

Quality Report



Generated with PIX4Dmapper version 4.7.3 Preview



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	Elk_Rock_Island_Survey_Marker
Processed	2023-03-22 13:28:44
Camera Model Name(s)	iPhone12_iPhone12backdualwidecamera4.2mmf/1.6_4.2_4032x3024 (RGB)
Average Ground Sampling Distance (GSD)	0.03 cm / 0.01 in

Quality Check



Images	median of 63639 keypoints per image	
Dataset	32 out of 34 images calibrated (94%), 1 images disabled	
Camera Optimization	1.59% relative difference between initial and optimized internal camera parameters	
Matching	median of 1503.07 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Calibration Details



Number of Calibrated Images	32 out of 35
Number of Geolocated Images	35 out of 35



Initial Image Positions



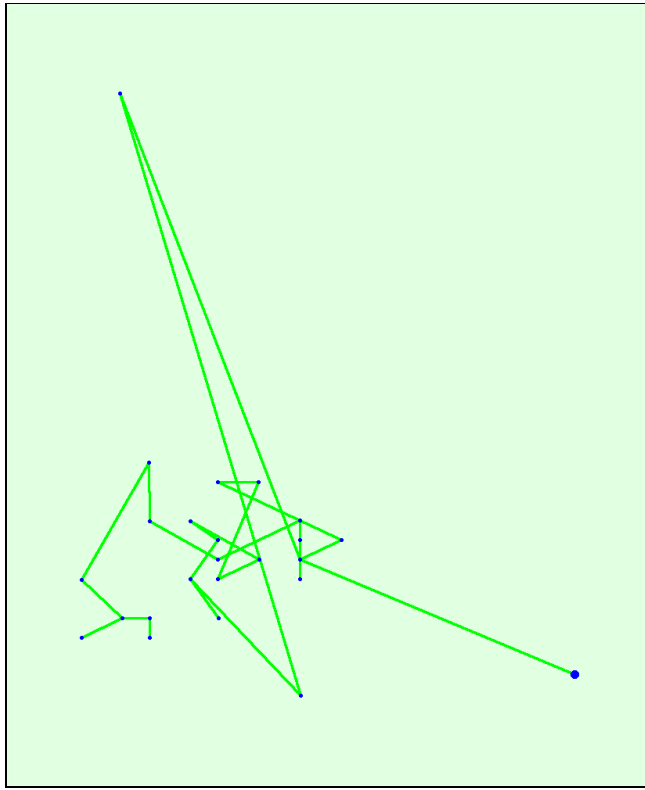
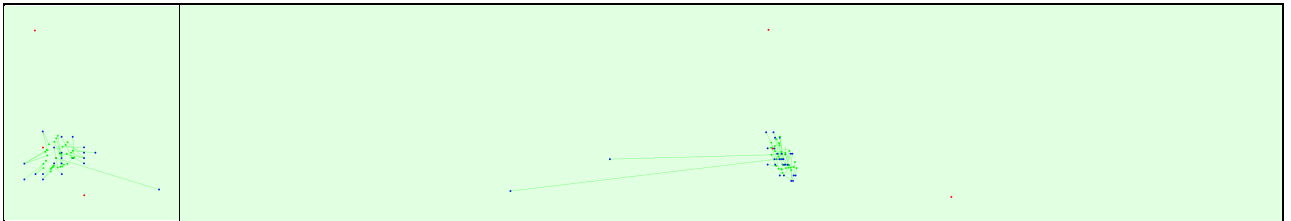


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



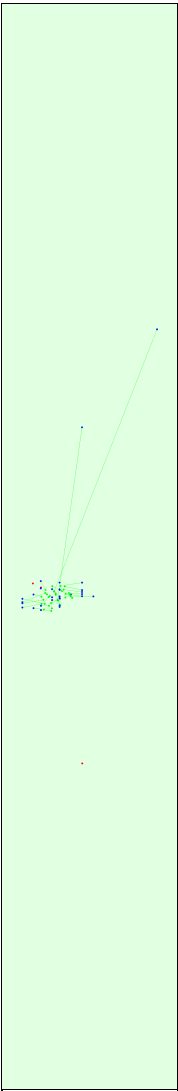


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled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

? Absolute camera position and orientation uncertainties i

Uncertainty computation failed.

Bundle Block Adjustment Details i

Number of 2D Keypoint Observations for Bundle Block Adjustment	48034
Number of 3D Points for Bundle Block Adjustment	17541
Mean Reprojection Error [pixels]	0.210

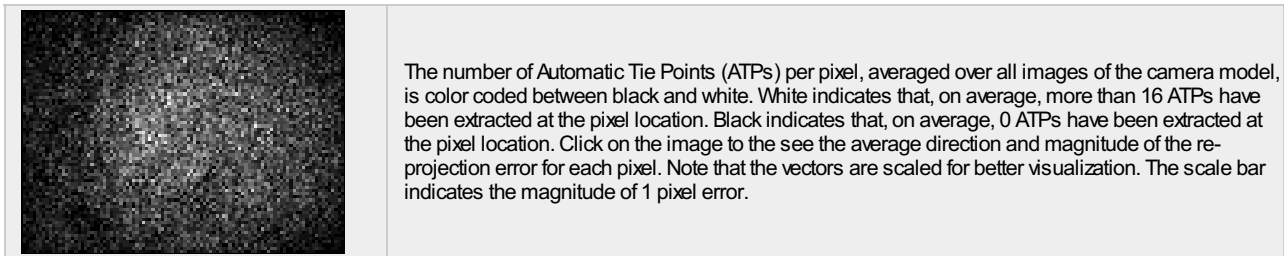
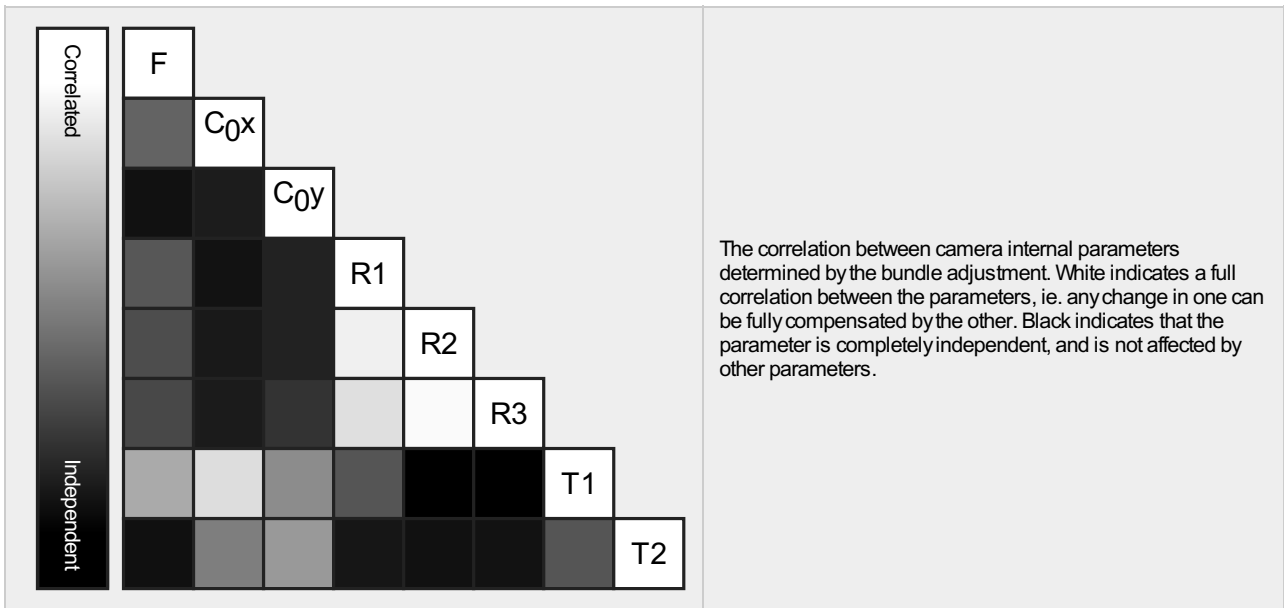
? Internal Camera Parameters

iPhone12_iPhone12backdualwidecamera4.2mmf/1.6_4.2_4032x3024 (RGB). Sensor Dimensions: 5.654 [mm] x 4.240 [mm] i

EXIF ID: iPhone12_iPhone12backdualwidecamera4.2mmf/1.6_4.2_4032x3024

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	2995.200 [pixel] 4.200 [mm]	2016.000 [pixel] 2.827 [mm]	1512.000 [pixel] 2.120 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3043.110 [pixel] 4.267 [mm]	2029.906 [pixel] 2.846 [mm]	1513.114 [pixel] 2.122 [mm]	0.113	-0.202	0.087	0.000	-0.001

Uncertainties (Sigma)	16.707 [pixel] 0.023 [mm]	20.004 [pixel] 0.028 [mm]	19.314 [pixel] 0.027 [mm]	0.023	0.081	0.088	0.002	0.002
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? 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	63639	1503
Mn	50251	348
Max	71266	3097
Mean	63338	1501

? 3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	10367
In 3 Images	4061
In 4 Images	1650
In 5 Images	753
In 6 Images	411
In 7 Images	172
In 8 Images	80
In 9 Images	34
In 10 Images	7
In 11 Images	6

? 2D Keypoint Matches



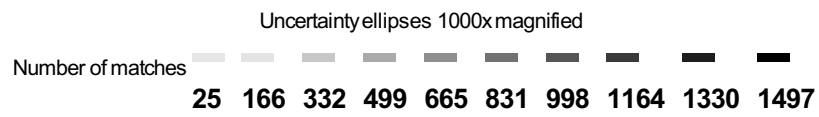
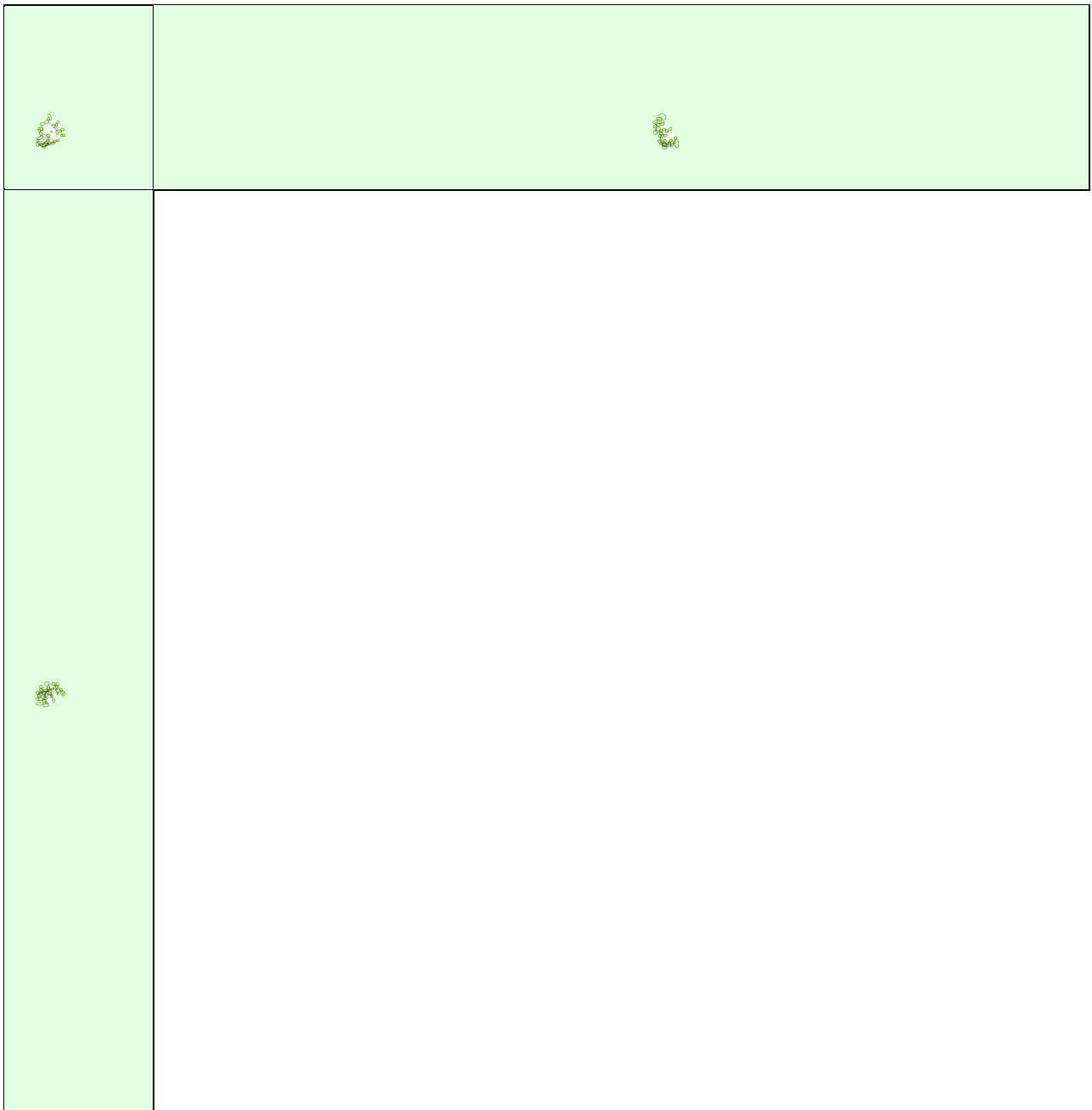


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty of the bundle block adjustment result.

Relative camera position and orientation uncertainties



	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]	Camera Displacement X[m]	Camera Displacement Y[m]	Camera Displacement Z[m]
Mean	0.000	0.000	0.000	0.020	0.022	0.021	0.000	0.000	0.000
Sigma	0.000	0.000	0.000	0.031	0.021	0.034	0.000	0.000	0.000

Manual Tie Points



MTP Name	Projection Error [pixel]	Verified/Marked
mtp1	1.769	10 / 10
mtp2	1.871	14 / 14

Projection errors for manual tie points. The last column counts the number of images where the manual tie point has been automatically verified vs. manually marked.

Geolocation Details

Orientation Constraints

Orientation Name	Axis	Angular Accuracy [degree]	Computed Angular Error [degree]	GCP/MTP Label 1	GCP/MTP Label 2
Orientation 1	Axis-Y	0.001	24.253	mtp2(14)	mtp1(10)

Orientation constraints errors.

Absolute Geolocation Variance

Mn 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	0.00	0.00	0.00
-3.00	0.00	53.33	63.33	53.33
0.00	3.00	46.67	36.67	46.67
3.00	6.00	0.00	0.00	0.00
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]		-0.026929	-0.127366	0.021972
Sigma [m]		0.725905	0.733593	0.274726
RMS Error [m]		0.726404	0.744567	0.275603

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]	100.00	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.

Rolling Shutter Statistics

Coordinate Systems



Image Coordinate System	WGS 84 (EGM96 Geoid)
Output Coordinate System	WGS 84 / UTMzone 10N (EGM96 Geoid)

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, 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: High Resolution Color Balancing: yes
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	01m:03s
Time for Point Cloud Classification	01s
Time for 3D Textured Mesh Generation	04m:24s

Results



Number of Generated Tiles	1
Number of 3D Densified Points	1196258
Average Density (per m ³)	-2.14748e+07