



**Seed Project: Generating a decadal time-series of displacements near  
Parkfield, California from 1929 to the present  
using change detection on LiDAR and historical aerial photographs**

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**Data Collection Summary:**

Collection Dates, # Flights:	May 31, 2018 (DOY 151)
Aircraft, Equipment:	Piper Navajo Chieftain (Tail No.: N640WA), Lidar: Optech Titan (14SEN/CON340)
Flight Plan Parameters:	Flying Height: 500 m AGL, Swath Width: 575 m, Overlap: 50%, Line Spacing: 200 m
Equipment Parameters:	PRF: 100 kHz x 3, Scan Frequency: 26 Hz, Scan Angle: ± 30°
Requested/Collected Area:	40 / 79.78 (based on DSM) km <sup>2</sup>

**GNSS Reference Station Summary:**

CARH	UNAVCO-PBO	35°53'18.18949" N, 120°25'50.97158" W, 480.257 m (Ellipsoid)
MIDA	UNAVCO-PBO	35°55'18.88586" N, 120°27'37.19808" W, 570.666 m (Ellipsoid)
P281	UNAVCO-PBO	35°50'27.81593" N, 120°23'22.06810" W, 383.823 m (Ellipsoid)
P297	UNAVCO-PBO	35°58'26.71489" N, 120°33'06.70187" W, 629.304 m (Ellipsoid)

**Data Products Summary:**

Horizontal / Vertical Datum:	WGS84 Ellipsoidal Elevations
Projection / Units:	UTM Zone 10N / meters
Point Cloud Tiles:	<p>1000 m × 1000 m tiles in LAS format (Version 1.4), classified into following classes:</p> <ol style="list-style-type: none"> <li>1) Unclassified – Class 1</li> <li>2) Ground – Class 2</li> </ol> <p>* Each of the returns contained on the LAS tiles are encoded with a laser channel value. The values used are 1 (1550 nm), 2 (1064 nm), and 3 (532 nm), and are stored in the 'User Data' record of the Point Data records in the LAS file.</p> <p>* Lidar height was validated against 2506 kinematic GPS measurements obtained inside the project area, accuracy of lidar elevations was assessed at 0.053 m.</p>
Digital Elevation Models:	<p>ESRI FLT format @ 1-m resolution for the following:</p> <ol style="list-style-type: none"> <li>1) DEM Grid &amp; Hillshade from classified ground returns from all channels</li> <li>2) DSM Grid &amp; Hillshade from first returns from all channels</li> </ol>

A detailed summary of the equipment and processing techniques used by NCALM is included in the [Data Collection & Processing Summary](#).

**Area of Interest:**



Figure 1. Location of survey polygon (in red) and GNSS reference stations (P297, MIDA, CARH, P281)

## File Naming Schemes:

### LAS Point Cloud Files

The 1000 m × 1000 m tiles follow a naming convention using the lower-left coordinate (minimum X, Y) of the UTM coordinates as the seed for the file name as follows: *XXXXXX\_YYYYYYY*. For example, if the tile bounds are the coordinate values from Easting 721000 through 722000, and Northing 3983000 through 3984000, then the tile file-name incorporates *721000\_39830000*.

### ESRI Files

Due to the limited number of characters that can be used for ArcGIS data products, the resulting format is followed: *NNNN\_TDR\_##U*. “NNNN” correspond to the 4-character identifier for the project or project area, “SAPF” for this project. Character “T” represent the type of raster and it can be “G” for a grid, “H” for a hillshade. Character “D” represents what kind of data was used to create the raster (an “E” for elevation). Character “R” represents the type of return that was used for creating the raster and could be a “F” for first return or “G” for ground return. The characters “##” represent the raster resolution in decimeters. Finally, the last character “U” is an indicator for the unit of measurement. For e.g. a bare earth elevation grid with ground classified points and resolution 1 m will be named as: “SAPF\_GEG\_01M.FLT”