



Data Collection & Product Report for 2017 Seed Project: 3D High-Resolution Geologic Mapping of Goat Rocks Volcano, Washington State

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Data Collection Summary:

Collection Dates, Flights:	September 19–20, 2018 (DOY 262–263) comprising two (2) flights
Aircraft, Equipment:	Piper PA-31 Navajo Chieftain (N640WA) with Optech Titan Lidar (14SEN340)
Flight Plan Parameters:	Flying Height: 400 m AGL, Swath Width: 450 m, Overlap: 50%
Equipment Parameters:	PRF: 50 kHz, Scan Frequency: 32 Hz, Scan Angle: $\pm 25^\circ$
Imagery Flight Plan Parameters:	Collected simultaneously
Collected Area:	67.2 km ²

GNSS Reference Station Summary:

Station Name	Operating Agency	Control Coordinates (NAD83(2011) epoch 2010.00/Ellipsoid)	RMS (OPUS)
P432	UNAVCO	46°37'22.26522" N, 121°40'59.56702" W, 319.247 m	0.010 m
YKM1	NCALM	46°34'20.91328" N, 120°33'09.21708" W, 311.221 m	0.011 m
YKM2	NCALM	46°34'21.24898" N, 120°33'09.13219" W, 311.262 m	0.011 m

Data Processing Summary:

Scan Angle Cutoff:	$\pm 1^\circ$
Intensity Normalization:	500 m
Data Adjustments:	Line-by-line/channel-by-channel orientation and elevation correction, project elevation shift of -25 cm
Ground Classification:	Four iterations of medium to aggressive ground determination, manual classification of cliff edges and misclassified ground
Elevation Model Generation:	Elevation values calculated from Kriging

Data Accuracy Summary

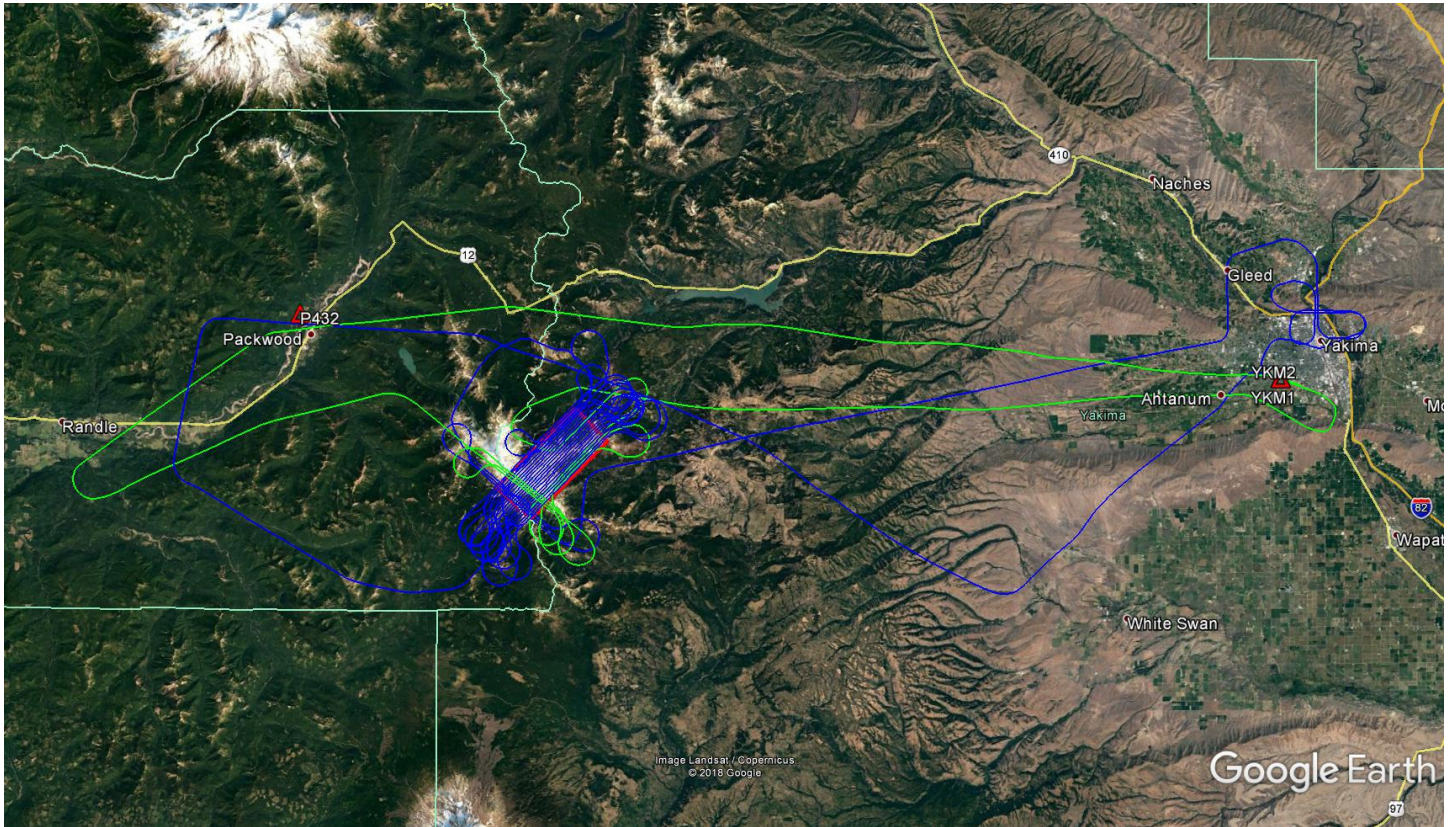
Strip-to-Strip Average	0.085 m
GCP Residual RMS	0.025 m

Data Product Summary:

Horizontal / Vertical Datum:	NAD83(2011) epoch 2010.00 / NAVD88 (GEOID12B)
Projection / Units:	UTM Zone 10N / meters
Point Cloud Tiles:	1000-m \times 1000-m tiles in LAS format (Version 1.4) classified by non-ground (1), ground (2), low point (7), and high point (18) returns
Bare-Earth Elevation Model:	ESRI FLT format @ 1-m resolution from classified ground points
Bare-Earth Hillshade:	ESRI-created raster @ 1-m resolution
First-Surface Elevation Model:	ESRI FLT format @ 1-m resolution with canopy included
First-Surface Hillshade:	ESRI-created raster @ 1-m resolution
Aerial Images:	Radiometrically corrected and rectified 24-bit TIFF files with timestamp and location information

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

Area of Interest:



Location of survey polygon (in red), aircraft trajectories, and GNSS reference stations

The requested survey area consisted of one polygon located at Goat Rocks, southeast of Packwood, WA, and west of Yakima, WA. The polygon encloses approximately 39.9 km² (15.4 mi²).

Notes:

The imagery was collected under non-ideal conditions (i.e., substantial cloud cover and shadows). These influences will be evident in some images. Images with significant cloud obscuration were not processed.