NSF Sponsored
NATIONAL CENTER FOR AIRBORNE LASER MAPPING

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Airborne Laser Swath Mapping Project

Silver Plume, Colorado

PI: Dennis Staley, University of Memphis
Date Flown: September 29, 2005 (Day 272)

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 interval Contour Maps in ESRI coverage file format.
4. Raw laser point data (9 columns), ASCII format.
5. Filtered and unfiltered last return laser point data (xyz), tiled with overlap, ASCII format.
6. High resolution JPEG images for quick visualization.
7. 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 may have 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

  "**afltr_grd**" – 1m bare-earth grid, Arapahoe area
  "**aunfl_grd**" – 1m unfiltered "last-return" grid, Arapahoe area
  "**rfltr_grd**" – 1m bare-earth grid, Ruby Creek area
  "**runfl_grd**" – 1m unfiltered "last-return" grid, Ruby Creek area
  "**sfltr_grd**" – 1m bare-earth grid, Stevens Gulch area
  "**sunfl_grd**" – 1m unfiltered "last-return" grid, Stevens Gulch area

  Projection: UTM zone 13N, with orthometric heights in NAVD88 computed using NGS GEOID03 model.

- Contour Maps, in ESRI coverage format

  "afltr_cnt" – 1m interval Contours coverage, Arapahoe area
  "rfltr_cnt" – 1m interval Contours coverage, Ruby Creek area
  "sfltr_cnt" – 1m interval Contours coverage, Stevens Gulch area

  The contour maps were generated based on the 1m bare-earth DEMs.

- Shaded Relief Maps, in ESRI GRID file format

  "**afltr_shd**" – bare-earth shaded relief grid, Arapahoe area
  "**aunfl_shd**" – unfiltered "last-return" shaded relief grid, Arapahoe area
  "**rfltr_shd**" – bare-earth shaded relief grid, Ruby Creek area
  "**runfl_shd**" – unfiltered "last-return" shaded relief grid, Ruby Creek area
  "**sfltr_shd**" – bare-earth shaded relief grid, Stevens Gulch area
  "**sunfl_shd**" – unfiltered "last-return" shaded relief grid, Stevens Gulch area

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

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

PointData _**FilteredTiles** – This folder contains ZIP archives with filtered last return laser point data split in 1km x 1km tiles.

Filename consists of _XXX_YYYY.dat where:
XXX = first 3 significant figures of UTM Easting
YYYY = first 4 significant figures of UTM Northing

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 13N with orhtometric heights in NAVD88 computed using the NGS GEOID03 model.

PointData _UnfilteredTiles – This folder contains ZIP archives with unfiltered last return laser point data split in 1km x 1km tiles.

Filename consists of _XXX_YYYY.dat where:
XXX = first 3 significant figures of UTM Easting
YYYY = first 4 significant figures of UTM Northing

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 13N 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

PointData_9cols – This folder contains a ZIP archive with raw laser point data files in 9-column ASCII format, one file per flight strip. 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 (13) 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.