



Data Collection & Product Report for 2024 Seed Project: Spatiotemporal Dynamics of Carbon Accumulation Within the Wax Lake Delta, Louisiana

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Data Collection Summary:

Collection Dates, Flights:	1 flight on February 17, 2026 (DOY 048)
Aircraft, Equipment:	Robinson R44 Raven II (N60HT), RIEGL VQ-580 II (H2225798)
Nominal Flight Parameters:	Flying Height: 600 m AGL, Speed: 60 kt, Overlap: 50%
Nominal Equipment Parameters:	Pulse Rate: 600 kHz, Scan Rate: 220 Hz, Scan Angle: $\pm 37.5^\circ$
Collected Area:	34.6 km ²

GNSS Reference Station Summary:

Station Name	Operating Agency	Coordinates (NAD83(2011) epoch 2010.00 / Ellipsoid)
SPTA	NCALM	29°42'45.40442" N, 091°19'57.48380" W, -22.903 m
SPTB	NCALM	29°42'45.33012" N, 091°19'57.44636" W, -22.650 m

Data Processing Summary:

Trajectory Generation Method:	Applanix POSPac using NovAtel GrafNav differential GPS solution
Data Adjustments:	Line-by-line RiPRECISION least-squares best-fit adjustment to trajectory; project-wide XYZ shift to fit reference data (2020 Seed Project, DOI: 10.5069/G99W0CP6)
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:	0.032 m (using Measure Match in TerraMatch)
GCP Final Root Mean Square:	0.076 m before fit to 2020 data (GCPs collected at airport during same flight)

Data Product Summary:

Horizontal / Vertical Datum:	NAD83(2011) epoch 2010.00 / orthometric (NAVD88 based on GEOID18)
Projection / Units:	UTM Zone 15N / meters (EPSG:6344+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), and high noise (18) returns
LAS Extra Bytes:	Additional attributes saved: ellipsoid height – "EllipsoidHeight", elevation change v. 2020 data – "Change" (experimental)
Bare-Earth Elevation Model:	GeoTIFF @ 1-m resolution from ground and water surface
First-Surface Elevation Model:	GeoTIFF @ 1-m resolution with canopy included (from first-return of laser shots)

Area of Interest:



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

The requested survey area consisted of one polygon located southwest of Morgan City, LA. The polygon enclosed approximately 44.0 km² (17.0 mi²).

Ground Control Points:



Location of ground control points in relation to airport

A total of 1,159 kinematic ground control points were collected at the airport using a GNSS receiver and antenna mounted on a vehicle. GCPs were used to check for vertical bias in the final dataset.

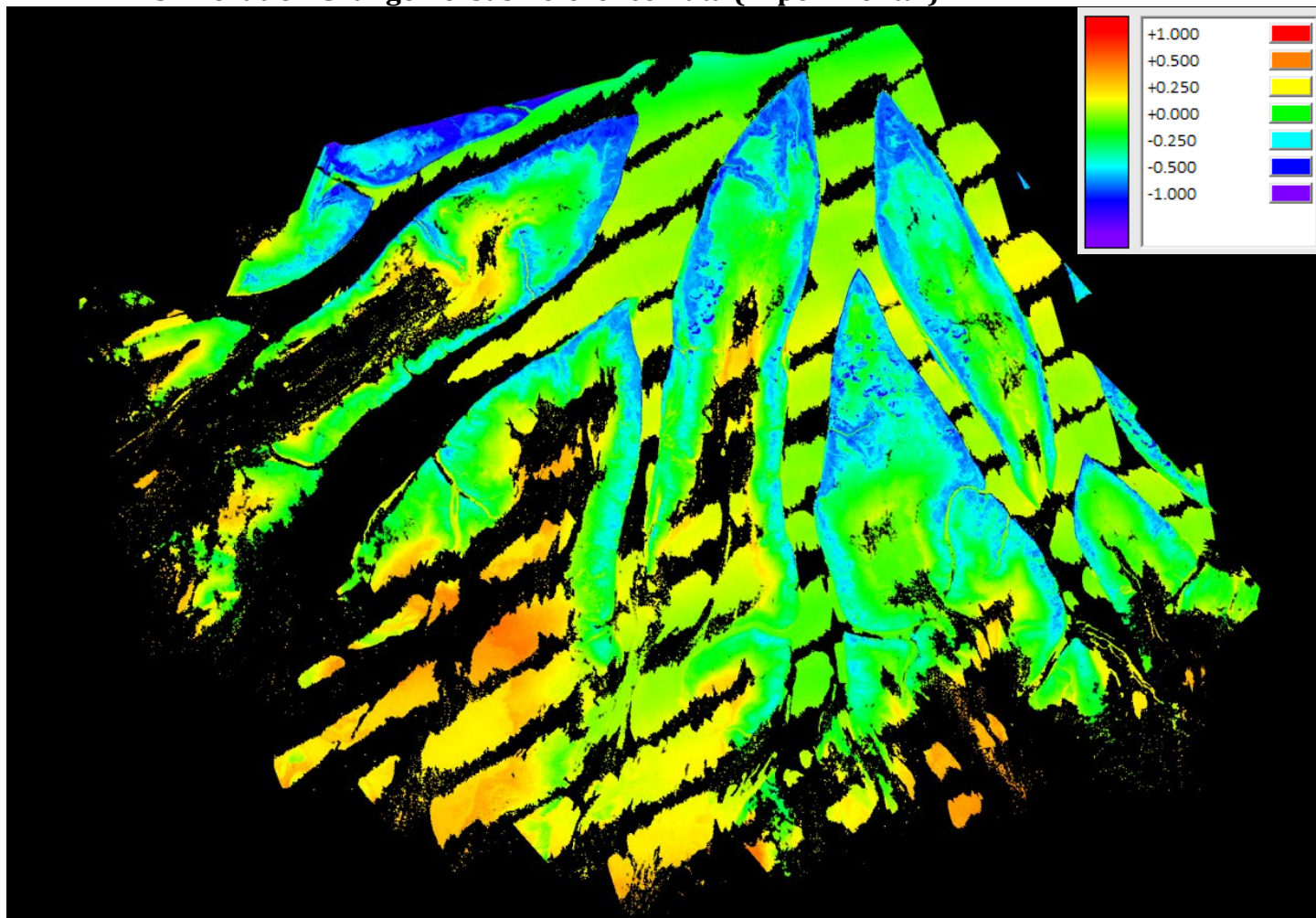
APPENDIX 1: “Measure Match” Comparison to Surface Results

Line	Magnitude	Dz
1	0.0377	-0.0051
2	0.0291	0.0007
3	0.0338	0.0015
4	0.0288	-0.0028
5	0.0313	0.0035
6	0.0306	-0.0060
7	0.0317	-0.0016
8	0.0314	0.0025
9	0.0292	-0.0021
10	0.0297	-0.0045
11	0.0334	0.0013
12	0.0316	0.0007
13	0.0264	-0.0021
14	0.0282	0.0013
15	0.0299	0.0047
16	0.0292	0.0010
17	0.0294	0.0006
18	0.0364	0.0118

APPENDIX 2: “Output Control Report” Comparison to GCPs Results

Average Dz	0.042
Minimum Dz	-0.046
Maximum Dz	0.130
Average Magnitude	0.062
Root Mean Square	0.076
Standard Deviation	0.063

APPENDIX 3: Elevation Change Versus Reference Data (Experimental)



Example of raster image representing elevation change (in meters) of 2026 data when compared to 2020 data