

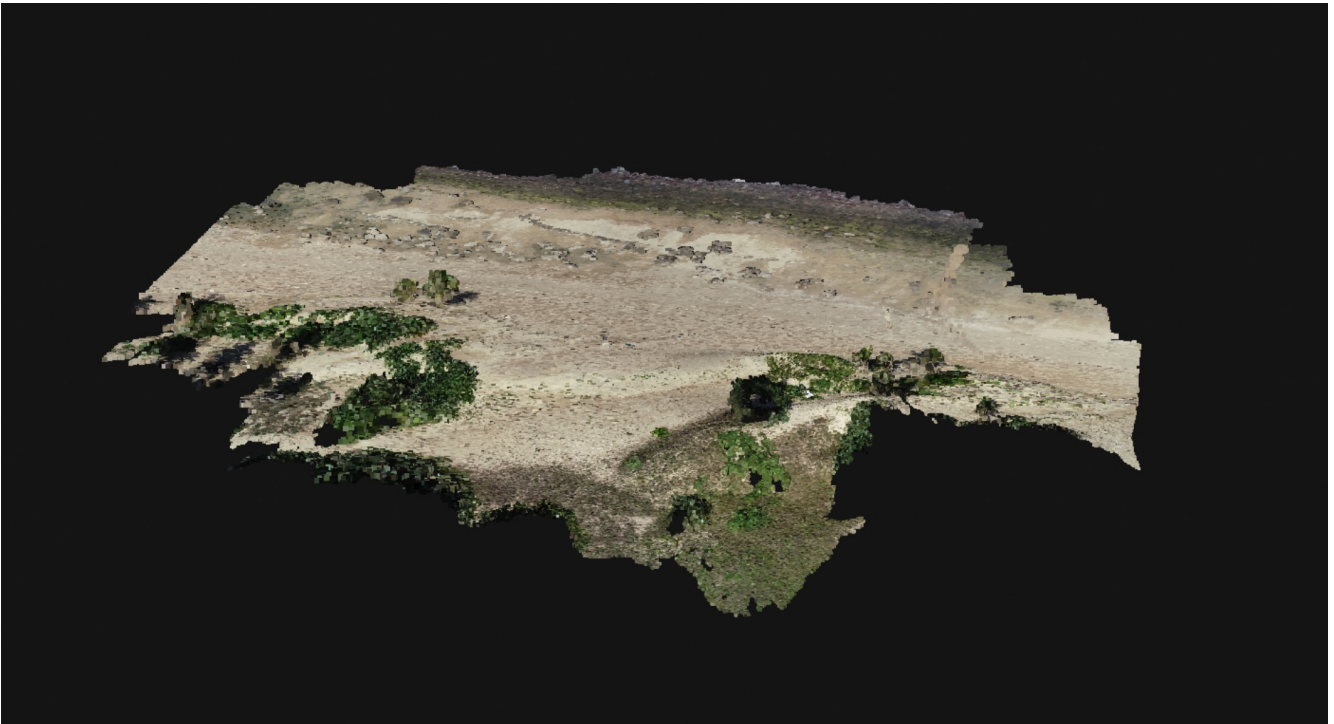
Finca Nolla Paseo Post, Camuy
January 10, 2023.



Centroid coordinates : 18.48911° N 66.84395° W

3D map

Finca Nolla Paseo Post, Camuy



2D map



Total area of site = 2.27638 ha

Beach length (m)
Finca Nolla Paseo Post, Camuy



Beach length = 205.073 m

Density surface model
Finca Nolla Paseo Post, Camuy



Area of the beach
Finca Nolla Paseo Post, Camuy



Area of the beach = 5,429.91 m²

Beach volume

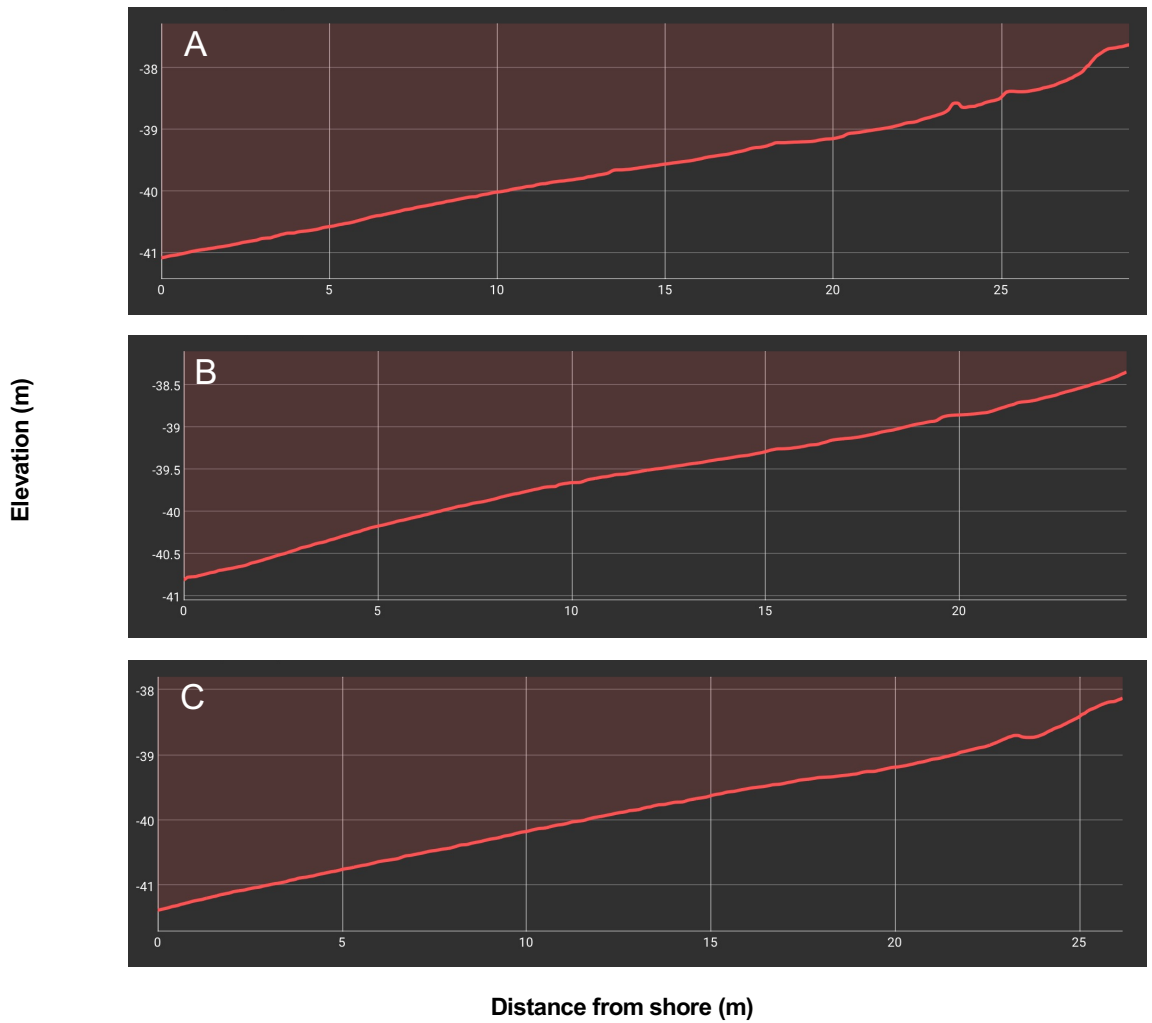
Finca Nolla Paseo Post, Camuy



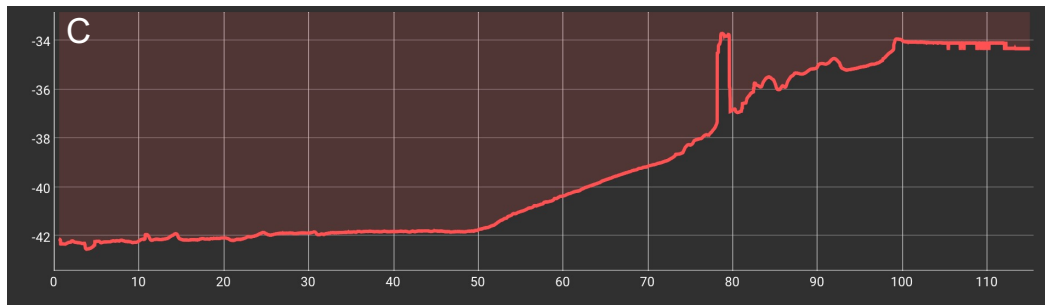
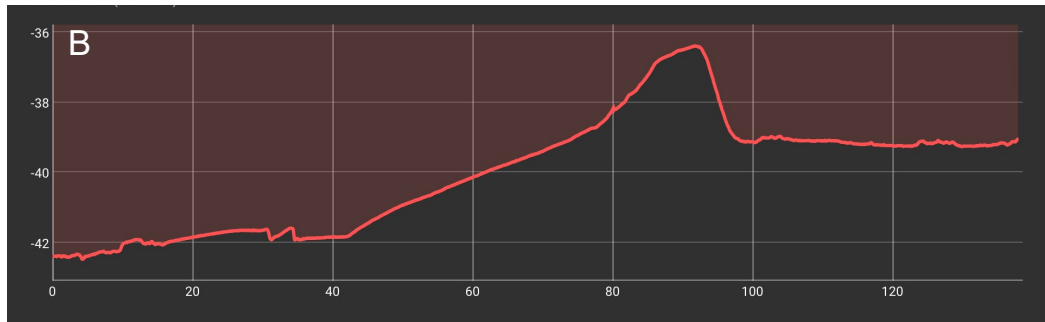
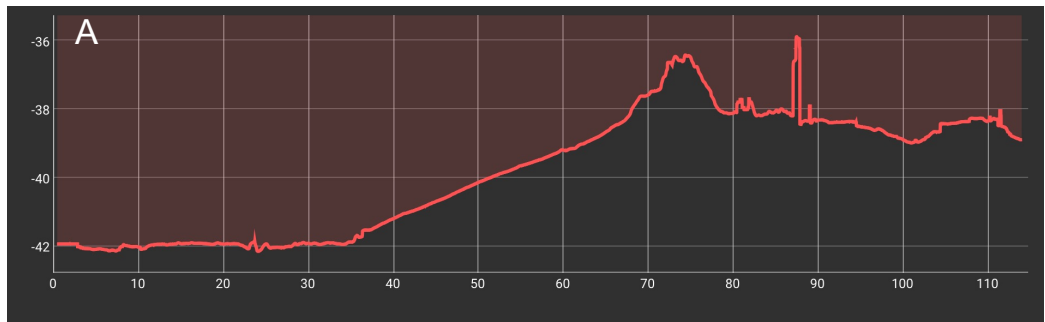
Cut = 0.00 m³
Fill = -215,297 m³
Volume Dif. = -215,297 m³

Beach elevation

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Site elevation (m)
Finca Nolla Paseo Post, Camuy



Distance from shore (m)

Dune height (m)

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Dune height	
A	= 0.134 m
B	= 2.353 m
C	= 0.249 m

Dune width (m)

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Dune width

A = 50.045 m

B = 10.724 m

C = 43.28 m

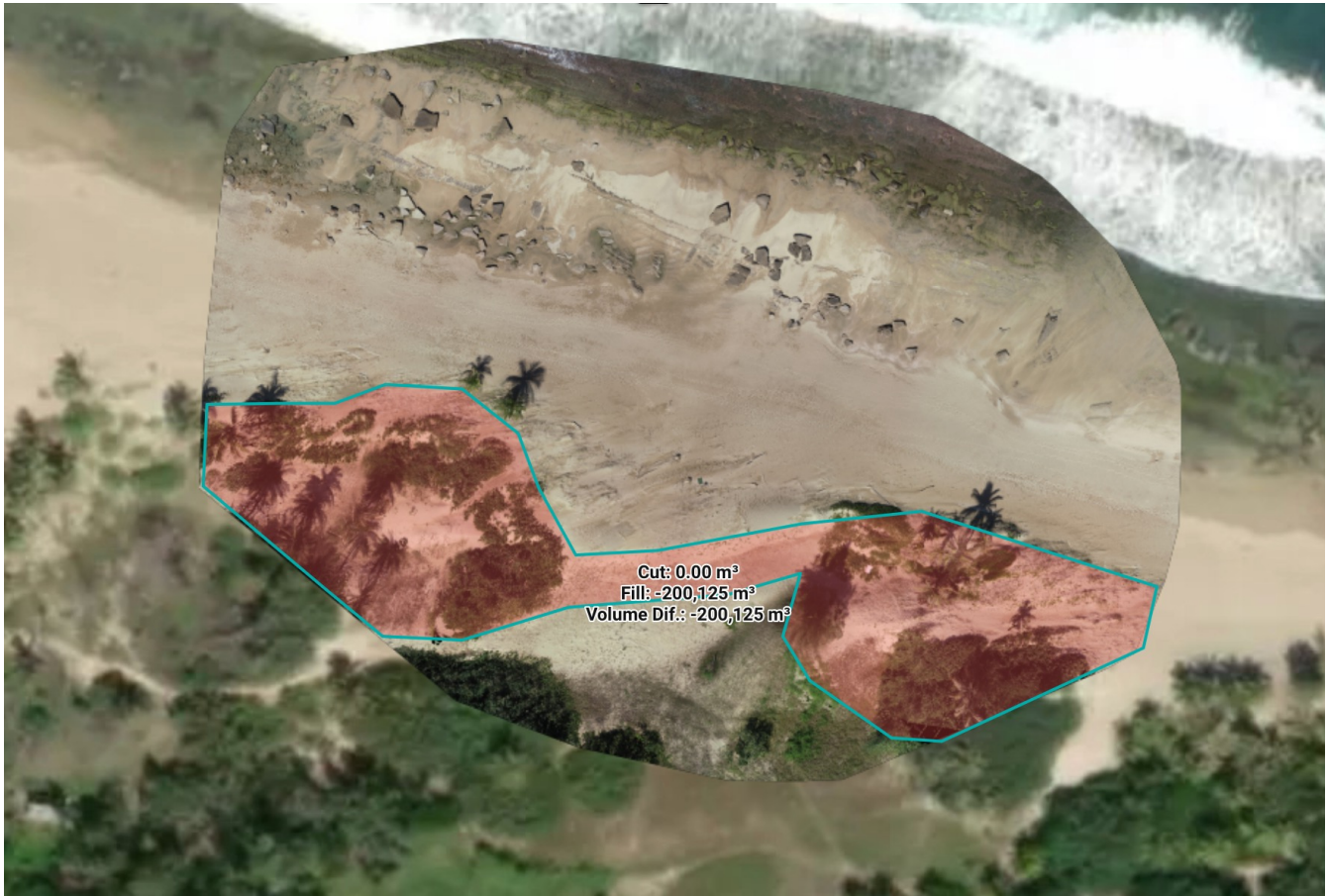
Area and perimeter of dune
Finca Nolla Paseo Post, Camuy



Area and perimeter of dune	
2D area	= 5,449.92 m ²
3D area	= 5,449.92 m ²
2D perimeter	= 468.842 m
3D perimeter	= 468.842 m
Elevation difference	= 0.00 m

Volume of dune

Finca Nolla Paseo Post, Camuy



Base surface	Triangulated
Cut volume	0.00 m ³
Cut error	0.00 m ³
Fill volume	-200,125 m ³
Fill error	341.412 m ³
Volume difference	-200,125 m ³

Shoreline

Finca Nolla Paseo Post, Camuy



Shoreline length = 213.384 m

Shoreline geolocation

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Shoreline markers

A = 18.48944° N 66.84470° W
B = 18.48941° N 66.84432° W
C = 18.48926° N 66.84391° W
D = 18.48923° N 66.84352° W
E = 18.48909° N 66.84316° W

Shoreline extension
Finca Nolla Paseo Post, Camuy



Shoreline extension

A =38.814 m

B =37.573 m

C =40.458 m

Shoreline position

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Shoreline position

A = 31.72 m

B = 49.602 m

C = 30.636 m

Area of dune breaches
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Area of dune breaches
Breach = 5,449.92 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

i Additional information about the sections

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

Summary



Project	198002-Project-2023-01-10T23:53:29.526Z
Processed	2023-01-11 01:07:04
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	1.05 cm / 0.41 in
Area Covered	0.023 km ² / 2.2674 ha / 0.01 sq. mi. / 5.6058 acres
Time for Initial Processing (without report)	57m:07s

Quality Check



? Images	median of 58798 keypoints per image	✓
? Dataset	246 out of 263 images calibrated (93%), all images enabled, 3 blocks	⚠
? Camera Optimization	0.09% relative difference between initial and optimized internal camera parameters	✓
? Matching	median of 9472.82 matches per calibrated image	✓
? Georeferencing	yes, no 3D GCP	⚠

? Preview

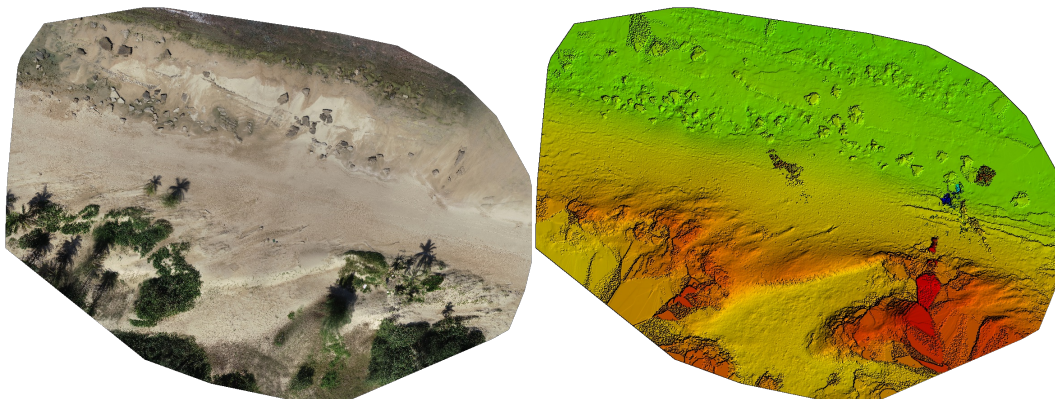


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	246 out of 263
Number of Geolocated Images	263 out of 263

? Initial Image Positions

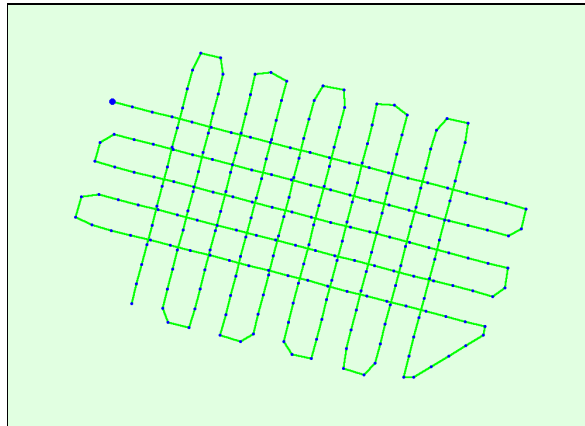
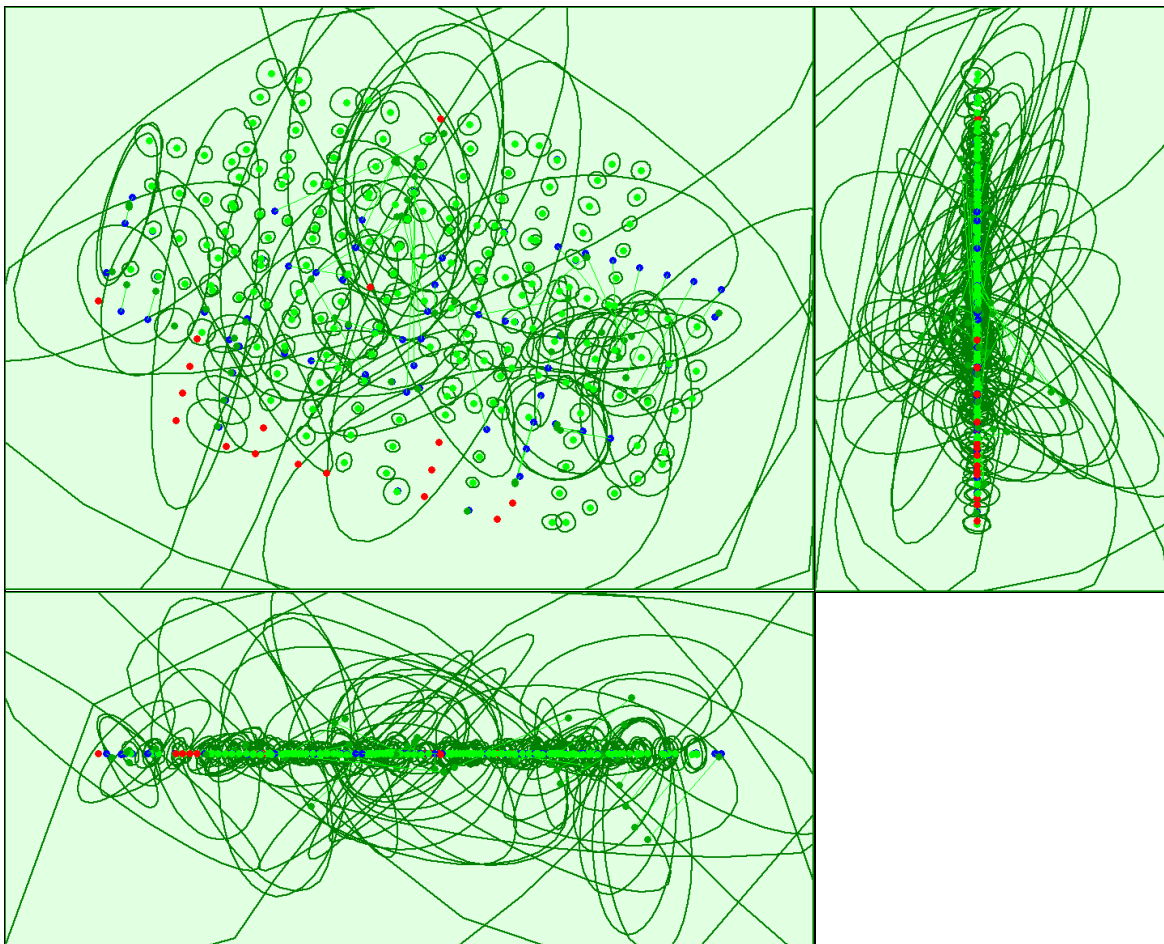


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? Computed Image/GCPs/Manual Tie Points Positions



Uncertainty ellipses 500x 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	0.051	0.048	0.078	0.062	0.057	0.088
Sigma	0.555	0.368	0.821	0.354	0.435	0.753

Overlap

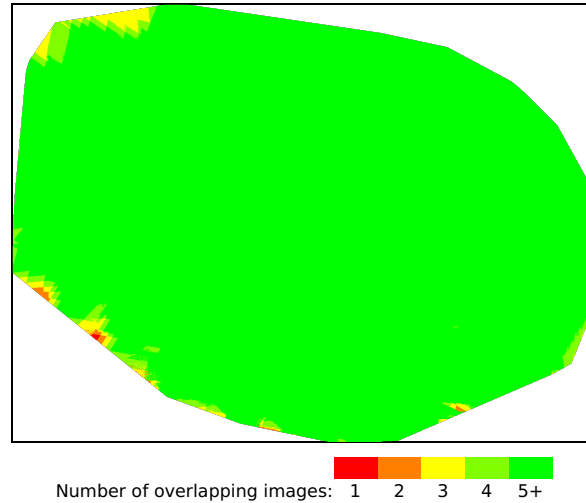


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

Bundle Block Adjustment Details

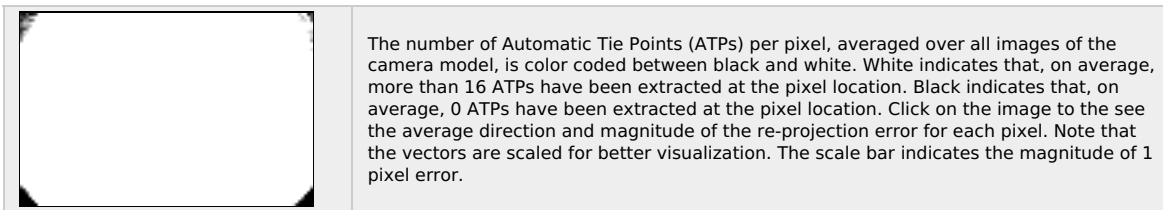
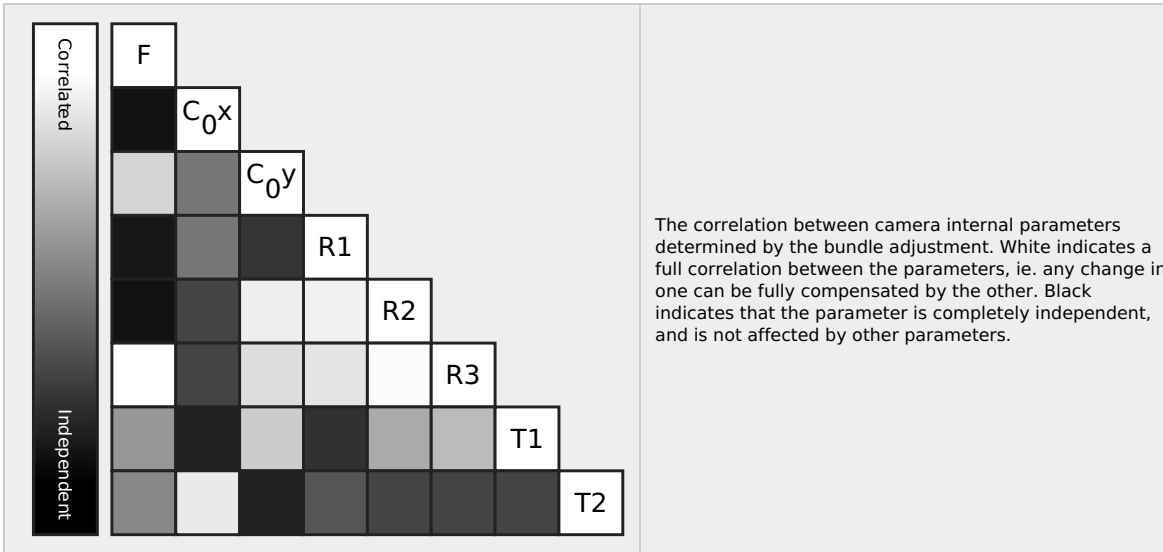
Number of 2D Keypoint Observations for Bundle Block Adjustment	2913315
Number of 3D Points for Bundle Block Adjustment	1193337
Mean Reprojection Error [pixels]	0.177

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	3654.894 [pixel] 8.572 [mm]	2733.736 [pixel] 6.411 [mm]	1817.611 [pixel] 4.263 [mm]	0.002	-0.021	0.021	-0.001	-0.001
Uncertainties (Sigma)	0.386 [pixel] 0.001 [mm]	0.266 [pixel] 0.001 [mm]	0.443 [pixel] 0.001 [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	58798	9473
Min	26714	46
Max	79013	35334
Mean	56258	11843

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	911249
In 3 Images	168772
In 4 Images	57929
In 5 Images	25767
In 6 Images	12671
In 7 Images	6726
In 8 Images	3821
In 9 Images	2257
In 10 Images	1356
In 11 Images	860
In 12 Images	608
In 13 Images	412
In 14 Images	335
In 15 Images	176
In 16 Images	145
In 17 Images	98
In 18 Images	67
In 19 Images	44
In 20 Images	19
In 21 Images	13
In 22 Images	7
In 23 Images	1

In 24 Images	1
In 25 Images	1
In 26 Images	2

2D Keypoint Matches

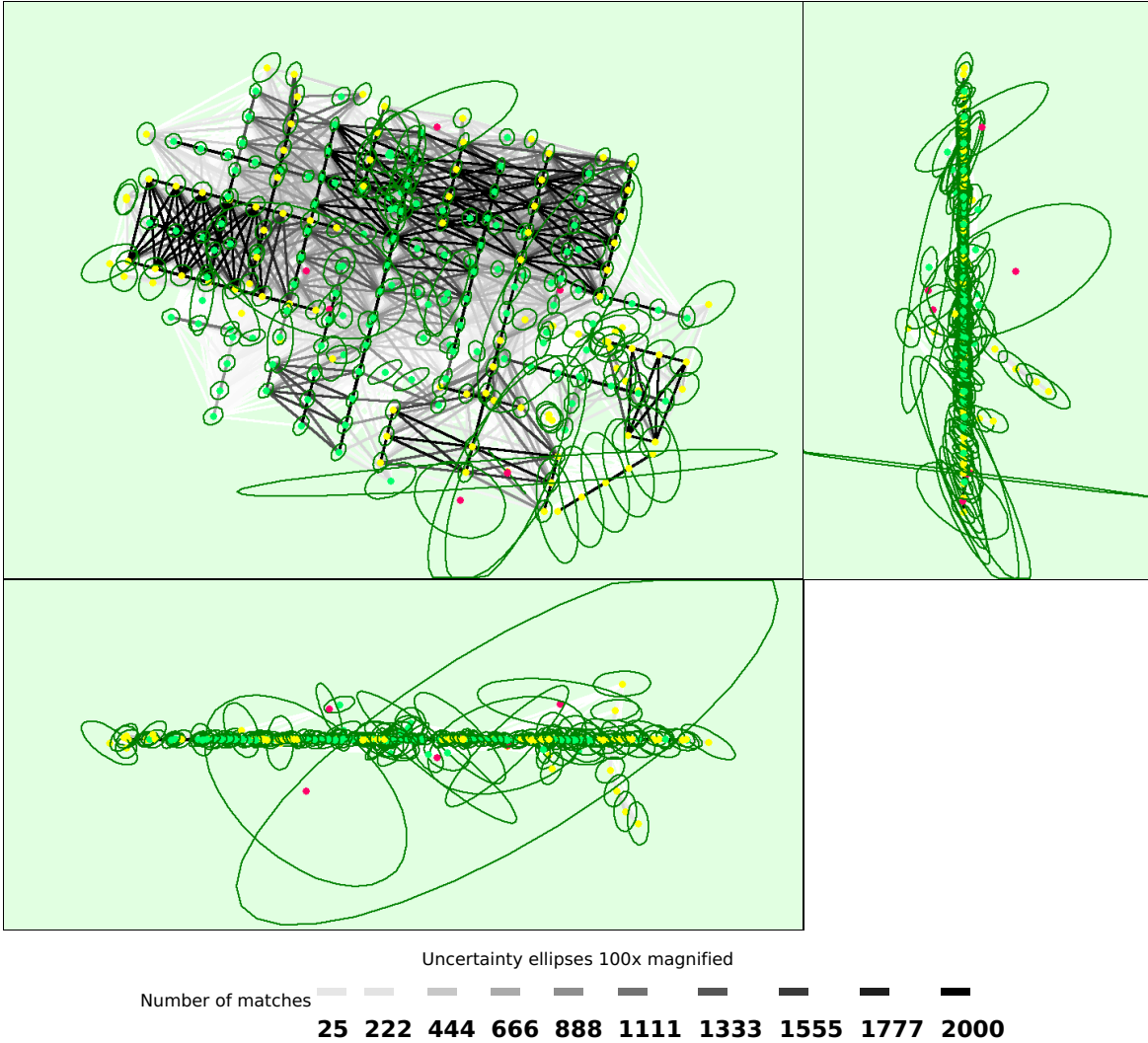


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.026	0.029	0.022	0.056	0.049	0.056
Sigma	0.042	0.031	0.030	0.086	0.126	0.307

Geolocation Details

Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]

-	-0.84	0.00	0.00	0.00
-0.84	-0.67	0.00	0.00	0.00
-0.67	-0.51	0.00	0.00	0.00
-0.51	-0.34	0.00	0.00	0.00
-0.34	-0.17	0.00	0.00	0.00
-0.17	0.00	47.92	54.69	44.79
0.00	0.17	52.08	45.31	55.21
0.17	0.34	0.00	0.00	0.00
0.34	0.51	0.00	0.00	0.00
0.51	0.67	0.00	0.00	0.00
0.67	0.84	0.00	0.00	0.00
0.84	-	0.00	0.00	0.00
Mean [m]		0.000496	0.001004	-0.000974
Sigma [m]		0.009859	0.012255	0.023597
RMS Error [m]		0.009871	0.012296	0.023617

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]	90.63	91.67	86.98
[-2.00, 2.00]	96.35	96.88	97.40
[-3.00, 3.00]	99.48	97.92	98.96
Mean of Geolocation Accuracy [m]	0.015237	0.015237	0.034335
Sigma of Geolocation Accuracy [m]	0.020347	0.020347	0.040730

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

Geolocation Orientational Variance	RMS [degree]
Omega	0.629
Phi	0.547
Kappa	2.472

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

Initial Processing Details


System Information

Hardware	CPU: Intel(R) Xeon(R) Platinum 8124M 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*
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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	09m:24s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	08m:32s

Results

Number of Generated Tiles	1
Number of 3D Densified Points	22095171
Average Density (per m ³)	3799.01

DSM, Orthomosaic and Index Details

Processing Options

DSM and Orthomosaic Resolution	1 x GSD (1.05 [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	05m:09s
Time for Orthomosaic Generation	11m:33s
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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