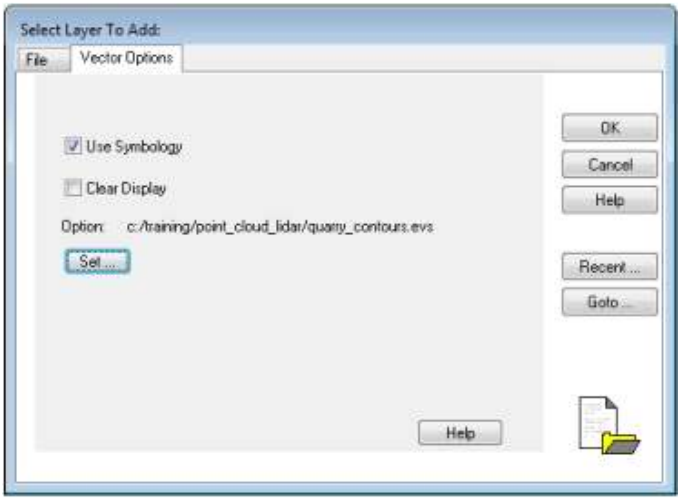
13. Click **OK** to being generating the contours

14. When the process finishes, in IMAGINE, select **File > Open > Vector Layer**

15. Navigate to your Outputs directory. Use Shift + click to select all of the ***quarry_contours_*.shp*** files. In our case there are four Shapefiles created by the software. Do NOT click OK yet

The Contouring function creates tiled contour Shapefiles. The finename we provided was the rootname for the files. The software uses the rootname_RowNumber_ColumnNumber template when naming the files.

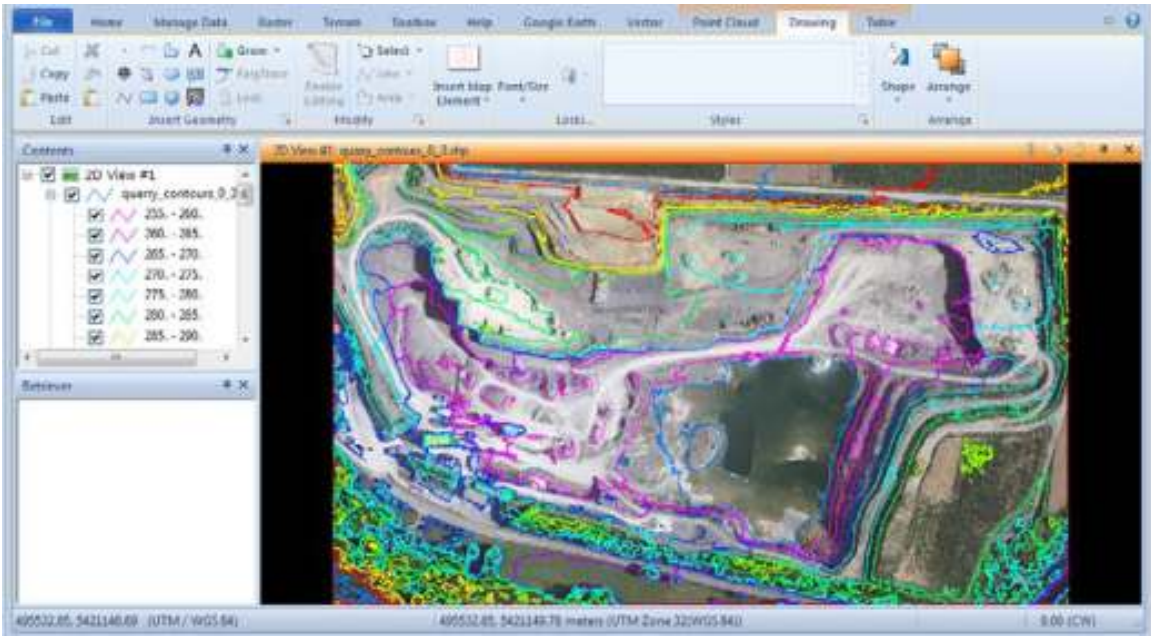
16. Click on the **Vector Options** tab



17. Check the **Use Symbology** option

18. Click **Set…** Navigate to your Inputs directory and select **quarry_contours.evs.** Click **OK** on the Choose Symbology dialog

19. Click **OK** on the Select Layer to Add dialog. The vector contours are displayed on top of the ***subset_contours.las*** file



20. **Close** the Terrain Prep Tool. Do not save the changes to the project

21. **Clear** the View

Class Notes