Data Collection & Product Report for 2021 Seed Project: Characterizing Alluvial Channel Bank Erosion with Time-Lapse Airborne and UAV Lidar

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Data Collection Summary:

Collection Dates, Flights:	1 flight on September 19, 2023 (DOY 262)
Aircraft, Equipment:	Piper PA-31 Navajo (C-GJMT), Optech Titan (14SEN340)
Nominal Flight Parameters:	Flying Height: 400 m AGL, Speed: 120 kt, Overlap: 50%
Nominal Equipment Parameters:	Pulse Rate: 150 kHz, Scan Rate: 26 Hz, Scan Angle: ± 30°
Collected Area:	50.3 km²

GNSS Reference Station Summary:

Station Name	Operating Agency	Coordinates (ITRF2014 Epoch 2023.72 / Ellipsoid)
KEFD	NCALM	29°36’07.60561” N, 95°10’09.01780” W, -18.061 m
TXLI	TxDOT	30°03’21.19820” N, 94°46’15.71725” W, -11.112 m

Data Processing Summary:

Scan Angle Cutoff:	± 1°
Intensity Normalization:	400 m
Data Adjustments:	Line-by-line roll/pitch and elevation matching
Ground Classification:	1 iteration of conservative ground determination, manual classification of misclassified ground
Elevation Model Generation:	Bare-earth calculated from Kriging, first-return calculated from TIN model

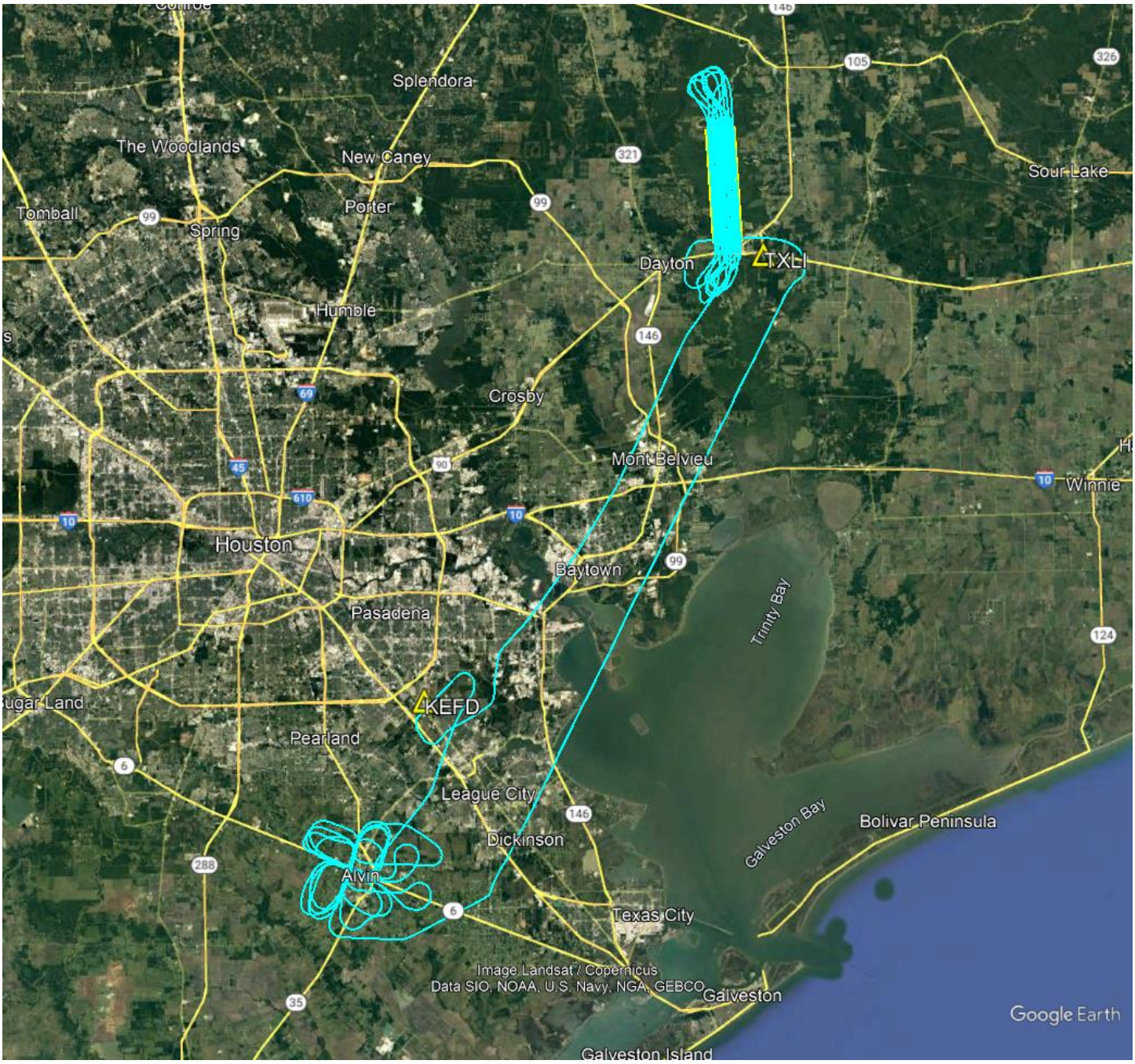
Data Accuracy Summary:

Strip-to-Strip Average:	0.04 m
GCP Residual RMS:	N/A

Data Product Summary:

Horizontal / Vertical Datum:	NAD83(2011) epoch 2010.00 / orthometric (GEOID18)
Projection / Units:	UTM Zone 15N / 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
Bare-Earth Elevation Model:	GeoTIFF @ 50-cm resolution from classified ground
First-Surface Elevation Model:	GeoTIFF @ 50-cm resolution with canopy and buildings included

Area of Interest:



Location of survey polygon, aircraft trajectory (including instrument calibration), and GNSS reference stations

The requested survey area consisted of one polygon located northeast of Houston, TX, over the Trinity River. The polygon enclosed approximately 39.3 km^2 (15.2 mi^2).

Notes:

Benthic layer (due to water penetration from green laser) was not corrected for refraction.