Quality Report



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Generated with Pix4Dmapper Pro version 3.1.23

Important: Click on the different icons for:
Help to analyze the results in the Quality Report
Additional information about the sections

Summary

Project	flight4
Processed	2021-03-01 14:17:54
Camera Model Name(s)	ILCE-5100_0.0_6000x4000 (RGB)
Average Ground Sampling Distance (GSD)	5.37 cm / 2.11 in
Area Covered	3.1798 km ² / 317.985 ha / 1.2284 sq. mi. / 786.164 acres
Time for Initial Processing (without report)	21m:45s

Quality Check

Images	median of 10057 keypoints per image	0
② Dataset	536 out of 542 images calibrated (98%), all images enabled	0
Camera Optimization	60.24% relative difference between initial and optimized internal camera parameters	▲
Matching	median of 2135.12 matches per calibrated image	0
Georeferencing	yes, no 3D GCP	Δ

? Preview

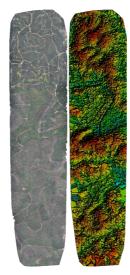


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details

Number of Calibrated Images
Number of Geolocated Images

536 out of 542 542 out of 542

Initial Image Positions

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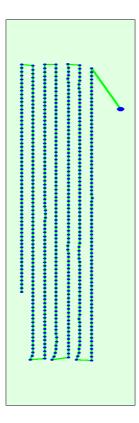
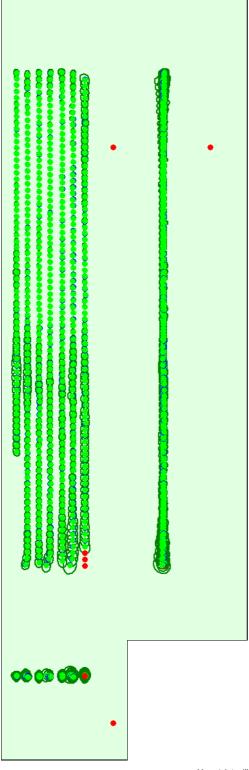


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Ocmputed 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.

Operation and orientation uncertainties

	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	1.900	2.328	2.629	0.413	0.496	0.135
Sigma	0.664	0.886	0.741	0.146	0.087	0.066

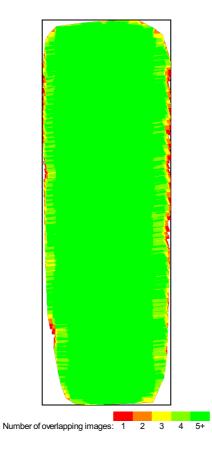


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

Bundle Block Adjustment Details

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Number of 2D Keypoint Observations for Bundle Block Adjustment	1081221
Number of 3D Points for Bundle Block Adjustment	449597
Mean Reprojection Error [pixels]	0.114

Internal Camera Parameters

⊖ ILCE-5100_0.0_6000x4000 (RGB). Sensor Dimensions: 23.520 [mm] x 15.680 [mm]

EXIF ID: ILCE-5100_0.0_6000x4000

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3966.199 [pixel] 15.547 [mm]	3000.000 [pixel] 11.760 [mm]	2000.000 [pixel] 7.840 [mm]	-0.048	0.037	-0.011	-0.000	-0.001
Optimized Values	6355.739 [pixel] 24.914 [mm]	3019.765 [pixel] 11.837 [mm]	1964.971 [pixel] 7.703 [mm]	-0.124	0.077	0.164	0.001	0.000
Uncertainties (Sigma)	37.696 [pixel] 0.148 [mm]	4.788 [pixel] 0.019 [mm]	4.487 [pixel] 0.018 [mm]	0.004	0.029	0.061	0.000	0.000

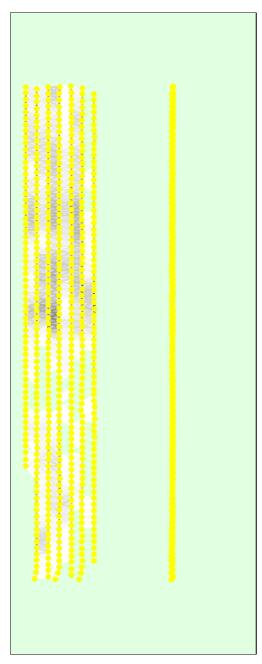
The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to the see the average direction and magnitude of the reprojection error for each pixel. Note that the vectors are scaled for better visualization.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	10057	2135
Min	7466	242
Max	12612	4078
Mean	10029	2017

	Number of 3D Points Observed
In 2 Images	337891
In 3 Images	73657
In 4 Images	23363
In 5 Images	7617
In 6 Images	2918
In 7 Images	1688
In 8 Images	998
In 9 Images	568
In 10 Images	325
In 11 Images	194
In 12 Images	127
In 13 Images	90
In 14 Images	79
In 15 Images	33
In 16 Images	18
In 17 Images	18
In 18 Images	11
In 20 Images	2

2D Keypoint Matches



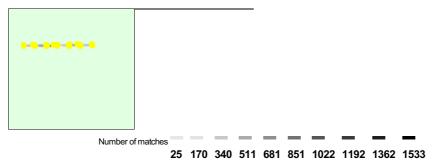


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Geolocation Details

② 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	0.00	0.00	0.00
-6.00	-3.00	0.19	1.68	0.00
-3.00	0.00	50.75	50.56	56.34
0.00	3.00	48.32	44.78	43.66
3.00	6.00	0.75	2.99	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]		-0.000000	-0.000000	0.000000
Sigma [m]		1.030825	1.452467	0.893099
RMS Error [m]		1.030825	1.452467	0.893099

Min Error and Max Error represent geolocation error intervalsbetween -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.

Initial Processing Details

System Information

Hardware	CPU: Intel(R) Core(TM) i7-4700MQ CPU @ 2.40GHz RAM: 16GB GPU: Intel(R) HD Graphics 4600 (Driver: 20.19.15.4835)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems

Image Coordinate System	WGS84 (egm96)
Output Coordinate System	WGS84 / UTMzone 50N (egm96)

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0

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0

Detected Template	No Template Available
Keypoints Image Scale	Custom, Image Scale: 0.25
Advanced: Matching Image Pairs	Aerial Grid or Corridor
Advanced: Matching Strategy	Use Geometrically Verified Matching: yes
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Automatic
Advanced: Calibration	Calibration Method: Standard Internal Parameters Optimization: All External Parameters Optimization: All Rematch: Auto, no Bundle Adjustment: Classic