

Quality Report



Generated with Pix4Dmapper version 4.3.27



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	Tjorhomprosjekt
Processed	2018-10-10 15:40:13
Camera Model Name(s)	FC330_3.6_4000x3000 (RGB)
Average Ground Sampling Distance (GSD)	1.77 cm / 0.70 in
Time for Initial Processing (without report)	06h:03m:59s

Quality Check



Images	median of 69828 keypoints per image	
Dataset	161 out of 161 images calibrated (100%), all images enabled	
Camera Optimization	4.33% relative difference between initial and optimized internal camera parameters	
Matching	median of 28402.1 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Calibration Details



Number of Calibrated Images	161 out of 161
Number of Geolocated Images	161 out of 161



Initial Image Positions



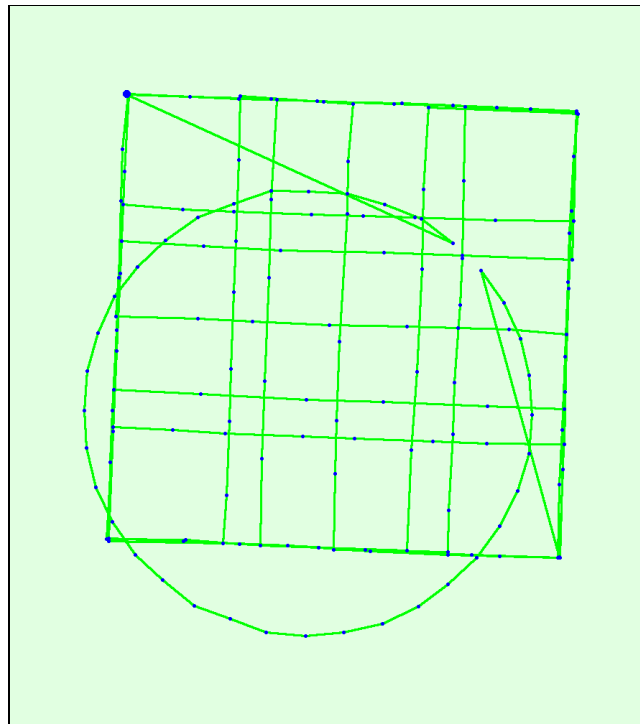
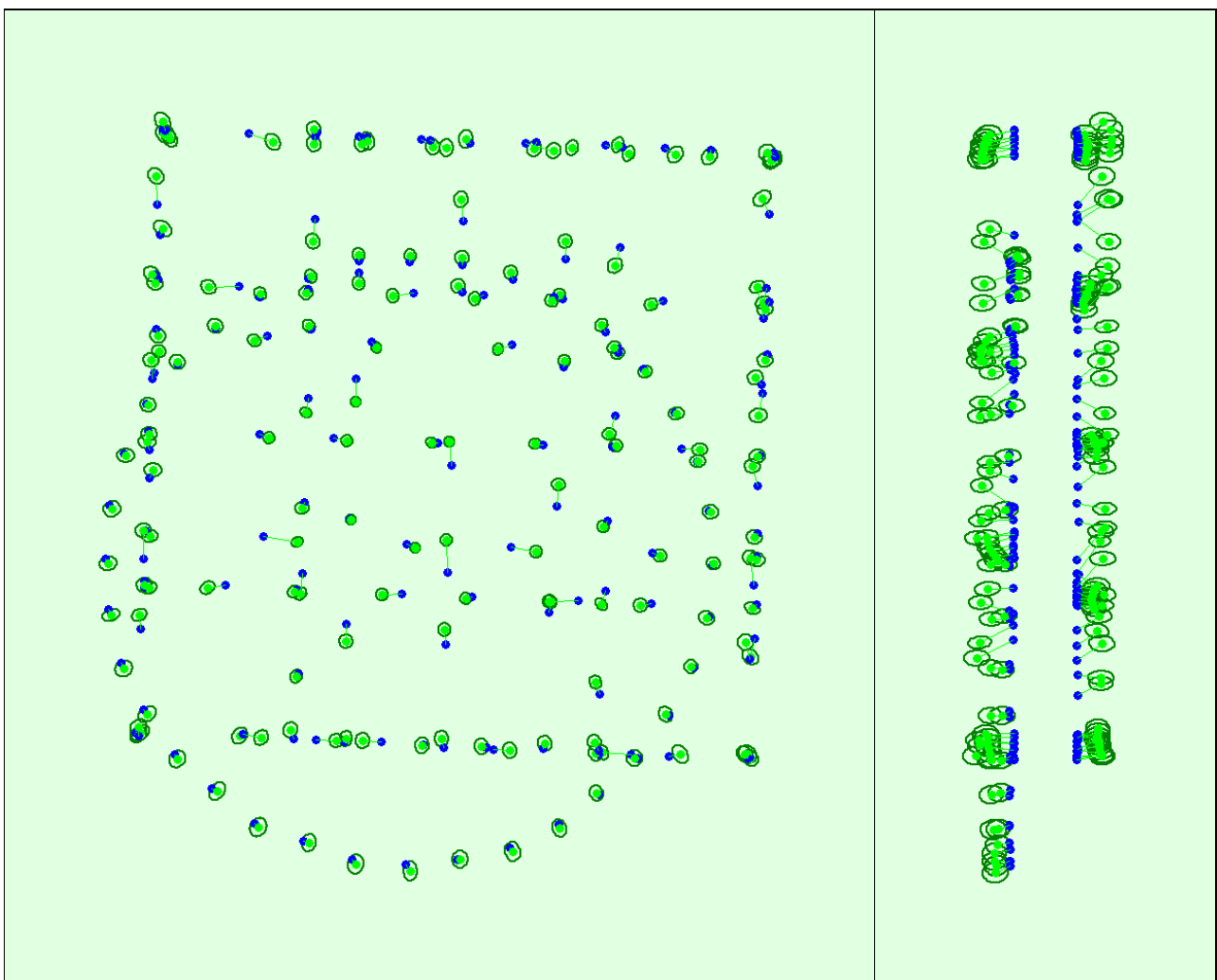
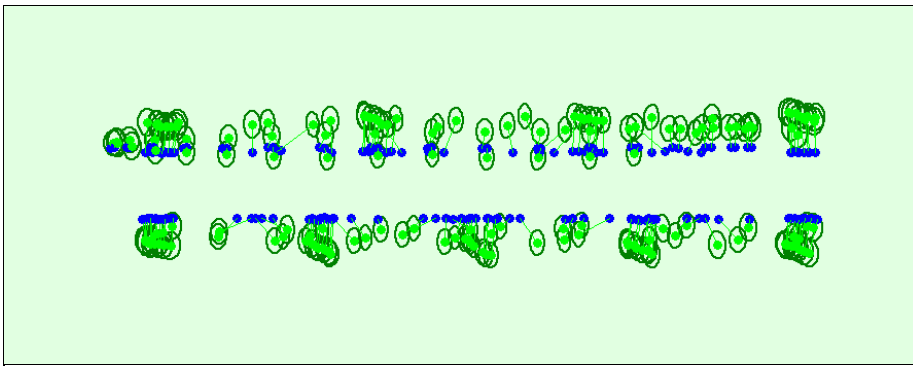


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? 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	0.110	0.111	0.178	0.063	0.066	0.076
Sigma	0.014	0.015	0.004	0.006	0.004	0.010

Bundle Block Adjustment Details

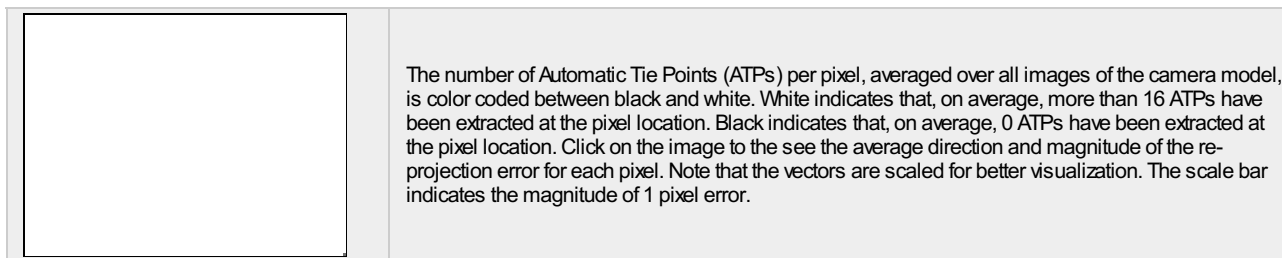
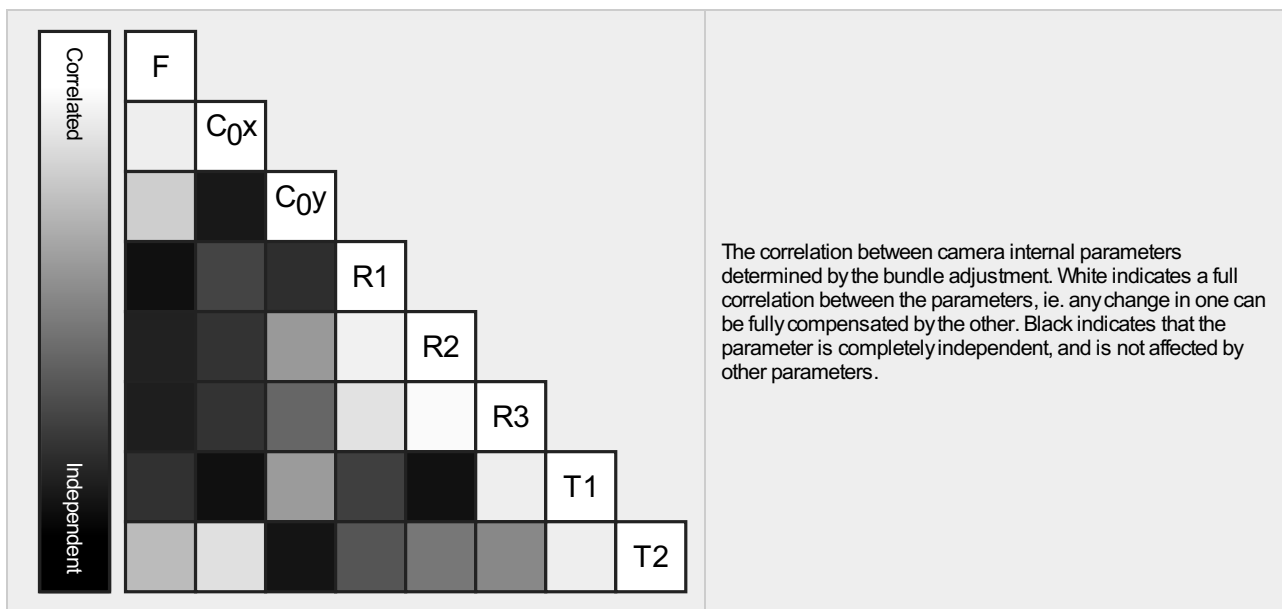
Number of 2D Keypoint Observations for Bundle Block Adjustment	4513918
Number of 3D Points for Bundle Block Adjustment	1702156
Mean Reprojection Error [pixels]	0.204

? Internal Camera Parameters

FC330_3.6_4000x3000 (RGB). Sensor Dimensions: 6.317 [mm] x 4.738 [mm]

EXIF ID: FC330_3.6_4000x3000

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	2285.722 [pixel] 3.610 [mm]	2000.006 [pixel] 3.159 [mm]	1500.003 [pixel] 2.369 [mm]	-0.001	-0.002	0.000	-0.001	-0.001
Optimized Values	2384.875 [pixel] 3.767 [mm]	2071.557 [pixel] 3.272 [mm]	1510.904 [pixel] 2.386 [mm]	-0.004	-0.002	0.002	0.000	0.001
Uncertainties (Sigma)	0.120 [pixel] 0.000 [mm]	0.049 [pixel] 0.000 [mm]	0.088 [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	69828	28402
Mn	53001	11906
Max	79782	41161
Mean	69009	28037

3D Points from 2D Keypoint Matches

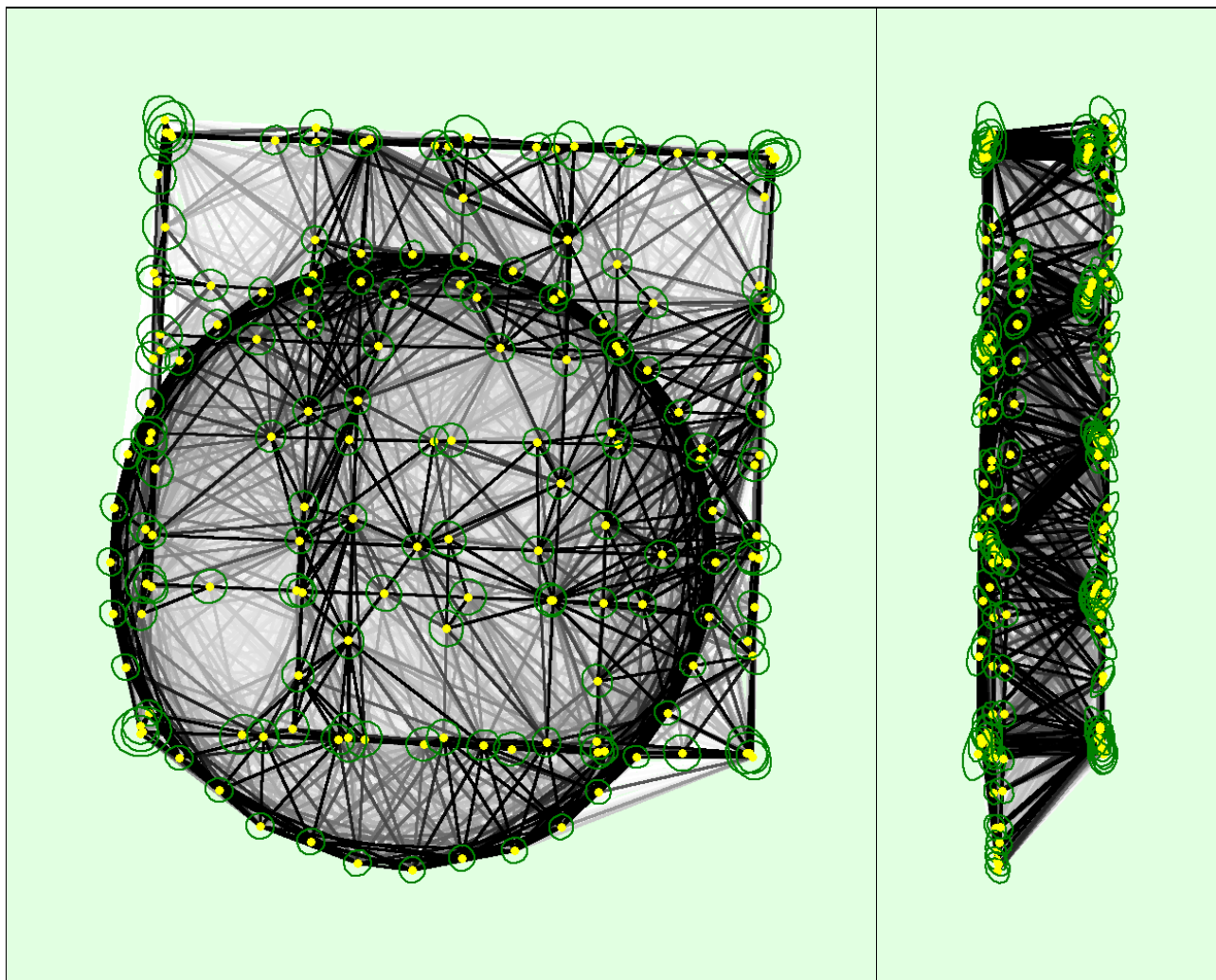


	Number of 3D Points Observed
In 2 Images	1177963
In 3 Images	287975
In 4 Images	110090
In 5 Images	51828
In 6 Images	27914
In 7 Images	16115
In 8 Images	9947
In 9 Images	6322
In 10 Images	4125
In 11 Images	2820
In 12 Images	1924
In 13 Images	1362
In 14 Images	979
In 15 Images	669
In 16 Images	491
In 17 Images	399
In 18 Images	266
In 19 Images	215
In 20 Images	178
In 21 Images	135
In 22 Images	87

In 23 Images	79
In 24 Images	74
In 25 Images	42
In 26 Images	47
In 27 Images	27
In 28 Images	20
In 29 Images	17
In 30 Images	10
In 31 Images	11
In 32 Images	5
In 33 Images	2
In 34 Images	5
In 35 Images	3
In 36 Images	3
In 37 Images	2
In 38 Images	1
In 40 Images	1
In 41 Images	2
In 47 Images	1

? 2D Keypoint Matches

1



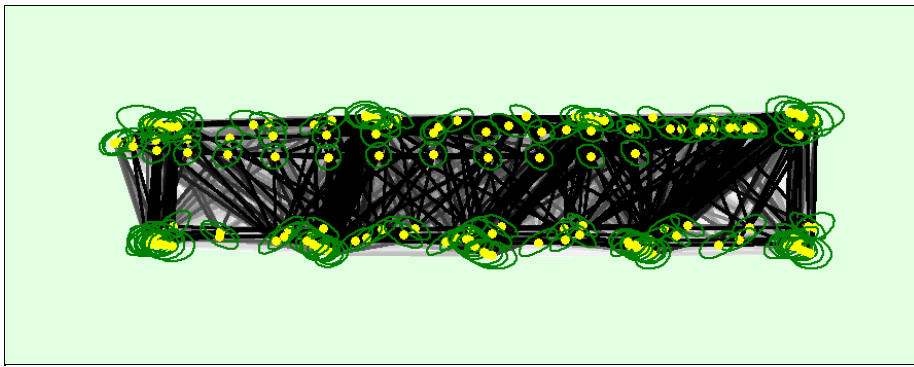


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.002	0.002	0.002	0.004	0.003	0.002
Sigma	0.000	0.000	0.000	0.001	0.001	0.001

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	3.73	5.59	27.33
-3.00	0.00	41.61	32.30	17.39
0.00	3.00	52.17	59.63	27.33
3.00	6.00	2.48	2.48	27.95
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]		0.000001	0.000000	0.000006
Sigma [m]		1.289894	1.452885	3.396327
RMS Error [m]		1.289894	1.452885	3.396327

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]	99.38	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	1.995
Phi	3.496
Kappa	6.213

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) i7-2600 CPU @ 3.40GHz RAM: 8GB GPU: AMD Radeon HD 5450 (Driver: 15.201.1151.1008)
Operating System	Windows 10 Education, 64-bit

Coordinate Systems



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

Processing Options



Detected Template	3D Models
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Free Flight or Terrestrial
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	41m:56s

Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	06m:21s

Results



Number of Generated Tiles	1
Number of 3D Densified Points	11906018
Average Density (per m ³)	894.17

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (1.77 [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	11m:05s
Time for Orthomosaic Generation	43m:43s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s