

# Quality Report



Generated with PIX4Dmapper 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



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## Summary



Project	SAN ANDRES 2
Processed	2022-10-18 13:38:48
Camera Model Name(s)	ILCE-6100_E20mmF2.8_20.0_6000x4000 (RGB)
Average Ground Sampling Distance (GSD)	1.29 cm / 0.51 in
Area Covered	0.802 km <sup>2</sup> / 80.1670 ha / 0.31 sq. mi. / 198.1996 acres

## Quality Check



Images	median of 24080 keypoints per image	
Dataset	1373 out of 1420 images calibrated (96%), all images enabled, 3 blocks	
Camera Optimization	0.3% relative difference between initial and optimized internal camera parameters	
Matching	median of 2370 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

## Preview

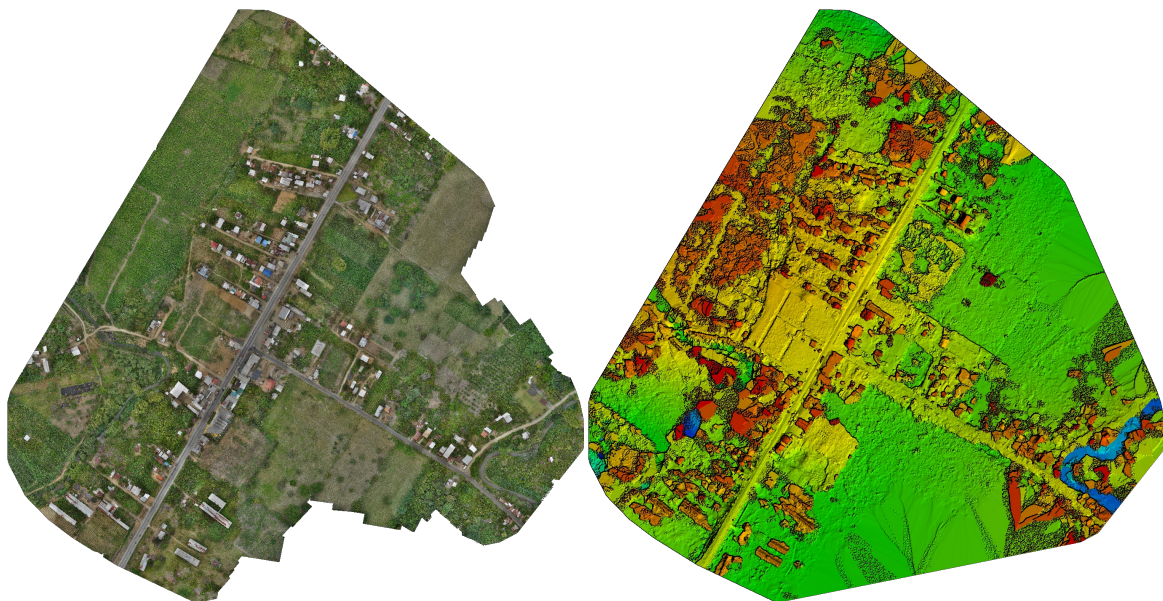


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

## Calibration Details



Number of Calibrated Images	1373 out of 1420
Number of Geolocated Images	1420 out of 1420

### ? Initial Image Positions

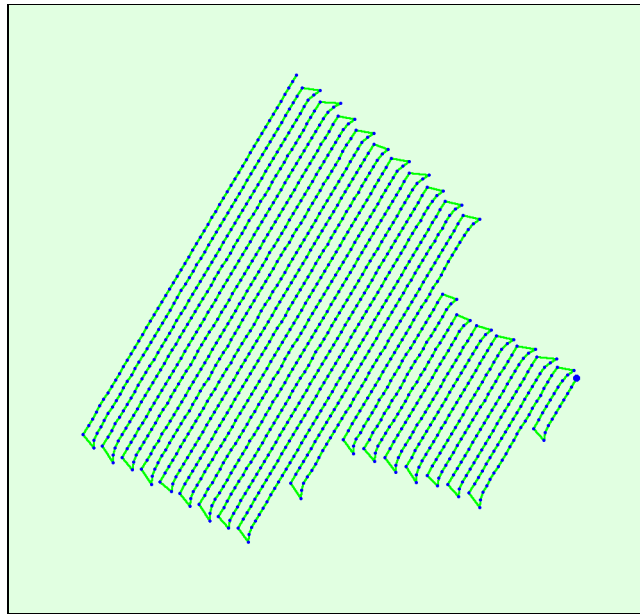
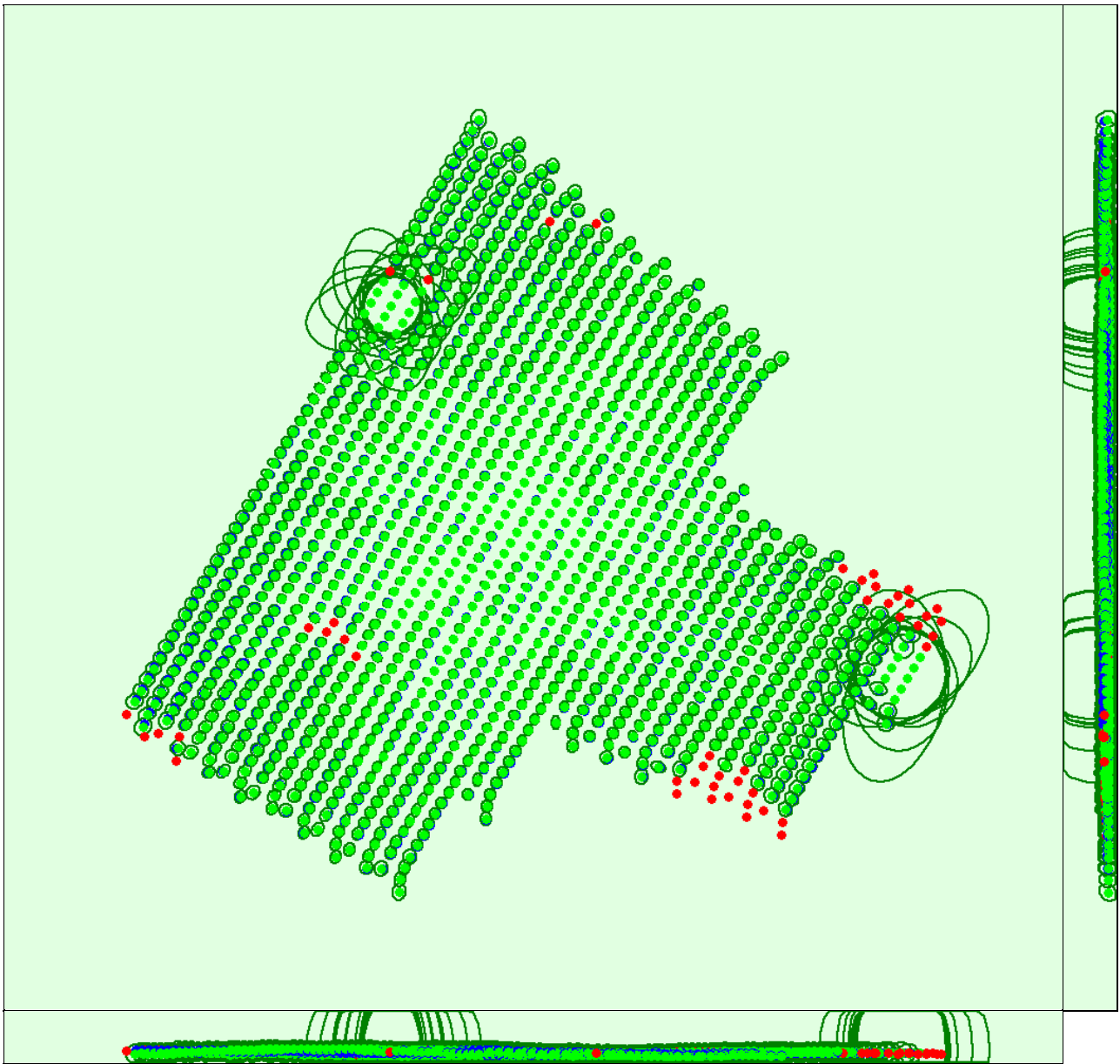


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

### ? 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	0.090	0.091	0.143	0.024	0.022	0.012
Sigma	0.086	0.089	0.141	0.011	0.010	0.014

### 🔍 Overlap



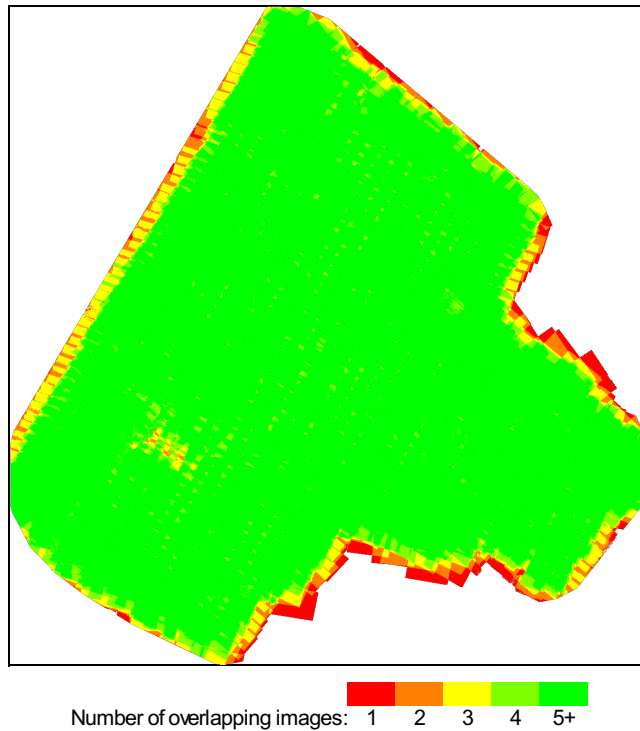


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

## Bundle Block Adjustment Details

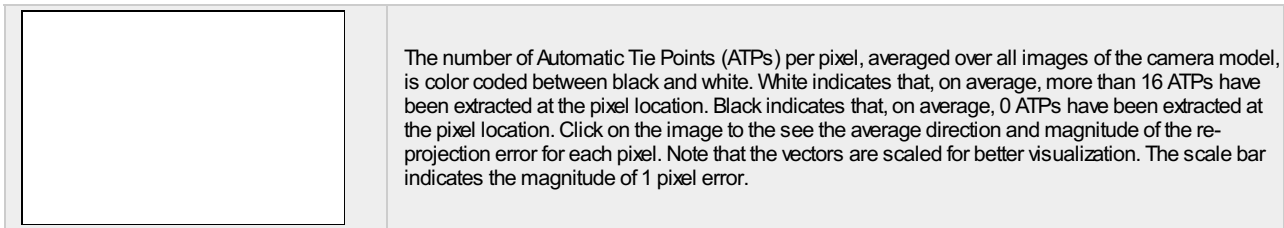
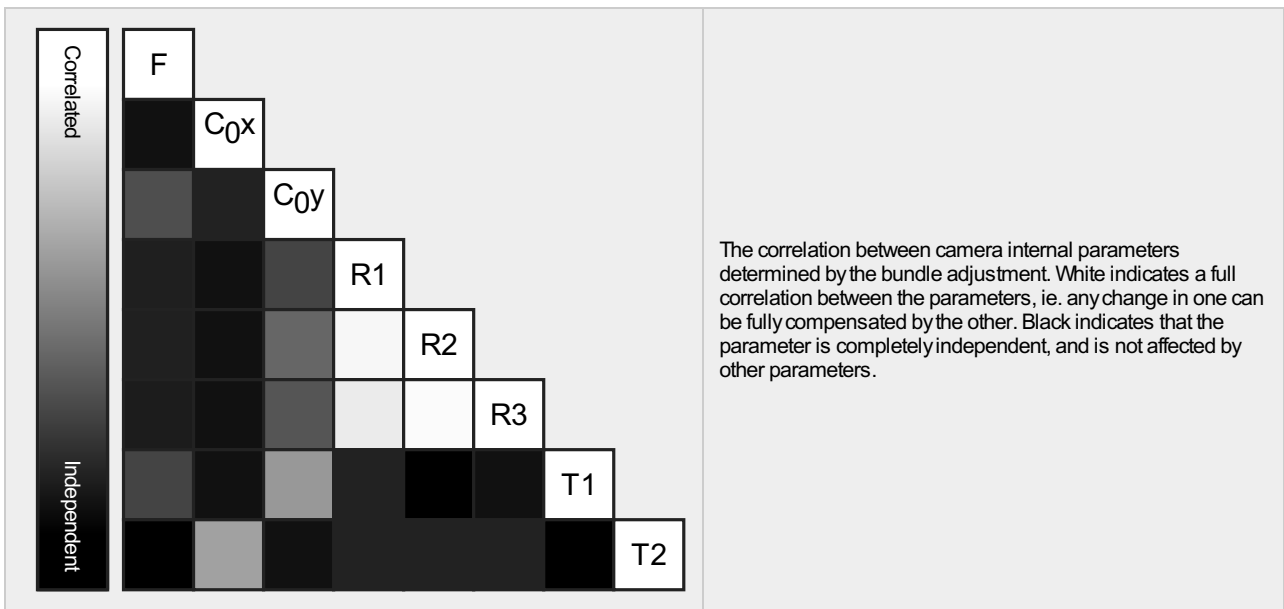
Number of 2D Keypoint Observations for Bundle Block Adjustment	3665905
Number of 3D Points for Bundle Block Adjustment	1276570
Mean Reprojection Error [pixels]	0.099

### Internal Camera Parameters

ILCE-6100\_E20mmF2.8\_20.0\_6000x4000 (RGB). Sensor Dimensions: 23.333 [mm] x 15.556 [mm]

EXIF ID: ILCE-6100\_E20mmF2.8\_20.0\_6000x4000

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	5142.860 [pixel] 20.000 [mm]	3000.000 [pixel] 11.667 [mm]	2000.000 [pixel] 7.778 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	5158.481 [pixel] 20.061 [mm]	2990.819 [pixel] 11.631 [mm]	2009.212 [pixel] 7.814 [mm]	-0.031	0.071	-0.055	-0.000	-0.001
Uncertainties (Sigma)	0.662 [pixel] 0.003 [mm]	0.157 [pixel] 0.001 [mm]	0.135 [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	24080	2370
Mn	14168	79
Max	38850	16257
Mean	24197	2670

### ? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	769199
In 3 Images	231799
In 4 Images	109980
In 5 Images	72209
In 6 Images	46790
In 7 Images	27482
In 8 Images	14277
In 9 Images	4550
In 10 Images	259
In 11 Images	25

### ? 2D Keypoint Matches



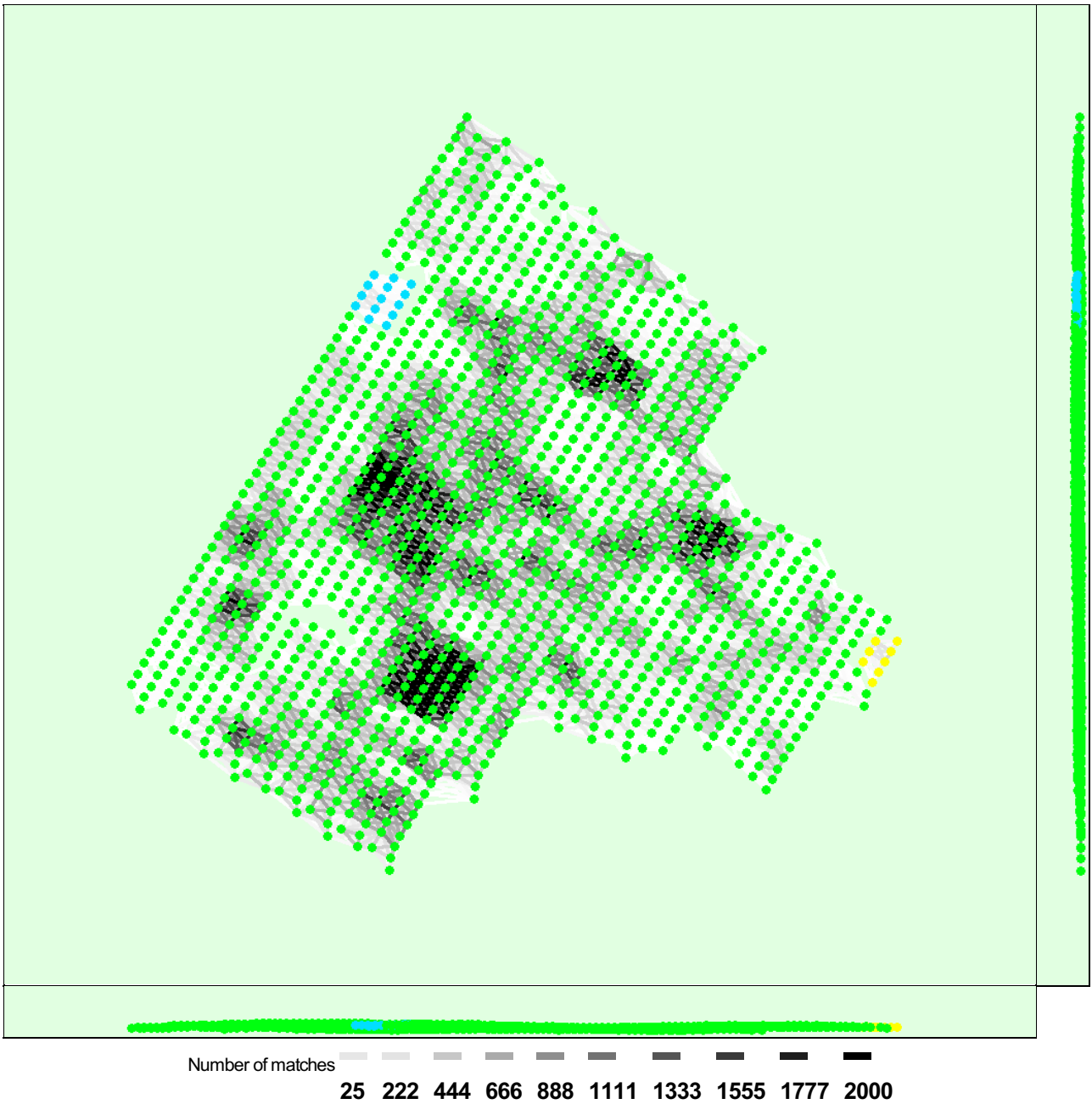


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

## Geolocation Details

### ? Absolute Geolocation Variance

Mn Error [m]	Max Error [m]	Geolocation Error X[%]	Geolocation Error Y[%]	Geolocation Error Z[%]
-	-15.00	0.00	0.00	0.00
-15.00	-12.00	0.00	0.00	0.00
-12.00	-9.00	0.00	0.00	0.00
-9.00	-6.00	0.00	0.00	0.00
-6.00	-3.00	0.00	0.00	0.00
-3.00	0.00	44.36	56.23	52.44
0.00	3.00	55.64	43.04	45.81
3.00	6.00	0.00	0.73	1.53
6.00	9.00	0.00	0.00	0.22
9.00	12.00	0.00	0.00	0.00

12.00	15.00	0.00	0.00	0.00
15.00	-	0.00	0.00	0.00
<b>Mean [m]</b>		0.000000	0.000001	0.000001
<b>Sigma [m]</b>		0.653597	0.718005	1.080227
<b>RMS Error [m]</b>		0.653597	0.718005	1.080227

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]	100.00	100.00	100.00
[-2.00, 2.00]	100.00	100.00	100.00
[-3.00, 3.00]	100.00	100.00	100.00
<b>Mean of Geolocation Accuracy [m]</b>	5.000000	5.000000	10.000000
<b>Sigma of Geolocation Accuracy [m]</b>	0.000000	0.000000	0.000000

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

Geolocation Orientational Variance	RMS [degree]
Omega	1.150
Phi	0.406
Kappa	0.689

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) Core(TM) i7-7700 CPU @ 3.60GHz RAM: 32GB GPU: NVIDIA GeForce GT 710 (Driver: 30.0.14.7381)
Operating System	Windows 10 Pro, 64-bit

### Coordinate Systems

Image Coordinate System	WGS 84 (EGM96 Geoid)
Output Coordinate System	WGS 84 / UTMzone 17S (EGM96 Geoid)

### Processing Options

Detected Template	No Template Available
Keypoints Image Scale	Custom, Image Scale: 0.5
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, no

## 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: Custom Maximum Octree Depth: 10 Texture Size [pixels]: 8192x8192 Decimation Criteria: Quantitative, Maximum Number of Triangles: 1000000 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

## Results



Number of Generated Tiles	9
Number of 3D Densified Points	247068183
Average Density (per m <sup>3</sup> )	1039.97