Data Collection & Product Report for 2020 Seed Project: Field Validation of the Virtual Velocity Approach for Estimating Bedload Transport in Gravel-Bedded Rivers

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Data Collection Summary:

Collection Dates, Flights:	1 flight on August 31, 2021 (DOY 243)
Aircraft, Equipment:	Robinson R44 II (N558W), RIEGL VQ-580 II (H2225798)
Flight Plan Parameters:	Flying Height: 350 m AGL, Speed: 50 kt, Overlap: 50%
Equipment Parameters:	PRR: 300, 600, 1200 kHz, LPS: 300/s, Scan Angle: ± 37.5°
Collected Area:	3.5 km²

GNSS Reference Station Summary:

Station Name	Operating Agency	Control Coordinates (WGS84/Ellipsoid)
GSE4	NCALM	42°41'47.22353" N, 073°09'48.01511" W, 168.304 m
VTBE	VTrans	42°52'57.06527" N, 073°11'59.67121" W, 182.729 m

Data Processing Summary:

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Data Adjustments:	Line-by-line roll/elevation correction, project elevation shift of +1.024 m
Ground Classification:	Two iterations of gentle ground determination, manual classification of misclassified ground
Elevation Model Generation:	Bare-earth calculated from Kriging, first-return calculated from TIN model

Data Accuracy Summary

Strip-to-Strip Average	0.076 m
GCP Residual RMS	0.080 m (calibration area)

Data Product Summary:

Horizontal / Vertical Datum:	NAD83(2011) epoch 2010.00 / ellipsoid
Projection / Units:	UTM Zone 18N / meters
Point Cloud Tiles:	1000-m × 1000-m tiles in LAS format (Version 1.4) with non-ground (1), ground (2), low point (7), and high point (18) returns; user data record 1 (300 kHz), 2 (600 kHz), and 3 (1200 kHz)
Bare-Earth Elevation Model:	GeoTIFF @ 1-m resolution from classified ground
First-Surface Elevation Model:	GeoTIFF @ 1-m resolution with canopy included

Area of Interest:
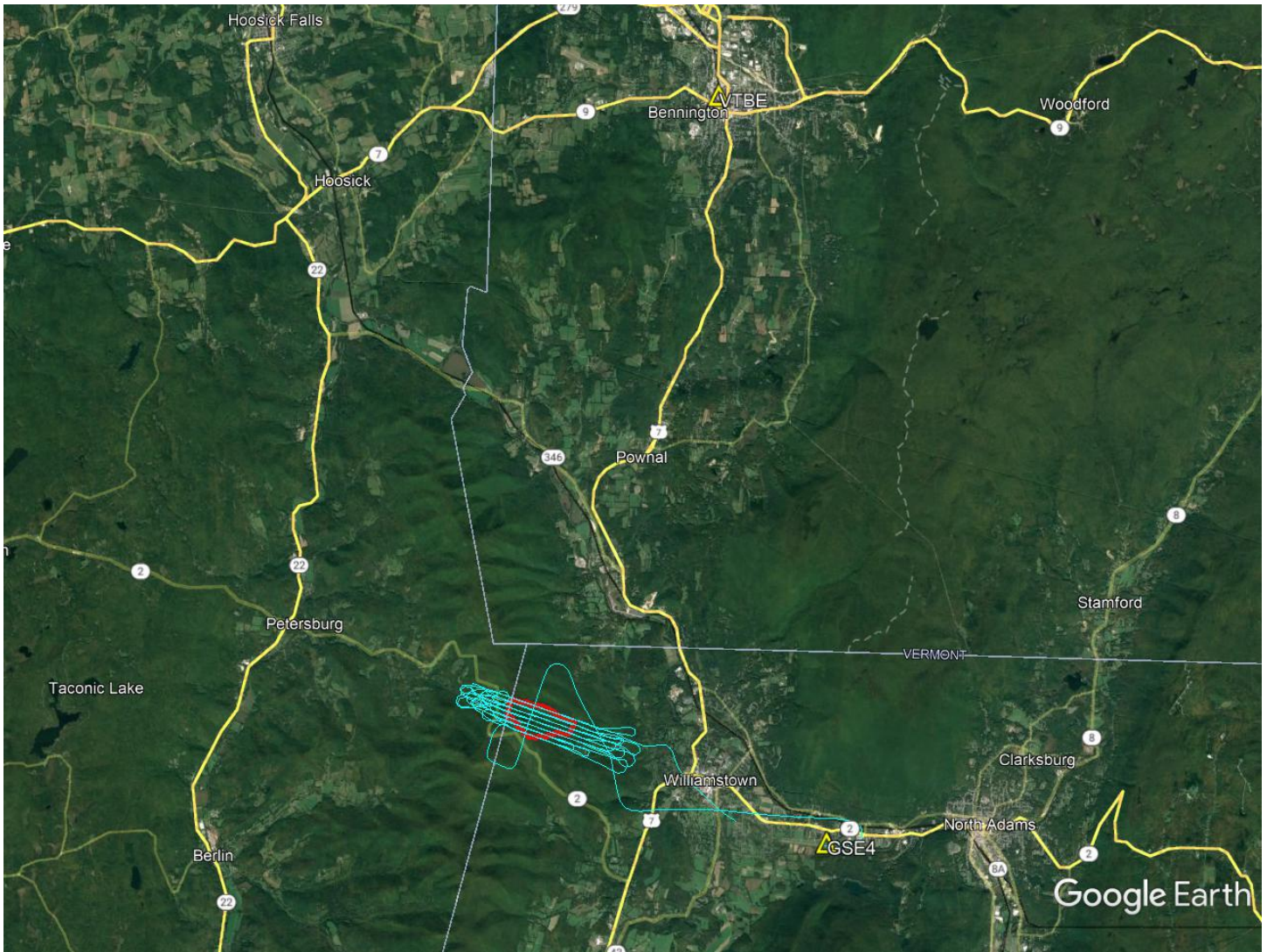
Location of survey polygon, aircraft trajectory, and GNSS reference stations

The requested survey area consisted of one polygon located west of North Adams, MA. The polygon enclosed approximately 1.2 km^2 (0.5 mi^2).