

Quality Report



Generated with PIX4Dmapper version 4.8.0 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



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Summary



Project	PorshinevFly I II III
Processed	2023-05-05 08:43:15
Camera Model Name(s)	FC6310R_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	6.16 cm / 2.43 in
Area Covered	0.880 km ² / 88.0236 ha / 0.34 sq. mi. / 217.6237 acres

Quality Check



Images	median of 65734 keypoints per image	
Dataset	381 out of 391 images calibrated (97%), all images enabled, 3 blocks	
Camera Optimization	48.68% relative difference between initial and optimized internal camera parameters	
Matching	median of 9503.58 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

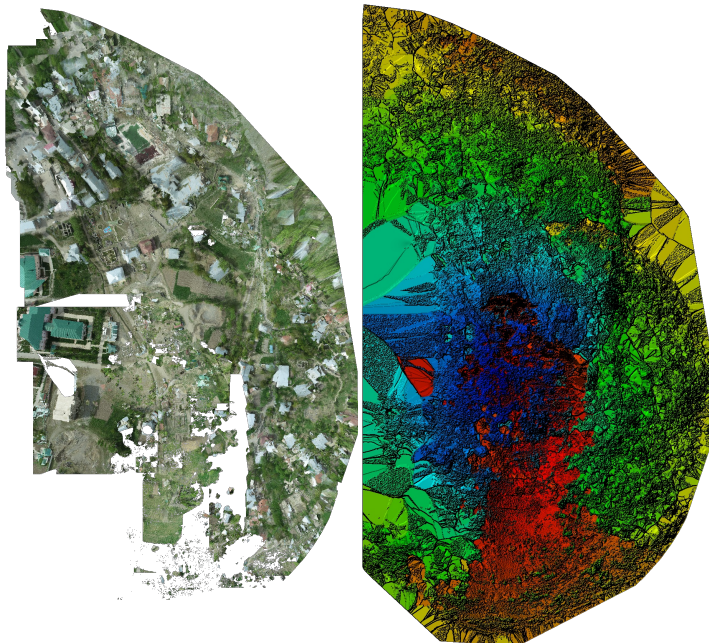


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	381 out of 391
Number of Geolocated Images	391 out of 391

Initial Image Positions

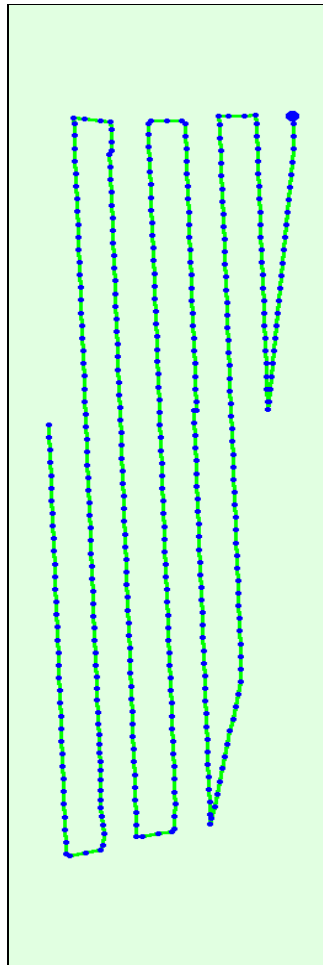
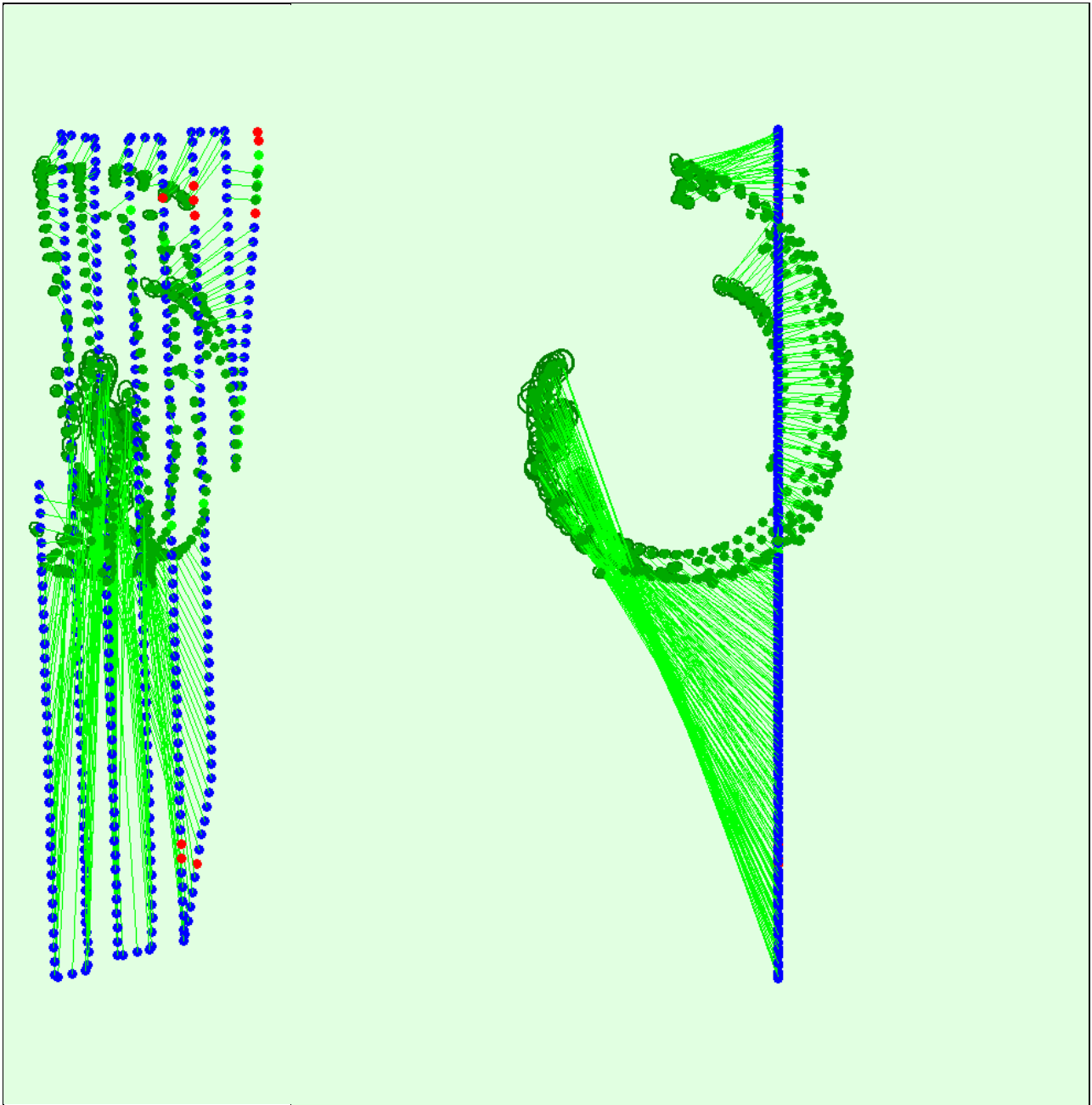
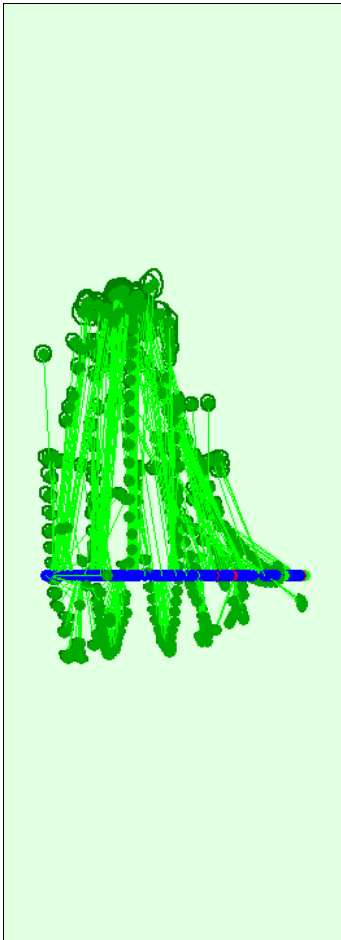


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

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). 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 i

	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.876	0.946	0.915	0.589	0.218	0.672
Sigma	0.372	0.578	0.543	5.984	0.285	8.051

? Overlap i

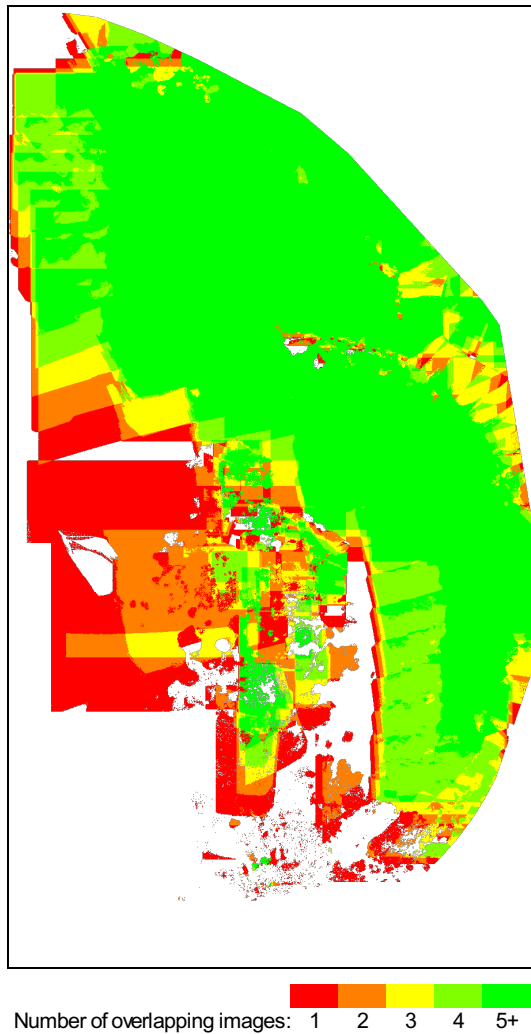


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

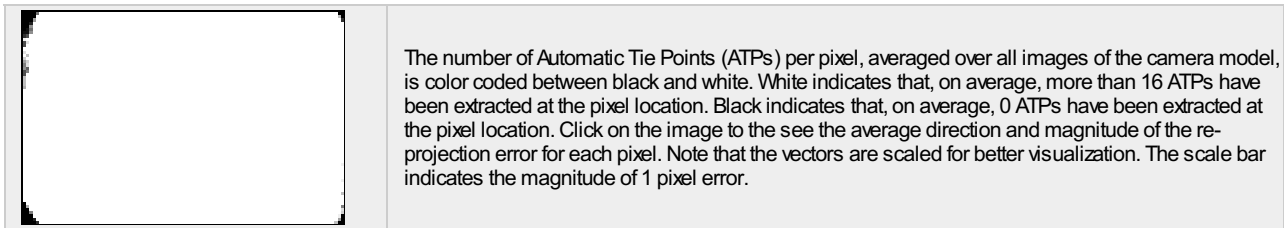
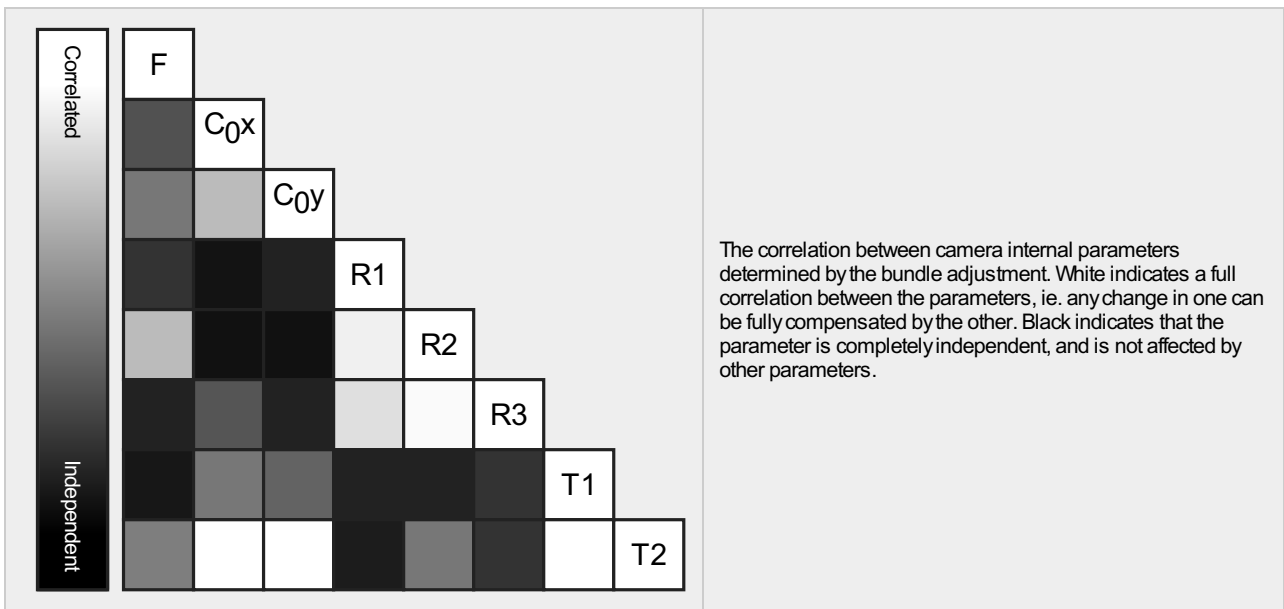
Number of 2D Keypoint Observations for Bundle Block Adjustment	3842027
Number of 3D Points for Bundle Block Adjustment	1628934
Mean Reprojection Error [pixels]	0.378

Internal Camera Parameters

FC6310R_8.8_5472x3648 (RGB). Sensor Dimensions: 12.833 [mm] x 8.556 [mm]

EXIF ID: FC6310R_8.8_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3658.300 [pixel] 8.580 [mm]	2722.500 [pixel] 6.385 [mm]	1835.100 [pixel] 4.304 [mm]	-0.269	0.112	-0.033	0.000	-0.001
Optimized Values	5439.440 [pixel] 12.757 [mm]	2865.179 [pixel] 6.720 [mm]	1827.133 [pixel] 4.285 [mm]	-0.250	0.057	0.055	-0.001	-0.006
Uncertainties (Sigma)	8.112 [pixel] 0.019 [mm]	1.931 [pixel] 0.005 [mm]	1.494 [pixel] 0.004 [mm]	0.001	0.008	0.013	0.000	0.000



? 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	65734	9504
Mn	45894	546
Max	79384	30605
Mean	65503	10084

? 3D Points from 2D Keypoint Matches



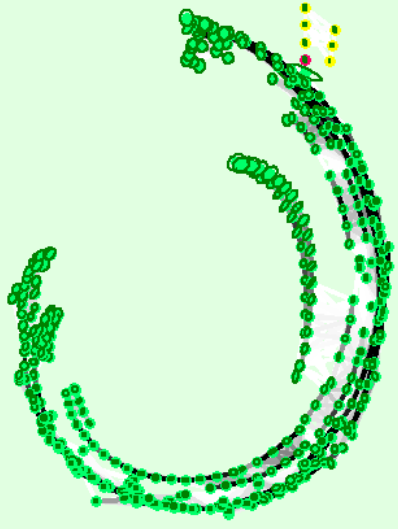
	Number of 3D Points Observed
In 2 Images	1268966
In 3 Images	237427
In 4 Images	74209
In 5 Images	24733
In 6 Images	10452
In 7 Images	5666
In 8 Images	3143
In 9 Images	1903
In 10 Images	1206
In 11 Images	614
In 12 Images	307
In 13 Images	182
In 14 Images	86
In 15 Images	40

? 2D Keypoint Matches





100



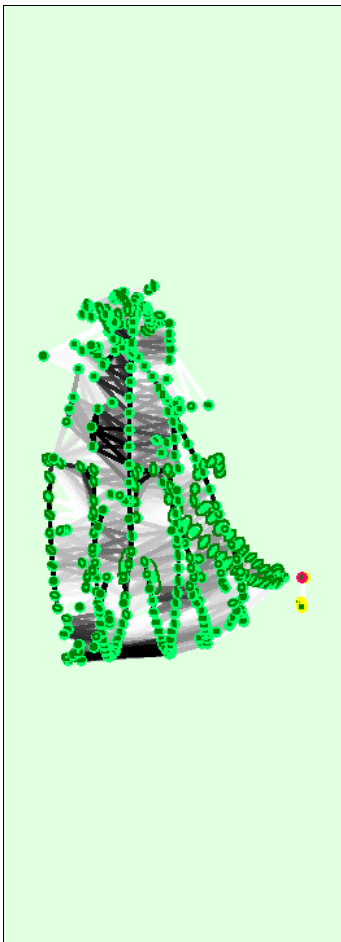


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty 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	0.404	0.540	0.491	0.584	0.148	0.711
Sigma	0.198	0.241	0.251	7.391	0.299	9.933

Geolocation Details



Absolute Geolocation Variance



Mn Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-0.05	7.14	0.00	35.71
-0.05	-0.04	7.14	0.00	0.00
-0.04	-0.03	0.00	0.00	0.00
-0.03	-0.02	0.00	0.00	7.14
-0.02	-0.01	14.29	28.57	7.14
-0.01	0.00	14.29	28.57	0.00
0.00	0.01	21.43	21.43	7.14
0.01	0.02	14.29	0.00	0.00
0.02	0.03	7.14	21.43	7.14

0.03	0.04	7.14	0.00	0.00
0.04	0.05	7.14	0.00	0.00
0.05	-	0.00	0.00	35.71
Mean [m]		-0.002792	0.000723	0.014348
Sigma [m]		0.032884	0.012939	0.223364
RMS Error [m]		0.033002	0.012959	0.223825

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]	35.71	64.29	28.57
[-2.00, 2.00]	71.43	92.86	35.71
[-3.00, 3.00]	78.57	100.00	57.14
Mean of Geolocation Accuracy [m]	0.011904	0.011904	0.029039
Sigma of Geolocation Accuracy [m]	0.000456	0.000456	0.001187

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

Geolocation Orientational Variance	RMS [degree]
Omega	58.591
Phi	51.914
Kappa	44.126

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) i9-10885H CPU @2.40GHz RAM: 64GB GPU: Intel(R) UHD Graphics (Driver: 27.20.100.9664), NVIDIA GeForce RTX2060 with Max-Q Design (Driver: 31.0.15.2737), Virtual MonitorX (Driver: 17.10.42.834)
Operating System	Windows 10 Home, 64-bit

Coordinate Systems

Image Coordinate System	WGS 84
Output Coordinate System	WGS 84 / UTMzone 42N

Processing Options

Detected Template	3D Maps
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Aerial Grid or Corridor
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