

# **NSF Sponsored NATIONAL CENTER OF AIRBORNE LASER MAPPING**

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## **LIDAR Project: DeathValley\_05feb\_JD**

**Furnace Creek and Fish Lake Valley Fault Zones in Death Valley  
National Park**

**PI: James Dolan**

Date Flown: February 28, 2005

## **List of products – quick view**

1. 1m DEMs in ESRI GRID file format, based on the unfiltered “last return” dataset
2. 1m Shaded Relief Maps in ESRI GRID file format.
3. 1m Contour maps in ESRI Coverage file format
4. Raw laser point data (9 columns), ASCII format.
5. “Last return” (3 columns) laser point data, ASCII format.
6. Shaded Relief Maps and Contour Maps high resolution JPEG images for quick visualization.
7. Report on the data processing.

## **Comments**

- Bare-earth extraction was not performed on this dataset due to the scarceness of vegetation in the interest area. Filtering the data with a conservative feature-preserving algorithm (Hagerud) can remove some of the vegetation but with the expense of smoothing out some of the morphology in steep areas. If requested, NCALM can provide such a filtered dataset, with the associated grids.
- 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)

- **Products** – this folder contains the products in ESRI file formats and the associated “info” directory used by all ESRI applications. See the Report (Report.pdf) for details about the Survey areas and parameters.

a. Digital Elevation Models, in ESRI GRID file format

“dvdn\_grd” - for the North area

“dvds\_grd” – for the South area

Grid Parameters

Cell Size: 1m

Gridding Method: Kriging

Kriging parameters:

Variogram: Linear

Nugget Variance: 0.10 meters

MicroVariance: 0.00 meters

Quadrant Search: 4

Search Radius: 5 meters

Minimum points per quadrant: 5

Maximum points per quadrant: 7

Projection:

UTM Zone 11, Datum: NAD83, Units: meters

Elevations are NAVD88 orthometric heights.

Processing: the gridding was performed with “Golden Software Surfer 8” in tiles and assembled as a seamless dataset with ArcGIS 8.3. The grids were created from the last return LIDAR data, without any vegetation removal.

b. Shaded Relief Maps, in ESRI GRID file format

“dvdn\_shd” - for the North area

“dvds\_shd” – for the South area

The Shaded Relief Maps were generated from the grids listed above, with a cell size of 1 meter.

c. Contour Maps, in ESRI Coverage file format

“dvdn\_cnt” - for the North area

“dvds\_cnt” – for the South area

The Contour Maps were generated from the grids listed above, with contour spacing and Z factor of 1 meter.

- **Images** – this folder contains high resolution images for quick visualization:
  - “dvd\_north\_shd.jpg” –high resolution JPEG file of the shaded relief map, North area

- “dvd\_south\_shd.jpg” –high resolution JPEG file of the shaded relief map, South area
- “dvd\_north\_cnt.jpg” – high resolution JPEG file of the contour map, North area
- “dvd\_south\_cnt.jpg” – high resolution JPEG file of the contour map, South area
- **Data** – this folder contains the LIDAR points dataset
  - “9columns/DeathValley\_JD\_feb05\_9cols.zip” – zip archive with 9-column ASCII files, one per flight strip. Details about the file format can be found in the Report, Section 5 (Laser Point Processing)
  - “3column/DeathValley\_JD\_feb05\_3cols\_N.zip” – zip archive with “last return” data, ASCII format, North area

“3column/DeathValley\_JD\_feb05\_3cols\_S.zip” – zip archive with “last return” data, ASCII format, South area

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

X = Easting last return

Y = Northing last return

Z = Elevation last stop.

The horizontal data is UTM Zone 12, in meters. Elevations are NAVD88 orthometric heights computed using the NGS GEOID03 model.

- **Readme.pdf** – this document
- **Report.pdf** – detailed report describing how the data was processed.

### Software required to use 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.