

Procedures for Processing LIDAR Point Cloud Files to Create DTM

Organize

Obtain LAS Data

If LAS data is Zipped (.LAZ) use LASTools – LasZip to unzip. Download LAS files, LAS files are stored in binary format they contain richer headers smaller sizes and can be read quicker than ASCII files. For batch processing in LASTools use LASTools GUIs.

Analyze Point Cloud

View LAS Data

LP360 Toolbar in ArcGIS
LASTools - LasView

Start by visualizing the point cloud data and coverage. LP360 Toolbar in ArcGIS is the fastest option to visualize multiple LAS files. Visually inspect data to ensure calibration is acceptable. Filter out erroneous data; clean point cloud (manually and automatically).

Subset

Create Boundary

LASTools - LasBoundary

Use this tool for data collection footprint and extent. In LASTool parameters make sure holes and disjoint areas are checked to maintain footprint.

Read LAS data headers

LASTools - LasInfo

Examine the extent of data coverage, number of LAS files, point count per file, and depth range per file, these factors will help to determine the size of the merged datasets.

Merge files

LASTools - LasMerge

Merging all LAS files into one file will speed up processing time and is easier to manage. However, if the data collection covers a large extent and contains billions of points, one file will take too long to process. Tiling the data and merging into smaller subsets might be more practical.

Transform/Grid

Transform Vertical Data

NOAA VDatum

Transform data to MSL then MHW for contours and shoreline analysis or MLLW for nautical chart analysis.

Grid LAS Data

DMagic Fledermaus,
ArcGIS

Using Dmagic Fledermaus 32 Bit add the ungridded/merged/transformed LAS files. Then grid the files using the appropriate cell size derived from the metadata or ArcGIS point information tool.

Export Bathy Raster

Fledermaus
ArcGIS

After gridding, launch Fledermaus, under create, add an ArcGIS workspace. Then use the DTM tools to export the bathy raster .

Evaluate

QA/QC Data Visually

ArcGIS

Use ArcGIS 3D Analyst – Triangulated Surface – Locate Outliers tool to identify anomalous elevation measurements from terrain, TIN, or LAS datasets that exceed a defined range of elevation values or have slope characteristics that are inconsistent with the surrounding surface. Add aerial imagery to inspect visually.