



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	Berceni 60-1
Processed	2023-11-22 10:51:27
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	3.52 cm / 1.39 in
Area Covered	0.524 km ² / 52.3751 ha / 0.20 sq. mi. / 129.4886 acres
Time for Initial Processing (without report)	04m:43s

Quality Check



Images	median of 74580 keypoints per image	
Dataset	396 out of 404 images calibrated (98%), all images enabled, 8 blocks	
Camera Optimization	0.36% relative difference between initial and optimized internal camera parameters	
Matching	median of 98.9942 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

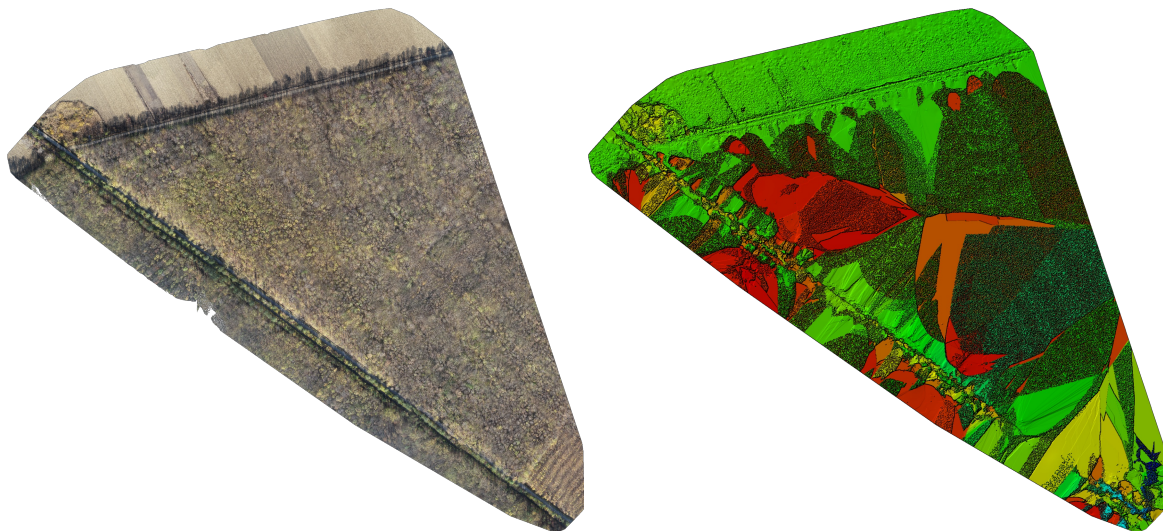


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	396 out of 404
Number of Geolocated Images	404 out of 404

Initial Image Positions

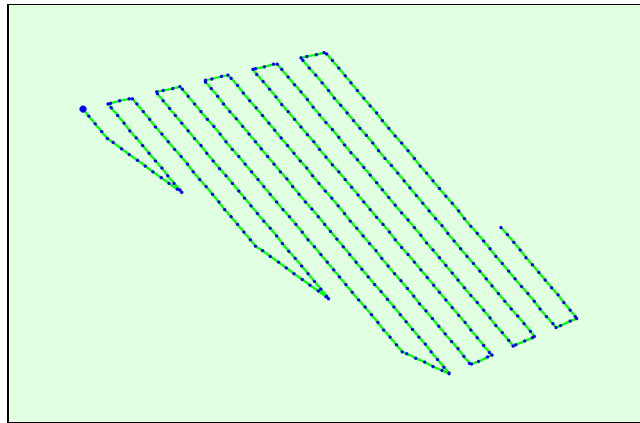
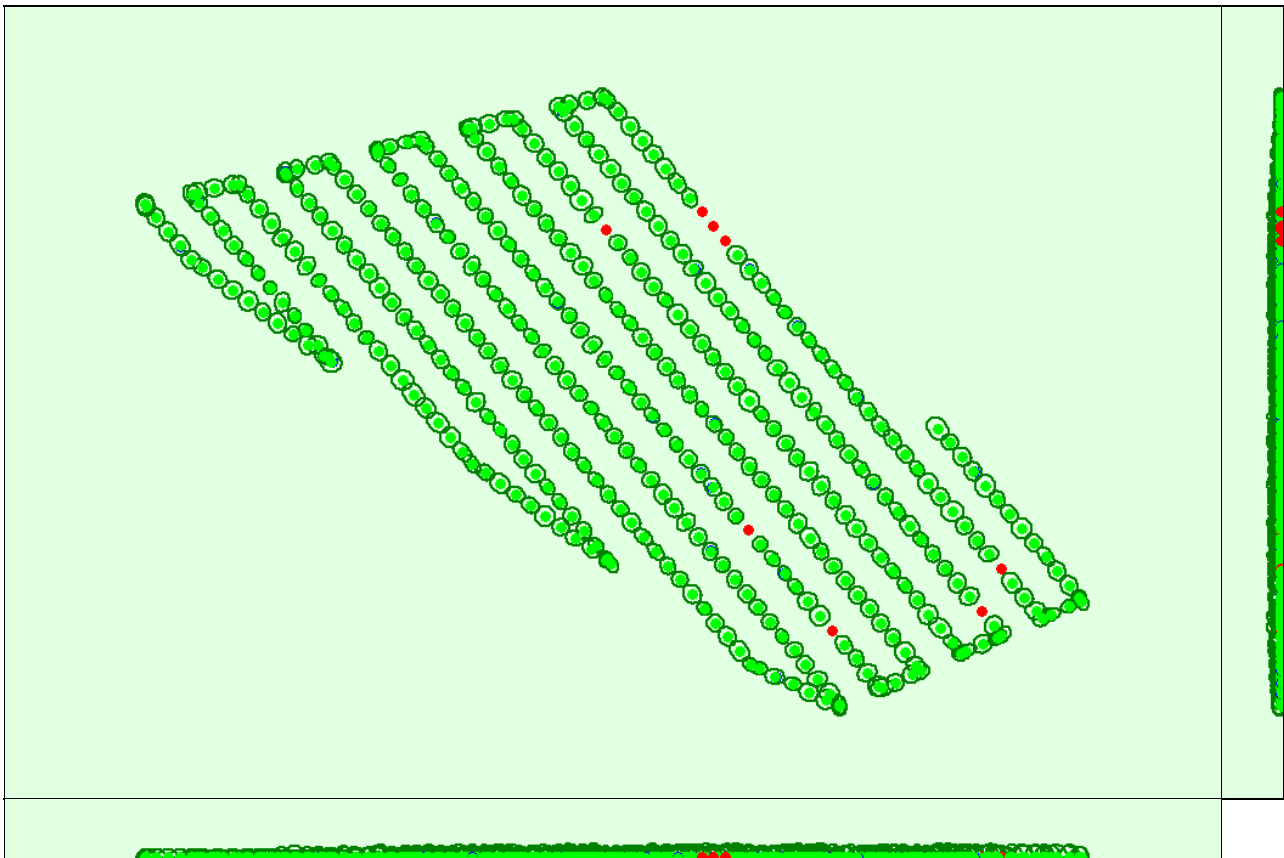


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

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	0.022	0.022	0.026	0.017	0.016	0.018
Sigma	0.002	0.002	0.005	0.003	0.003	0.007

Overlap

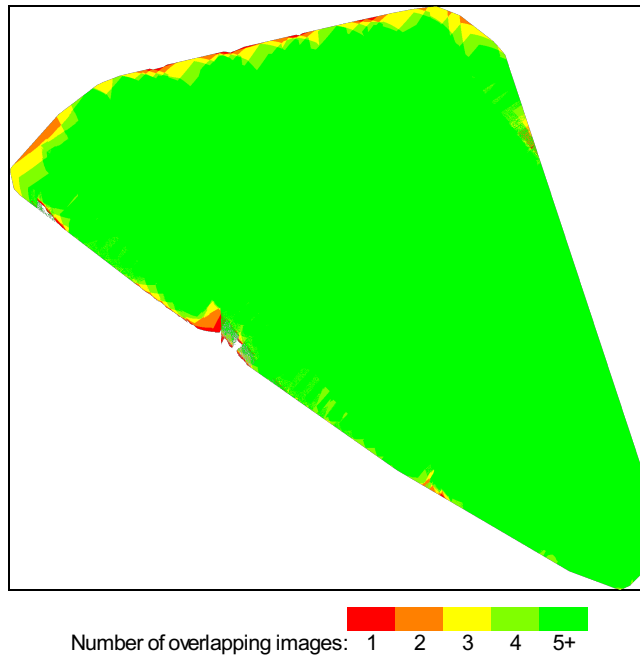


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint 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	1125741
Number of 3D Points for Bundle Block Adjustment	419996
Mean Reprojection Error [pixels]	0.160

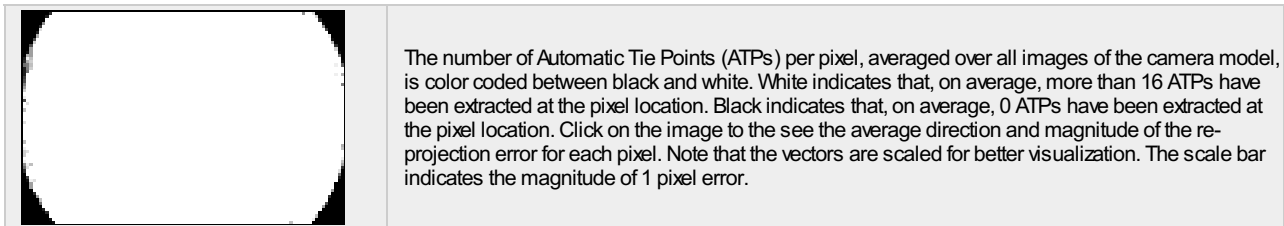
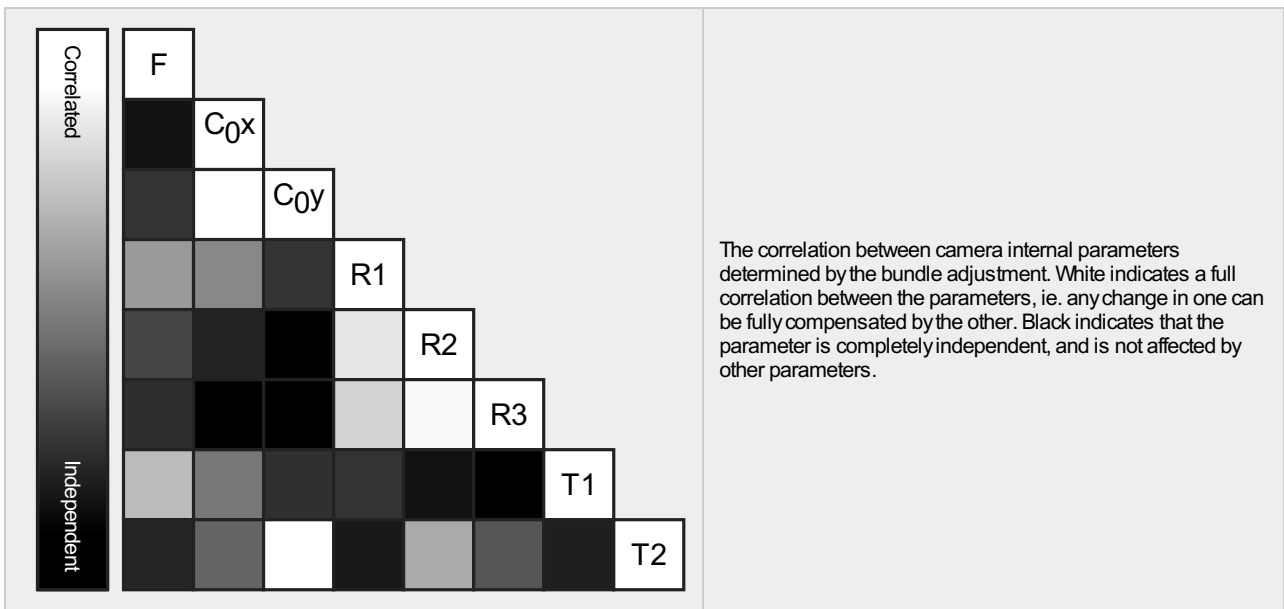
Internal Camera Parameters

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	3671.642 [pixel] 8.611 [mm]	2726.132 [pixel] 6.394 [mm]	1782.148 [pixel] 4.180 [mm]	-0.282	0.129	-0.040	-0.000	-0.000
Uncertainties (Sigma)	1.944 [pixel] 0.005 [mm]	0.399 [pixel] 0.001 [mm]	0.314 [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	74580	99
Mn	53734	19
Max	79996	30304
Mean	73009	2843

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	291351
In 3 Images	66758
In 4 Images	26177
In 5 Images	12910
In 6 Images	7968
In 7 Images	5272
In 8 Images	3711
In 9 Images	2533
In 10 Images	1724
In 11 Images	919
In 12 Images	307
In 13 Images	134
In 14 Images	93
In 15 Images	62
In 16 Images	33
In 17 Images	23
In 18 Images	15
In 19 Images	6

? 2D Keypoint Matches



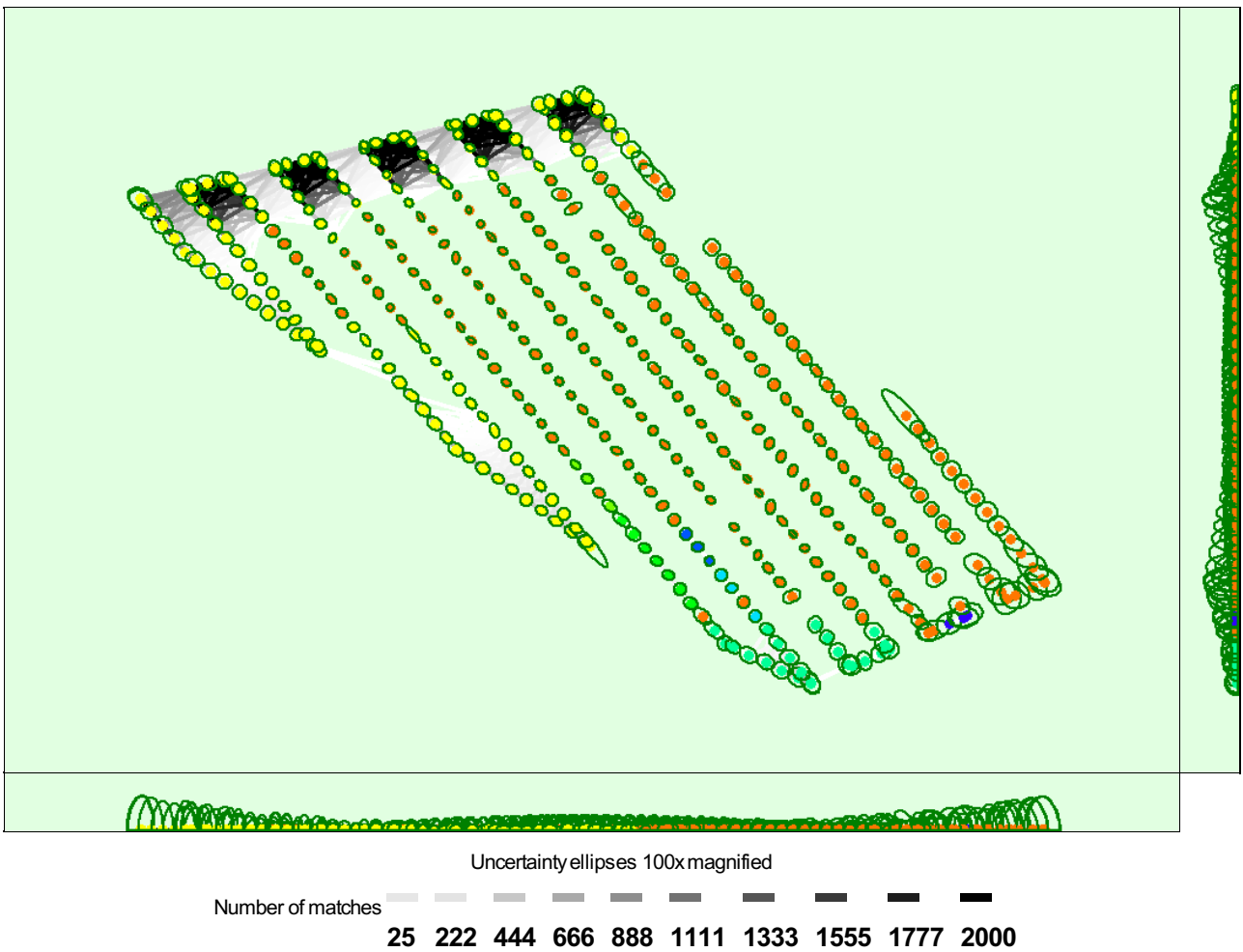


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.092	0.087	0.147	0.053	0.039	0.028
Sigma	0.035	0.032	0.077	0.024	0.016	0.008

Geolocation Details

Absolute Geolocation Variance

Mn Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-0.10	3.03	1.52	17.17
-0.10	-0.08	3.28	3.79	5.56
-0.08	-0.06	5.05	5.30	3.79
-0.06	-0.04	6.57	8.84	8.08
-0.04	-0.02	13.13	14.39	5.81
-0.02	0.00	14.14	17.68	10.10
0.00	0.02	22.98	14.65	9.85
0.02	0.04	14.90	15.40	8.08
0.04	0.06	6.82	8.33	5.30
0.06	0.08	5.05	4.29	6.82
0.08	0.10	2.02	2.78	4.04

0.10	-	3.03	3.03	15.40
Mean [m]		-0.000030	-0.000335	-0.000704
Sigma [m]		0.051238	0.048632	0.108217
RMS Error [m]		0.051238	0.048634	0.108219

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]	26.77	24.75	22.22
[-2.00, 2.00]	53.54	47.47	35.35
[-3.00, 3.00]	67.42	66.41	49.49
Mean of Geolocation Accuracy [m]	0.015081	0.015081	0.022151
Sigma of Geolocation Accuracy [m]	0.000743	0.000743	0.003358

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

Geolocation Orientational Variance	RMS [degree]
Omega	1.020
Phi	1.061
Kappa	2.192

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: 12th Gen Intel(R) Core(TM) i9-12900H RAM: 32GB GPU: NVIDIA GeForce RTX 3070 Ti Laptop GPU (Driver: 30.0.15.1278), Intel(R) Iris(R) Xe Graphics (Driver: 31.0.101.4502)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems

Image Coordinate System	Pulkovo 1942(58) / Stereo70
Output Coordinate System	Pulkovo 1942(58) / Stereo70 (2D)

Processing Options

Detected Template	No Template Available
Keypoints Image Scale	Custom, 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: Geolocation Based Internal Parameters Optimization: All prior External Parameters Optimization: All Rematch: Custom, yes

Point Cloud Densification details

Processing Options



Image Scale	multiscale, 1/4 (Quarter image size, Fast)
Point Density	Optimal
Minimum Number of Matches	3
3D Textured Mesh Generation	no
LOD	Generated: no
Advanced: Image Groups	group1
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Time for Point Cloud Densification	02m:04s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	NA

Results



Number of Generated Tiles	1
Number of 3D Densified Points	3193429
Average Density (per m ³)	14.42

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (3.52 [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:40s
Time for Orthomosaic Generation	19m:43s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s