

Lab 8: UAS Point Cloud Processing

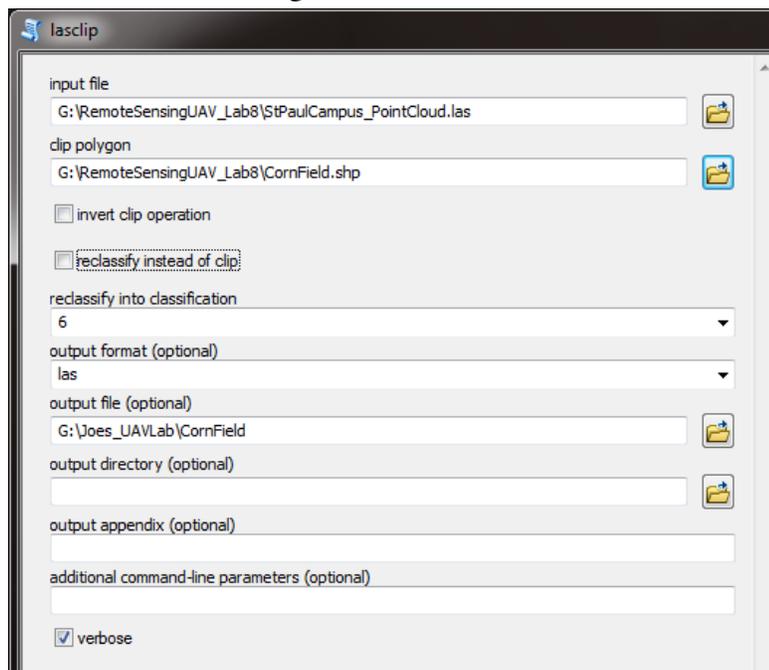


A. Exploring UAS Point Cloud

- a. Using the instructions from *Lab 6: Creating Lidar*, convert the *StPaulCampus_PointCloud.las* to both a DEM and DSM using ArcMap (Please use complete sentences and limit answers to roughly 1 paragraph).
 - i. The UAS does not have a lidar scanner, but rather a RGB sensor. How then was the dense point cloud created? You find this [LINK](#) to be a good starting point.
 - ii. As you calculate statistics of the LAS dataset in ArcMap, what do you notice that is different compared to the lidar dataset used in Lab 6? Why do you think it is so?
 - iii. As you compare the DEM to the DSM, you will notice the DEM is not very accurate. Considering your answer to question 1, why would a traditional lidar scanner be more effective when creating a bare-earth elevation model.

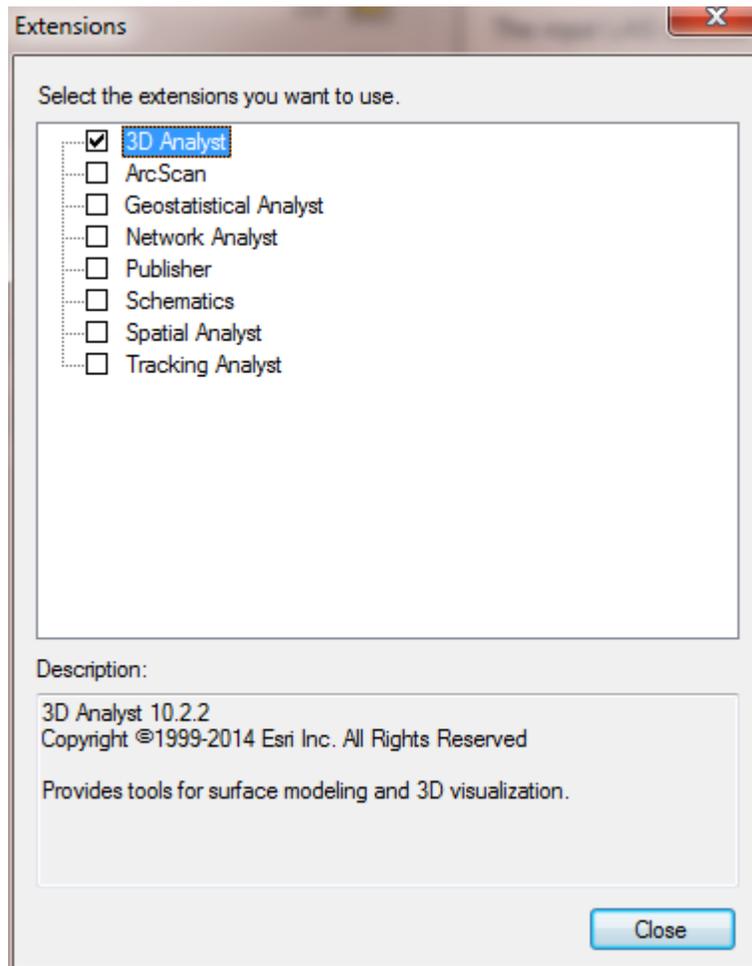
B. Deriving Surface Volume

- a. Download LASTOOLS either from Moodle or from <http://rapidlasso.com/lastools/> directly
- b. In the Catalog window, right-click and select *Add New Toolbox* to add the *LASTools* toolbox. Navigate to the location of LAS Tools and click on it.
- c. Using the *lasclip* tool, create a subset of the data that includes only a standing bed of corn. Use the settings below:

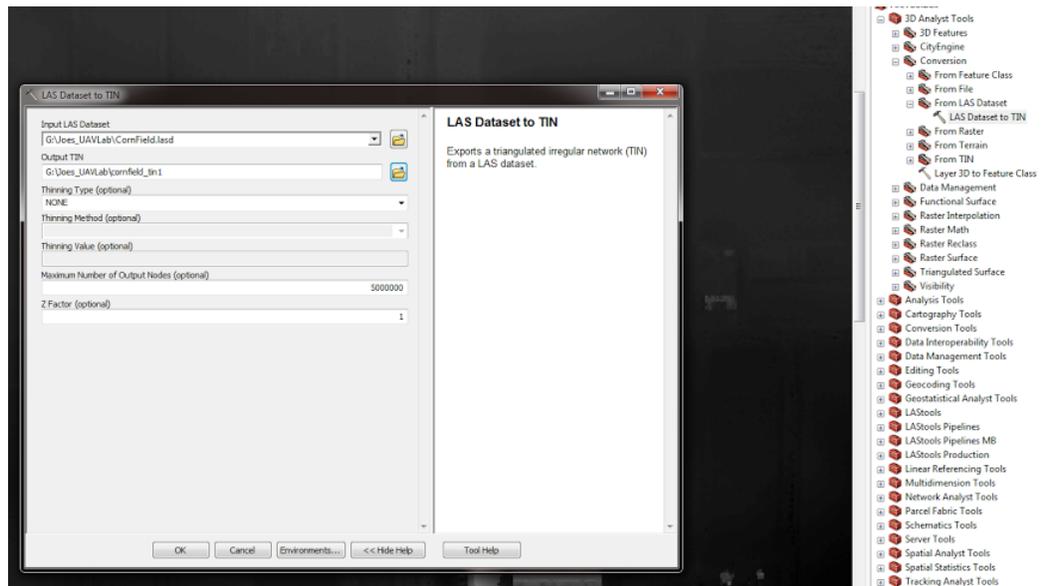


- d. Following previous instructions, create a LASdataset comprised of the *CornField.las* you have created.

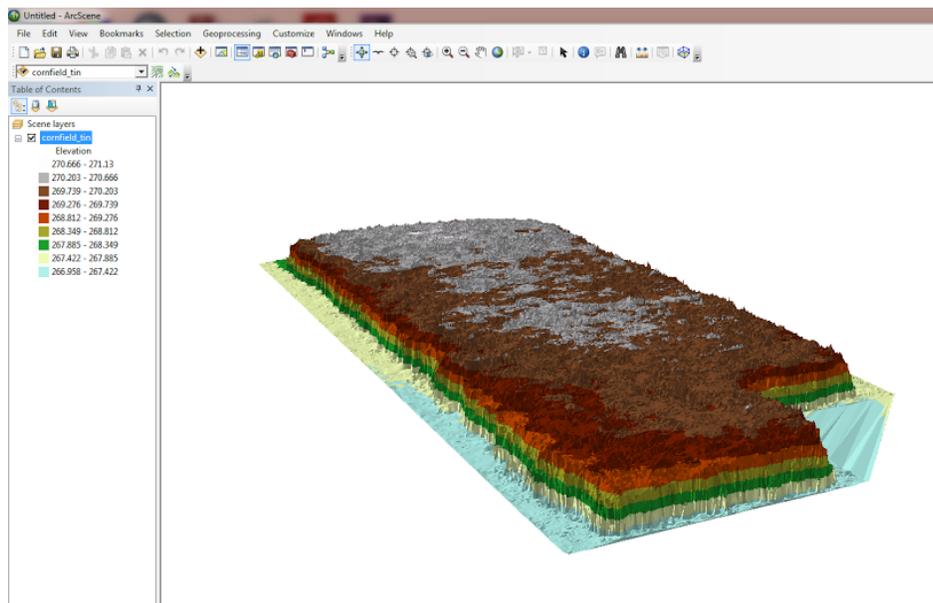
- e. Activate your 3D Analyst extension by selecting Customize-Extensions-3D Analyst along the top of the screen



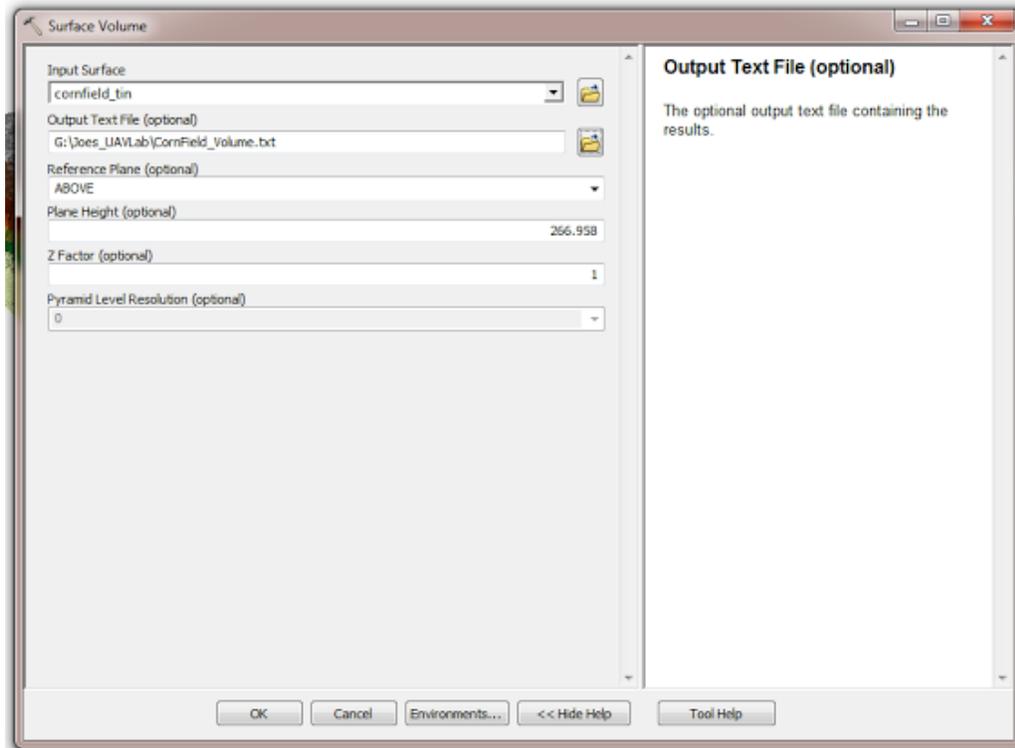
- f. In the 3D Analyst Toolbox select *Conversion-From LAS Dataset- LAS Dataset to TIN* and fill in as seen below:



- g. From your computer's start button, open ArcScene and add your new **CornField.tin**



- h. Using the search function, open 3D Analyst's Surface Volume tool and fill in as seen below:



- i. Refer to the .txt output. What is the volume of the plant stand?
- ii. Provide examples of when the high spatial and temporal resolution of UAS 3D Dense Point Cloud data (and volume estimation) could be valuable.