

NSF Sponsored NATIONAL CENTER FOR AIRBORNE LASER MAPPING



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Airborne Laser Swath Mapping Project

Detection of Tectonically Deformed Shorelines in Southern Illinois

PI: Darryl Granger, Purdue University

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List of products – quick view

1. 1m DEMs in ESRI GRID file format, based on the filtered (“bare-earth”) and unfiltered last return laser point datasets.
2. 1m Shaded Relief Maps in ESRI GRID file format.
3. 1m Contour Maps in ESRI Coverage file format, based on the bare-earth DEMs.
4. Raw laser point data (9 columns), ASCII format.
5. Last return laser point data projected to NAVD88 (Geoid03), ASCII format, one file per flight-line.
6. Filtered and unfiltered last return laser point data (xyz), tiled with overlap, ASCII format.
7. Shaded Relief Maps and Contour Maps high resolution JPEG images for quick visualization.
8. Report on the data processing.

Comments

- The bare-earth classification (filtering) was performed using Terrasolid’s TerraScan Lidar processing software. Details about the filtering process can be found in the Processing Report. Please note that these data are what we consider an improvement over the “first look” data you previously received. We suggest you use these new data for all your analysis.
- You may observe a periodic fine scale elevation variation throughout the dataset (about 5 to 20 cm, similar to a “corduroy” pattern), which is a property of the Optech LIDAR system, and it’s within the machine’s error limits. This variation can be removed by using a smoothing routine, but this process could smooth other features as well and we feel that the decision is best left with the PI.

What's on the DVD(s)

DVD1

GIS_Data – this folder contains the ArcInfo datasets and the associated “info” directory

- Digital Elevation Models, in ESRI GRID file format

“corX_fil_grd” – bare-earth grid

“corX_unfl_grd” – unfiltered “last-return” grid

(X between 1 and 7)

Grid Parameters

Cell Size: 1m

Gridding Method: Kriging

Kriging parameters:

Variogram: Linear

Nugget Variance: 0.07 meters

MicroVariance: 0.00 meters

SearchDataPerSector: 10

SearchMinData: 5

SearchMaxEmpty: 1

SearchRadius: 40m

Projection: UTM zone 16N, with orthometric heights in NAVD88 computed using NGS GEOID03 model.

- Shaded Relief Maps, in ESRI GRID file format

“corX_fil_shd” – bare-earth shaded relief map

“corX_unfl_shd” – unfiltered “last-return” shaded relief map

(X between 1 and 7)

Cell Size: 1m. The shaded relief maps were generated from the 1m DEMs.

- Contour Maps, in ESRI Coverage file format

“corX_fil_cnt” – bare-earth contour coverage

(X between 1 and 7)

Contour Spacing: 1m. The contour maps were generated from the 1m bare-earth (filtered) DEMs.

Images – This folder contains high resolution images for quick visualization. The images follow the same naming convention as the ArcInfo datasets.

Point_Data_FilteredTiles – This folder contains filtered last return laser point data split in 2km x 2km tiles with 60m overlap. There's one separate folder for each of the 7 corridors.

Tile naming convention:

f<min_easting>_<min_northing>.xyz (ex. f431472_4294714.xyz), where:

“f” stands for “filtered”,
<min_easting> and <min_northing> are the coordinates of the lower left tile corner, ignoring the overlap.

NOTE: these coordinates are the lower left coordinates of the bounding box used to define the tile for TerraScan processing and they do not necessary represent the minimum easting and northing values of the data within the file.

The format is 3-column space delimited X Y Z:

X = Easting last return

Y = Northing last return

Z = Elevation last return

The projection is UTM zone 16N with orhtometric heights in NAVD88 computed using the NGS GEOID03 model.

Point_Data_UnfilteredTiles – This folder contains unfiltered last return laser point data split in 2km x 2km tiles with 60m overlap. There’s one separate ZIP archive for each of the 7 corridors.

Tile naming convention:

u<min_easting>_<min_northing>.xyz (ex. u431472_4294714.xyz), where:

“u” stands for “unfiltered”,
<min_easting> and <min_northing> are the coordinates of the lower left tile corner, ignoring the overlap.

NOTE: these coordinates are the lower left coordinates of the bounding box used to define the tile for TerraScan processing and they do not necessary represent the minimum easting and northing values of the data within the file.

The format is 3-column space delimited X Y Z:

X = Easting last return

Y = Northing last return

Z = Elevation last return

The projection is UTM zone 16N with orhtometric heights in NAVD88 computed using the NGS GEOID03 model.

Readme.pdf – this document

ProcessingReport.pdf – detailed report describing how the data was processed

DVD2

FlightLines_LR_NAVD88 – This folder contains unfiltered last return point data, one file per flight strip.

Naming convention:

COR<X>_Str<Y>_navd88.utm (ex. COR4_Str250_navd88.utm), where:

X is the corridor number, between 1 and 7;

Y is the flight-strip ID number, as generated by Optech's REALM software.

The format is 3-column space delimited X Y Z:

X = Easting last return

Y = Northing last return

Z = Elevation last return

The projection is UTM zone 16N with orthometric heights in NAVD88 computed using the NGS GEOID03 model.

DVD3

Point_Data_9cols - This folder contains ZIP archives with raw laser point data files in 9-column ASCII format, one file per flight strip. There's one separate ZIP archive for each of the 7 corridors. The 9-column is the most complete format.

The nine columns are as follows:

1. GPS time (seconds of week);
2. Easting last return;
3. Northing last return;
4. Height last return;
5. Intensity last return;
6. Easting first return;
7. Northing first return;
8. Height first return;
9. Intensity first return.

Note that in these 9-column files no geoid model has been applied - height values are ellipsoid heights and these height values will NOT match orthometric heights (elevations) found in the 3-column (xyz) output or in the 1-meter DEM grid nodes. The UTM zone code (16) is appended to the Easting coordinate in this nine-column format.

Software required for using the data

The ESRI Grids and Coverages can be viewed with all ESRI software, such as ArcGIS, ArcMAP, and ArcView 3.xx. Please contact NCALM if alternative formats are needed.