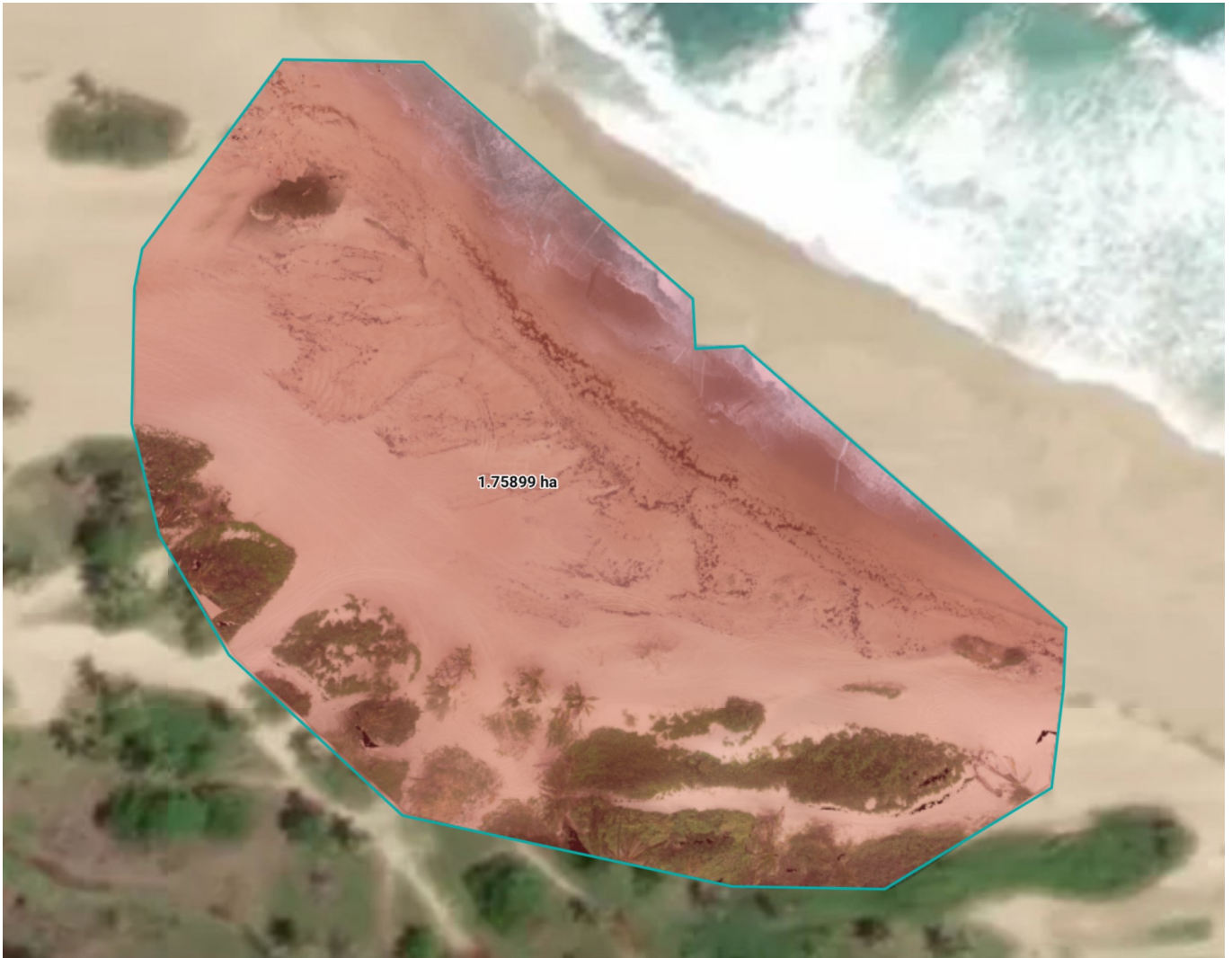


**East Poza De Teodoro Post, Isabela**  
December 21, 2022.



**Centroid coordinates : 18.51118° N 67.03516° W**

### 3D map

East Poza De Teodoro Post, Isabela



### 2D map



Total area of site = 1.75899 ha

**Beach length (m)**  
East Poza De Teodoro Post, Isabela



**Beach length = 166.947 m**

**Density surface model**  
East Poza De Teodoro Post, Isabela



## Area of the beach

East Poza De Teodoro Post, Isabela



**Area of the beach = 1.13342 ha**

## Beach volume

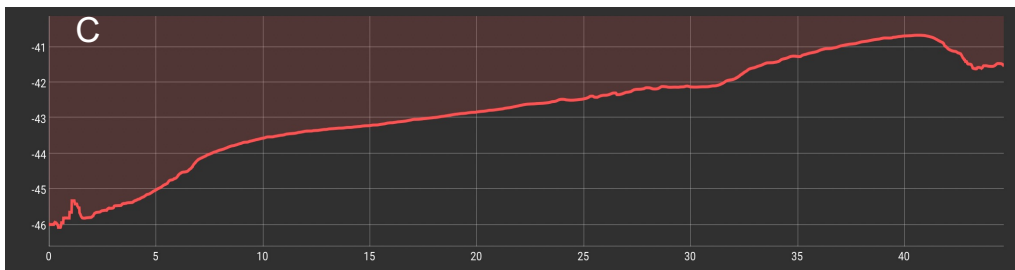
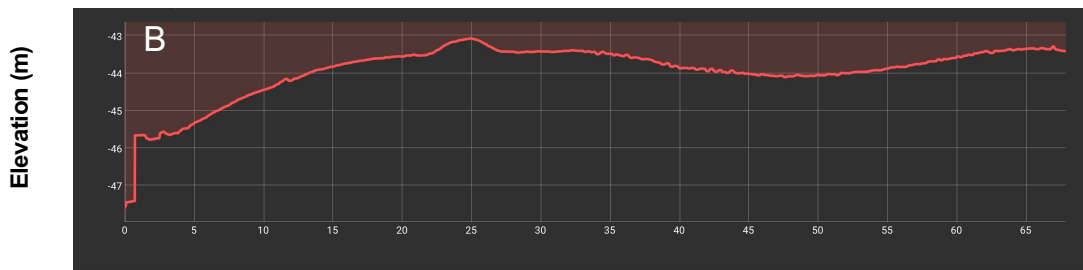
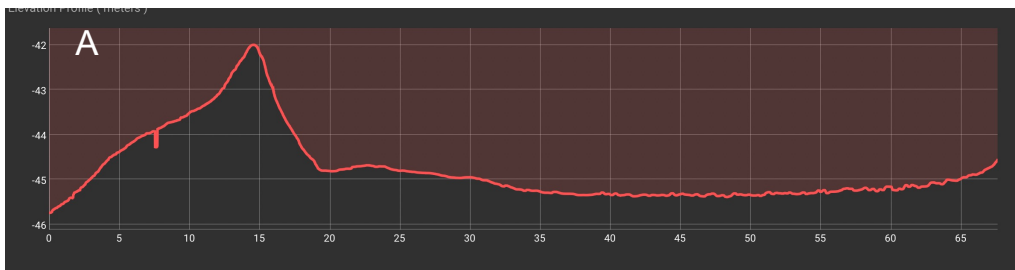
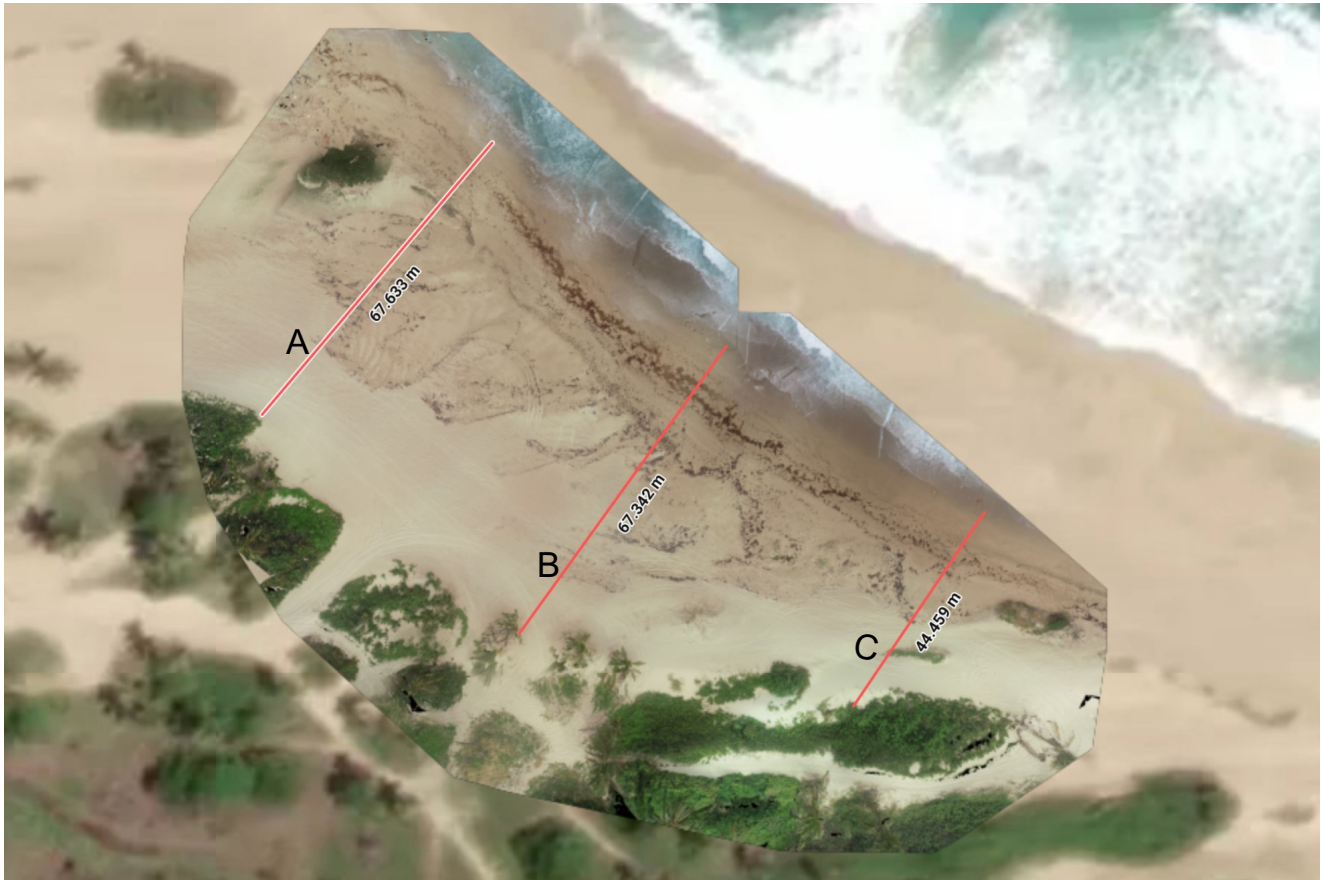
East Poza De Teodoro Post, Isabela



**Cut = 0.00 m<sup>3</sup>**  
**Fill = -495,864 m<sup>3</sup>**  
**Volume Dif. = -495,864 m<sup>3</sup>**

# Beach elevation

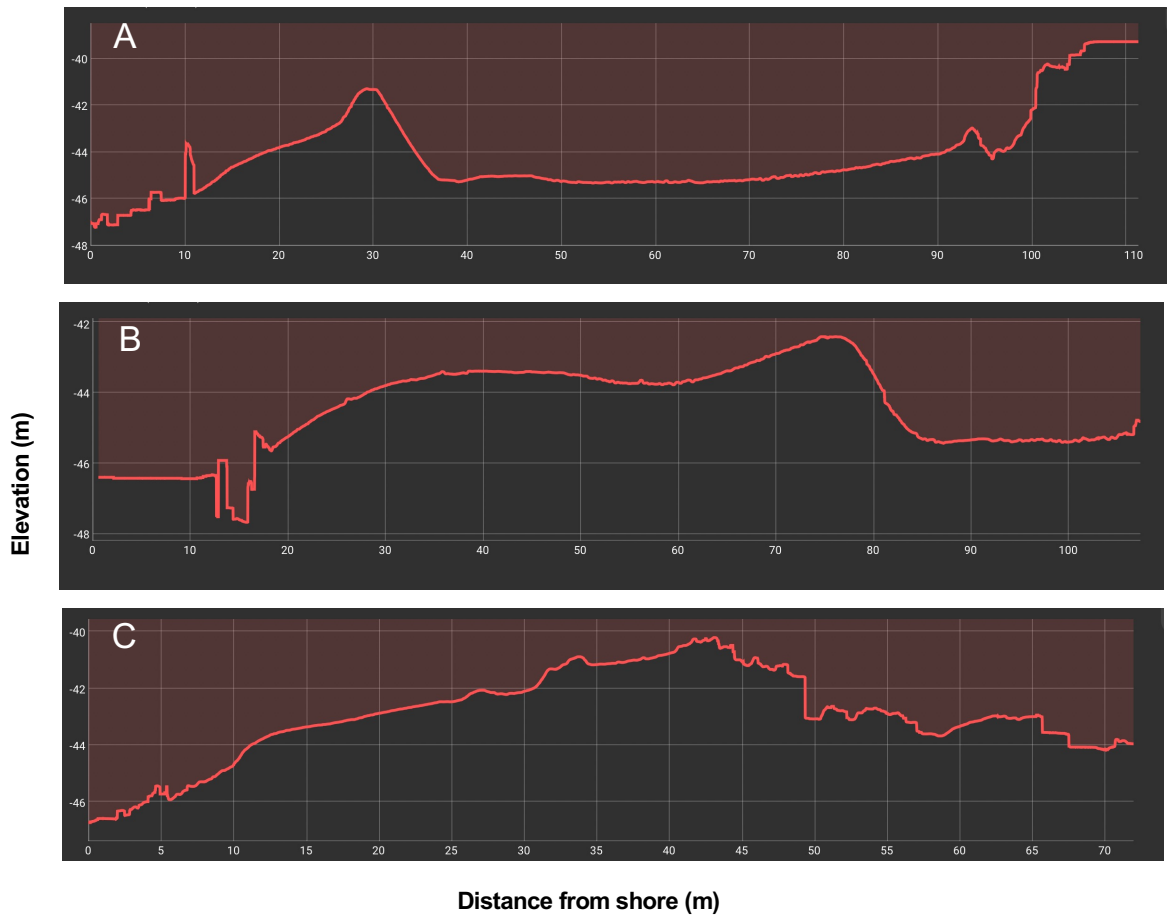
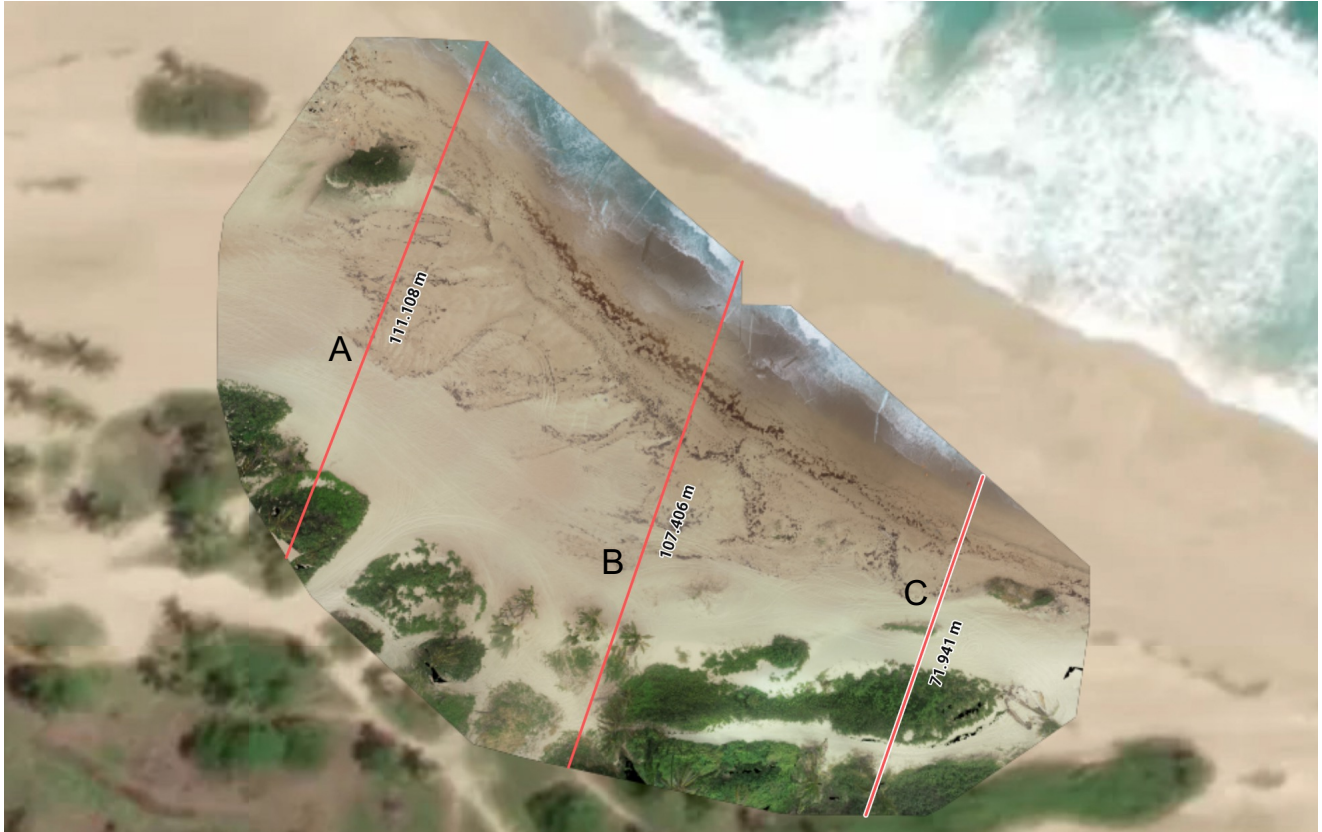
East Poza De Teodoro Post, Isabela



Distance from shore (m)

# Site elevation (m)

East Poza De Teodoro Post, Isabela





**Dune height (m)**

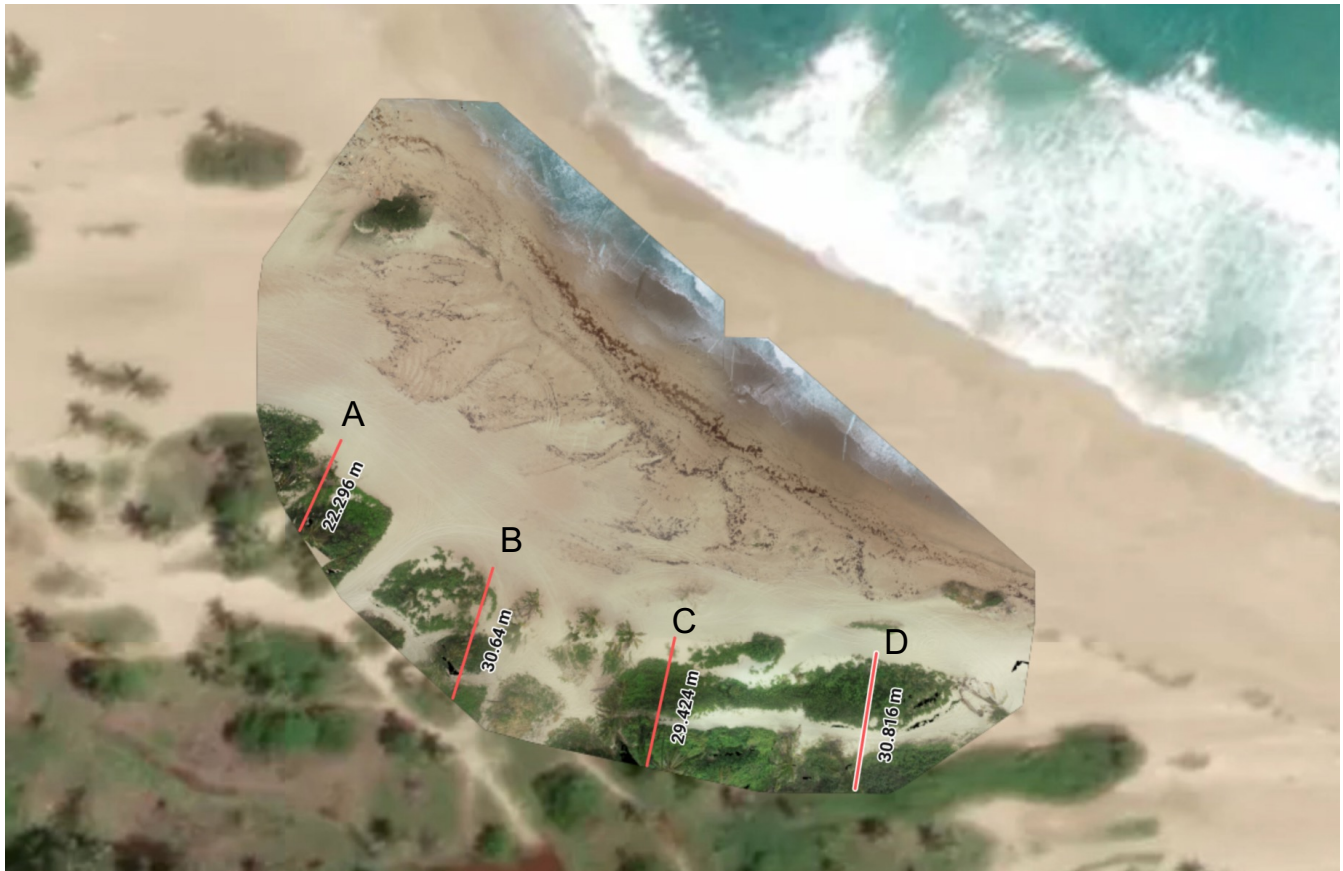
East Poza De Teodoro Post, Isabela



Dune height	
A	= 2.944 m
B	= 1.719 m
C	= 0.992 m
D	= 3.293 m

## Dune width (m)

East Poza De Teodoro Post, Isabela



### Dune width

A = 22.296 m

B = 30.64 m

C = 29.424 m

D = 30.816 m

# Area and perimeter of dune

East Poza De Teodoro Post, Isabela



**A- Area and perimeter of dune**

**2D area** = 713.823 m<sup>2</sup>  
**3D area** = 713.823 m<sup>2</sup>  
**2D perimeter** = 713.823 m  
**3D perimeter** = 112.28 m  
**Elevation difference** = 0.00 m

**B- Area and perimeter of dune**

**2D area** = 4,081.7 m<sup>2</sup>  
**3D area** = 4,081.7 m<sup>2</sup>  
**2D perimeter** = 330.984 m  
**3D perimeter** = 330.984 m  
**Elevation difference** = 0.00 m

# Volume of dune

East Poza De Teodoro Post, Isabela



	A	Triangulated
<b>Base surface</b>		
Cut volume		0.00 m <sup>3</sup>
Cut error		0.00 m <sup>3</sup>
Fill volume		-29,912.8 m <sup>3</sup>
Fill error		11.1529 m <sup>3</sup>
Volume difference		-29,912.8 m <sup>3</sup>

	B	Triangulated
<b>Base surface</b>		
Cut volume		0.00 m <sup>3</sup>
Cut error		0.00 m <sup>3</sup>
Fill volume		-177,635 m <sup>3</sup>
Fill error		258.938 m <sup>3</sup>
Volume difference		-177,635 m <sup>3</sup>

## Shoreline

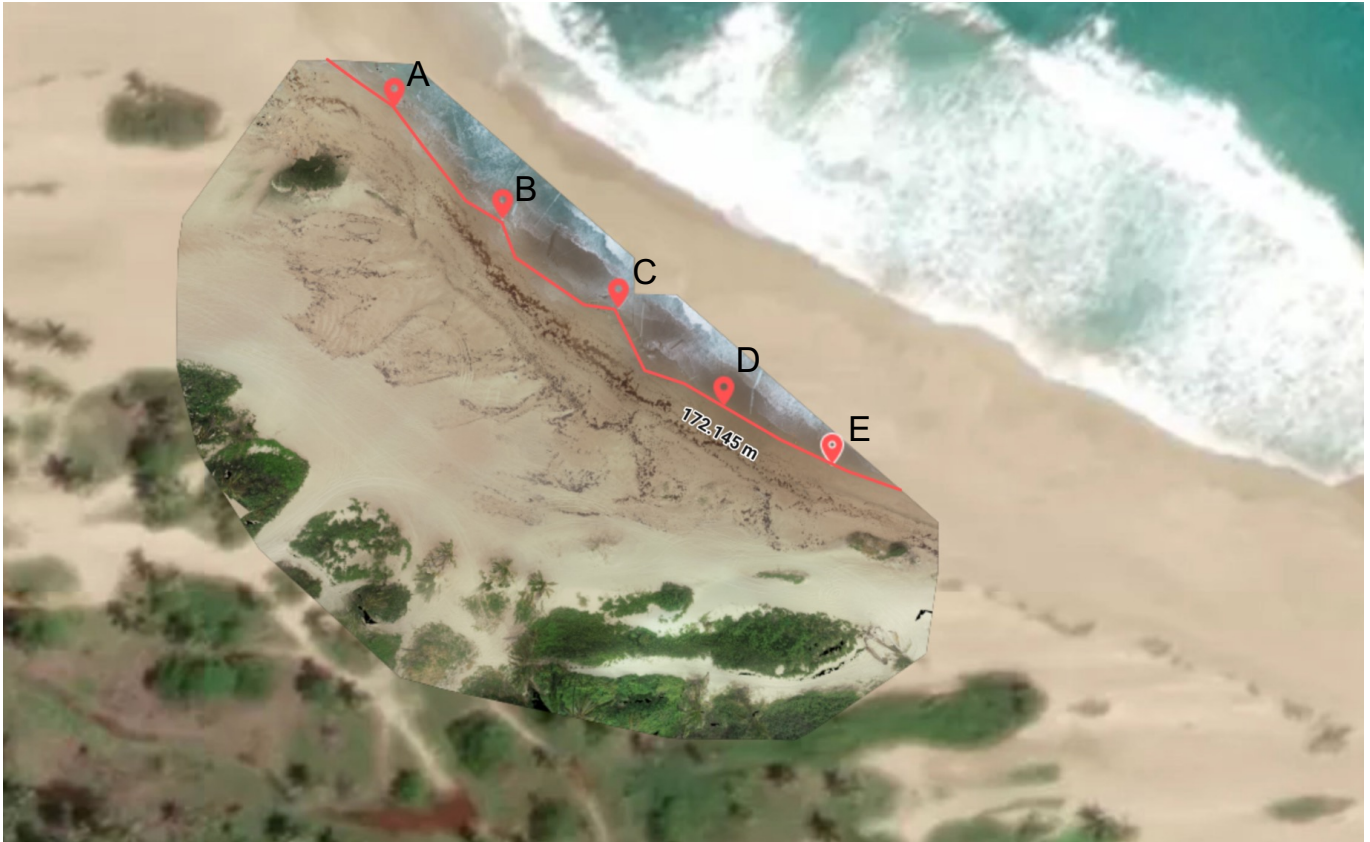
East Poza De Teodoro Post, Isabela



Shoreline length = 172.145 m

## Shoreline geolocation

East Poza De Teodoro Post, Isabela



### Shoreline markers

**A** = 18.51187° N 67.03541° W

**B** = 18.51164° N 67.03517° W

**C** = 18.51146° N 67.03492° W

**D** = 18.51125° N 67.03469° W

**E** = 18.51113° N 67.03445° W

## Shoreline extension

East Poza De Teodoro Post, Isabela



### Shoreline extension

**A** = 11.152 m

**B** = 9.448 m

**C** = 10.475 m

**D** = 11.202 m

## Shoreline position

East Poza De Teodoro Post, Isabela



### Shoreline position

A = 67.573 m

B = 64.927 m

C = 49.76 m

D = 19.704 m



**Area of dune breaches**  
East Poza De Teodoro Post, Isabela



**Area of dune breaches**

**Breach A= 713.823 m<sup>2</sup>**

**Breach B= 4,081.7 m<sup>2</sup>**

# 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	196442-Project-2022-12-21T19:01:53.792Z
Processed	2022-12-21 19:45:11
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	1.06 cm / 0.42 in
Area Covered	0.018 km <sup>2</sup> / 1.7573 ha / 0.01 sq. mi. / 4.3447 acres
Time for Initial Processing (without report)	33m:04s

## Quality Check



<b>?</b> <b>Images</b>	median of 33611 keypoints per image	✔
<b>?</b> <b>Dataset</b>	242 out of 275 images calibrated (88%), all images enabled, 5 blocks	⚠
<b>?</b> <b>Camera Optimization</b>	0.18% relative difference between initial and optimized internal camera parameters	✔
<b>?</b> <b>Matching</b>	median of 12407.8 matches per calibrated image	✔
<b>?</b> <b>Georeferencing</b>	yes, no 3D GCP	⚠

## **?** Preview

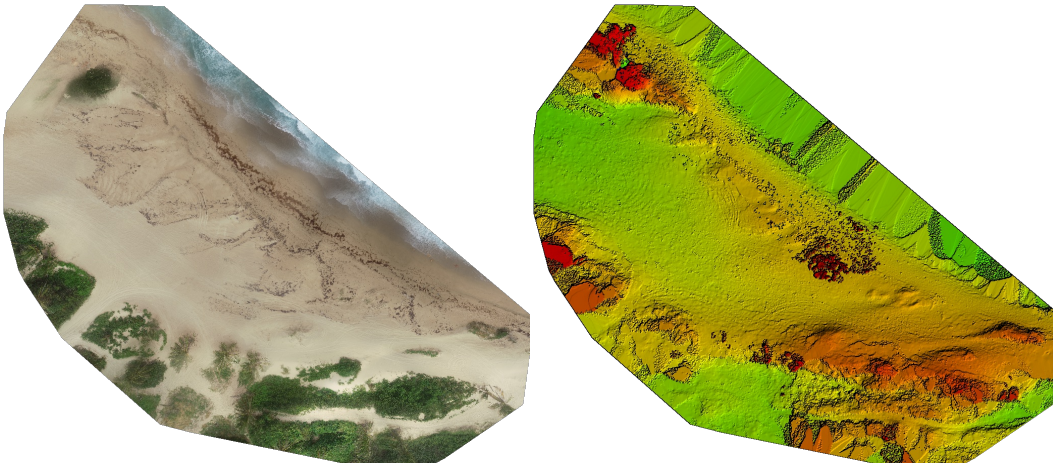


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

## Calibration Details



Number of Calibrated Images	242 out of 275
-----------------------------	----------------

### Initial Image Positions

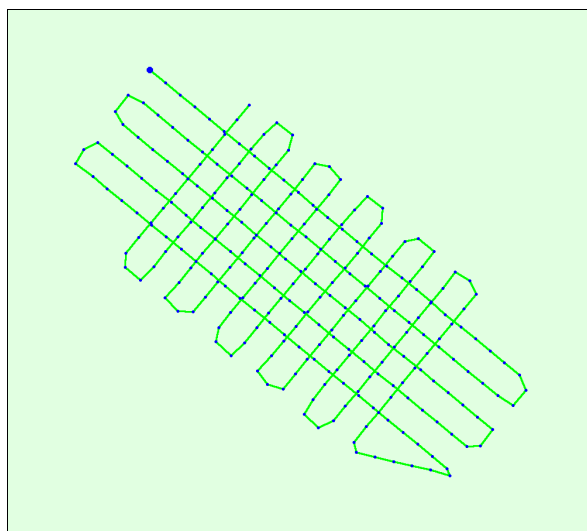
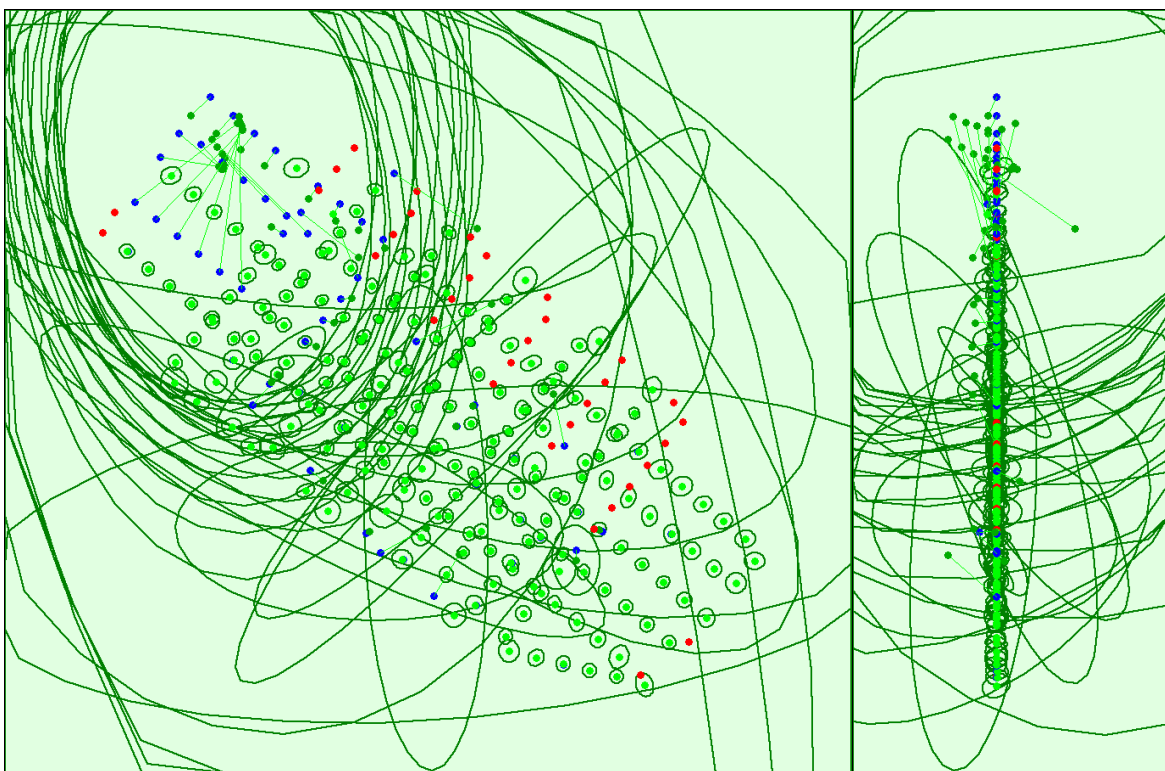
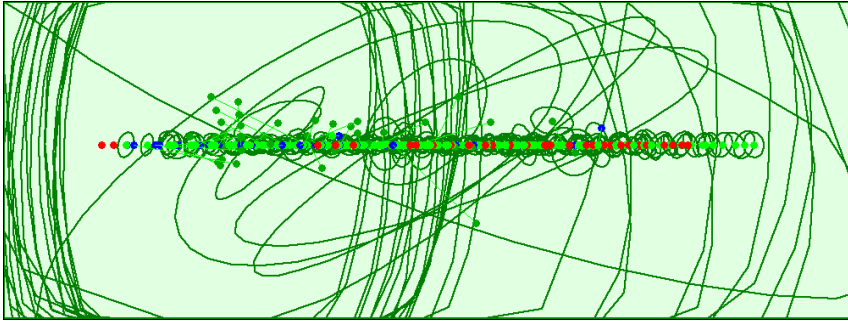


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

### Computed Image/GCPs/Manual Tie Points Positions





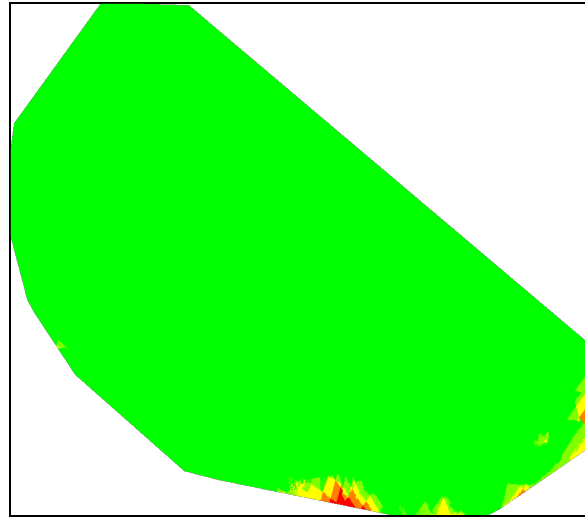
Uncertainty ellipses 1000x magnified

**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 i

	X [m]	Y [m]	Z [m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.014	0.015	0.014	0.025	0.021	0.019
Sigma	0.052	0.042	0.035	0.073	0.057	0.061

### ? Overlap i



Number of overlapping images: 1 2 3 4 5+

**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

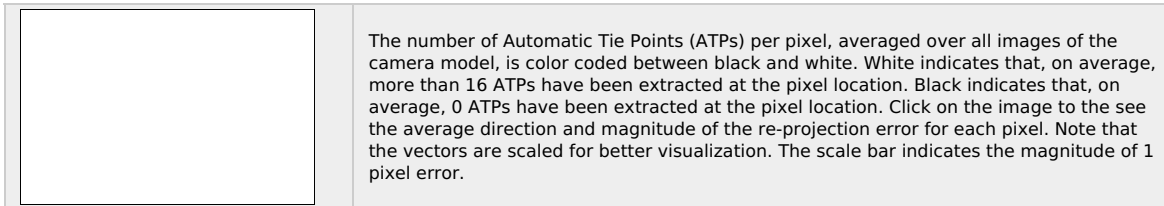
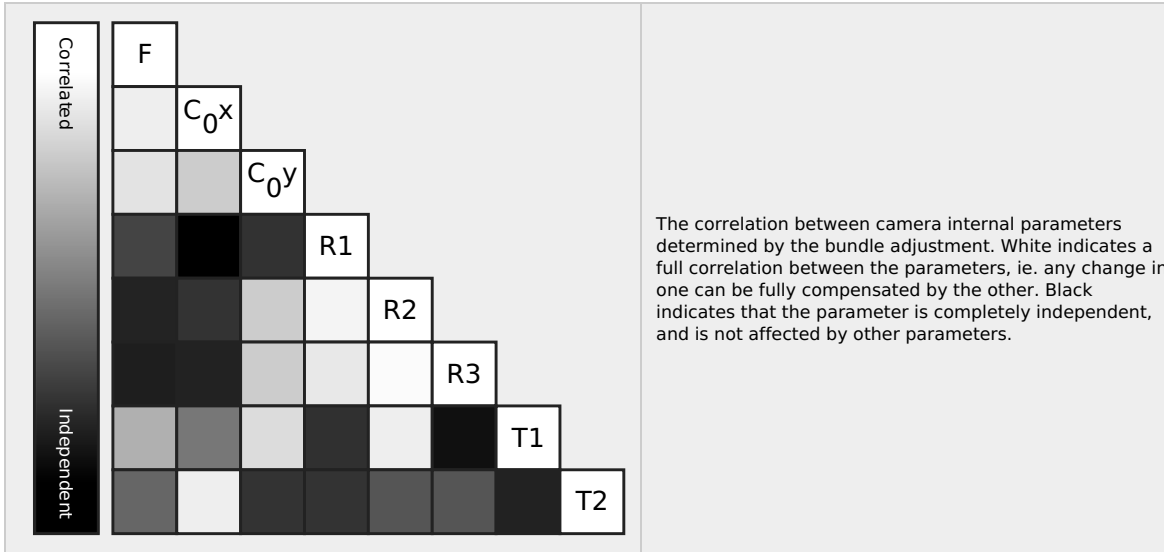
Number of 2D Keypoint Observations for Bundle Block Adjustment	2746995
Number of 3D Points for Bundle Block Adjustment	796435
Mean Reprojection Error [pixels]	0.165

### ? Internal Camera Parameters



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	3651.573 [pixel] 8.564 [mm]	2735.181 [pixel] 6.415 [mm]	1821.573 [pixel] 4.272 [mm]	-0.000	-0.014	0.014	-0.001	-0.001
Uncertainties (Sigma)	0.133 [pixel] 0.000 [mm]	0.072 [pixel] 0.000 [mm]	0.141 [pixel] 0.000 [mm]	0.000	0.000	0.000	0.000	0.000



### 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	33611	12408
Min	20083	26
Max	60038	27042
Mean	33966	11351

### 3D Points from 2D Keypoint Matches

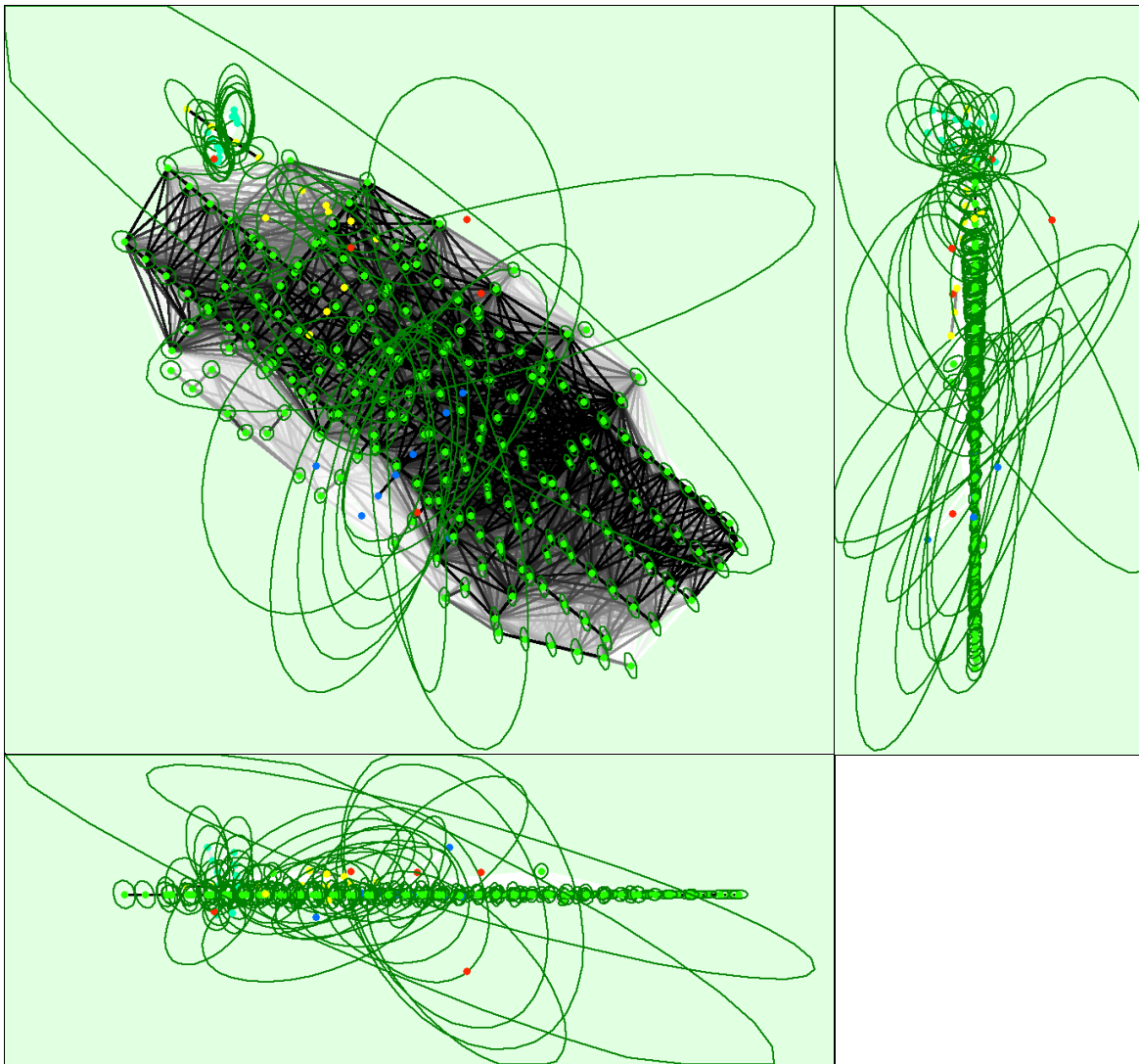


	Number of 3D Points Observed
In 2 Images	451306
In 3 Images	144333
In 4 Images	67361
In 5 Images	38267
In 6 Images	24232
In 7 Images	16347
In 8 Images	11654
In 9 Images	8365
In 10 Images	6509
In 11 Images	4987
In 12 Images	4011

In 13 Images	3194
In 14 Images	2508
In 15 Images	2192
In 16 Images	1718
In 17 Images	1381
In 18 Images	1196
In 19 Images	975
In 20 Images	903
In 21 Images	684
In 22 Images	599
In 23 Images	505
In 24 Images	422
In 25 Images	380
In 26 Images	335
In 27 Images	291
In 28 Images	235
In 29 Images	191
In 30 Images	176
In 31 Images	183
In 32 Images	125
In 33 Images	138
In 34 Images	107
In 35 Images	88
In 36 Images	80
In 37 Images	74
In 38 Images	60
In 39 Images	60
In 40 Images	35
In 41 Images	33
In 42 Images	33
In 43 Images	30
In 44 Images	23
In 45 Images	21
In 46 Images	21
In 47 Images	19
In 48 Images	10
In 49 Images	10
In 50 Images	10
In 51 Images	8
In 52 Images	2
In 53 Images	2
In 54 Images	3
In 55 Images	1
In 56 Images	2

 **2D Keypoint Matches**





Uncertainty ellipses 100x magnified

Number of matches

25 222 444 666 888 1111 1333 1555 1777 2000

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	0.033	0.043	0.031	0.056	0.058	0.049
Sigma	0.083	0.083	0.049	0.120	0.113	0.106

## Geolocation Details



### Absolute Geolocation Variance



Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-5.06	0.00	0.00	0.00
-5.06	-4.05	0.00	0.00	0.00

-4.05	-3.04	0.00	0.00	0.00
-3.04	-2.02	0.00	0.00	0.00
-2.02	-1.01	0.00	0.00	0.00
-1.01	0.00	44.55	48.51	57.92
0.00	1.01	54.95	50.99	42.08
1.01	2.02	0.50	0.00	0.00
2.02	3.04	0.00	0.50	0.00
3.04	4.05	0.00	0.00	0.00
4.05	5.06	0.00	0.00	0.00
5.06	-	0.00	0.00	0.00
<b>Mean [m]</b>		0.009031	0.010636	-0.001645
<b>Sigma [m]</b>		0.108174	0.154184	0.025796
<b>RMS Error [m]</b>		0.108550	0.154550	0.025848

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]	89.60	96.53	84.16
[-2.00, 2.00]	100.00	99.50	99.50
[-3.00, 3.00]	100.00	100.00	100.00
<b>Mean of Geolocation Accuracy [m]</b>		0.022511	0.051136
<b>Sigma of Geolocation Accuracy [m]</b>		0.075633	0.234523

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

Geolocation Orientational Variance	RMS [degree]
Omega	1.440
Phi	1.928
Kappa	3.512

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*
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	10m:21s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	07m:13s

### Results

Number of Generated Tiles	1
Number of 3D Densified Points	18372268
Average Density (per m <sup>3</sup> )	3563.17

## 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	05m:04s
Time for Orthomosaic Generation	11m:38s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s

## East Poza De Teodoro Post, Isabela

