

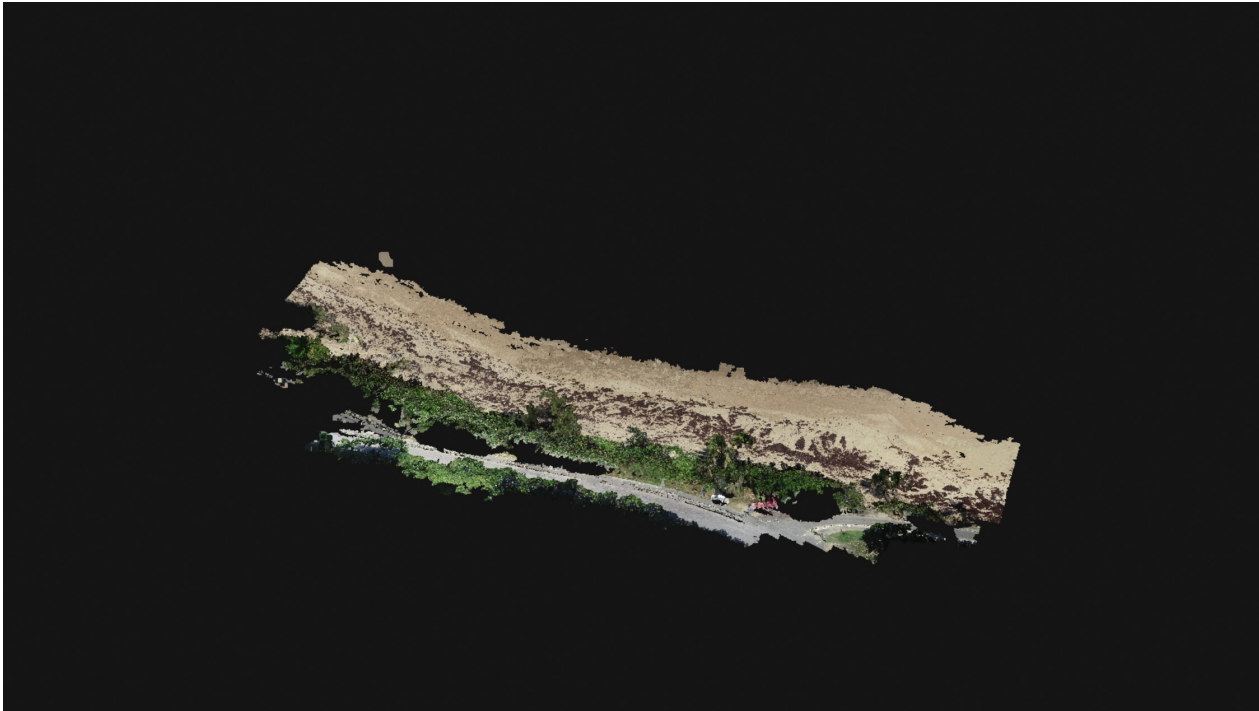
Shore Island Post, Isabela
December 20, 2022.



Centroid coordinates : 18.50895° N 67.02893° W

3D map

Shore Island Post, Isabela



2D map



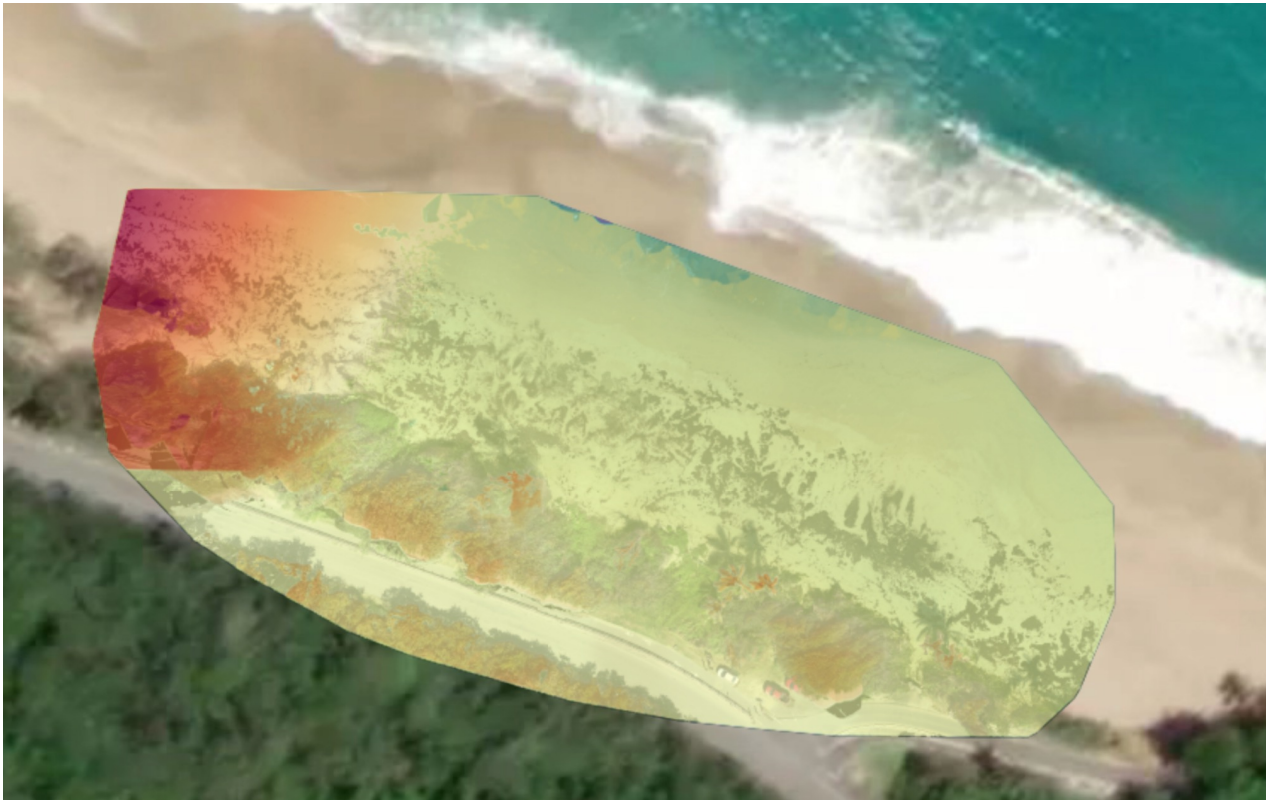
Total area of site = 1.49051 ha

Beach length (m)
Shore Island Post, Isabela



Beach length = 178.329 m

Density surface model
Shore Island Post, Isabela



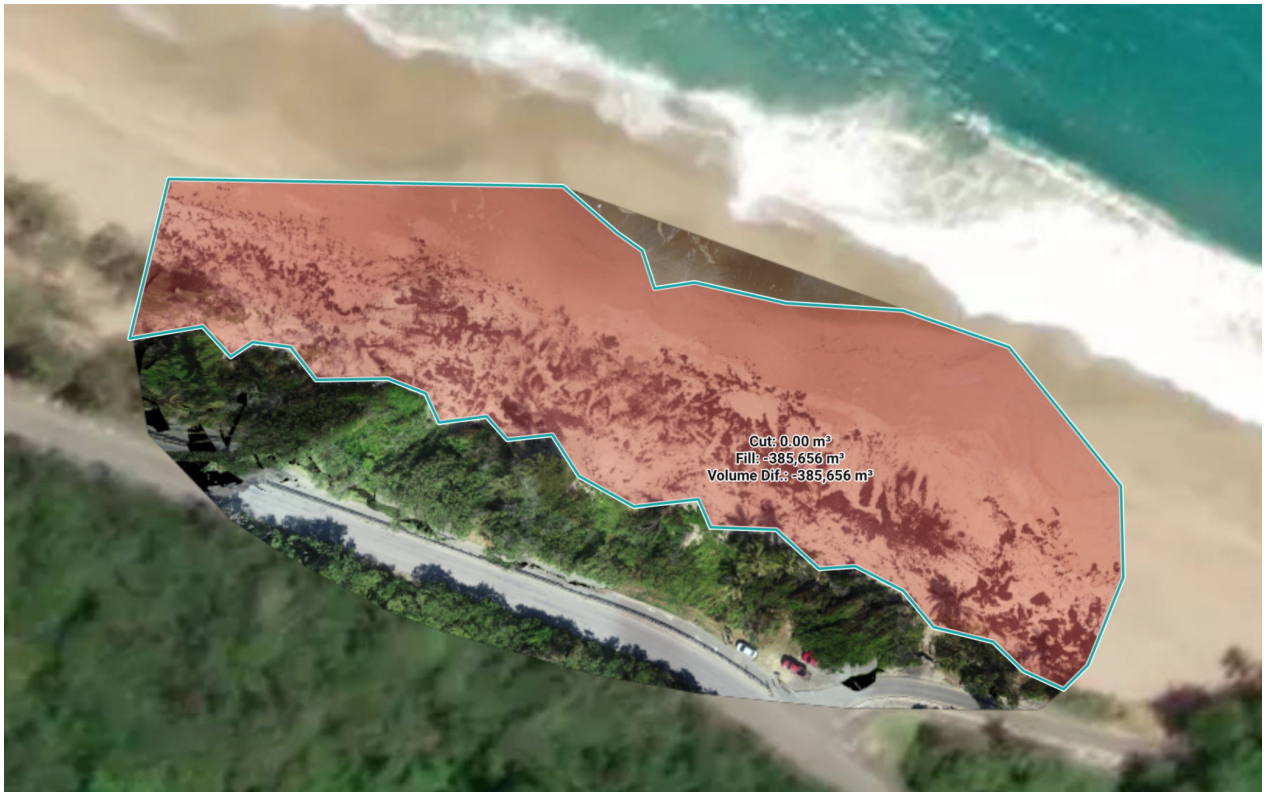
Area of the beach

Shore Island Post, Isabela



Area of the beach = 8,691.91 m²

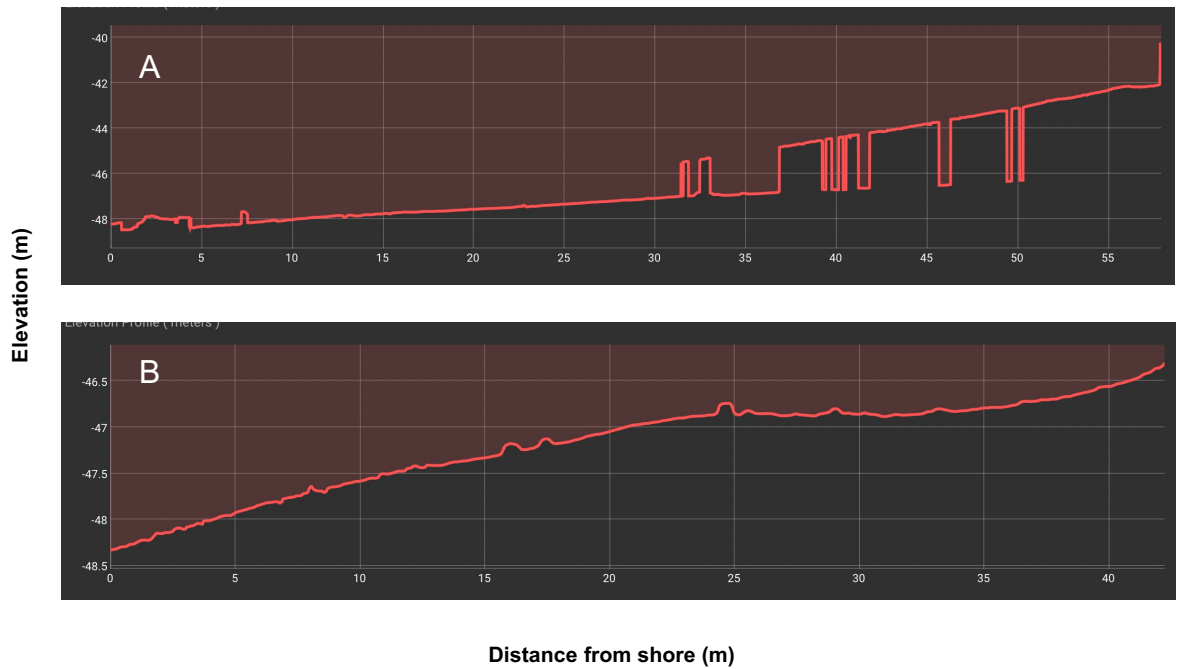
Beach volume
Shore Island Post, Isabela



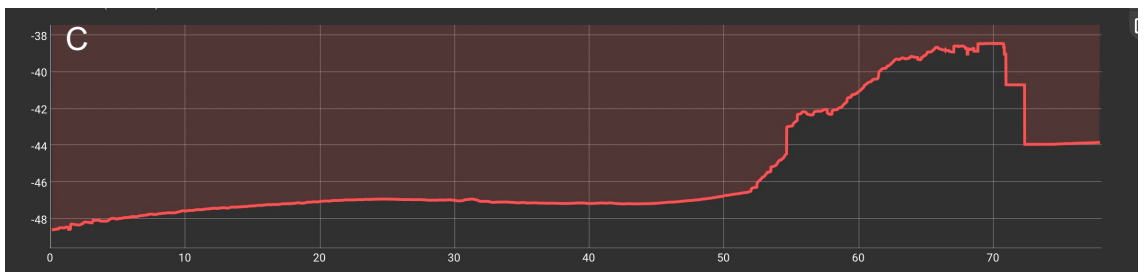
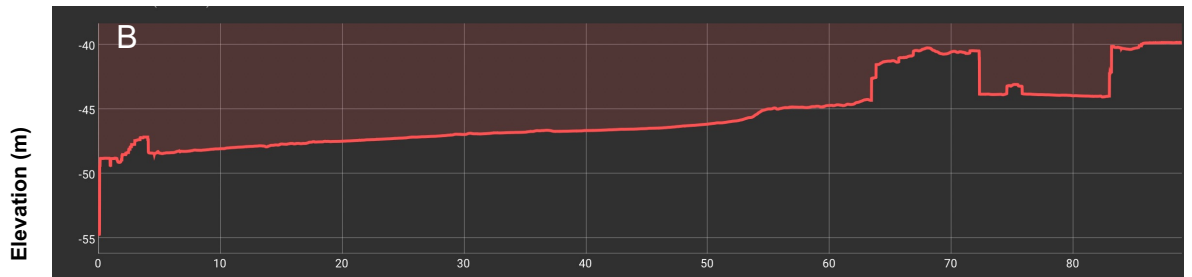
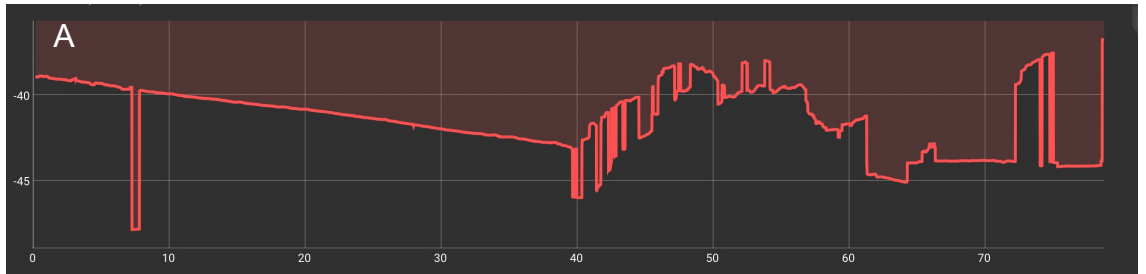
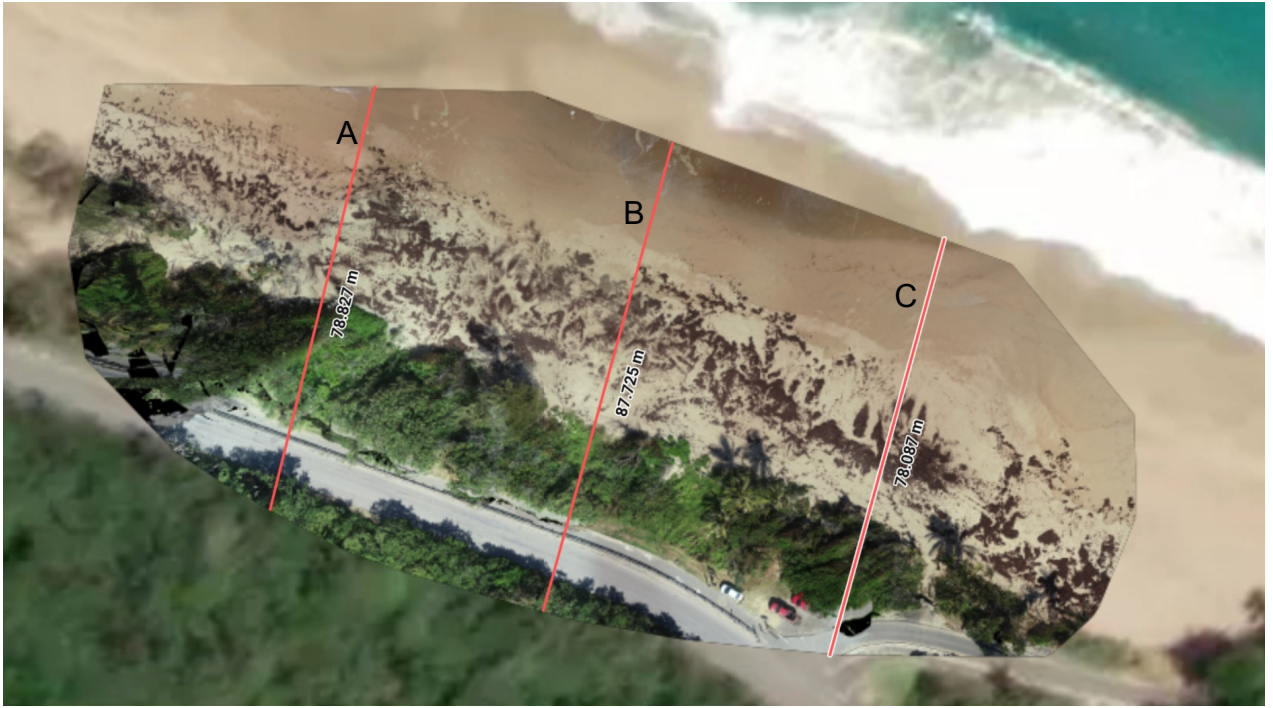
Cut = 0.00 m³
Fill = -385,656 m³
Volume Dif. = -385,656 m³

Beach elevation

Shore Island Post, Isabela



Site elevation (m)
Shore Island Post, Isabela



Distance from shore (m)

Dune height (m)

Shore Island Post, Isabela



Dune height	
A	= 3.273 m
B	= 5.084 m
C	= 5.118 m
D	= 6.813 m
E	= 4.985 m

Dune width (m)

Shore Island Post, Isabela



Dune width

A = 17.469 m
B = 21.505 m
C = 17.474 m
D = 18.937 m
E = 10.388 m

Area and perimeter of dune

Shore Island Post, Isabela



A- Area and perimeter of dune

2D area = 3,219.18 m²
3D area = 3,381.87 m²
2D perimeter = 373.24 m
3D perimeter = 383.514 m
Elevation difference = 17.232 m

B- Area and perimeter of dune

2D area = 204.343 m²
3D area = 204.343 m²
2D perimeter = 71.344 m
3D perimeter = 71.344 m
Elevation difference = 0.00 m

Volume of dune
Shore Island Post, Isabela



	A	Triangulated
Base surface		
Cut volume	5,190.03 m ³	
Cut error	150.946 m ³	
Fill volume	-792.682 m ³	
Fill error	54.7607 m ³	
Volume difference	4,397.35 m ³	

	B	Triangulated
Base surface		
Cut volume	0.00 m ³	
Cut error	0.00 m ³	
Fill volume	-8,987.14 m ³	
Fill error	3.25663 m ³	
Volume difference	-8,987.14 m ³	

Shoreline

Shore Island Post, Isabela



Shoreline length = 180.7 m

Shoreline geolocation

Shore Island Post, Isabela



Shoreline markers

A = 18.50937° N 67.02922° W
B = 18.50919° N 67.02902° W
C = 18.50916° N 67.02874° W
D = 18.50905° N 67.02849° W
E = 18.50900° N 67.02821° W

Shoreline extension

Shore Island Post, Isabela

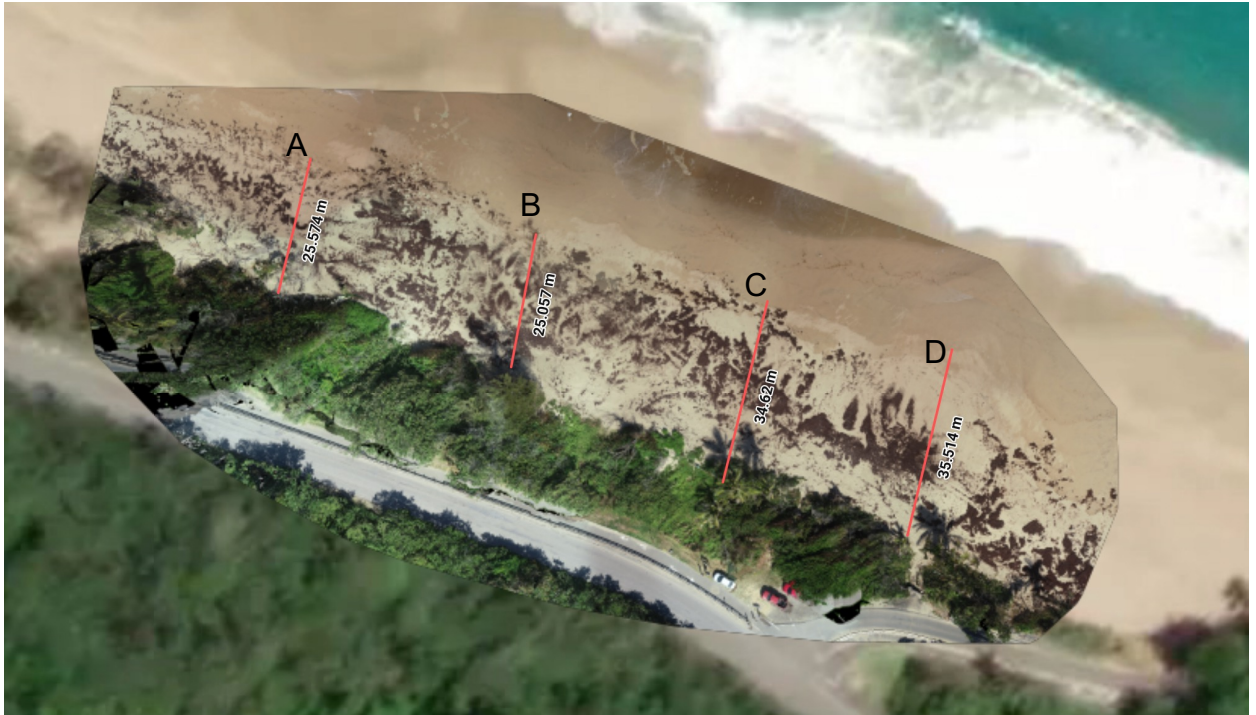


Shoreline extension

A = 13.173 m
B = 22.939 m
C = 19.911 m
D = 10.189 m

Shoreline position

Shore Island Post, Isabela



Shoreline position

A =
B = 64.927 m
C = 49.76 m
D = 19.704 m

Area of dune breaches
Shore Island Post, Isabela



Area of dune breaches

Breach A= 3,219.18 m²
Breach B= 204.343 m²

Quality Report



Generated with Pix4Denterprise version 4.8.2
Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	196270-Project-2022-12-20T18:37:37.579Z
Processed	2022-12-20 19:23:58
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	1.06 cm / 0.42 in
Area Covered	0.015 km ² / 1.4849 ha / 0.01 sq. mi. / 3.6712 acres
Time for Initial Processing (without report)	36m:53s

Quality Check



Images	median of 47409 keypoints per image	
Dataset	193 out of 214 images calibrated (90%), all images enabled, 4 blocks	
Camera Optimization	0.09% relative difference between initial and optimized internal camera parameters	
Matching	median of 17992.6 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

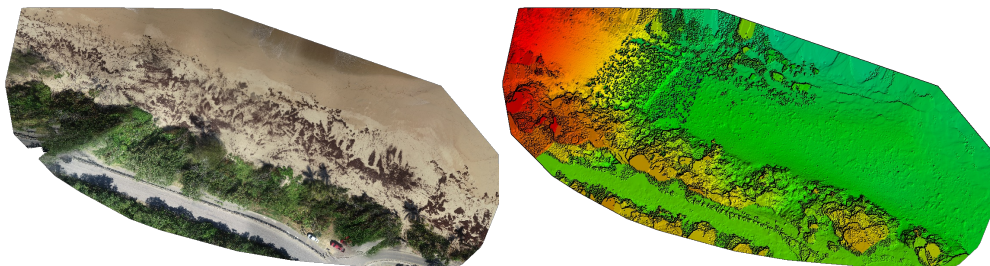


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	193 out of 214
Number of Geolocated Images	214 out of 214

Initial Image Positions



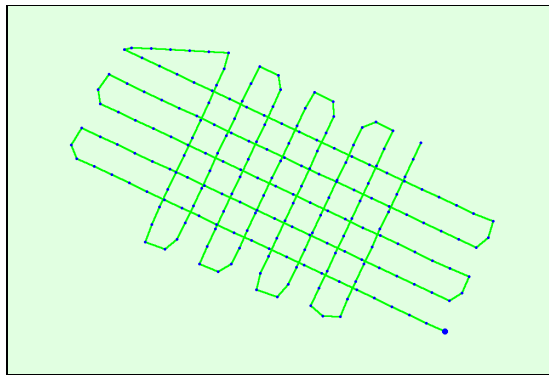
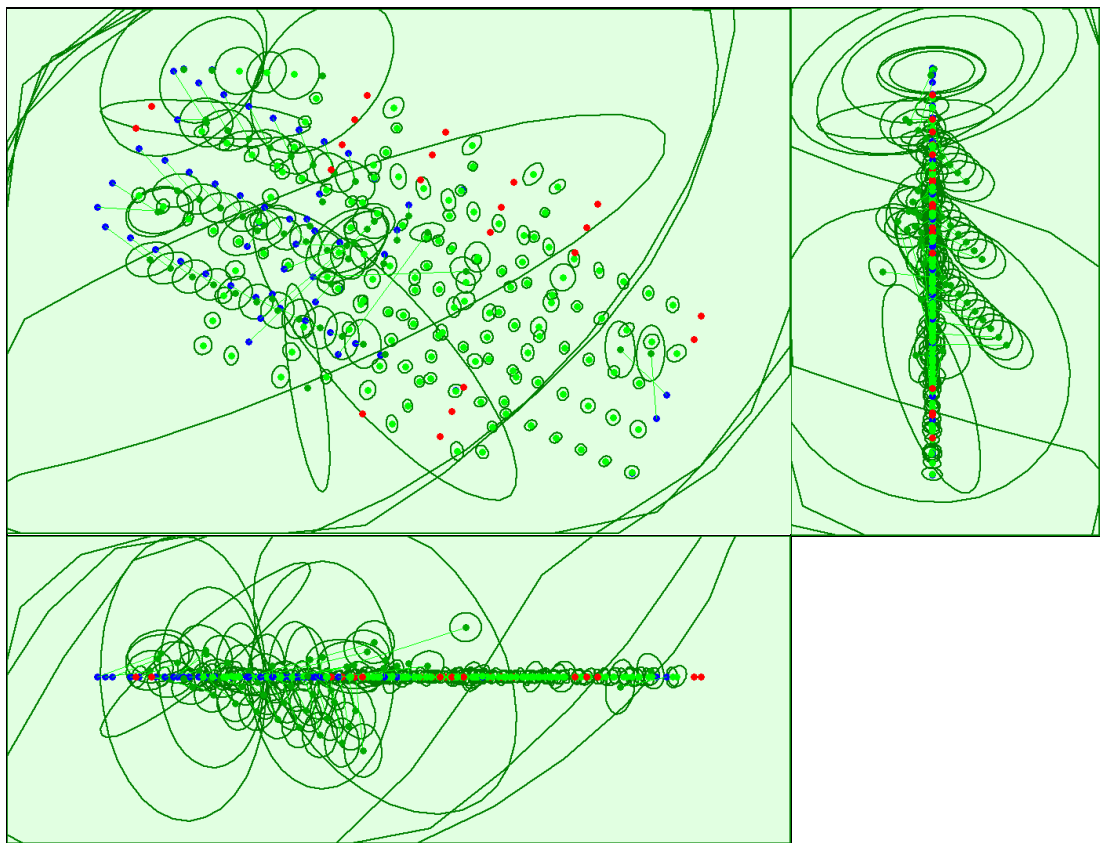


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



Uncertainty ellipses 1000x magnified

Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images. Dark green ellipses indicate the absolute position uncertainty of the bundle block adjustment result.

Absolute camera position and orientation uncertainties

	X [m]	Y [m]	Z [m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.006	0.005	0.006	0.015	0.011	0.009
Sigma	0.018	0.017	0.015	0.039	0.025	0.020

Overlap

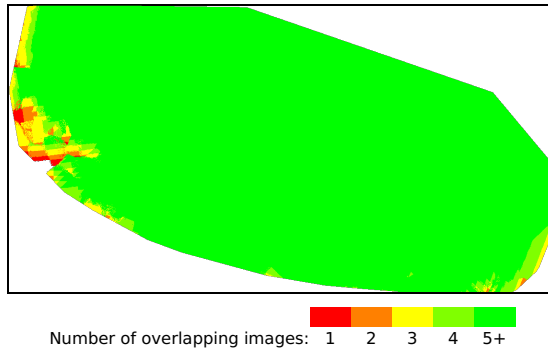


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic.
 Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details



Number of 2D Keypoint Observations for Bundle Block Adjustment	3232910
Number of 3D Points for Bundle Block Adjustment	907327
Mean Reprojection Error [pixels]	0.168

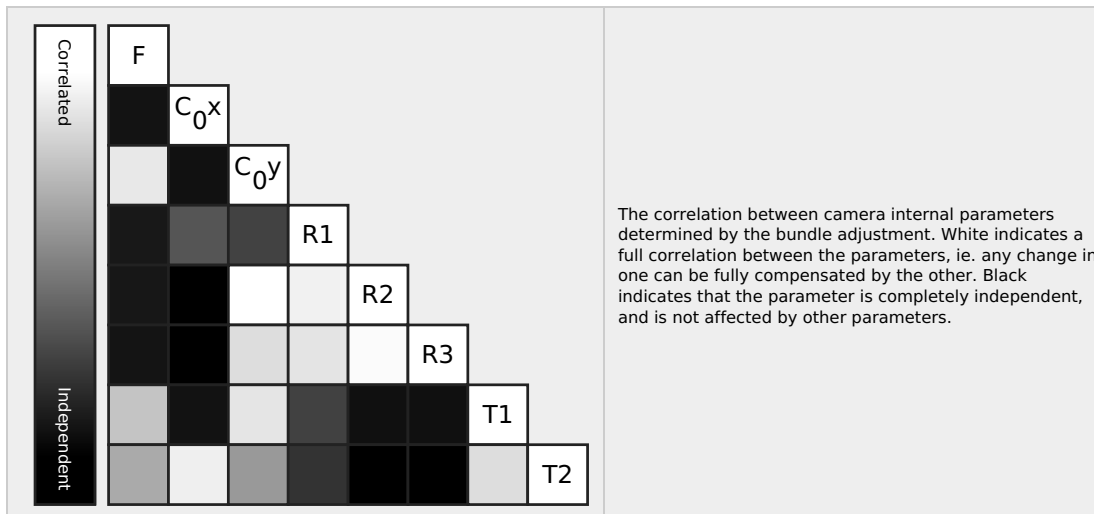
Internal Camera Parameters

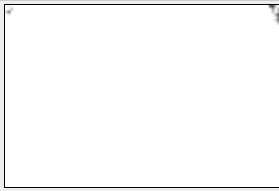
FC6310R_8.8_5472x3648 (RGB). Sensor Dimensions: 12.833 [mm] x 8.556 [mm]



EXIF ID: FC6310R_8.8_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3658.300 [pixel] 8.580 [mm]	2722.500 [pixel] 6.385 [mm]	1835.100 [pixel] 4.304 [mm]	-0.269	0.112	-0.033	0.000	-0.001
Optimized Values	3654.677 [pixel] 8.571 [mm]	2737.192 [pixel] 6.419 [mm]	1824.272 [pixel] 4.278 [mm]	0.001	-0.016	0.015	-0.000	-0.000
Uncertainties (Sigma)	0.154 [pixel] 0.000 [mm]	0.078 [pixel] 0.000 [mm]	0.166 [pixel] 0.000 [mm]	0.000	0.000	0.000	0.000	0.000





The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	47409	17993
Min	21120	180
Max	78630	34418
Mean	49057	16751

3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	525942
In 3 Images	150787
In 4 Images	72126
In 5 Images	42249
In 6 Images	27545
In 7 Images	19001
In 8 Images	13530
In 9 Images	10172
In 10 Images	7893
In 11 Images	6226
In 12 Images	5037
In 13 Images	4054
In 14 Images	3270
In 15 Images	2805
In 16 Images	2405
In 17 Images	1908
In 18 Images	1681
In 19 Images	1356
In 20 Images	1199
In 21 Images	990
In 22 Images	871
In 23 Images	758
In 24 Images	641
In 25 Images	585
In 26 Images	492
In 27 Images	408
In 28 Images	391
In 29 Images	331
In 30 Images	303
In 31 Images	237
In 32 Images	235
In 33 Images	204
In 34 Images	191
In 35 Images	155
In 36 Images	164
In 37 Images	146
In 38 Images	134
In 39 Images	119
In 40 Images	99

Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty of the bundle block adjustment result.

Relative camera position and orientation uncertainties

	X [m]	Y [m]	Z [m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.007	0.006	0.007	0.023	0.013	0.012
Sigma	0.013	0.014	0.016	0.065	0.029	0.028

Geolocation Details

Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-0.09	0.00	0.00	0.71
-0.09	-0.07	0.00	0.00	0.71
-0.07	-0.05	0.00	0.00	0.00
-0.05	-0.03	0.00	0.00	3.55
-0.03	-0.02	0.00	1.42	10.64
-0.02	0.00	53.90	48.94	37.59
0.00	0.02	43.97	49.65	26.24
0.02	0.03	2.13	0.00	17.02
0.03	0.05	0.00	0.00	2.84
0.05	0.07	0.00	0.00	0.00
0.07	0.09	0.00	0.00	0.00
0.09	-	0.00	0.00	0.71
Mean [m]		0.000127	-0.000018	-0.000556
Sigma [m]		0.007027	0.006351	0.022423
RMS Error [m]		0.007028	0.006351	0.022430

Min Error and Max Error represent geolocation error intervals between -1.5 and 1.5 times the maximum accuracy of all the images. Columns X, Y, Z show the percentage of images with geolocation errors within the predefined error intervals. The geolocation error is the difference between the initial and computed image positions. Note that the image geolocation errors do not correspond to the accuracy of the observed 3D points.

Relative Geolocation Variance

Relative Geolocation Error	Images X [%]	Images Y [%]	Images Z [%]
[-1.00, 1.00]	95.04	97.16	84.40
[-2.00, 2.00]	100.00	100.00	97.87
[-3.00, 3.00]	100.00	100.00	100.00
Mean of Geolocation Accuracy [m]	0.013929	0.013929	0.029715
Sigma of Geolocation Accuracy [m]	0.003403	0.003403	0.008002

Images X, Y, Z represent the percentage of images with a relative geolocation error in X, Y, Z.

Geolocation Orientational Variance	RMS [degree]
Omega	0.739
Phi	0.556
Kappa	3.096

Initial Processing Details



System Information



Hardware	CPU: Intel(R) Xeon(R) Platinum 8223CL CPU @ 3.00GHz RAM: 69GB GPU: no info (Driver: unknown)
Operating System	Linux 5.15.0-1026-aws x86_64

Coordinate Systems



Image Coordinate System	WGS 84
Output Coordinate System	WGS 84 / UTM zone 19N

Processing Options



Detected Template	cloud-3d-maps-1*
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Aerial Grid or Corridor
Advanced: Matching Strategy	Use Geometrically Verified Matching: no
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Automatic
Advanced: Calibration	Calibration Method: Standard Internal Parameters Optimization: All External Parameters Optimization: All Rematch: Auto, yes

Point Cloud Densification details



Processing Options



Image Scale	multiscale, 1/2 (Half image size, Default)
Point Density	Optimal
Minimum Number of Matches	3
3D Textured Mesh Generation	yes
3D Textured Mesh Settings:	Resolution: Medium Resolution (default) Color Balancing: no
LOD	Generated: no
Advanced: 3D Textured Mesh Settings	Sample Density Divider: 1
Advanced: Image Groups	group1
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Time for Point Cloud Densification	08m:22s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	02m:29s

Results



Number of Generated Tiles	1
Number of 3D Densified Points	15463019
Average Density (per m ³)	2904.98

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (1.06 [cm/pixel])
DSM Filters	Noise Filtering: yes Surface Smoothing: yes, Type: Sharp
Raster DSM	Generated: yes Method: Inverse Distance Weighting Merge Tiles: yes
Orthomosaic	Generated: yes Merge Tiles: yes GeoTIFF Without Transparency: no Google Maps Tiles and KML: no
Time for DSM Generation	03m:00s
Time for Orthomosaic Generation	09m:42s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s

Shore Island Post, Isabela

