

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	Nesjen
Processed	2018-10-05 15:20:01
Camera Model Name(s)	FC330_3.6_4000x3000 (RGB)
Average Ground Sampling Distance (GSD)	1.74 cm / 0.68 in
Time for Initial Processing (without report)	02h:26m:43s

Quality Check



Images	median of 54804 keypoints per image	
Dataset	237 out of 237 images calibrated (100%), all images enabled	
Camera Optimization	4.88% relative difference between initial and optimized internal camera parameters	
Matching	median of 23360.1 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Calibration Details



Number of Calibrated Images	237 out of 237
Number of Geolocated Images	237 out of 237



Initial Image Positions



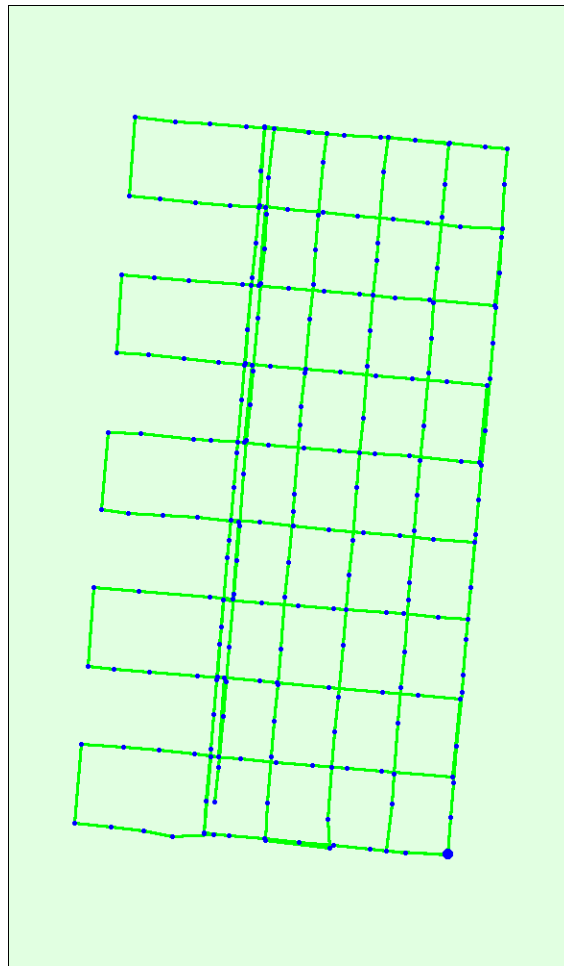
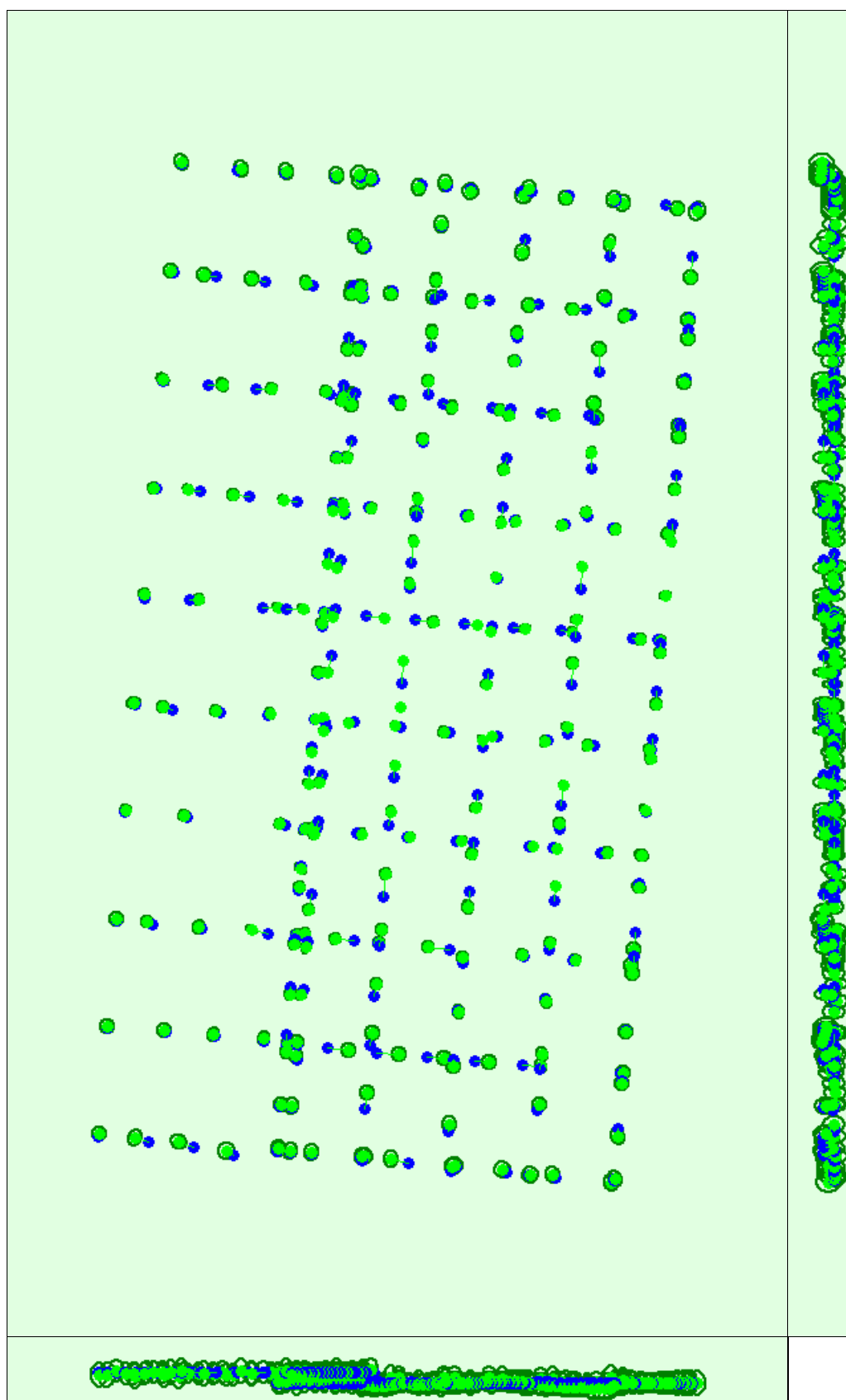


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.



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	0.171	0.176	0.292	0.084	0.094	0.076
Sigma	0.028	0.033	0.025	0.002	0.003	0.004

Bundle Block Adjustment Details



Number of 2D Keypoint Observations for Bundle Block Adjustment	5457875
Number of 3D Points for Bundle Block Adjustment	2054937
Mean Reprojection Error [pixels]	0.228

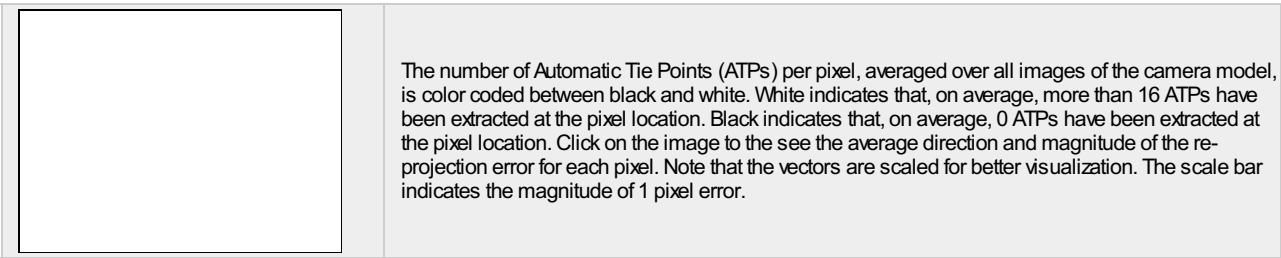
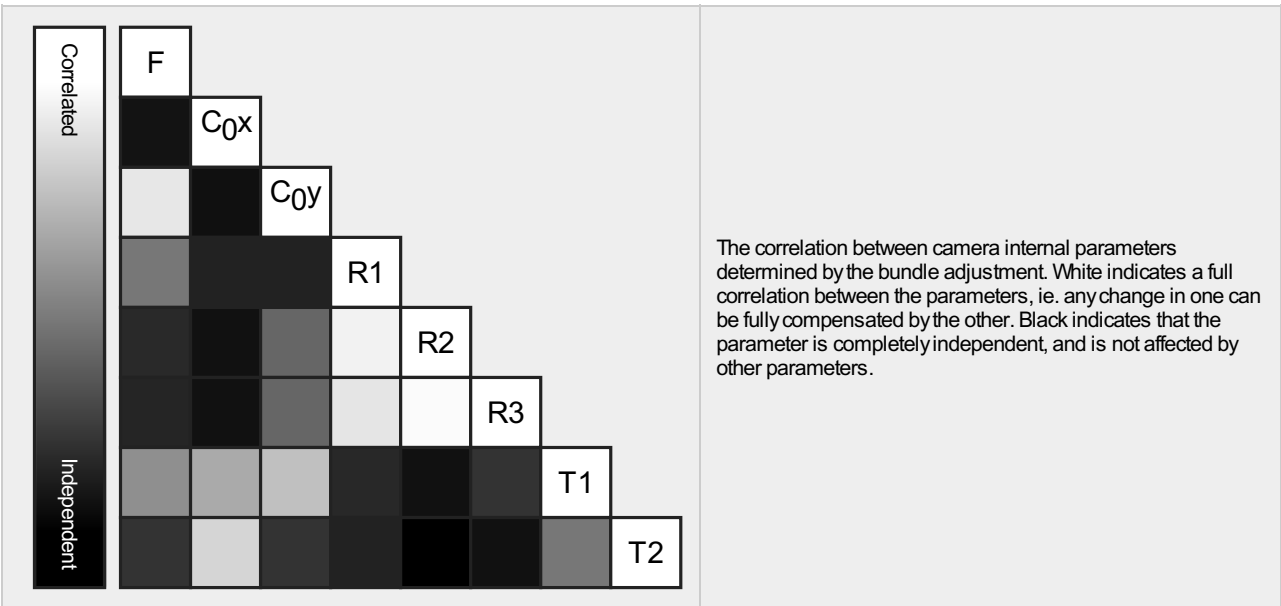
Internal Camera Parameters

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	2397.314 [pixel] 3.786 [mm]	1973.709 [pixel] 3.117 [mm]	1404.449 [pixel] 2.218 [mm]	0.003	-0.013	0.007	-0.000	0.000
Uncertainties (Sigma)	0.201 [pixel] 0.000 [mm]	0.059 [pixel] 0.000 [mm]	0.134 [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	54804	23360
Mn	41710	6249
Max	62988	36064
Mean	54413	23029

3D Points from 2D Keypoint Matches

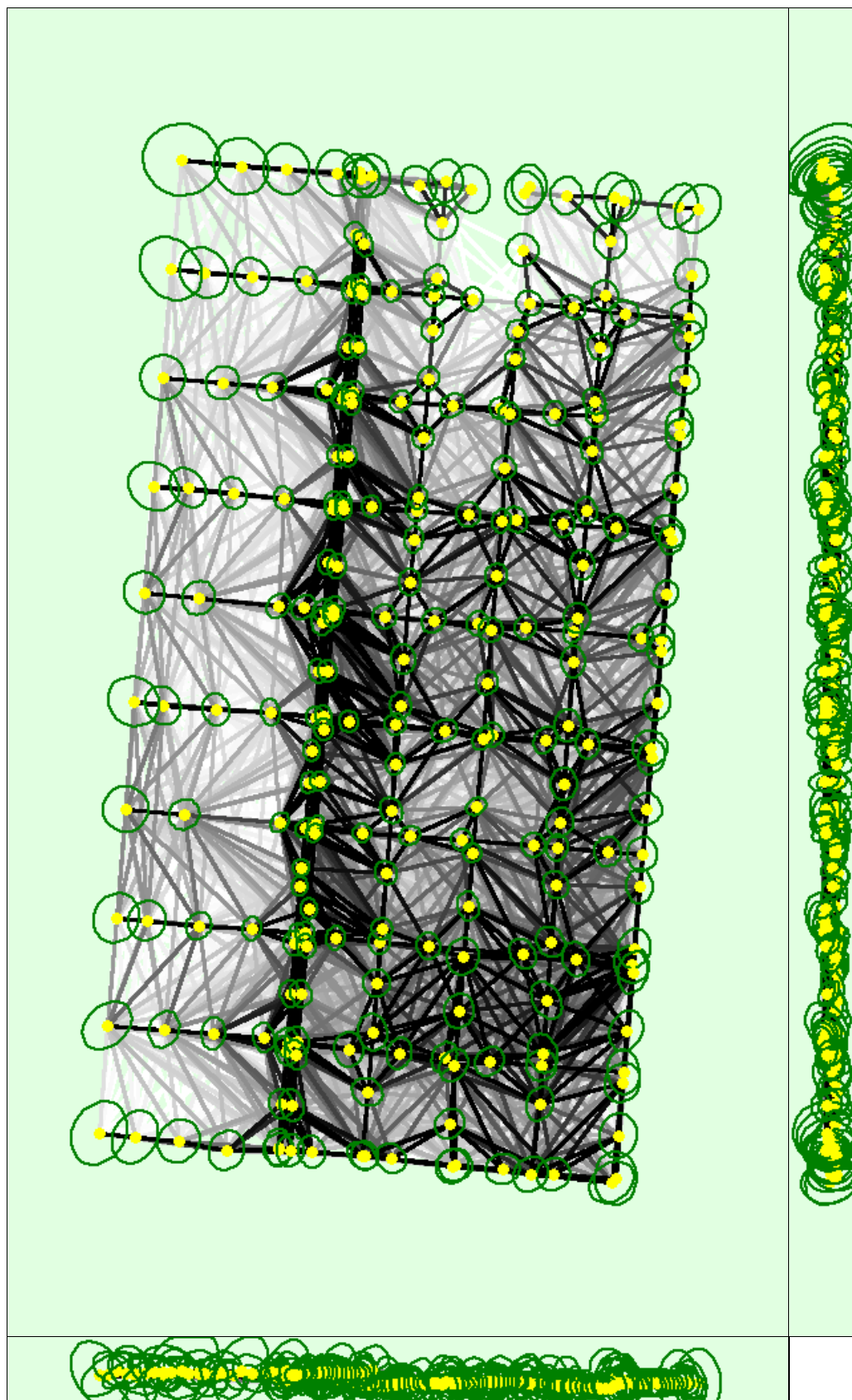


	Number of 3D Points Observed
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In 2 Images	1422015
In 3 Images	341317
In 4 Images	134694
In 5 Images	62554
In 6 Images	35105
In 7 Images	20948
In 8 Images	13064
In 9 Images	8582
In 10 Images	5604
In 11 Images	3808
In 12 Images	2489
In 13 Images	1665
In 14 Images	1052
In 15 Images	695
In 16 Images	466
In 17 Images	283
In 18 Images	172
In 19 Images	104
In 20 Images	71
In 21 Images	65
In 22 Images	47
In 23 Images	32
In 24 Images	19
In 25 Images	21
In 26 Images	15
In 27 Images	13
In 28 Images	8
In 29 Images	11
In 30 Images	3
In 31 Images	5
In 32 Images	4
In 33 Images	3
In 35 Images	2
In 37 Images	1

🔍 2D Keypoint Matches





Uncertainty ellipses 1000x magnified

Number of matches

25 222 444 666 888 1111 1333 1555 1777 2000

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]
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Mean	0.004	0.004	0.004	0.007	0.006	0.004
Sigma	0.001	0.001	0.002	0.002	0.002	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	0.84	2.53	0.00
-6.00	-3.00	5.91	7.17	0.00
-3.00	0.00	39.24	42.62	46.84
0.00	3.00	48.52	38.40	53.16
3.00	6.00	5.06	8.86	0.00
6.00	9.00	0.42	0.42	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]		-0.000000	0.000002	-0.000012
Sigma [m]		1.801290	2.211837	0.673320
RMS Error [m]		1.801290	2.211837	0.673320

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]	95.78	94.94	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	2.492
Phi	2.822
Kappa	8.695

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	01h:16m:06s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	12m:49s

Results



Number of Processed Clusters	2
Number of Generated Tiles	1
Number of 3D Densified Points	20655049
Average Density (per m ³)	449.86

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (1.74 [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	33m:22s
Time for Orthomosaic Generation	01h:11m:41s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s