

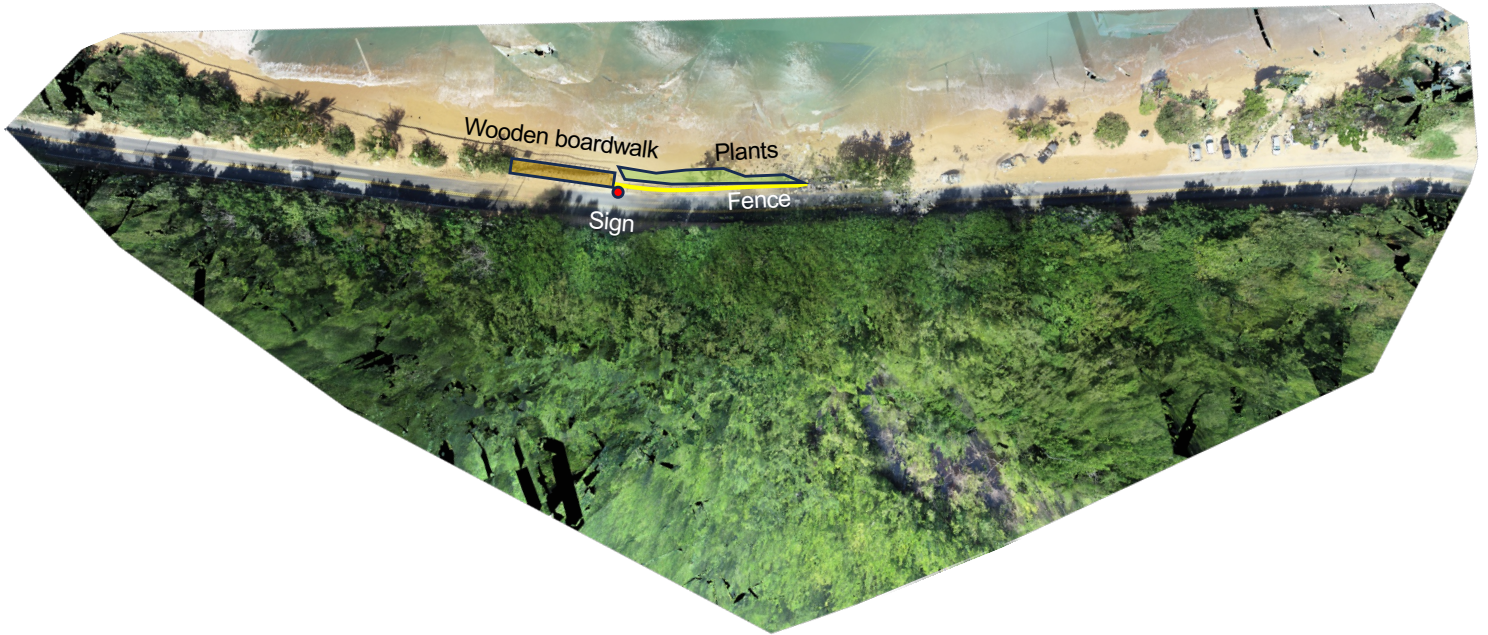
Vacia Talega Post, Loiza
February 06, 2023



Centroid coordinates : 18.44930° N 65.90474° W

Ecological restoration action

February 06, 2023



Area planted with dune vegetation = 57 m²

Wooden boardwalk = 65 ft

Exclusion fence = 115 ft

Note:

In this area we installed a wooden boardwalk a wooden exclusion fence and information sign to direct foot traffic away from vegetated areas and to protect plants and accumulated sand from parked vehicles on roadside. This same techniques will be expanded and implemented to the west of this site in the near future.

3D map

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2D map



Total area of site = 2.71658 ha

Beach length (m)
Vacía Talega Post, Loiza



Beach length = 283.884 m

Density surface model
Vacía Talega Post, Loiza

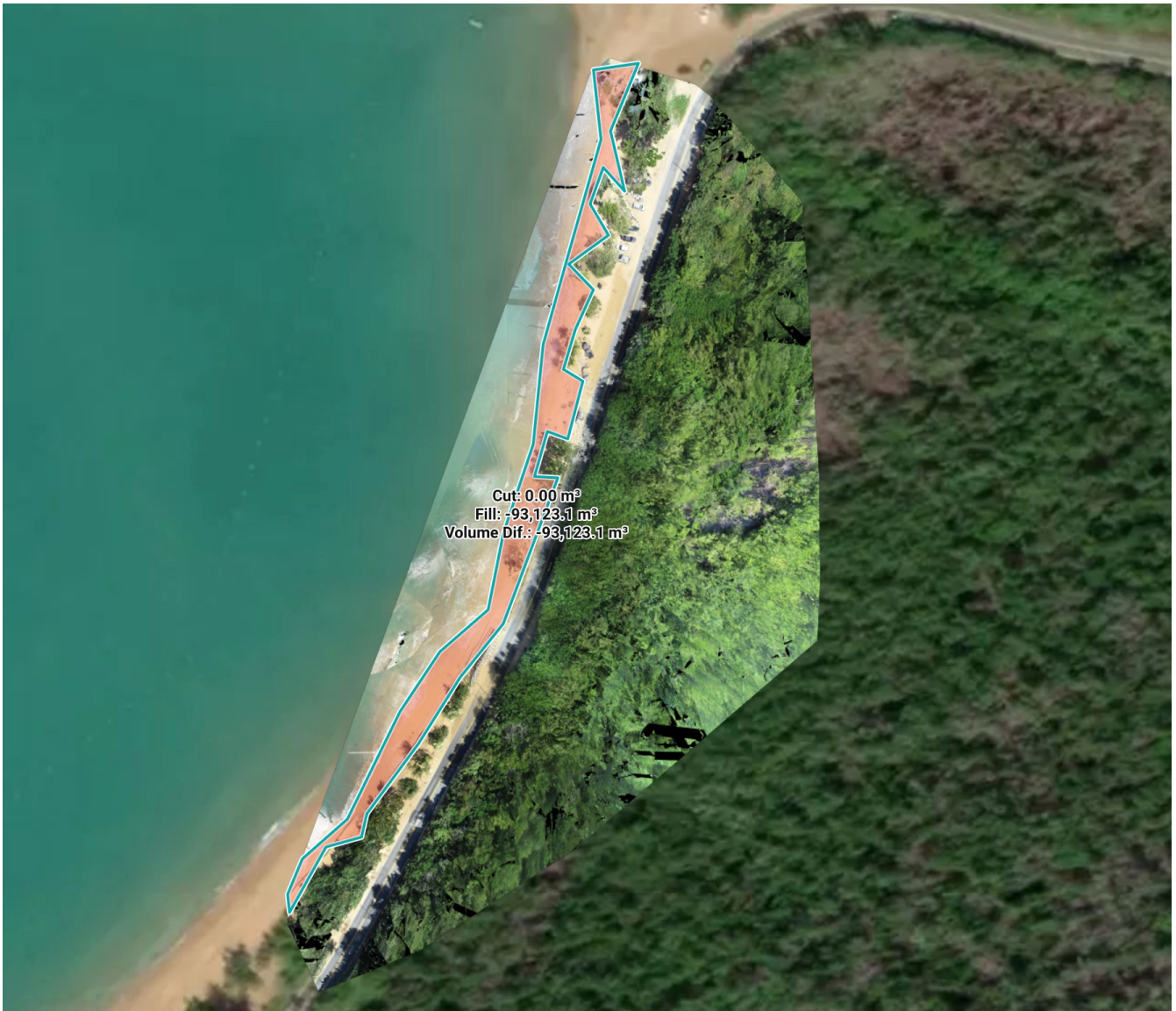


Area of the beach
Vacía Talega Post, Loiza



Area of the beach = 2,175.96 m²

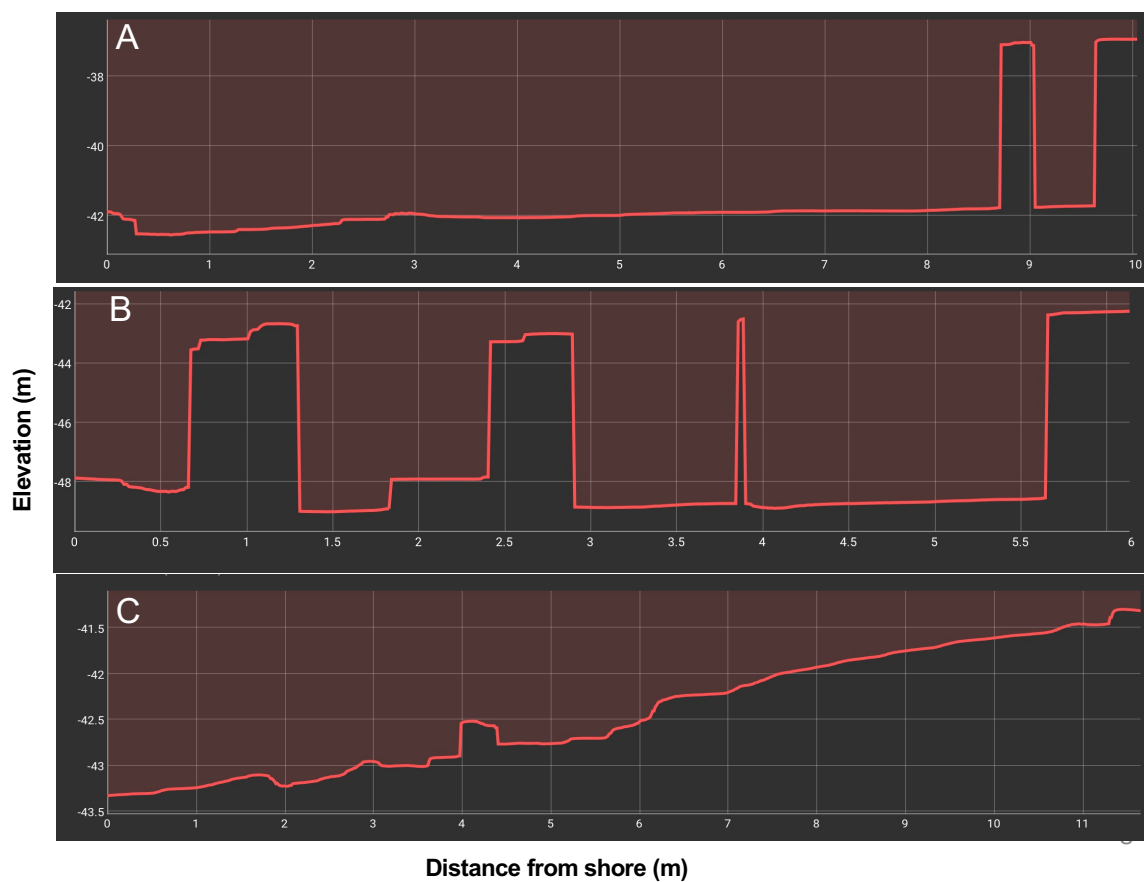
Beach volume
Vacía Talega Post, Loiza



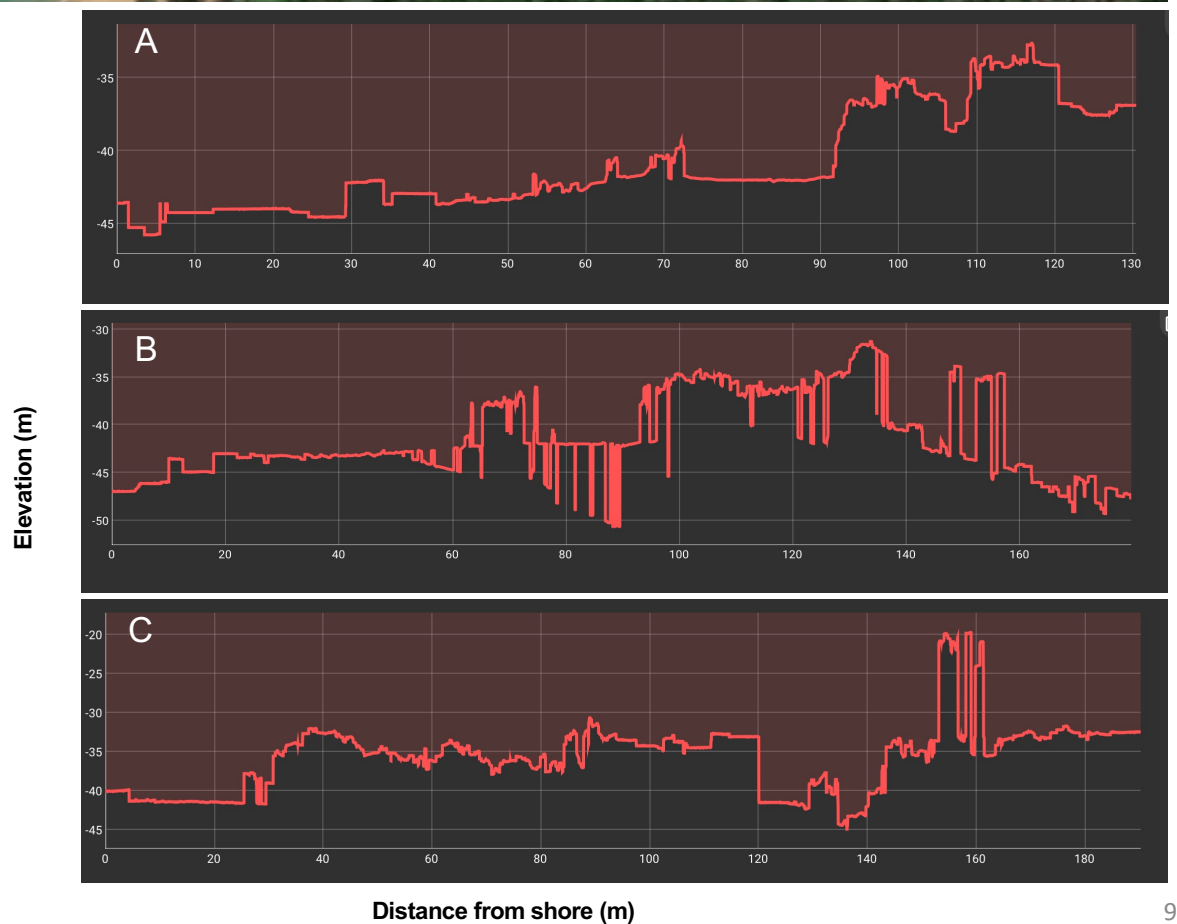
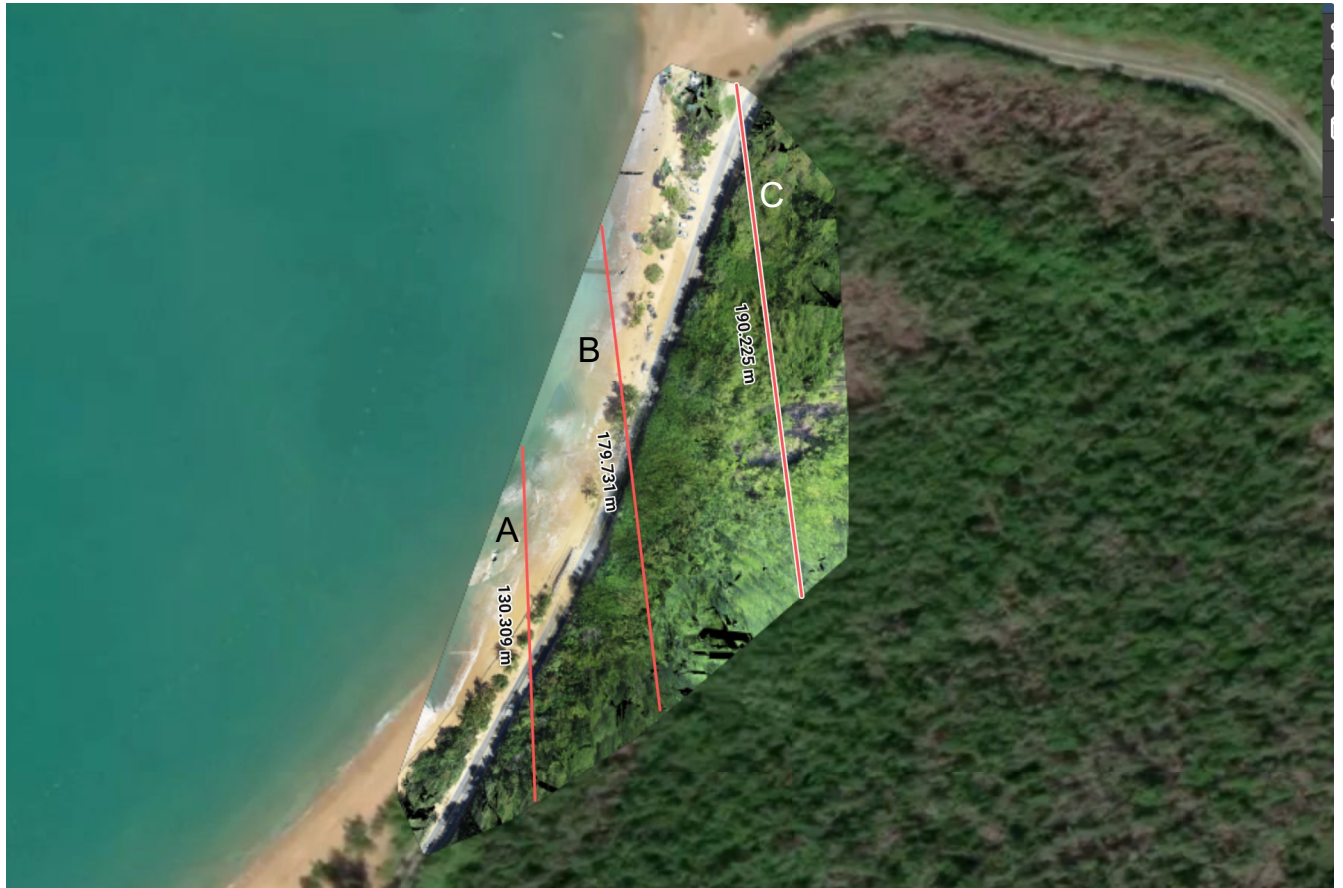
Cut = 0.00 m³
Fill = -93,123.1 m³
Volume Dif. = -93,123.1 m³

Beach elevation

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Site elevation (m)
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Dune height (m)
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Dune height	
A	= 16.107 m
B	= 7.851 m
C	= 10.299 m

Dune width (m)

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Dune width

A = 26.408 m

B = 12.691 m

C = 15.247 m

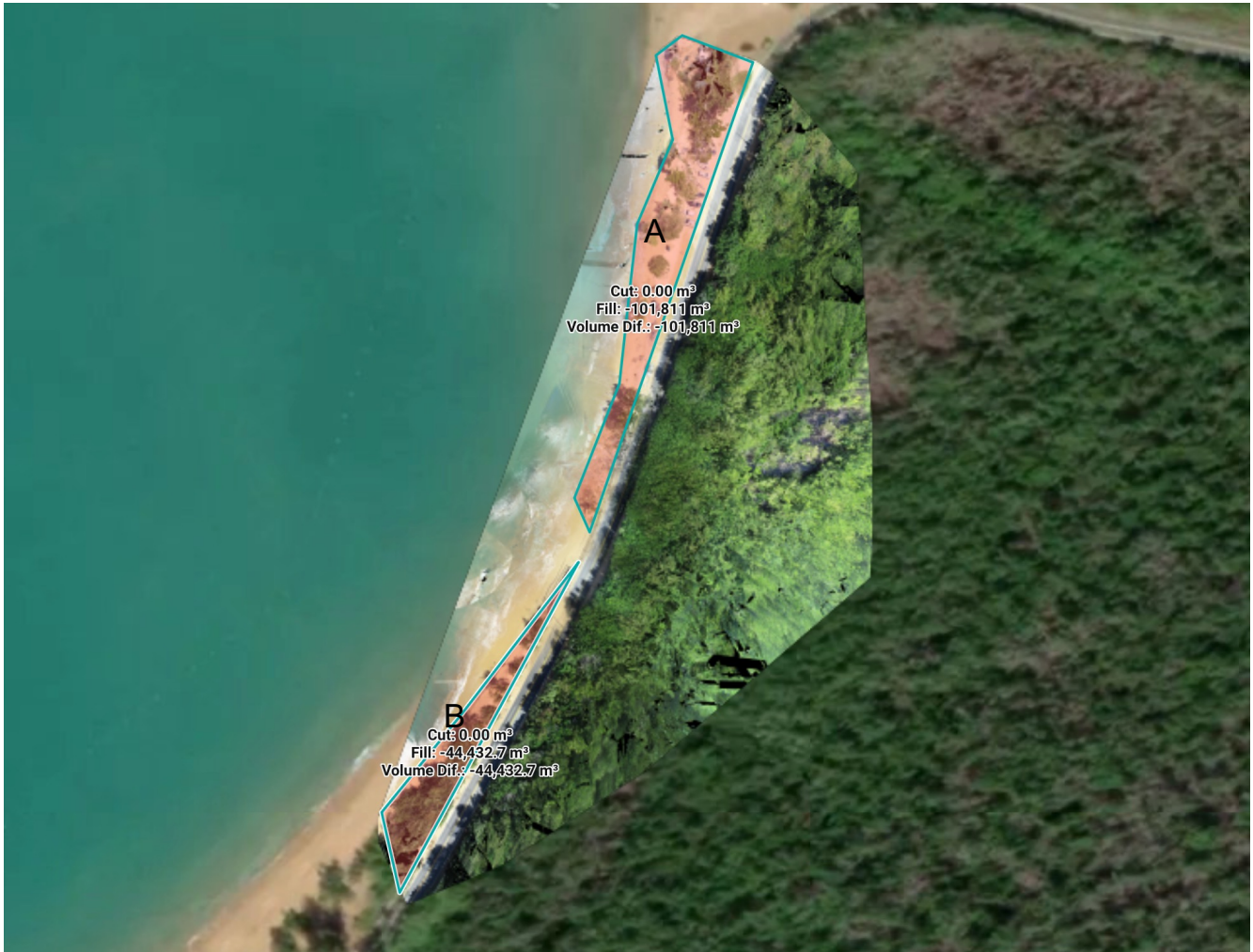
Area and perimeter of dune
Vacía Talega Post, Loiza



A - Area and perimeter of dune
2D area = 2,472.08 m²
3D area = 2,472.08 m²
2D perimeter = 371.896 m
3D perimeter = 371.896 m
Elevation difference = 0.00 m

B- Area and perimeter of dune
2D area = 1,117.52 m²
3D area = 1,117.52 m²
2D perimeter = 261.67 m
3D perimeter = 261.67 m
Elevation difference = 0.00 m

Volume of dune
 Vacia Talega Post, Loiza



	A	Triangulated
Base surface		
Cut volume		0.00 m ³
Cut error		0.00 m ³
Fill volume		-101,811 m ³
Fill error		106.737 m ³
Volume difference		-101,811 m ³

	B	Triangulated
Base surface		
Cut volume		0.00 m ³
Cut error		0.00 m ³
Fill volume		-44,432.7 m ³
Fill error		48.3279 m ³
Volume difference		-44,432.7 m ³

Shoreline
Vacía Talega Post, Loiza



Shoreline length = 258.569 m

Shoreline geolocation
Vacía Talega Post, Loiza



Shoreline markers	
A	= 18.45033° N 65.90477° W
B	= 18.44978° N 65.90484° W
C	= 18.44921° N 65.90505° W
D	= 18.44871° N 65.90534° W

Shoreline extension
Vacía Talega Post, Loiza



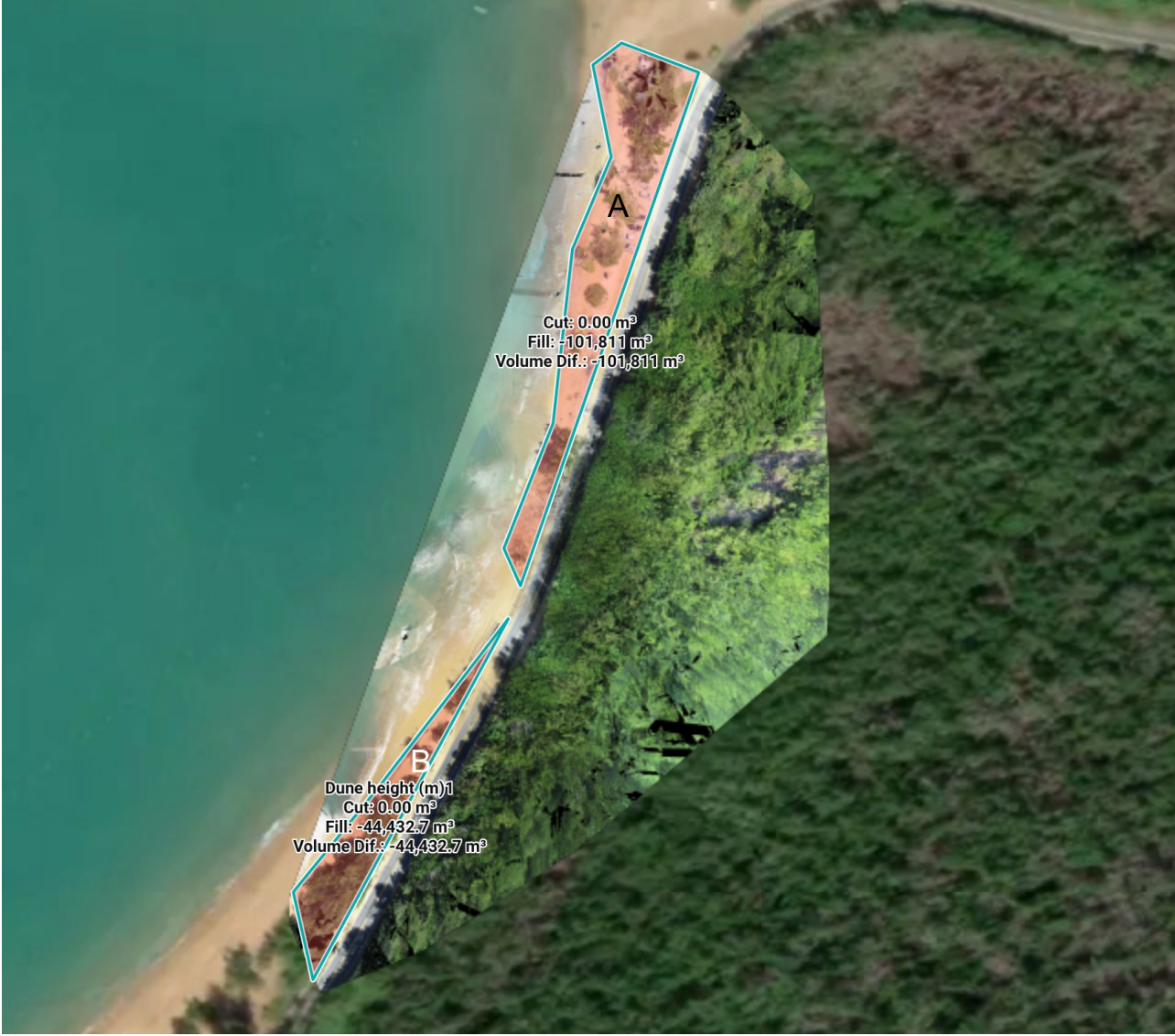
Shoreline extension	
A	= 11.196 m
B	= 11.40 m
C	= 10.523 m

Shoreline position
Vacía Talega Post, Loiza



Shoreline position	
A	= 8.432 m
B	= 7.735 m
C	= 9.684 m

Area of dune breaches
Vacía Talega Post, Loiza



A
Area of dune breaches
Breach = 2,472.08 m²

B
Area of dune breaches
Breach = 1,117.52 m²

Quality Report



Generated with Pix4Denterprise version 4.8.3
Preview

- !** **Important:** Click on the different icons for:
 - ?** Help to analyze the results in the Quality Report
 - i** Additional information about the sections

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

Summary **i**

Project	201639-Project-2023-02-06T22:13:18.704Z
Processed	2023-02-06 22:56:45
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	1.44 cm / 0.57 in
Area Covered	0.027 km ² / 2.6937 ha / 0.01 sq. mi. / 6.6597 acres
Time for Initial Processing (without report)	28m:00s

Quality Check **i**

? Images	median of 54639 keypoints per image	✔
? Dataset	209 out of 304 images calibrated (68%), all images enabled, 7 blocks	⚠
? Camera Optimization	5.31% relative difference between initial and optimized internal camera parameters	⚠
? Matching	median of 4885.84 matches per calibrated image	✔
? Georeferencing	yes, no 3D GCP	⚠

? Preview **i**

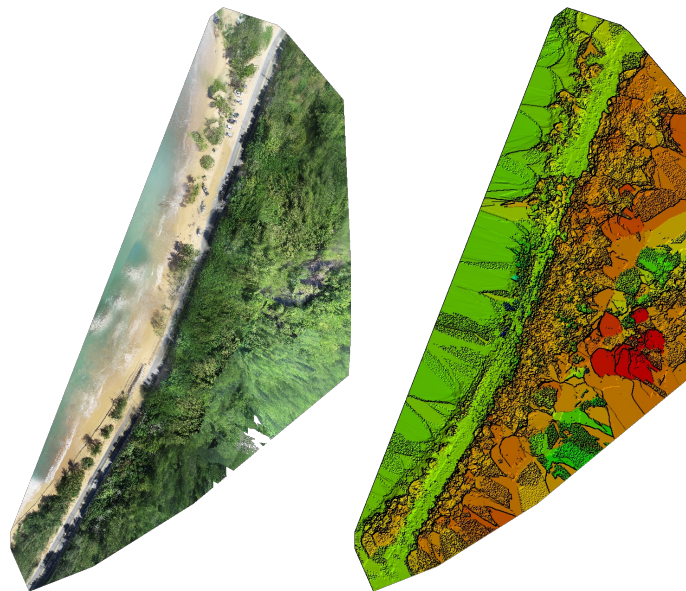


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	209 out of 304
Number of Geolocated Images	304 out of 304

? Initial Image Positions

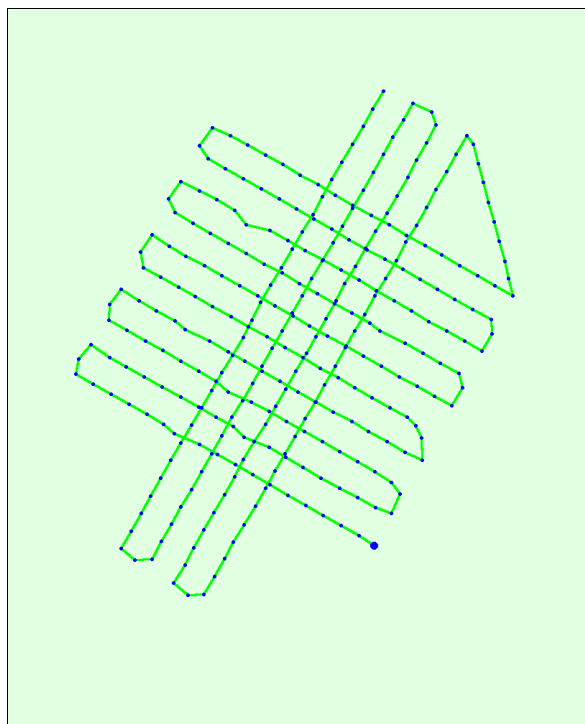
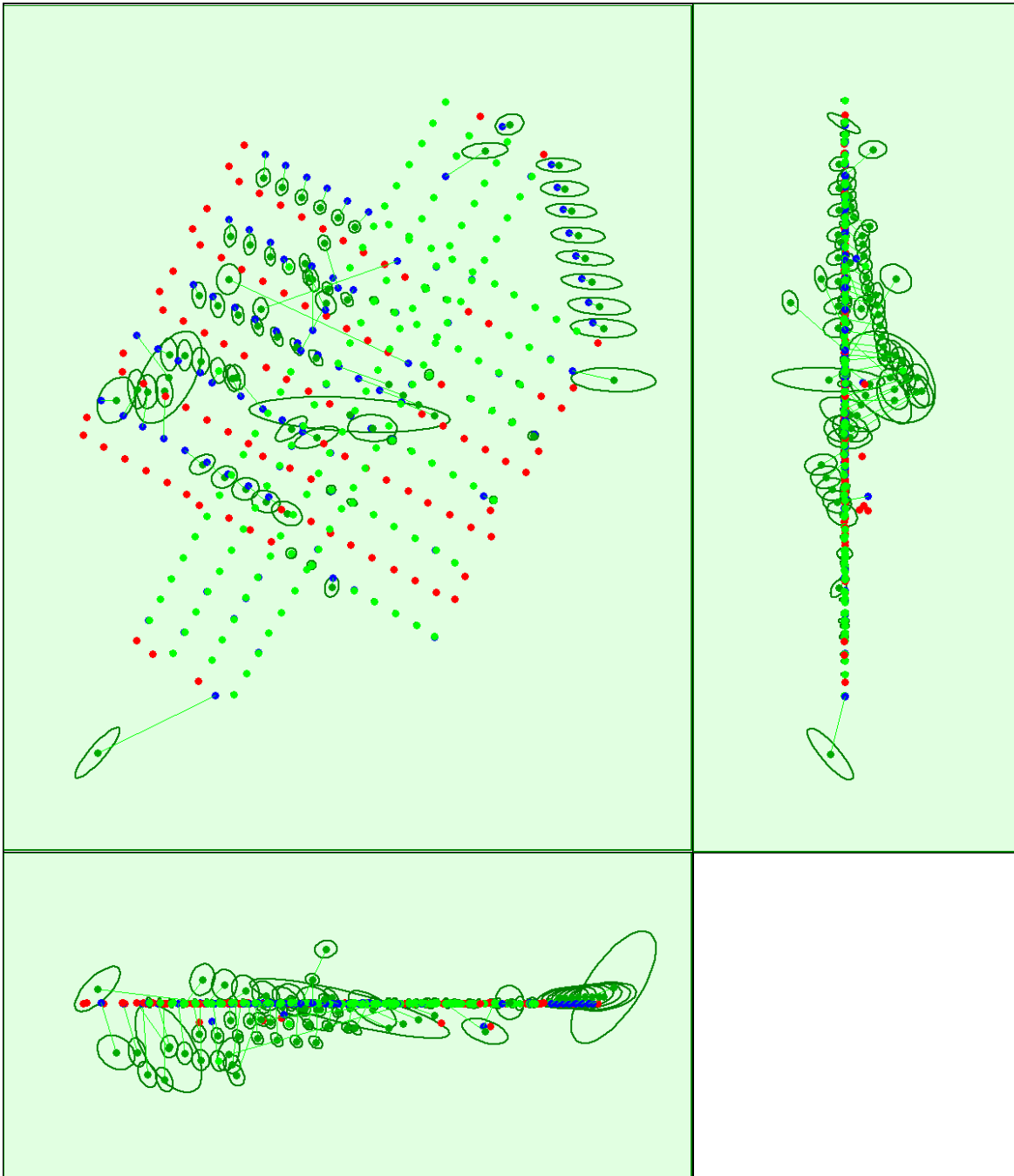


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? Computed Image/GCPs/Manual Tie Points Positions





Uncertainty ellipses 100x 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	45.184	39.066	49.758	0.054	0.027	0.047
Sigma	646.743	559.174	712.223	0.265	0.067	0.245

? Overlap



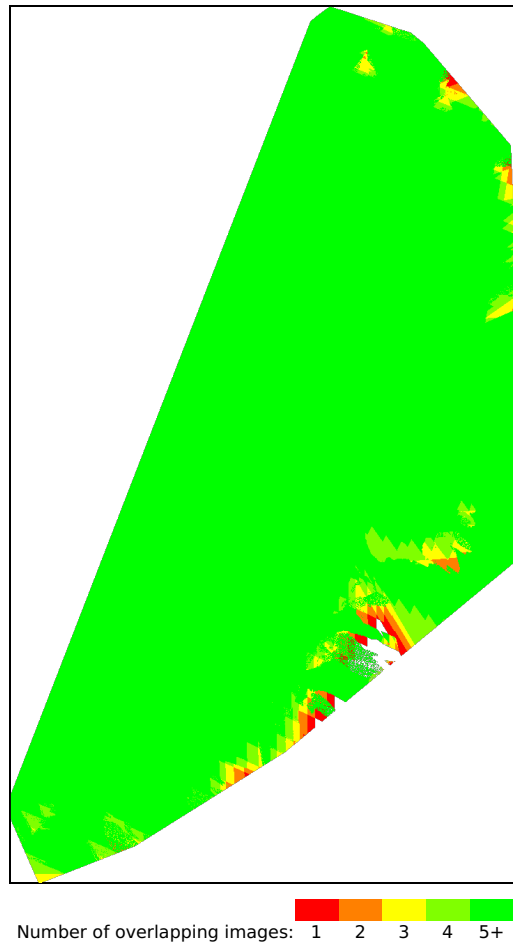


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic.
 Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

Bundle Block Adjustment Details i

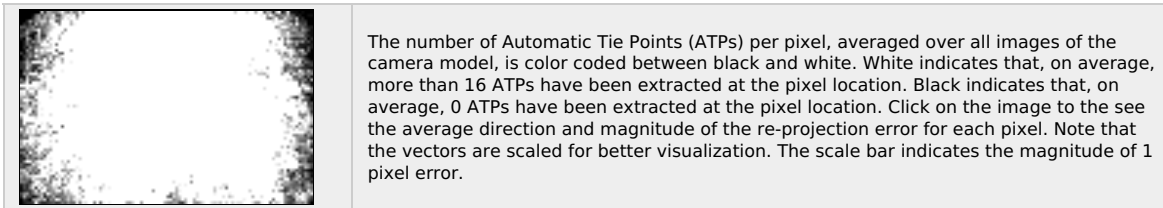
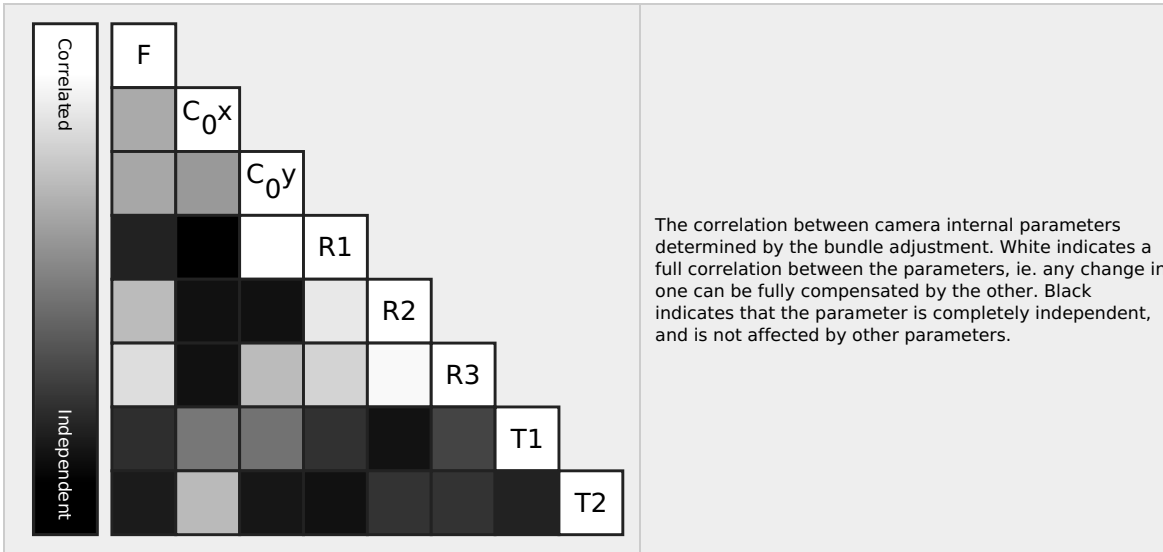
Number of 2D Keypoint Observations for Bundle Block Adjustment	960193
Number of 3D Points for Bundle Block Adjustment	395077
Mean Reprojection Error [pixels]	0.229

? Internal Camera Parameters

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

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	3852.586 [pixel] 9.035 [mm]	2749.031 [pixel] 6.447 [mm]	1621.217 [pixel] 3.802 [mm]	-0.002	-0.013	0.013	-0.001	0.000
Uncertainties (Sigma)	0.924 [pixel] 0.002 [mm]	0.763 [pixel] 0.002 [mm]	1.438 [pixel] 0.003 [mm]	0.000	0.001	0.001	0.000	0.000



? 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	54639	4886
Min	20117	32
Max	77259	11272
Mean	53574	4594

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	308234
In 3 Images	51101
In 4 Images	17352
In 5 Images	7818
In 6 Images	4080
In 7 Images	2403
In 8 Images	1466
In 9 Images	938
In 10 Images	559
In 11 Images	387
In 12 Images	236
In 13 Images	157
In 14 Images	88
In 15 Images	79
In 16 Images	48
In 17 Images	29
In 18 Images	27
In 19 Images	14
In 20 Images	29
In 21 Images	10
In 22 Images	9
In 23 Images	5

In 24 Images	2
In 25 Images	4
In 26 Images	2

2D Keypoint Matches

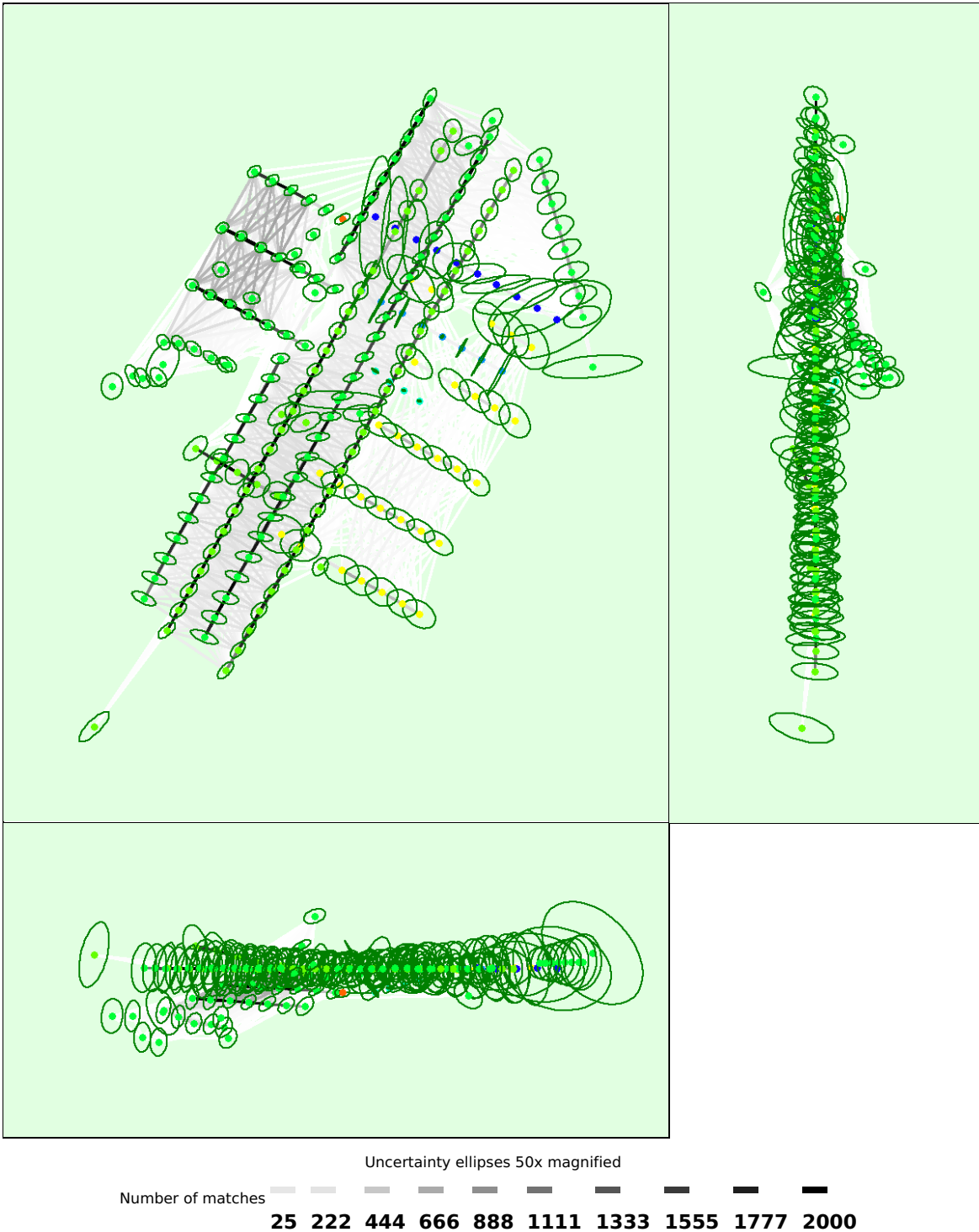


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.058	0.051	0.084	0.161	0.118	0.175
Sigma	0.037	0.037	0.038	0.132	0.055	0.137

Geolocation Details

? Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-4.42	0.00	0.00	0.68
-4.42	-3.54	0.00	0.00	0.00
-3.54	-2.65	0.00	0.68	0.00
-2.65	-1.77	0.68	0.00	0.00
-1.77	-0.88	1.36	0.00	0.00
-0.88	0.00	51.70	50.34	51.70
0.00	0.88	46.26	47.62	46.26
0.88	1.77	0.00	0.68	0.00
1.77	2.65	0.00	0.68	0.68
2.65	3.54	0.00	0.00	0.00
3.54	4.42	0.00	0.00	0.00
4.42	-	0.00	0.00	0.68
Mean [m]		-0.038811	0.000032	0.043309
Sigma [m]		0.275059	0.296736	0.933048
RMS Error [m]		0.277783	0.296736	0.934053

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]	65.31	65.31	76.19
[-2.00, 2.00]	89.80	91.84	95.92
[-3.00, 3.00]	97.28	96.60	98.64
Mean of Geolocation Accuracy [m]	0.042307	0.042307	0.088028
Sigma of Geolocation Accuracy [m]	0.181960	0.181960	0.404976

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

Geolocation Orientational Variance	RMS [degree]
Omega	3.151
Phi	2.454
Kappa	4.057

Geolocation RMS error of the orientation angles given by the difference between the initial and computed image orientation angles.

Initial Processing Details

System Information

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	04m:27s
Time for Orthomosaic Generation	16m:43s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s

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