



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	Projekt 2_1_Be_dH 9
Processed	2022-05-02 09:28:18
Camera Model Name(s)	FC6310_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	0.54 cm / 0.21 in
Area Covered	0.002 km ² / 0.2395 ha / 0.00 sq. mi. / 0.5920 acres
Time for Initial Processing (without report)	01m:52s

Quality Check



Images	median of 60500 keypoints per image	
Dataset	49 out of 49 images calibrated (100%), all images enabled	
Camera Optimization	0.08% relative difference between initial and optimized internal camera parameters	
Matching	median of 23869.5 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

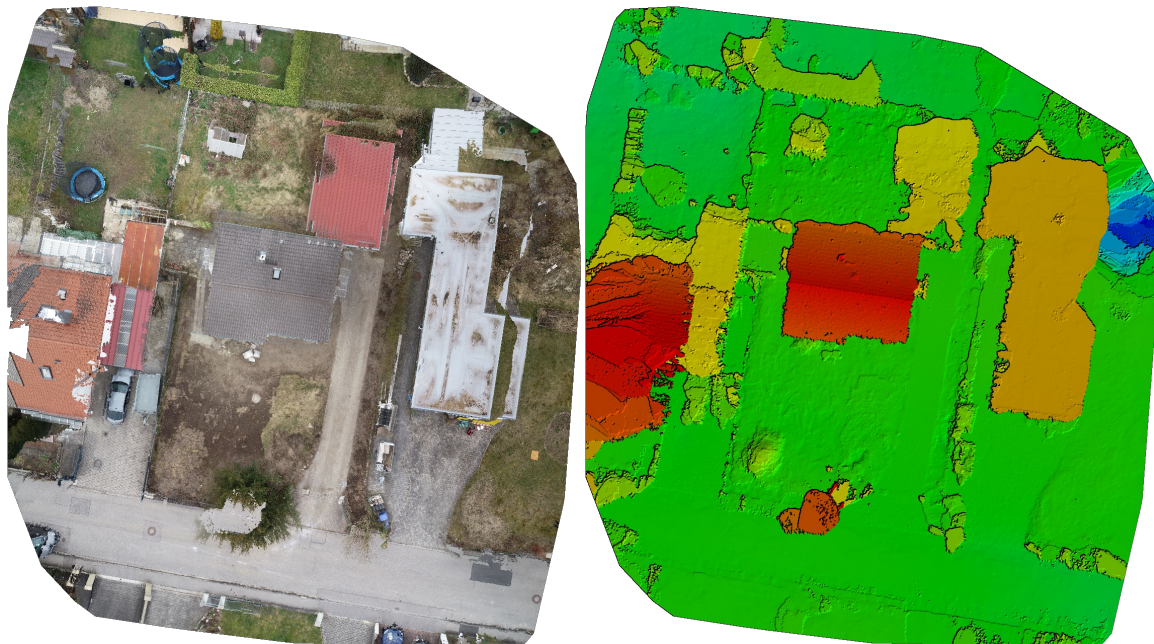


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	49 out of 49
Number of Geolocated Images	49 out of 49

Initial Image Positions

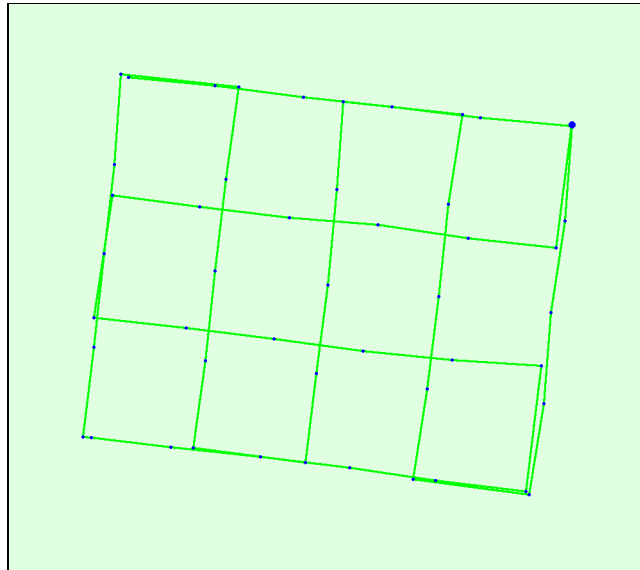
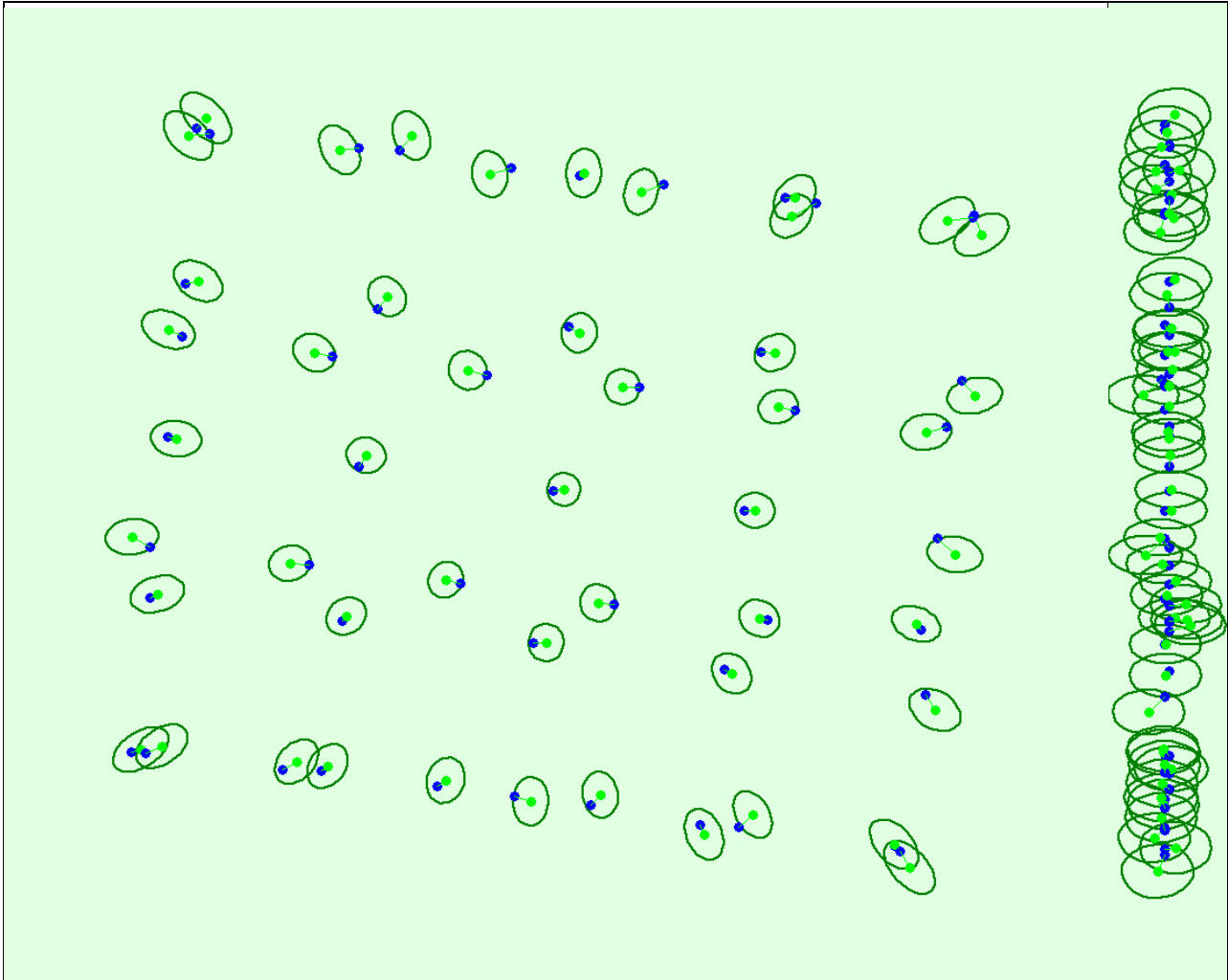
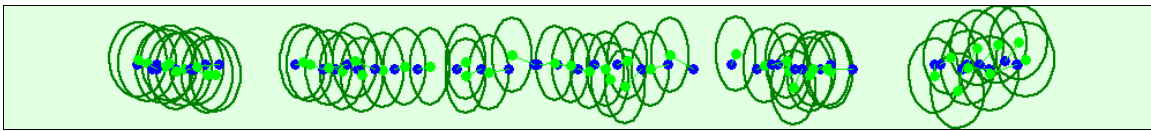


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions





Uncertainty ellipses 5x 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). 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	0.110	0.105	0.176	0.065	0.070	0.100
Sigma	0.017	0.013	0.000	0.001	0.002	0.005

? Overlap i

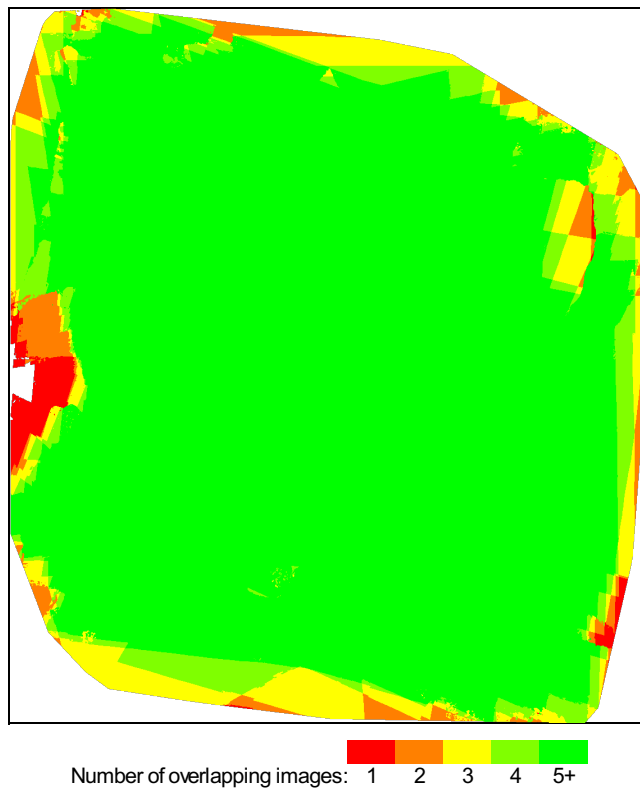


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

Bundle Block Adjustment Details i

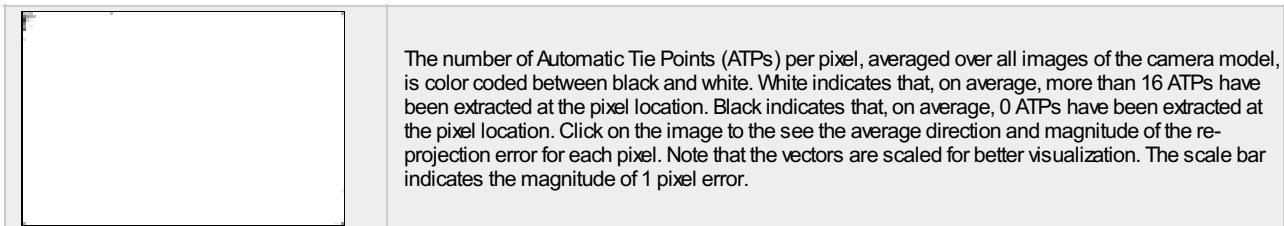
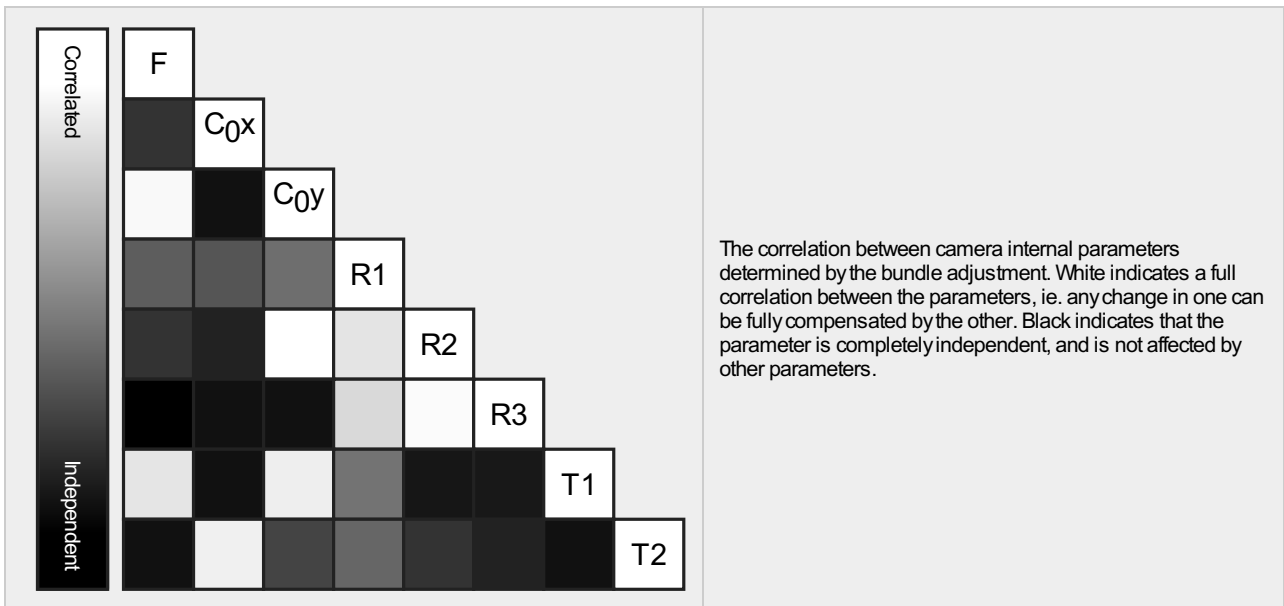
Number of 2D Keypoint Observations for Bundle Block Adjustment	1162524
Number of 3D Points for Bundle Block Adjustment	404861
Mean Reprojection Error [pixels]	0.171

? Internal Camera Parameters

FC6310_8.8_5472x3648 (RGB). Sensor Dimensions: 12.833 [mm] x 8.556 [mm] i

EXIF ID: FC6310_8.8_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3668.759 [pixel] 8.604 [mm]	2736.001 [pixel] 6.417 [mm]	1823.999 [pixel] 4.278 [mm]	0.003	-0.008	0.008	-0.000	0.000
Optimized Values	3665.795 [pixel] 8.597 [mm]	2743.416 [pixel] 6.434 [mm]	1826.326 [pixel] 4.283 [mm]	0.002	-0.006	0.007	-0.000	0.001
Uncertainties (Sigma)	0.346 [pixel] 0.001 [mm]	0.073 [pixel] 0.000 [mm]	0.237 [pixel] 0.001 [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	60500	23869
Mn	41743	16625
Max	75688	31401
Mean	59046	23725

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	272855
In 3 Images	64612
In 4 Images	26179
In 5 Images	13360
In 6 Images	7625
In 7 Images	5021
In 8 Images	3668
In 9 Images	2567
In 10 Images	2057
In 11 Images	1610
In 12 Images	1262
In 13 Images	977
In 14 Images	759
In 15 Images	543
In 16 Images	439

In 17 Images	327
In 18 Images	262
In 19 Images	169
In 20 Images	139
In 21 Images	105
In 22 Images	97
In 23 Images	74
In 24 Images	54
In 25 Images	46
In 26 Images	29
In 27 Images	13
In 28 Images	8
In 29 Images	4

2D Keypoint Matches

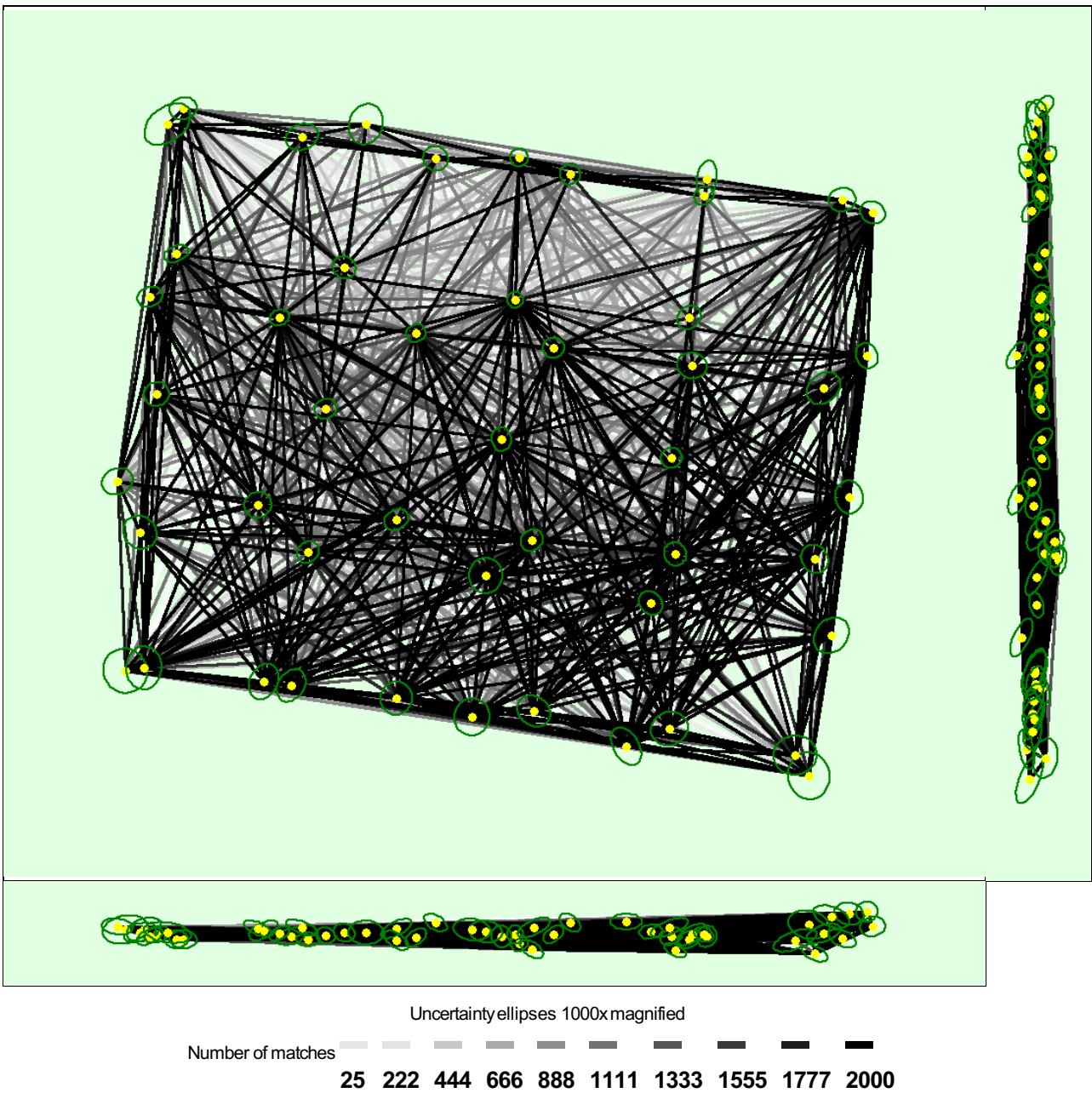


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.000	0.000	0.000	0.002	0.002	0.001
Sigma	0.000	0.000	0.000	0.001	0.001	0.000

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	61.22	59.18	46.94
0.00	3.00	38.78	40.82	53.06
3.00	6.00	0.00	0.00	0.00
6.00	9.00	0.00	0.00	0.00
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
Mean [m]		0.000009	0.000019	-0.000130
Sigma [m]		0.344070	0.198985	0.204912
RMS Error [m]		0.344070	0.198985	0.204912

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
Mean of Geolocation Accuracy [m]	5.000000	5.000000	10.000000
Sigma of Geolocation Accuracy [m]	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	1.067
Phi	1.480
Kappa	4.260

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: AMD Ryzen 7 5800X8-Core Processor RAM: 32GB GPU: NMDIA GeForce GTX 1660 SUPER (Driver: 27.21.14.6627)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems



Image Coordinate System	WGS 84 (EGM96 Geoid)
Output Coordinate System	WGS 84 / UTMzone 33N (EGM96 Geoid)

Processing Options



Detected Template	Von Pix4D für PVSOL*
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: Custom Maximum Octree Depth: 12 Texture Size [pixels]: 4096x4096 Decimation Criteria: Quantitative, Maximum Number of Triangles: 300000 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	01m:53s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	59s

Results



Number of Generated Tiles	1
Number of 3D Densified Points	3164452
Average Density (per m ³)	25558.3