



- !** **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	Assignment10
Processed	2023-11-10 20:30:26
Camera Model Name(s)	NEX-5_16.0_4592x3056 (RGB)
Average Ground Sampling Distance (GSD)	1.71 cm / 0.68 in
Area Covered	0.009 km ² / 0.8810 ha / 0.00 sq. mi. / 2.1782 acres

Quality Check



? Images	median of 54890 keypoints per image	✓
? Dataset	18 out of 18 images calibrated (100%), all images enabled	✓
? Camera Optimization	1% relative difference between initial and optimized internal camera parameters	✓
? Matching	median of 8279.26 matches per calibrated image	✓
? Georeferencing	yes, no 3D GCP	⚠

? Preview

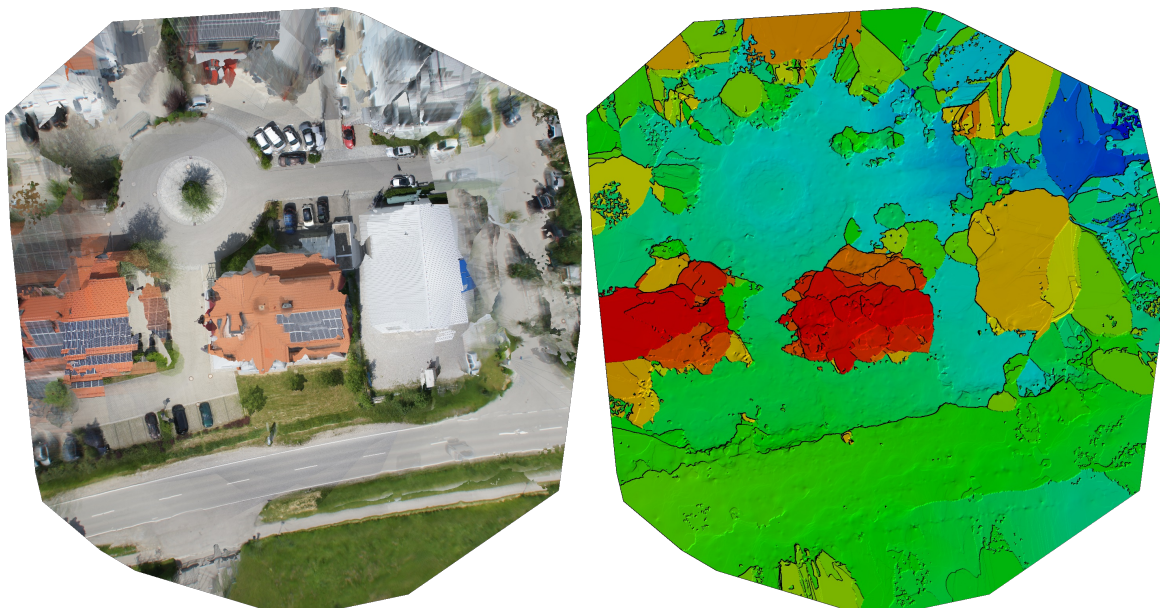


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	18 out of 18
Number of Geolocated Images	18 out of 18

Initial Image Positions

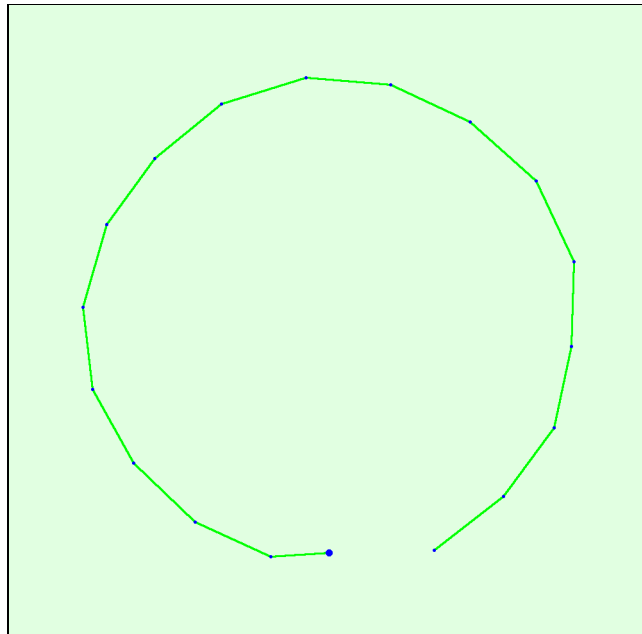
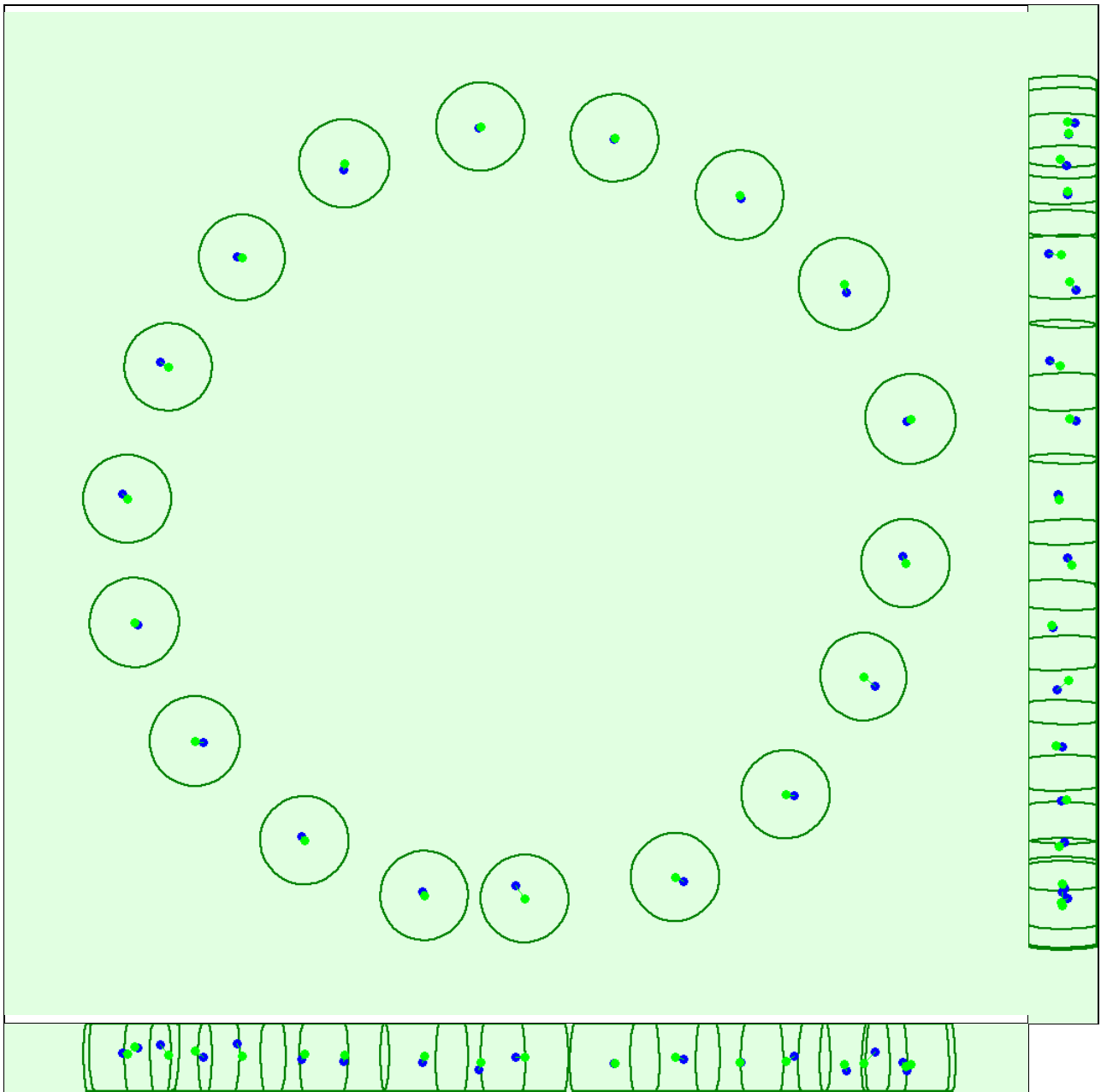


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions





Uncertainty ellipses 10x 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



	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.465	0.465	1.139	1.396	1.097	1.119
Sigma	0.005	0.005	0.014	0.065	0.111	0.161

? Overlap



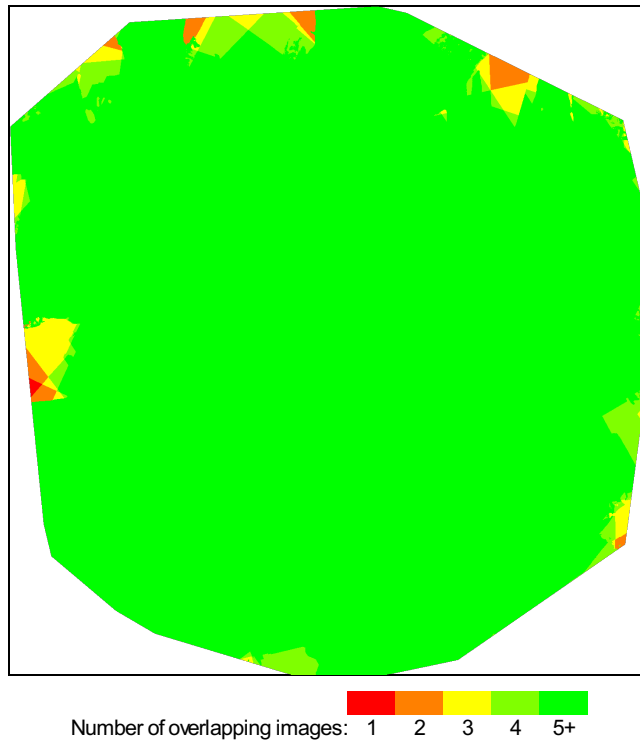


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint 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	161438
Number of 3D Points for Bundle Block Adjustment	73043
Mean Reprojection Error [pixels]	0.219

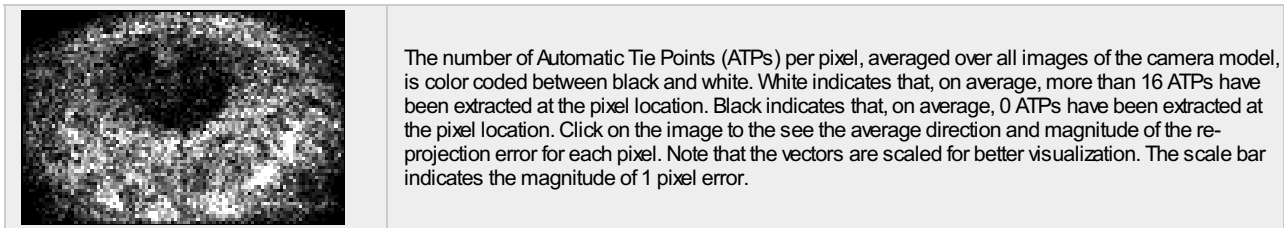
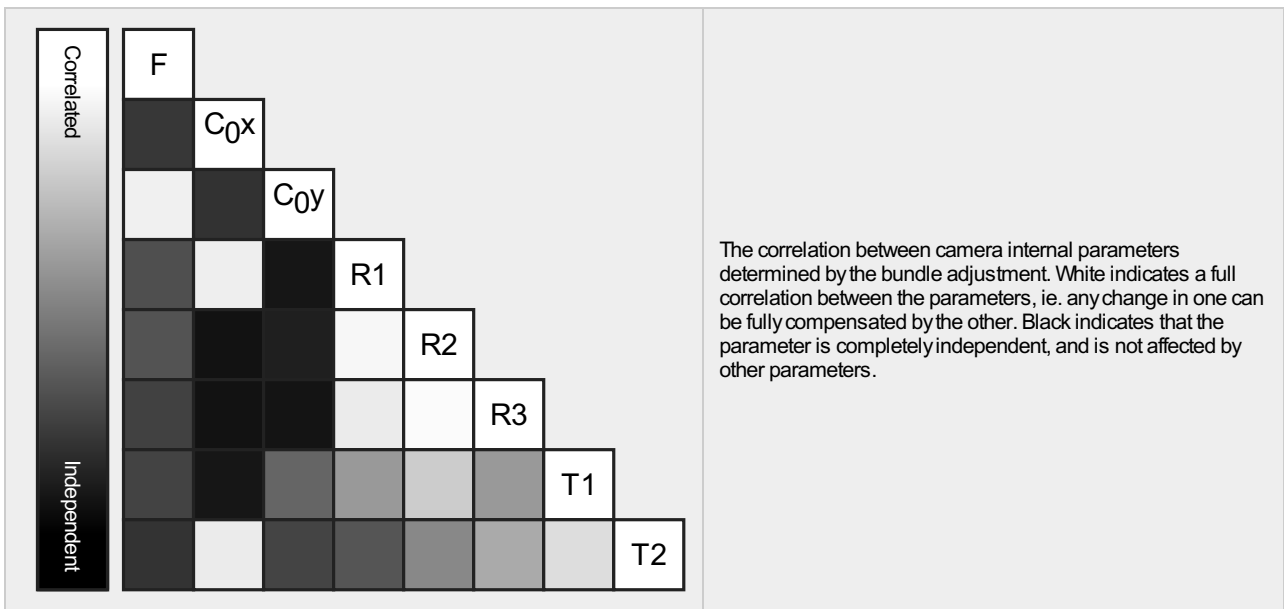
Internal Camera Parameters

NEX-5_16.0_4592x3056 (RGB). Sensor Dimensions: 36.000 [mm] x 23.958 [mm]



EXIF ID: NEX-5_E16mmF2.8_16.0_4592x3056

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3160.760 [pixel] 24.779 [mm]	2296.000 [pixel] 18.000 [mm]	1528.000 [pixel] 11.979 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3128.923 [pixel] 24.530 [mm]	2260.676 [pixel] 17.723 [mm]	1474.206 [pixel] 11.557 [mm]	-0.059	0.087	0.004	0.000	-0.001
Uncertainties (Sigma)	1.751 [pixel] 0.014 [mm]	0.494 [pixel] 0.004 [mm]	1.685 [pixel] 0.013 [mm]	0.001	0.003	0.003	0.000	0.000



? 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	54890	8279
Min	49460	6589
Max	67711	13364
Mean	57289	8969

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	62150
In 3 Images	7989
In 4 Images	1921
In 5 Images	621
In 6 Images	226
In 7 Images	87
In 8 Images	33
In 9 Images	8
In 10 Images	7
In 11 Images	1

? 2D Keypoint Matches



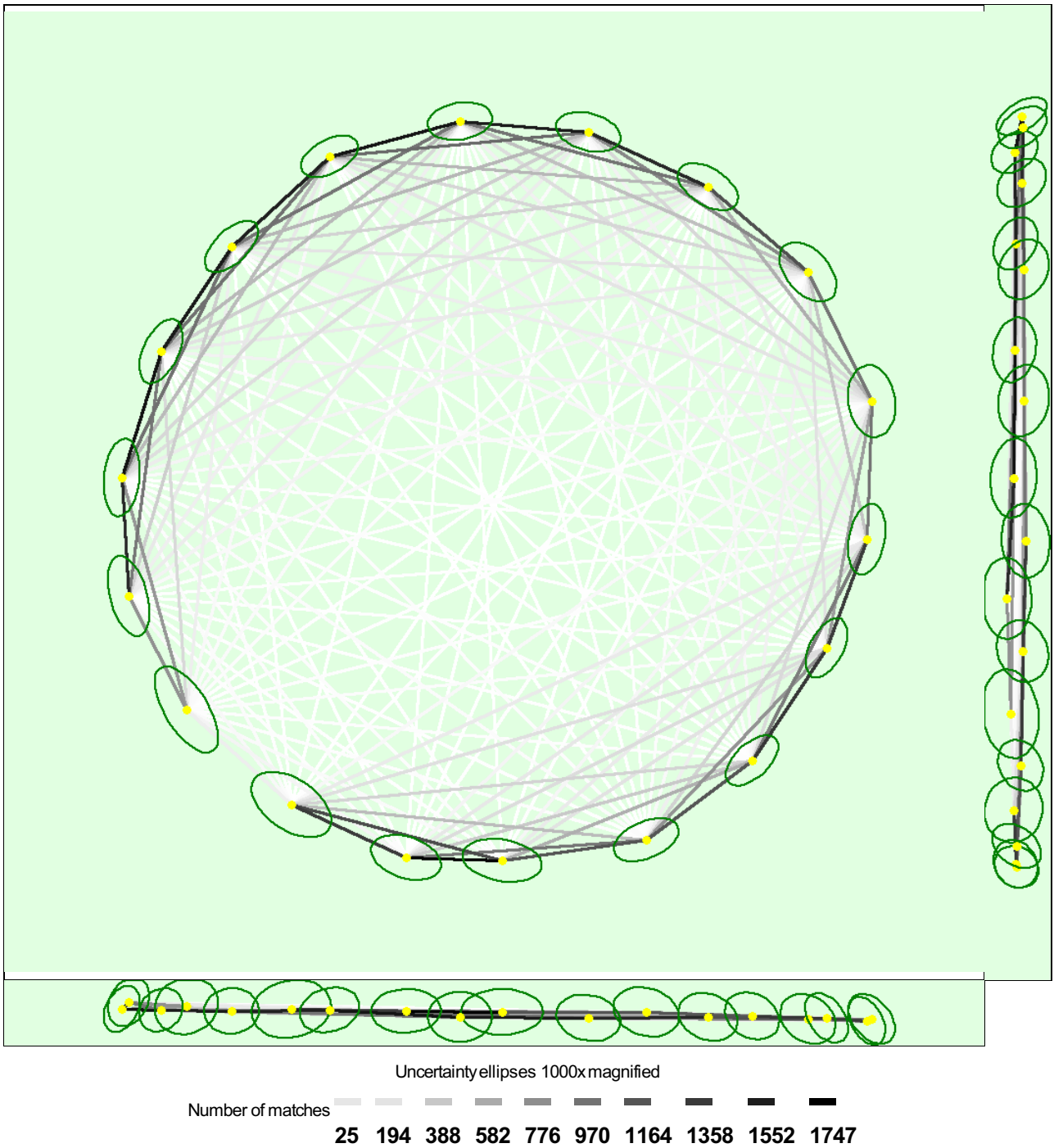


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.003	0.003	0.003	0.026	0.018	0.018
Sigma	0.001	0.001	0.000	0.008	0.009	0.009

Geolocation Details

Absolute Geolocation Variance

Min 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	61.11	61.11	61.11
0.00	3.00	38.89	38.89	38.89
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]		0.000089	0.000290	0.000232
Sigma [m]		0.579146	0.564780	0.631796
RMS Error [m]		0.579146	0.564780	0.631796

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.

Initial Processing Details

System Information

Hardware	CPU: Intel(R) Core(TM) i5-10210U CPU @ 1.60GHz RAM: 8GB GPU: Intel(R) UHD Graphics (Driver: 30.0.100.9864)
Operating System	Windows 11, 64-bit

Coordinate Systems

Image Coordinate System	WGS 84 (EGM96 Geoid)
Output Coordinate System	WGS 84 / UTMzone 32N (EGM96 Geoid)

Processing Options

Detected Template	3D Maps
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

Results



Number of Generated Tiles	1
Number of 3D Densified Points	1805918
Average Density (per m ³)	466.39

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (1.71 [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