



**Data Collection & Product Report for 2024 Seed Project:
Assessment of Coastal Dune Erosion Before and After the Closure of
Sand Mining Operations Using Lidar and SfM Differencing,
Southern Monterey Bay, CA**

PI: Shannon Sondeno (ssondeno@csumb.edu)

California State University, Monterey Bay, Department of Applied Environmental Science
Chapman Science Academic Ctr, Rm S314, Marina, CA 93933

Data Collection Summary:

Collection Dates, Flights:	1 flight on August 18, 2025 (DOY 230)
Aircraft, Equipment:	Aero Commander 500 S (N500HM), RIEGL VQ-580 II-S (H2229296)
Nominal Flight Parameters:	Flying Height: 950 m AGL, Speed: 140 kt, Overlap: 50%
Nominal Equipment Parameters:	Pulse Rate: 1200 kHz, Scan Rate: 200 Hz, Scan Angle: $\pm 37.5^\circ$
Collected Area:	40.8 km ²

GNSS Reference Station Summary:

Station Name	Operating Agency	Coordinates (NAD83(2011) epoch 2010.00 / Ellipsoid)
KCVH	NCALM	36°53'25.52982" N, 121°24'19.97748" W, 36.243 m
P210	UNAVCO	36°48'58.08143" N, 121°43'54.58102" W, 3.602 m
P231	UNAVCO	36°37'18.02240" N, 121°54'19.42445" W, -25.778 m
P235	UNAVCO	36°48'51.36635" N, 121°32'29.49666" W, 362.271 m

Data Processing Summary:

Trajectory Generation Method:	Applanix POSPac with PP-RTX
Data Adjustments:	RiPRECISION least-squares best-fit adjustment to trajectory
Ground Classification:	1 iteration of moderate ground determination (using TerraScan); manual classification of misclassified ground
Elevation Model Generation:	Bare-earth and first-surface models calculated from Kriging

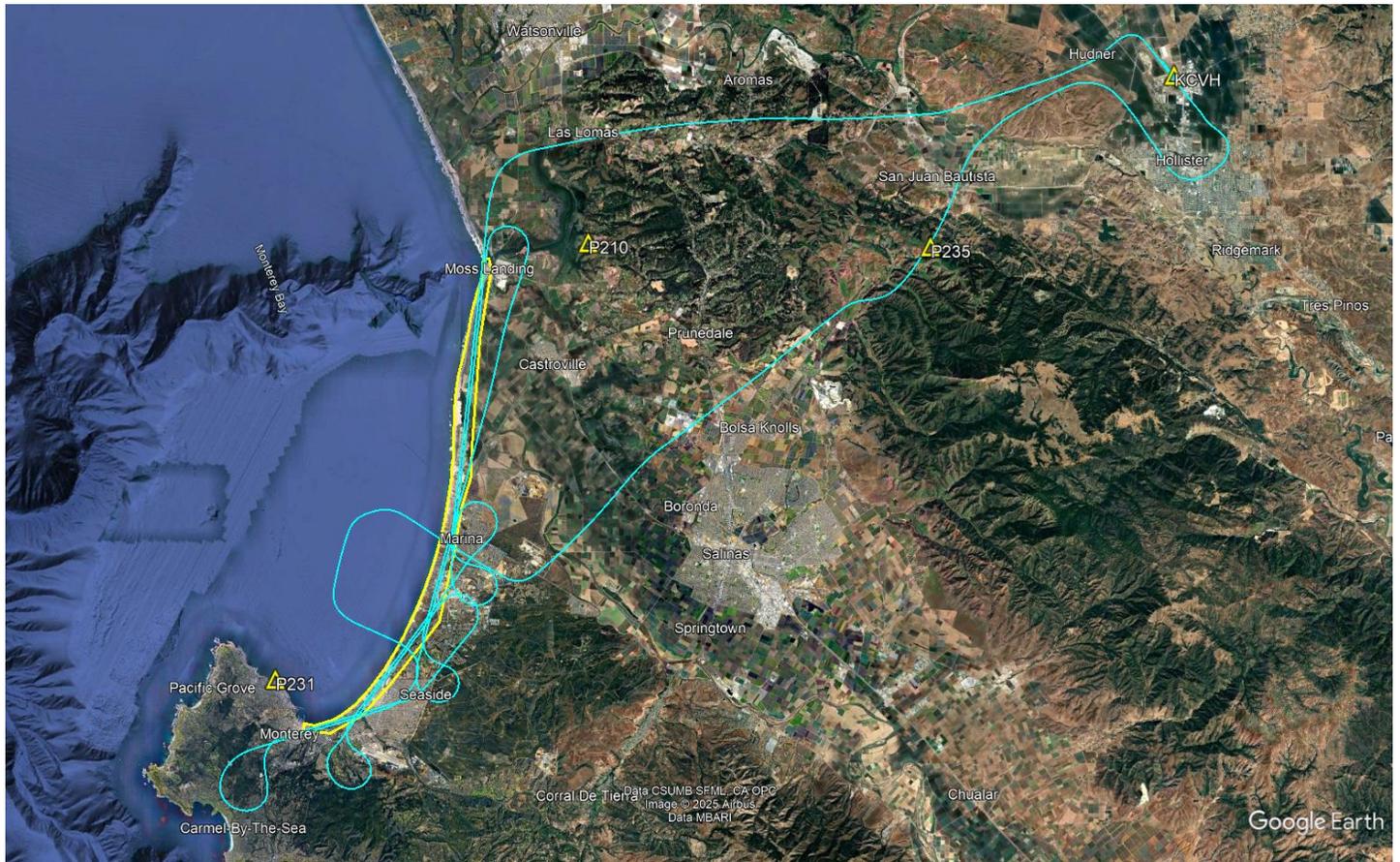
Data Accuracy Summary:

Strip-to-Strip Average Magnitude:	0.020 m (using Measure Match in TerraMatch)
GCP Final Root Mean Square:	0.040 m (GCPs collected in project AOI)

Data Product Summary:

Horizontal / Vertical Datum:	NAD83(2011) epoch 2010.00 / orthometric (GEOID18)
Projection / Units:	UTM Zone 10N / meters (EPSG:6339+5703)
Point Cloud Tiles:	1000-m \times 1000-m tiles in LAS format (Version 1.4) with non-ground (1), ground (2), low noise (7), high noise (18), and excluded (22) returns
Bare-Earth Elevation Model:	GeoTIFF @ 1-m resolution from ground and water surface
First-Surface Elevation Model:	GeoTIFF @ 1-m resolution with canopy and buildings included (from first-return of laser shots)

Area of Interest:



Location of survey polygon, aircraft trajectory, and GNSS reference stations

The requested survey area consisted of one polygon located on the coast of Monterey Bay, between Monterey and Moss Landing, CA. The polygon enclosed approximately 20.9 km² (8.1 mi²).

Ground Control Points:



Location of ground control points in relation to area of interest

A total of 2,880 kinematic ground control points were collected inside the area of interest using a GNSS receiver and antenna mounted on a vehicle. GCPs were used to check for vertical bias in the final dataset.

APPENDIX 1: "Measure Match" Comparison to Surface Results

Line	Magnitude	Dz
1	0.0230	-0.0007
2	0.0255	0.0016
3	0.0181	-0.0008
4	0.0181	-0.0002
5	0.0185	-0.0003
6	0.0184	0.0008
7	0.0184	-0.0006
8	0.0199	-0.0007
9	0.0215	0.0009

APPENDIX 2: "Output Control Report" Comparison to GCPs Results

Average Dz	0.035
Minimum Dz	-0.022
Maximum Dz	0.090
Average Magnitude	0.036
Root Mean Square	0.040
Standard Deviation	0.019