

- !** **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 i

Project	Tjorhomvar
Processed	2019-05-07 13:17:45
Camera Model Name(s)	L1D-20c_10.3_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	0.11 cm / 0.04 in

## Quality Check i

<b>?</b> Images	median of 83463 keypoints per image	✓
<b>?</b> Dataset	204 out of 206 images calibrated (99%), all images enabled, 2 blocks	⚠
<b>?</b> Camera Optimization	1.53% relative difference between initial and optimized internal camera parameters	✓
<b>?</b> Matching	median of 16288.8 matches per calibrated image	✓
<b>?</b> Georeferencing	yes, no 3D GCP	⚠

## Calibration Details i

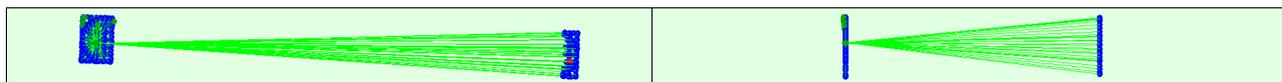
Number of Calibrated Images	204 out of 206
Number of Geolocated Images	206 out of 206

### **?** Initial Image Positions i



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 i



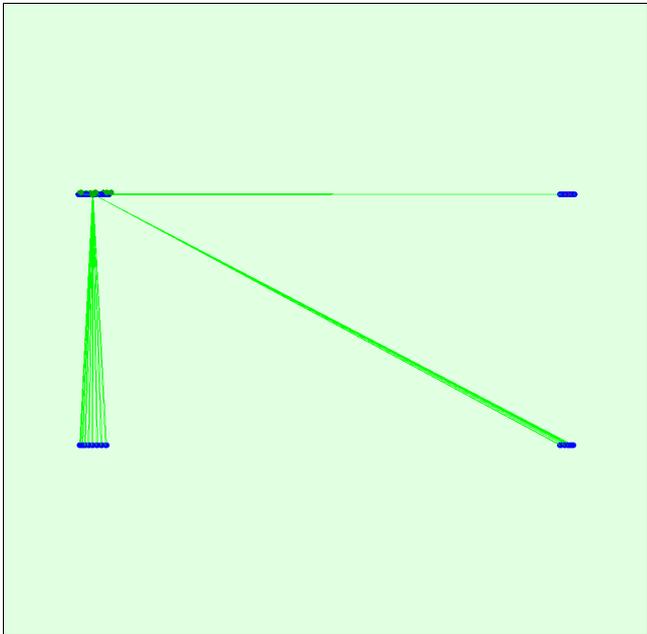


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

### ? Absolute camera position and orientation uncertainties i

Uncertainty computation failed.

## Bundle Block Adjustment Details i

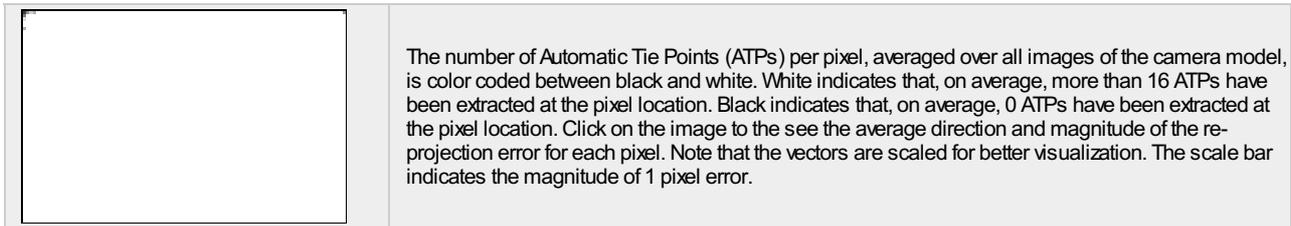
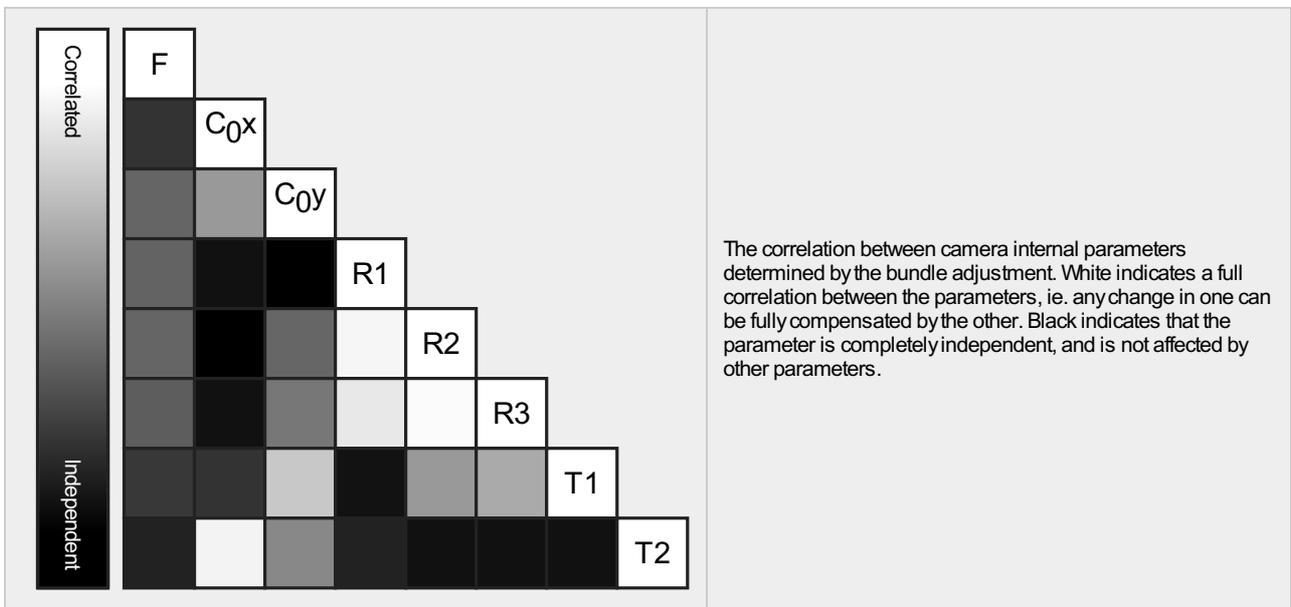
Number of 2D Keypoint Observations for Bundle Block Adjustment	3930683
Number of 3D Points for Bundle Block Adjustment	1695381
Mean Reprojection Error [pixels]	0.444

### ? Internal Camera Parameters

📷 L1D-20c\_10.3\_5472x3648 (RGB). Sensor Dimensions: 12.825 [mm] x 8.550 [mm] i

EXIF ID: L1D-20c\_10.3\_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	4470.830 [pixel] 10.479 [mm]	2770.870 [pixel] 6.494 [mm]	1698.700 [pixel] 3.981 [mm]	0.009	0.040	-0.050	-0.003	0.002
Optimized Values	4539.615 [pixel] 10.640 [mm]	2762.691 [pixel] 6.475 [mm]	1635.283 [pixel] 3.833 [mm]	0.018	0.012	-0.026	-0.005	0.002
Uncertainties (Sigma)	0.816 [pixel] 0.002 [mm]	1.028 [pixel] 0.002 [mm]	0.873 [pixel] 0.002 [mm]	0.001	0.005	0.007	0.000	0.000



### 2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	83463	16289
Mn	67007	3478
Max	88763	57293
Mean	81675	19268

### 3D Points from 2D Keypoint Matches

	Number of 3D Points Observed
In 2 Images	1422916
In 3 Images	166303
In 4 Images	48478
In 5 Images	22449
In 6 Images	12453
In 7 Images	7438
In 8 Images	4772
In 9 Images	3495
In 10 Images	2841
In 11 Images	1726
In 12 Images	932
In 13 Images	707
In 14 Images	261
In 15 Images	121
In 16 Images	85
In 17 Images	68
In 18 Images	48
In 19 Images	44
In 20 Images	47
In 21 Images	29
In 22 Images	31
In 23 Images	26

In 24 Images	21
In 25 Images	13
In 26 Images	15
In 27 Images	13
In 28 Images	9
In 29 Images	8
In 30 Images	8
In 31 Images	7
In 32 Images	6
In 33 Images	5
In 34 Images	1
In 35 Images	3
In 39 Images	2

## ? 2D Keypoint Matches

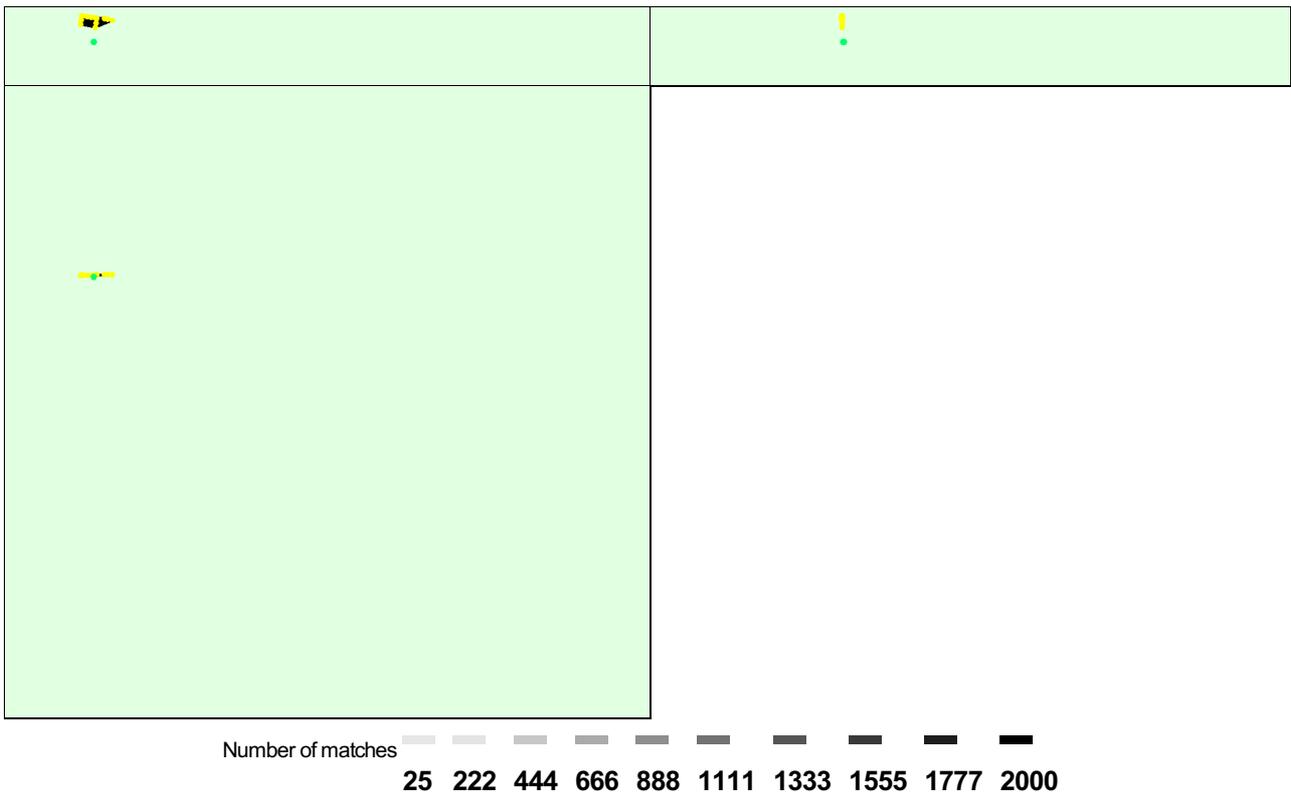


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

## Geolocation Details



### ? Absolute Geolocation Variance



Mn Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-15.00	30.10	34.95	0.00
-15.00	-12.00	7.77	0.00	0.00
-12.00	-9.00	2.91	2.91	0.00
-9.00	-6.00	1.94	8.74	0.00
-6.00	-3.00	1.94	0.97	0.00
-3.00	0.00	2.91	1.94	37.86
0.00	3.00	8.74	1.94	62.14
3.00	6.00	1.94	0.97	0.00

6.00	9.00	2.91	7.77	0.00
9.00	12.00	0.97	3.88	0.00
12.00	15.00	3.88	0.97	0.00
15.00	-	33.98	34.95	0.00
<b>Mean [m]</b>		0.142913	0.886140	0.030428
<b>Sigma [m]</b>		21.632567	28.630344	0.146336
<b>RMS Error [m]</b>		21.633039	28.644054	0.149466

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]	15.53	4.85	100.00
[-2.00, 2.00]	20.39	26.21	100.00
[-3.00, 3.00]	35.92	30.10	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	113.979
Phi	47.054
Kappa	71.465

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 / UTMzone 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

## Results



Number of Generated Tiles	1
Number of 3D Densified Points	5555234
Average Density (per m <sup>3</sup> )	337655

# DSM, Orthomosaic and Index Details



## Processing Options



DSM and Orthomosaic Resolution	1 x GSD (0.114 [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