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Help to analyze the results in the Quality Report



Additional information about the sections



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Summary



Project	ERA24FA217
Processed	2024-05-21 09:52:34
Camera Model Name(s)	M30T_4.4_4000x3000 (RGB)
Average Ground Sampling Distance (GSD)	2.82 cm / 1.11 in
Area Covered	0.670 km ² / 67.0082 ha / 0.26 sq. mi. / 165.6665 acres
Time for Initial Processing (without report)	43m:49s

Quality Check



 Images	median of 48771 keypoints per image	
 Dataset	959 out of 1197 images calibrated (80%), all images enabled, 12 blocks	
 Camera Optimization	2.73% relative difference between initial and optimized internal camera parameters	
 Matching	median of 2257.69 matches per calibrated image	
 Georeferencing	yes, no 3D GCP	

Preview

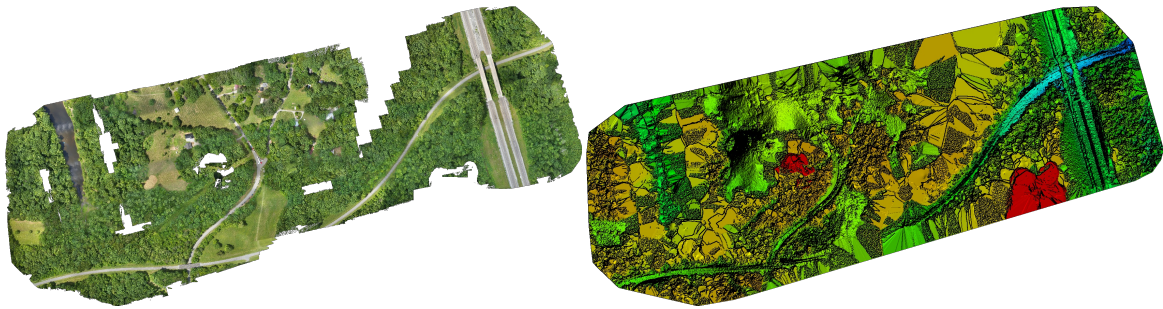


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	959 out of 1197
Number of Geolocated Images	1197 out of 1197

Initial Image Positions



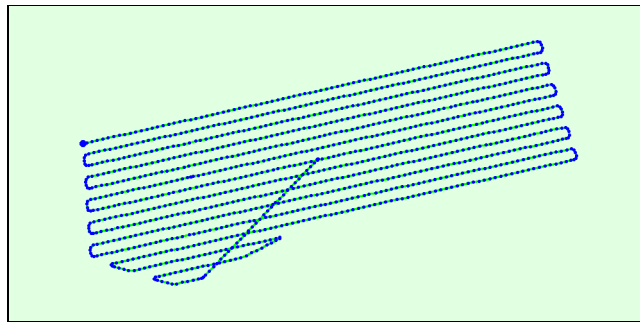


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? Computed Image/GCPs/Manual Tie Points Positions

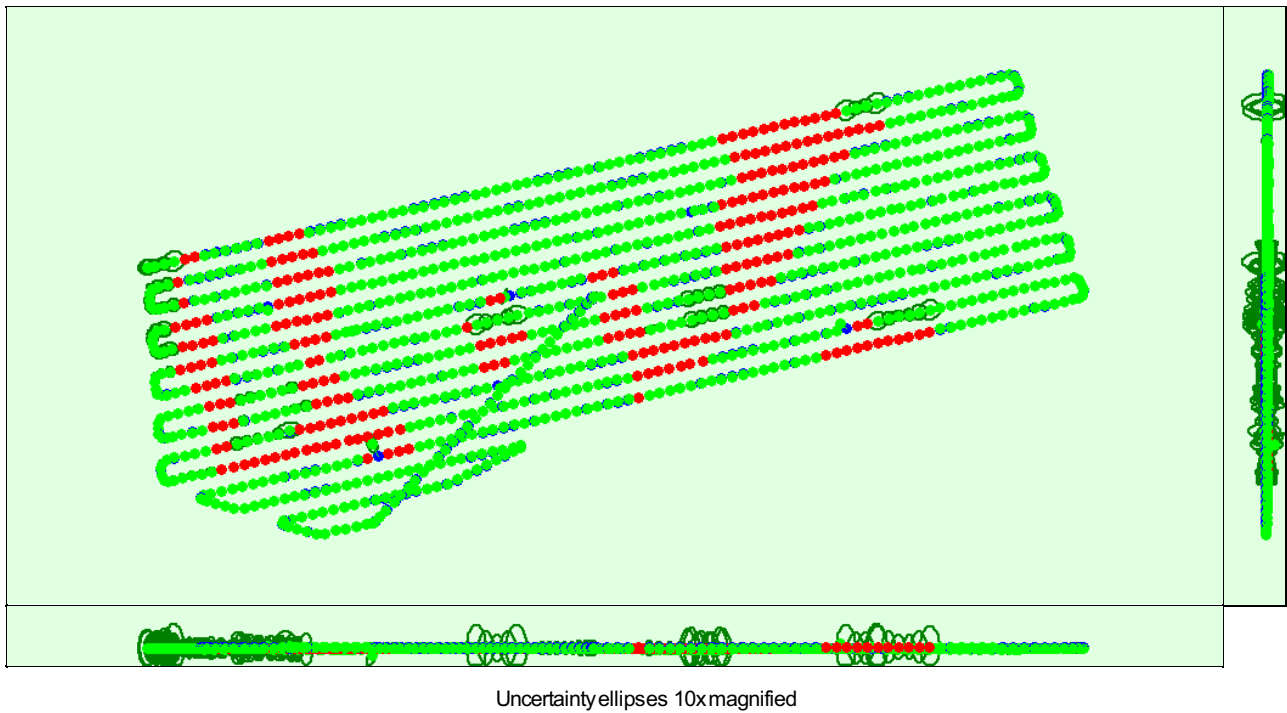
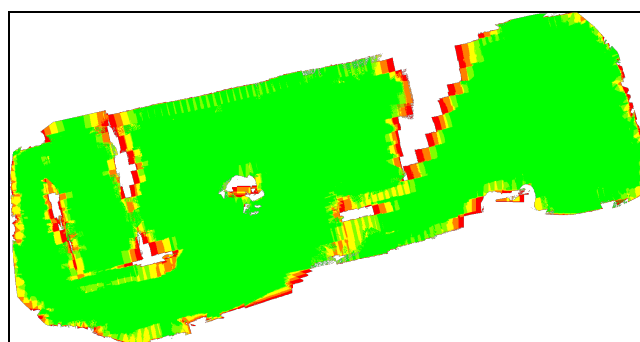


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled 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	0.963	0.929	2.194	1.095	0.598	0.419
Sigma	0.731	0.718	1.791	4.610	1.612	1.995

? Overlap



Number of overlapping images: 1 2 3 4 5+

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

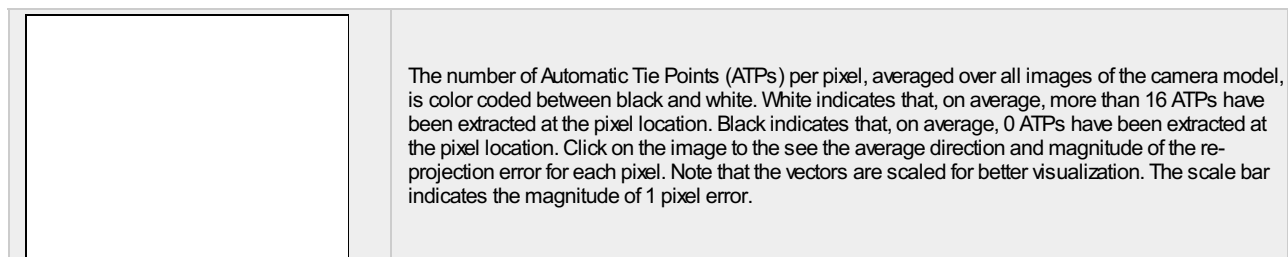
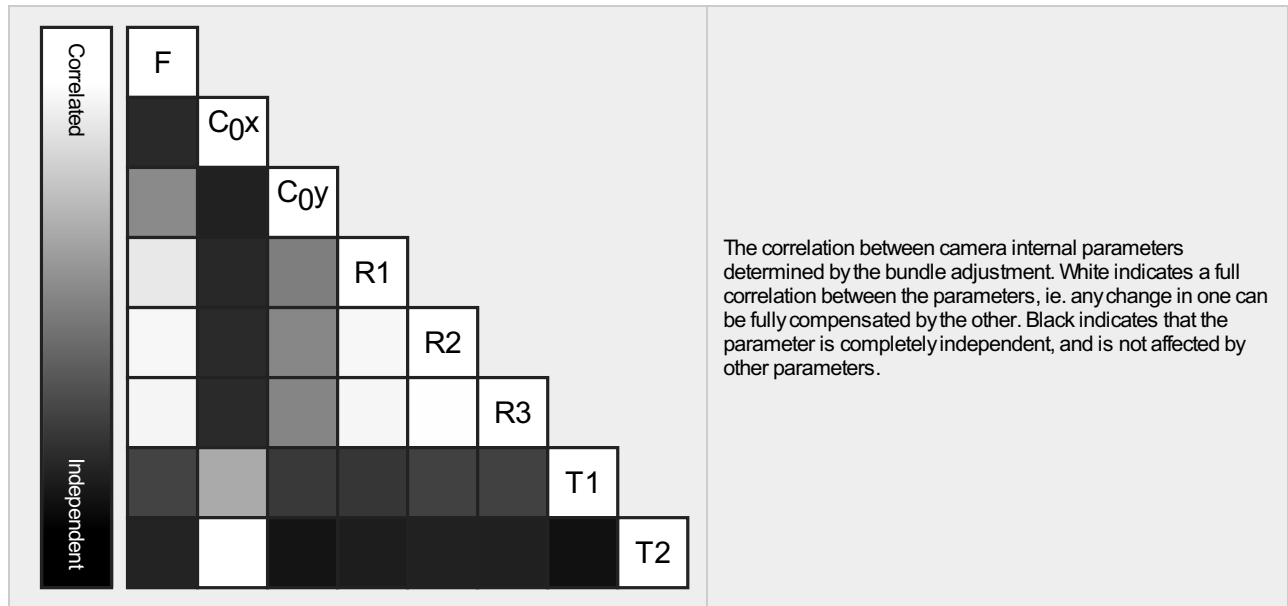
Number of 2D Keypoint Observations for Bundle Block Adjustment	3222709
Number of 3D Points for Bundle Block Adjustment	1098825
Mean Reprojection Error [pixels]	0.173

Internal Camera Parameters

M30T_4.4_4000x3000 (RGB). Sensor Dimensions: 6.417 [mm] x 4.813 [mm]

EXIF ID: M30T_4.4_4000x3000

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	2871.120 [pixel] 4.606 [mm]	2032.410 [pixel] 3.260 [mm]	1496.350 [pixel] 2.400 [mm]	0.187	-0.446	0.228	-0.000	-0.000
Optimized Values	2949.514 [pixel] 4.732 [mm]	2006.115 [pixel] 3.218 [mm]	1498.397 [pixel] 2.404 [mm]	0.191	-0.479	0.250	0.000	-0.000
Uncertainties (Sigma)	11.261 [pixel] 0.018 [mm]	0.380 [pixel] 0.001 [mm]	0.347 [pixel] 0.001 [mm]	0.002	0.008	0.006	0.000	0.000



2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	48771	2258
Mn	22731	30
Max	65410	17957

Mean	47986	3360
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3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	715516
In 3 Images	187641
In 4 Images	76798
In 5 Images	39713
In 6 Images	21534
In 7 Images	13923
In 8 Images	10105
In 9 Images	7586
In 10 Images	5937
In 11 Images	4274
In 12 Images	3709
In 13 Images	2927
In 14 Images	2265
In 15 Images	1905
In 16 Images	944
In 17 Images	816
In 18 Images	635
In 19 Images	521
In 20 Images	415
In 21 Images	351
In 22 Images	297
In 23 Images	291
In 24 Images	282
In 25 Images	149
In 26 Images	79
In 27 Images	48
In 28 Images	39
In 29 Images	35
In 30 Images	27
In 31 Images	31
In 32 Images	14
In 33 Images	9
In 34 Images	4
In 35 Images	2
In 36 Images	2
In 43 Images	1

2D Keypoint Matches



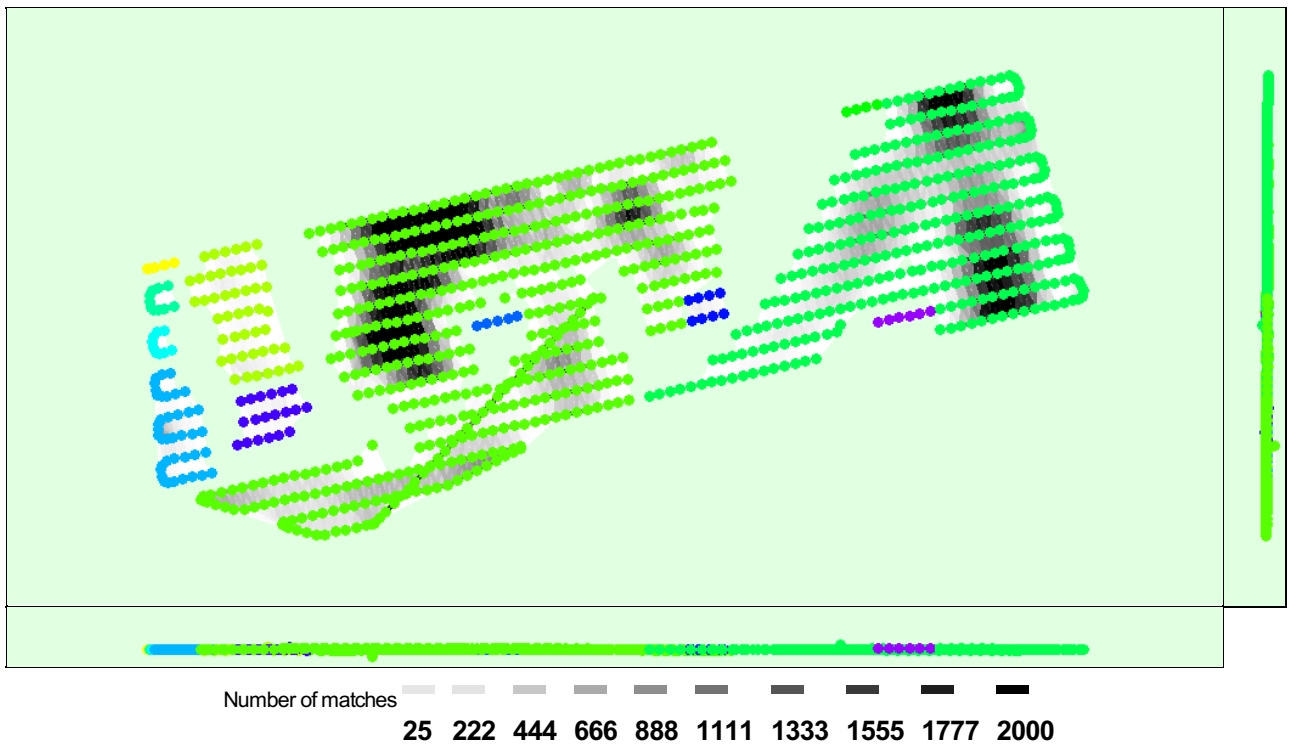


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Geolocation Details

? Absolute Geolocation Variance

Mn Error [ft]	Max Error [ft]	Geolocation Error X[%]	Geolocation Error Y[%]	Geolocation Error Z[%]
-	-11.39	0.31	0.21	0.31
-11.39	-9.12	0.00	0.00	0.10
-9.12	-6.84	0.00	0.10	0.00
-6.84	-4.56	0.21	0.21	0.63
-4.56	-2.28	3.02	7.09	9.28
-2.28	0.00	54.01	43.59	43.80
0.00	2.28	38.69	40.77	33.47
2.28	4.56	1.77	7.61	9.38
4.56	6.84	1.25	0.10	2.09
6.84	9.12	0.31	0.10	0.83
9.12	11.39	0.10	0.00	0.00
11.39	-	0.31	0.21	0.10
Mean [ft]		-0.011415	-0.040184	-0.032189
Sigma [ft]		2.285779	2.721646	2.597632
RMS Error [ft]		2.285808	2.721942	2.597832

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]	95.10	93.85	98.75
[-2.00, 2.00]	98.64	99.37	99.79

[-3.00, 3.00]	99.27	99.58	99.79
Mean of Geolocation Accuracy [ft]	3.102250	3.102250	7.236096
Sigma of Geolocation Accuracy [ft]	0.068145	0.068145	0.175326

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

Geolocation Orientational Variance	RMS [degree]
Omega	175.032
Phi	1.165
Kappa	147.709

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: 11th Gen Intel(R) Core(TM) i9-11950H @ 2.60GHz RAM: 63GB GPU: Intel(R) UHD Graphics (Driver: 31.0.101.4644), NVIDIA RTX A3000 Laptop GPU (Driver: 31.0.15.3827)
Operating System	Windows 10 Enterprise, 64-bit

Coordinate Systems

Image Coordinate System	WGS 84
Output Coordinate System	NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet

Processing Options

Detected Template	No Template Available
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, no

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	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	17m:51s

Time for Point Cloud Classification	01m:10s
Time for 3D Textured Mesh Generation	09m:56s

Results



Number of Generated Tiles	1
Number of 3D Densified Points	13628150
Average Density (per ft ³)	0.96

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (2.82 [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: yes
Time for DSM Generation	13m:18s
Time for Orthomosaic Generation	01h:00m:27s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s