

Quality Report



Generated with PIX4Dmapper version 4.10.0



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	Johnville_Nord
Processed	2025-09-13 20:19:57
Camera Model Name(s)	RedEdge-P_5.5_1456x1088 (Blue), RedEdge-P_5.5_1456x1088 (Green), RedEdge-P_5.5_1456x1088 (Red), RedEdge-P_5.5_1456x1088 (NIR), RedEdge-P_5.5_1456x1088 (Red edge), RedEdge-P_10.4_2464x2056 (Panchro), RedEdge-P_5.5_1456x1088 (Blue-444), RedEdge-P_5.5_1456x1088 (Green-531), RedEdge-P_5.5_1456x1088 (Red edge-740), RedEdge-P_5.5_1456x1088 (Red-650), RedEdge-P_5.5_1456x1088 (Red edge-705)
Rig name(s)	«RedEdge-P»
Average Ground Sampling Distance (GSD)	5.87 cm / 2.31 in
Area Covered	0.362 km ² / 36.1952 ha / 0.14 sq. mi. / 89.4865 acres
Time for Initial Processing (without report)	03h:00m:18s

Quality Check



	Images	median of 8797 keypoints per image	
	Dataset	15057 out of 16962 images calibrated (88%), 22 images disabled, 3 blocks	
	Camera Optimization	0.45% relative difference between initial and optimized internal camera parameters	
	Matching	median of 2373.1 matches per calibrated image	
	Georeferencing	yes, 4 GCPs (4 3D), mean RMS error = 0.013 m	

Preview



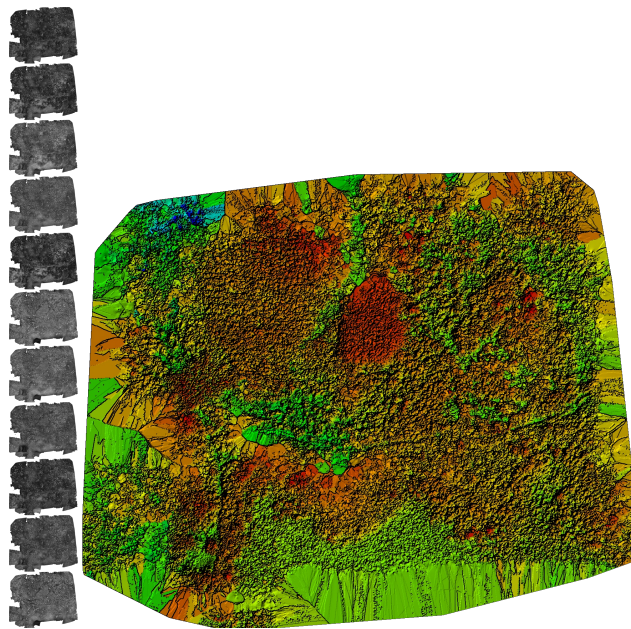


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	15057 out of 16984
Number of Geolocated Images	16984 out of 16984

? Initial Image Positions

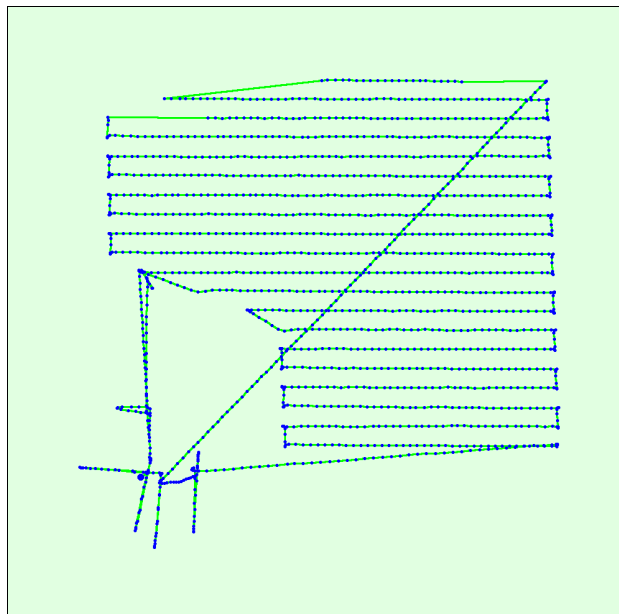
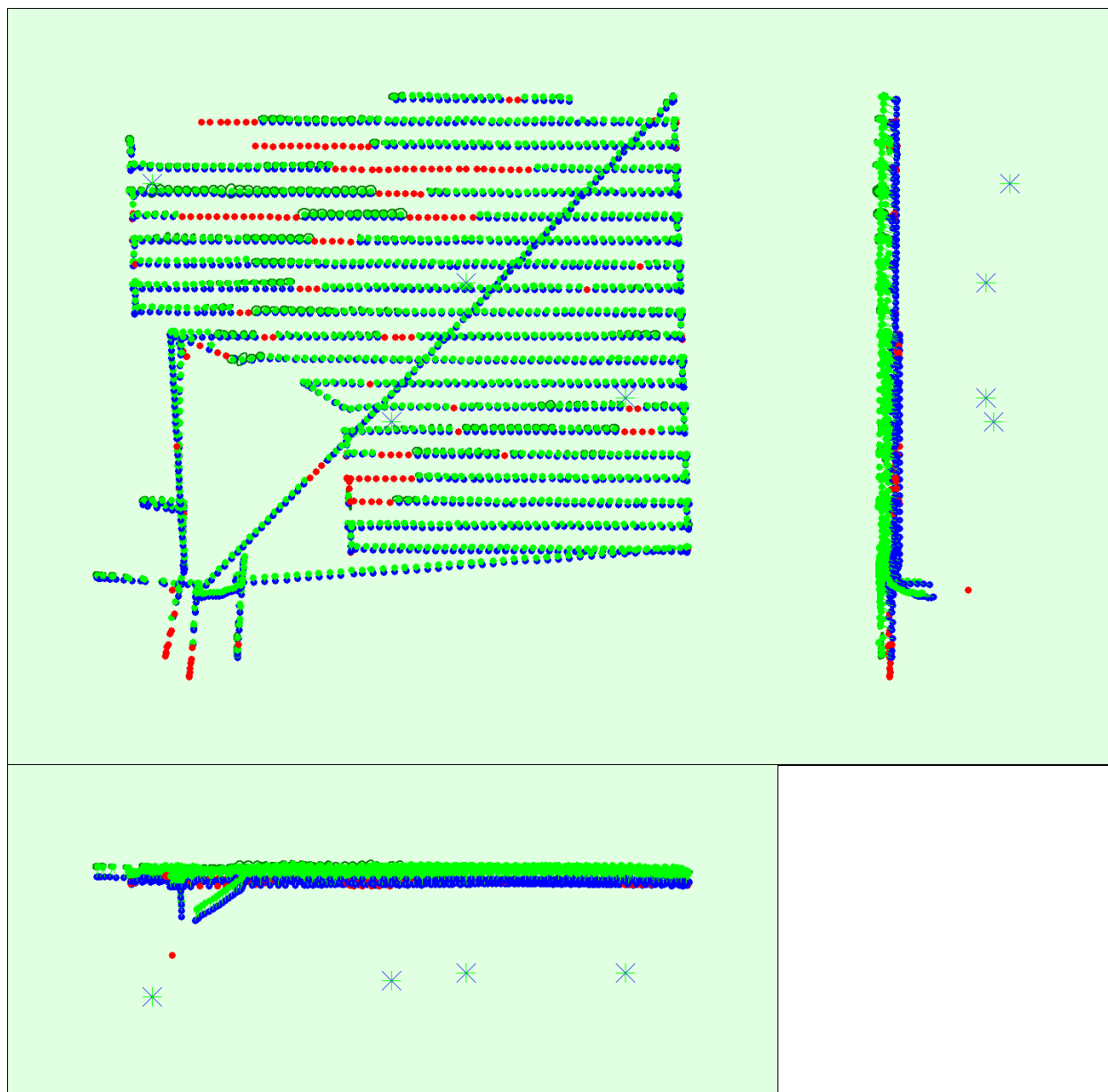


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

? 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



	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.159	0.158	0.140	0.107	0.097	0.058
Sigma	0.073	0.068	0.066	0.153	0.063	0.082

? Overlap



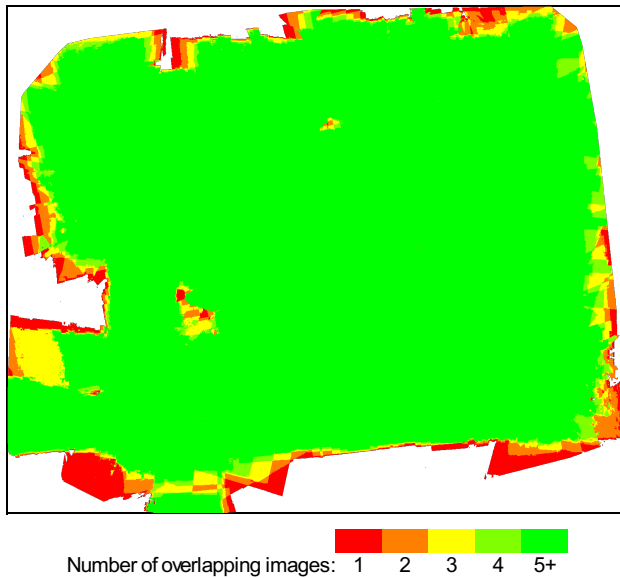


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint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

Bundle Block Adjustment Details

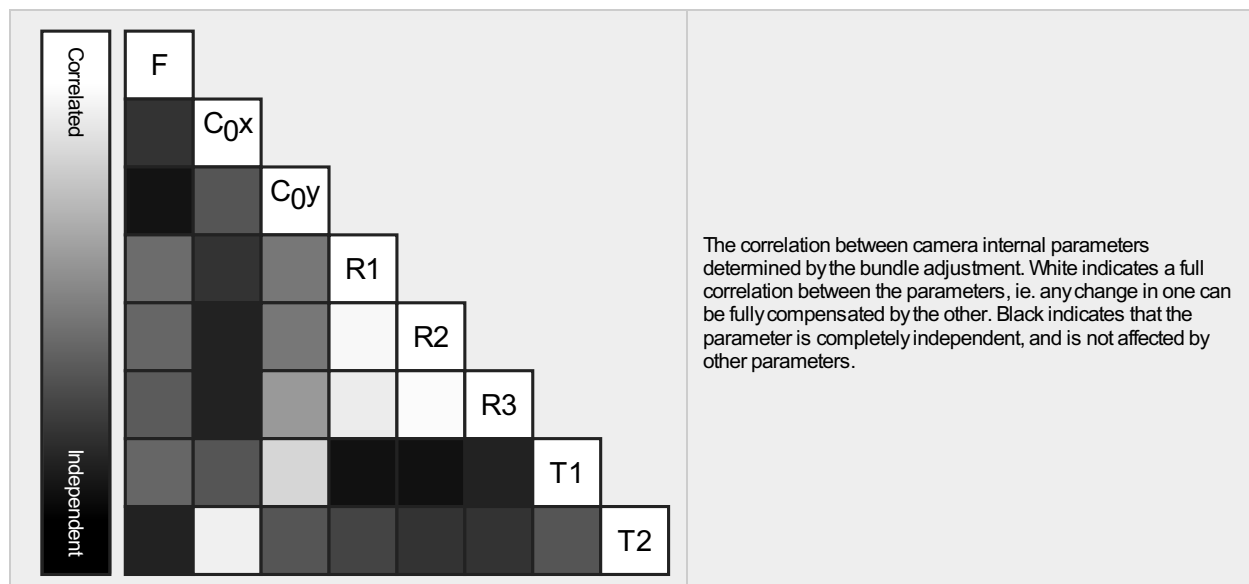
Number of 2D Keypoint Observations for Bundle Block Adjustment	7108440
Number of 3D Points for Bundle Block Adjustment	2467799
Mean Reprojection Error [pixels]	0.204

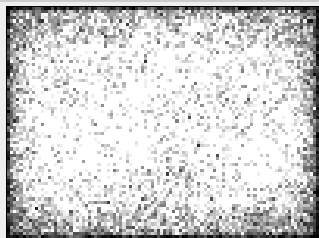
? Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Blue). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]

EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	733.052 [pixel] 2.529 [mm]	486.901 [pixel] 1.680 [mm]	-0.102	0.147	-0.050	-0.002	0.002
Optimized Values	1571.394 [pixel] 5.421 [mm]	720.587 [pixel] 2.486 [mm]	502.940 [pixel] 1.735 [mm]	-0.095	0.146	-0.041	-0.000	0.000
Uncertainties (Sigma)	0.576 [pixel] 0.002 [mm]	0.693 [pixel] 0.002 [mm]	0.524 [pixel] 0.002 [mm]	0.004	0.026	0.052	0.000	0.000





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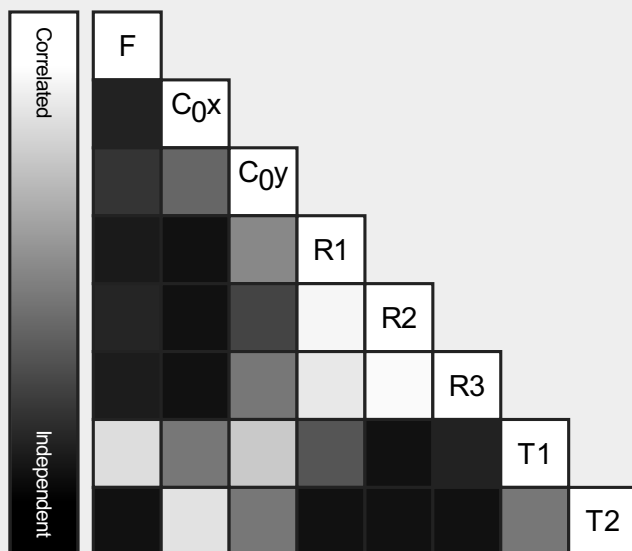
Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Green). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]

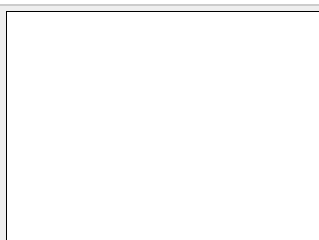


EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	728.272 [pixel] 2.513 [mm]	491.255 [pixel] 1.695 [mm]	-0.101	0.138	-0.046	-0.002	0.002
Optimized Values	1575.182 [pixel] 5.434 [mm]	714.750 [pixel] 2.466 [mm]	507.878 [pixel] 1.752 [mm]	-0.095	0.138	-0.030	0.001	0.000
Uncertainties (Sigma)	0.518 [pixel] 0.002 [mm]	0.283 [pixel] 0.001 [mm]	0.244 [pixel] 0.001 [mm]	0.001	0.008	0.016	0.000	0.000



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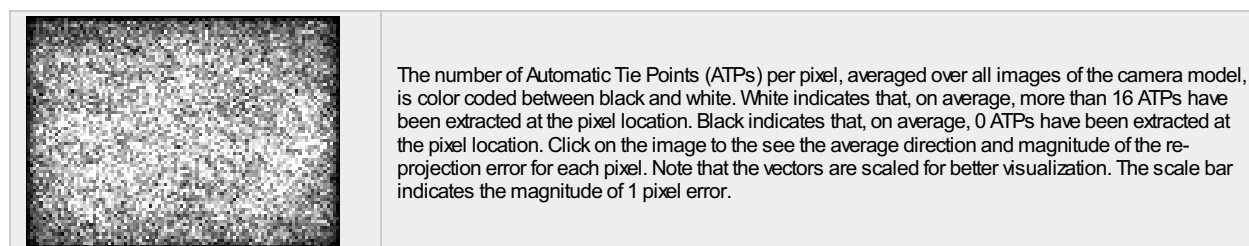
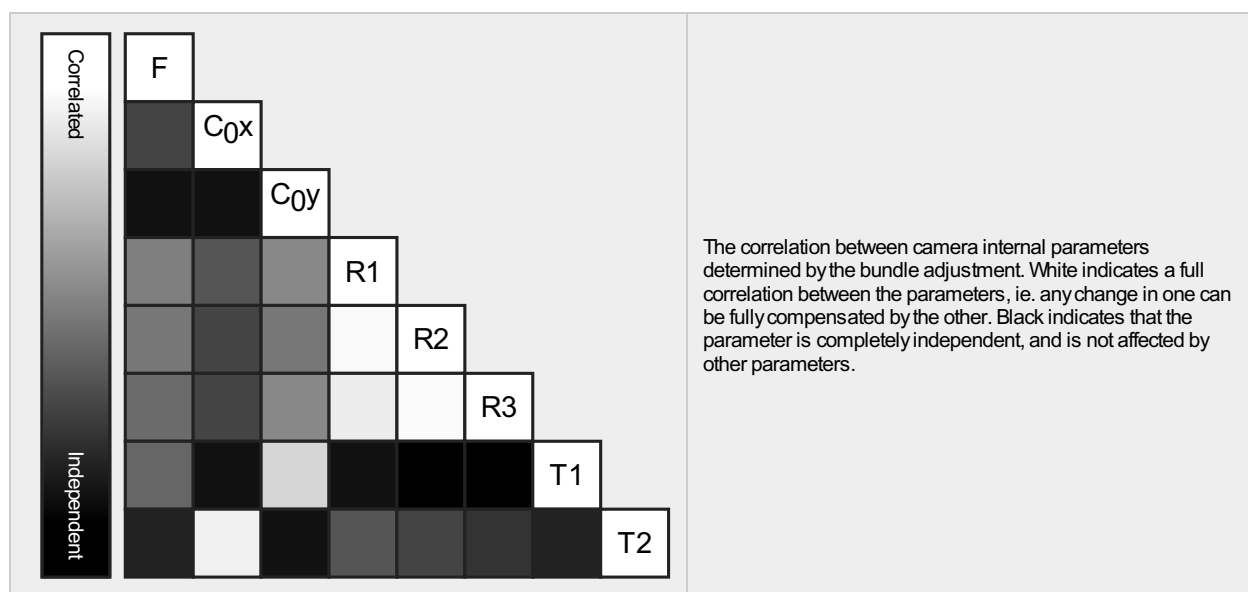
Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Red). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	742.023 [pixel] 2.560 [mm]	495.400 [pixel] 1.709 [mm]	-0.103	0.143	-0.047	-0.002	0.002
Optimized Values	1574.992 [pixel] 5.434 [mm]	731.223 [pixel] 2.523 [mm]	511.772 [pixel] 1.766 [mm]	-0.103	0.184	-0.121	0.001	0.000
Uncertainties (Sigma)	0.608 [pixel] 0.002 [mm]	0.844 [pixel] 0.003 [mm]	0.633 [pixel] 0.002 [mm]	0.005	0.033	0.067	0.000	0.000



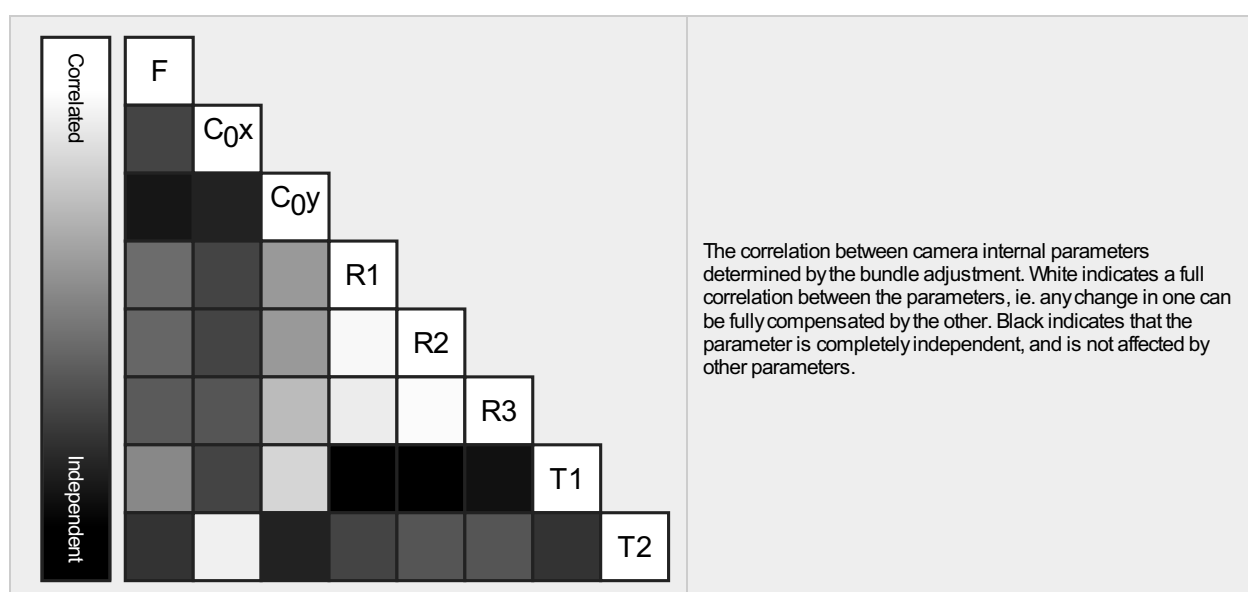
Internal Camera Parameters

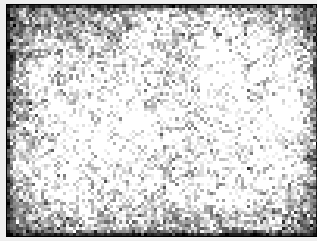
RedEdge-P_5.5_1456x1088 (NIR). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	738.125 [pixel] 2.547 [mm]	476.429 [pixel] 1.644 [mm]	-0.109	0.164	-0.083	-0.002	0.002
Optimized Values	1581.014 [pixel] 5.454 [mm]	725.854 [pixel] 2.504 [mm]	492.698 [pixel] 1.700 [mm]	-0.100	0.149	-0.047	0.000	-0.000
Uncertainties (Sigma)	0.579 [pixel] 0.002 [mm]	0.714 [pixel] 0.002 [mm]	0.547 [pixel] 0.002 [mm]	0.004	0.027	0.054	0.000	0.000





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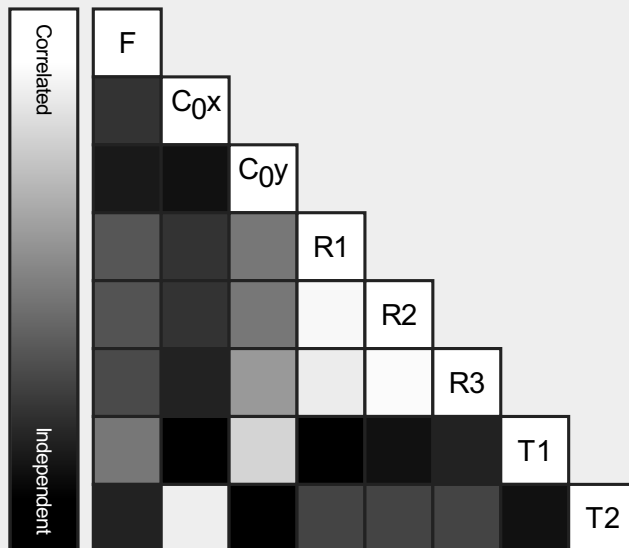
Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Red edge). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]

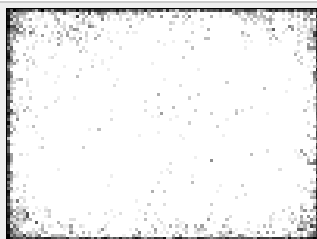


EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	749.017 [pixel] 2.584 [mm]	477.962 [pixel] 1.649 [mm]	-0.102	0.141	-0.049	-0.002	0.002
Optimized Values	1574.287 [pixel] 5.431 [mm]	735.508 [pixel] 2.538 [mm]	494.581 [pixel] 1.706 [mm]	-0.096	0.141	-0.039	-0.000	-0.000
Uncertainties (Sigma)	0.552 [pixel] 0.002 [mm]	0.560 [pixel] 0.002 [mm]	0.436 [pixel] 0.002 [mm]	0.003	0.020	0.041	0.000	0.000



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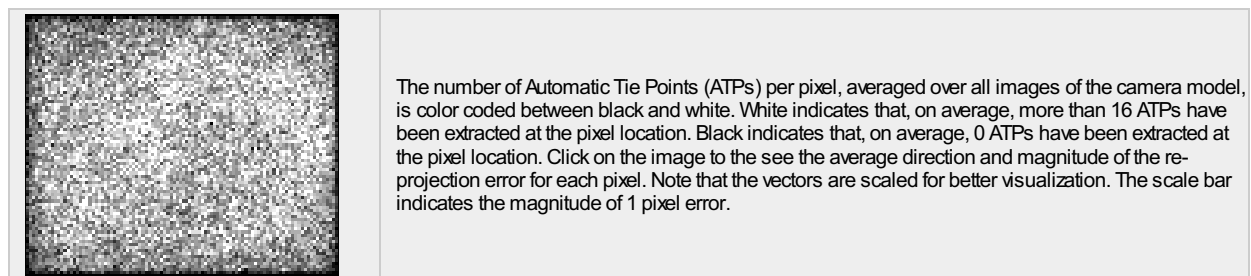
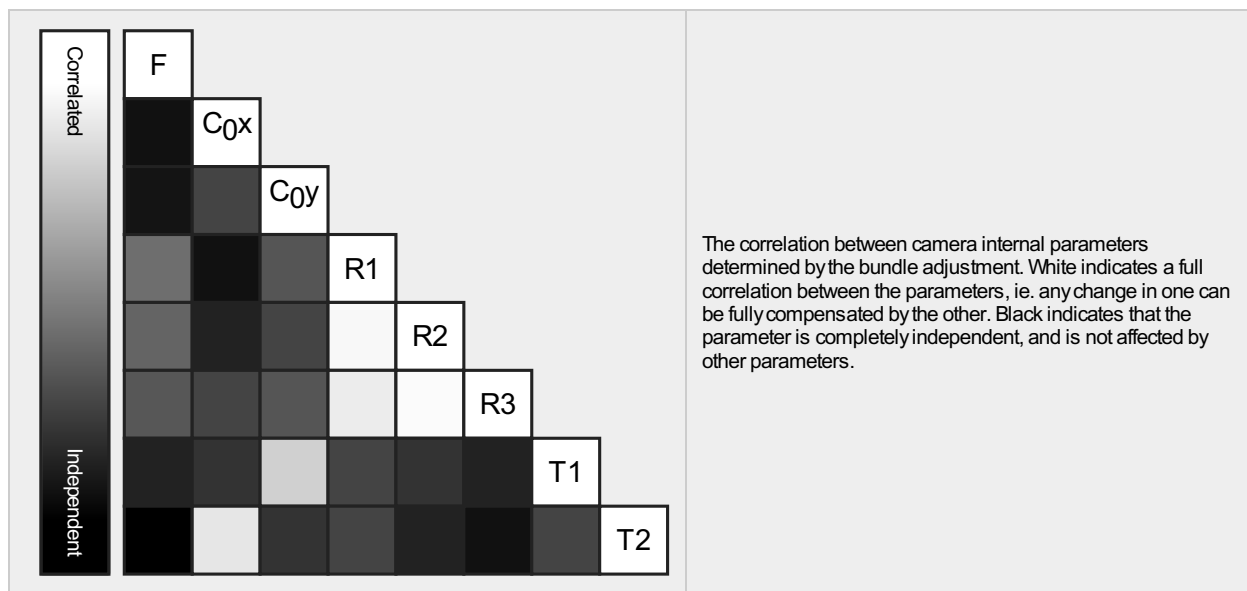
Internal Camera Parameters

RedEdge-P_10.4_2464x2056 (Panchro). Sensor Dimensions: 8.501 [mm] x 7.093 [mm]



EXIF ID: RedEdge-P_10.4_2464x2056

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	2946.210 [pixel] 10.164 [mm]	1268.446 [pixel] 4.376 [mm]	992.562 [pixel] 3.424 [mm]	-0.172	0.131	0.321	-0.001	0.003
Optimized Values	2971.477 [pixel] 10.252 [mm]	1245.393 [pixel] 4.297 [mm]	1022.925 [pixel] 3.529 [mm]	-0.169	0.140	0.332	0.001	0.001
Uncertainties (Sigma)	1.086 [pixel] 0.004 [mm]	1.260 [pixel] 0.004 [mm]	1.054 [pixel] 0.004 [mm]	0.004	0.033	0.075	0.000	0.000



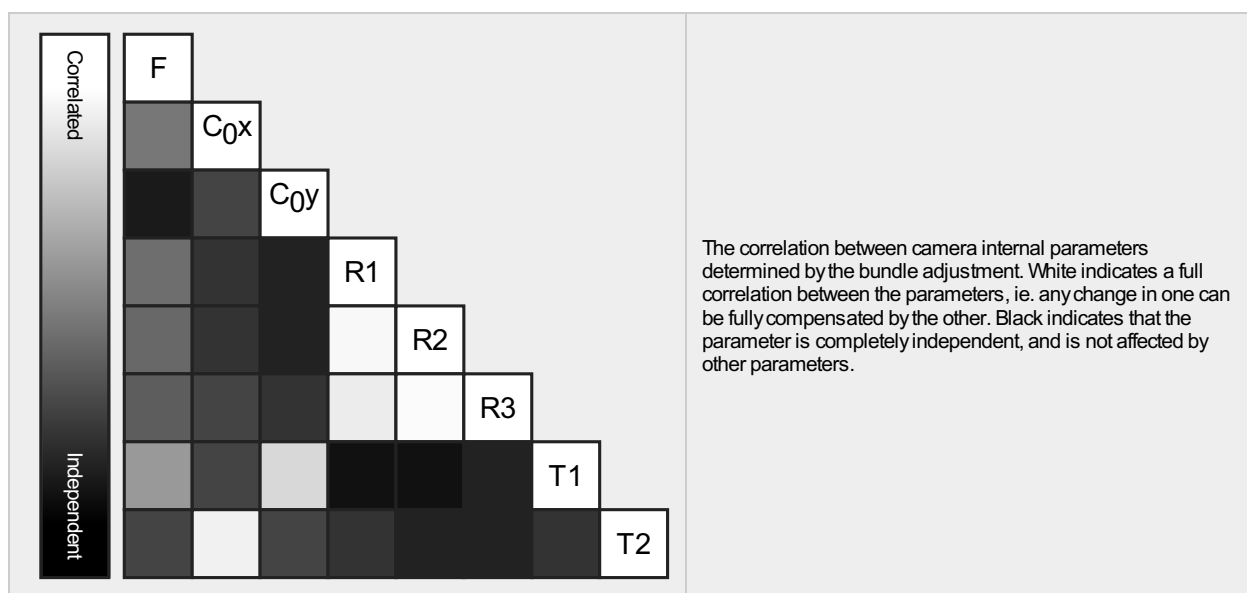
Internal Camera Parameters

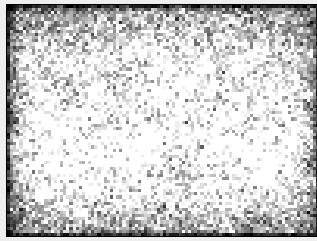
RedEdge-P_5.5_1456x1088 (Blue-444). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	701.206 [pixel] 2.419 [mm]	525.301 [pixel] 1.812 [mm]	-0.092	0.167	-0.095	-0.002	-0.001
Optimized Values	1576.973 [pixel] 5.441 [mm]	706.549 [pixel] 2.438 [mm]	543.374 [pixel] 1.875 [mm]	-0.087	0.154	-0.070	-0.000	-0.001
Uncertainties (Sigma)	0.580 [pixel] 0.002 [mm]	0.712 [pixel] 0.002 [mm]	0.535 [pixel] 0.002 [mm]	0.004	0.027	0.055	0.000	0.000





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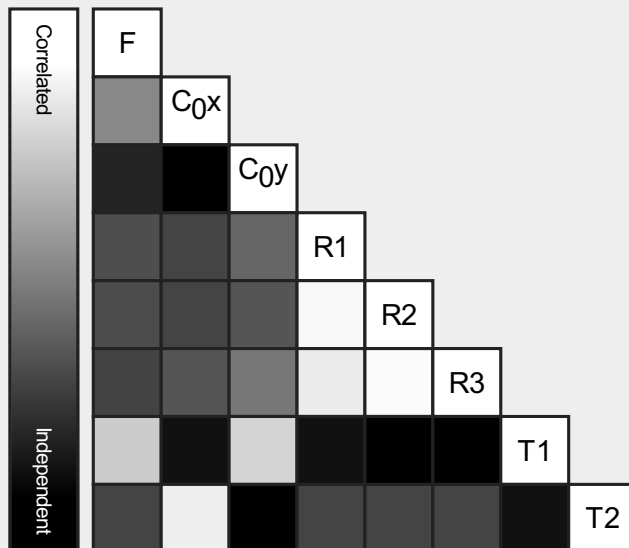
Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Green-531). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	707.551 [pixel] 2.441 [mm]	490.484 [pixel] 1.692 [mm]	-0.095	0.127	-0.022	-0.001	-0.001
Optimized Values	1569.299 [pixel] 5.414 [mm]	712.032 [pixel] 2.457 [mm]	507.215 [pixel] 1.750 [mm]	-0.094	0.137	-0.027	0.001	-0.000
Uncertainties (Sigma)	0.542 [pixel] 0.002 [mm]	0.515 [pixel] 0.002 [mm]	0.401 [pixel] 0.001 [mm]	0.003	0.019	0.038	0.000	0.000



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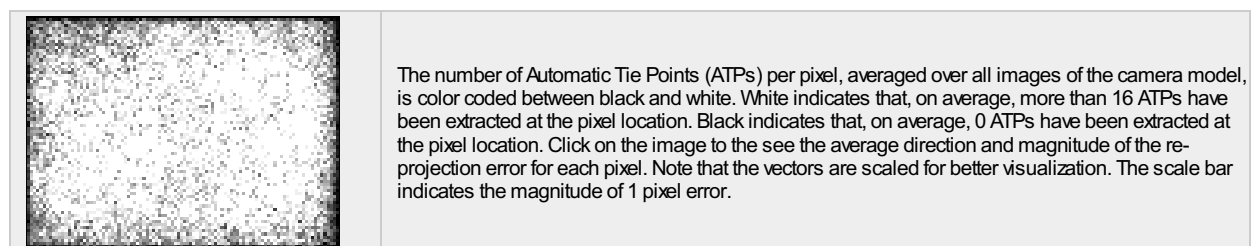
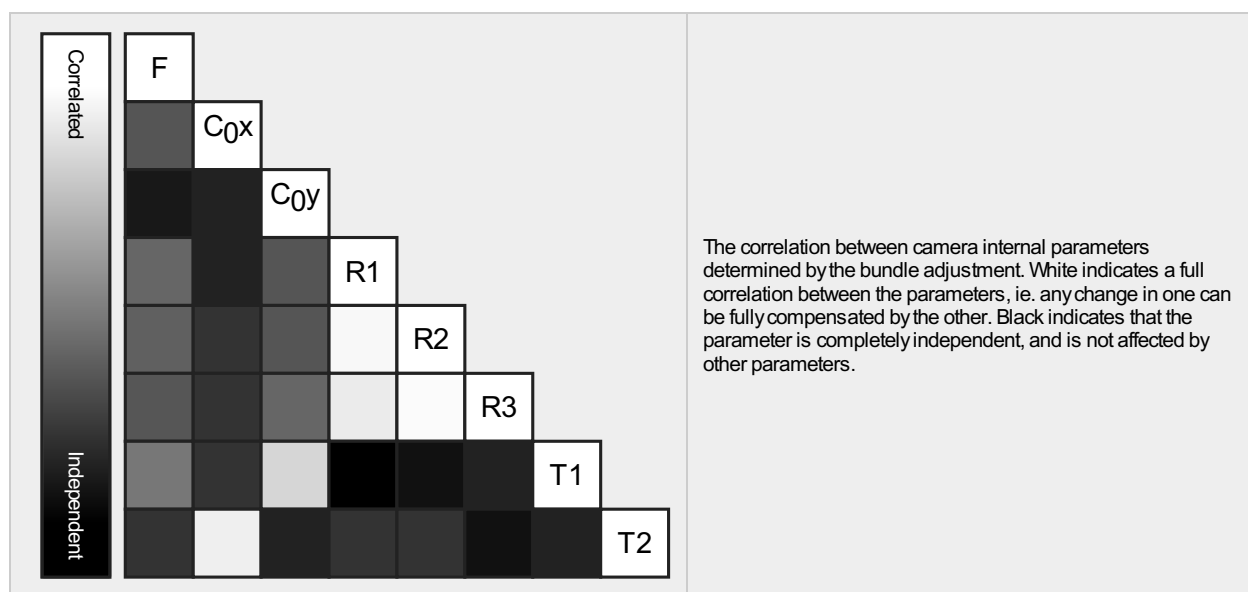
Internal Camera Parameters

RedEdge-P_5.5_1456x1088 (Red edge-740). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	691.252 [pixel] 2.385 [mm]	522.336 [pixel] 1.802 [mm]	-0.090	0.119	-0.019	-0.002	-0.000
Optimized Values	1582.609 [pixel] 5.460 [mm]	691.569 [pixel] 2.386 [mm]	514.065 [pixel] 1.774 [mm]	-0.105	0.182	-0.113	0.000	-0.000
Uncertainties (Sigma)	0.571 [pixel] 0.002 [mm]	0.670 [pixel] 0.002 [mm]	0.516 [pixel] 0.002 [mm]	0.004	0.024	0.049	0.000	0.000



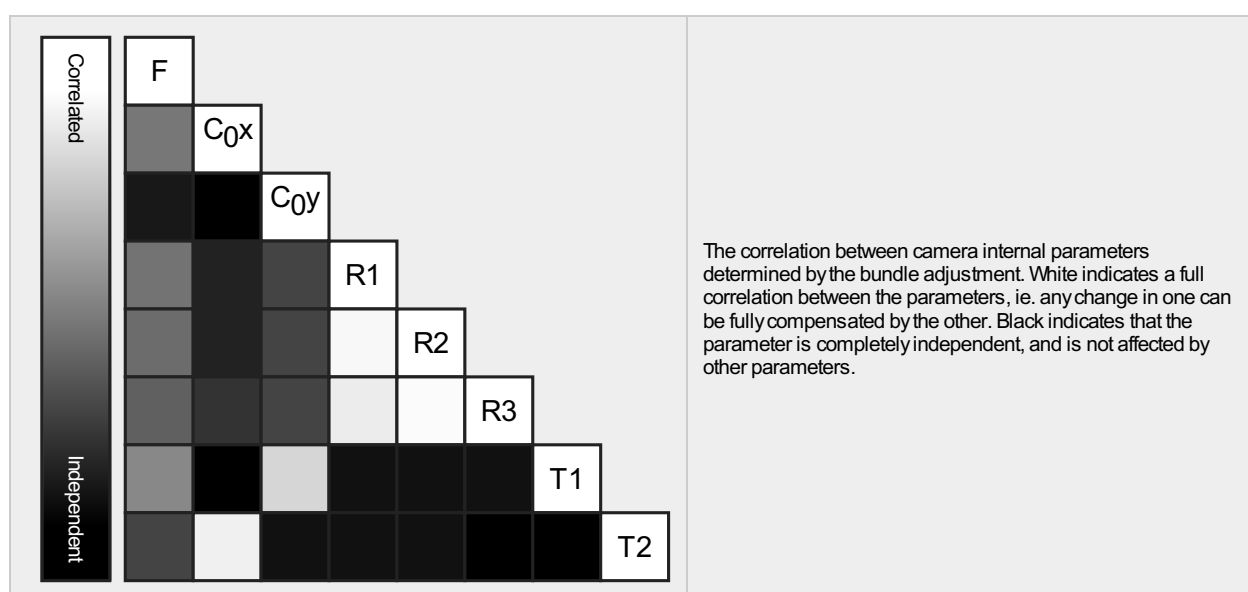
Internal Camera Parameters

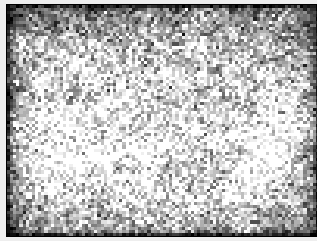
RedEdge-P_5.5_1456x1088 (Red-650). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]



EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	686.838 [pixel] 2.370 [mm]	495.319 [pixel] 1.709 [mm]	-0.102	0.155	-0.073	-0.002	-0.001
Optimized Values	1575.942 [pixel] 5.437 [mm]	712.288 [pixel] 2.457 [mm]	522.705 [pixel] 1.803 [mm]	-0.103	0.185	-0.122	0.000	-0.001
Uncertainties (Sigma)	0.586 [pixel] 0.002 [mm]	0.740 [pixel] 0.003 [mm]	0.559 [pixel] 0.002 [mm]	0.004	0.028	0.058	0.000	0.000





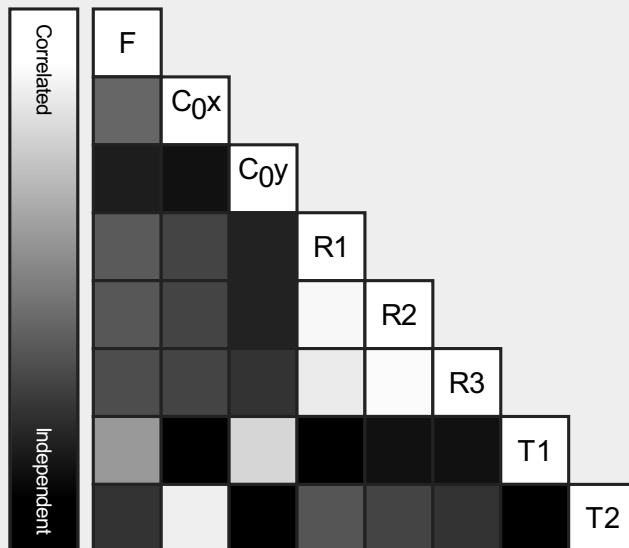
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Internal Camera Parameters

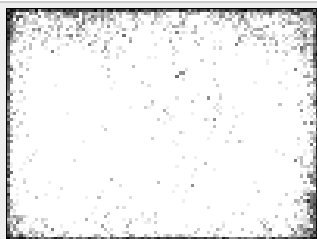
RedEdge-P_5.5_1456x1088 (Red edge-705). Sensor Dimensions: 5.023 [mm] x 3.754 [mm]

EXIF ID: RedEdge-P_5.5_1456x1088

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	1569.410 [pixel] 5.414 [mm]	708.310 [pixel] 2.444 [mm]	504.658 [pixel] 1.741 [mm]	-0.098	0.137	-0.046	-0.002	-0.001
Optimized Values	1577.025 [pixel] 5.441 [mm]	695.896 [pixel] 2.401 [mm]	539.523 [pixel] 1.861 [mm]	-0.090	0.127	-0.022	0.000	0.000
Uncertainties (Sigma)	0.557 [pixel] 0.002 [mm]	0.591 [pixel] 0.002 [mm]	0.452 [pixel] 0.002 [mm]	0.003	0.023	0.047	0.000	0.000



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Camera Rig «RedEdge-P» Relatives. Images: 16962

	Transl X[m]	Transl Y[m]	Transl Z[m]	Rot X[degree]	Rot Y[degree]	Rot Z[degree]
RedEdge-P_5.5_1456x1088 (Green)	Reference Camera					
RedEdge-P_5.5_1456x1088 (Blue)						
Initial Values	0.048	0.000	0.000	0.434	-0.081	-0.019
Optimized values	0.048	0.000	0.000	0.513	-0.185	-0.032
Uncertainties (sigma)				0.019	0.025	0.002
RedEdge-P_5.5_1456x1088 (Red)						
Initial Values	0.000	0.019	0.000	-0.179	-0.124	-0.026
Optimized values	0.000	0.019	0.000	-0.051	-0.078	-0.029
Uncertainties (sigma)				0.023	0.031	0.002
RedEdge-P_5.5_1456x1088 (NIR)						

Initial Values	0.024	-0.007	0.000	-0.085	-0.103	0.002
Optimized values	0.024	-0.006	0.000	-0.029	-0.157	-0.002
Uncertainties (sigma)				0.020	0.026	0.002
RedEdge-P_5.5_1456x1088 (Red edge)						
Initial Values	0.048	0.019	0.000	0.407	0.096	0.019
Optimized values	0.048	0.019	0.000	0.505	-0.048	0.006
Uncertainties (sigma)				0.015	0.020	0.001
RedEdge-P_10.4_2464x2056 (Panchro)						
Initial Values	0.024	0.017	0.000	0.129	0.002	0.019
Optimized values	0.024	0.017	0.000	0.244	-0.037	0.010
Uncertainties (sigma)				0.020	0.025	0.002
RedEdge-P_5.5_1456x1088 (Blue-444)						
Initial Values	0.048	0.070	0.000	0.006	-0.166	-0.030
Optimized values	0.048	0.070	0.000	-0.275	-0.738	-0.110
Uncertainties (sigma)				0.019	0.026	0.002
RedEdge-P_5.5_1456x1088 (Green-531)						
Initial Values	0.000	0.070	0.000	0.000	0.000	0.000
Optimized values	0.000	0.070	0.000	-0.236	-0.521	-0.071
Uncertainties (sigma)				0.014	0.018	0.001
RedEdge-P_5.5_1456x1088 (Red edge-740)						
Initial Values	0.000	0.088	0.000	0.465	0.171	0.074
Optimized values	0.000	0.088	0.000	0.099	-0.342	-0.179
Uncertainties (sigma)				0.018	0.024	0.002
RedEdge-P_5.5_1456x1088 (Red-650)						
Initial Values	0.024	0.063	0.000	0.367	0.191	-0.115
Optimized values	0.024	0.063	0.000	-0.185	-0.689	-0.035
Uncertainties (sigma)				0.020	0.027	0.002
RedEdge-P_5.5_1456x1088 (Red edge-705)						
Initial Values	0.048	0.088	0.000	0.101	-0.104	0.038
Optimized values	0.048	0.088	0.000	0.222	-0.426	0.003
Uncertainties (sigma)				0.016	0.021	0.001

? 2D Keypoints Table



	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	8797	2373
Mn	6356	9
Max	10000	7929
Mean	8818	2567

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Blue)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	7800	1722
Mn	6356	26
Max	9857	5521
Mean	7938	1929

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Green)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	8381	2707
Mn	6695	250
Max	10000	7929
Mean	8508	2930

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Red)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	8922	1812

Mn	6669	9
Max	10000	6303
Mean	8923	1970

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (NIR)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9651	2423
Mn	8232	23
Max	10000	6968
Mean	9570	2634

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Red edge)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9520	2292
Mn	7038	107
Max	10000	6146
Mean	9360	2455

2D Keypoints Table for Camera RedEdge-P_10.4_2464x2056 (Panchro)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	10000	1411
Mn	9640	35
Max	10000	7460
Mean	9997	1680

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Blue-444)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	8421	1746
Mn	6652	9
Max	10000	4665
Mean	8503	1967

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Green-531)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9271	2392
Mn	6967	140
Max	10000	6304
Mean	9069	2585

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Red edge-740)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9511	2310
Mn	7810	47
Max	10000	5682
Mean	9428	2509

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Red-650)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	8852	1854
Mn	6896	9
Max	10000	6228
Mean	8858	2014

2D Keypoints Table for Camera RedEdge-P_5.5_1456x1088 (Red edge-705)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9760	2169
Mn	7283	65
Max	10000	6642
Mean	9556	2386

Median / 75% / Maximal Number of Matches Between Camera Models

	RedEdge-P_5.5_... (Blue)	RedEdge-P_5.5... (Green)	RedEdge-P_5.5_1... (Red)	RedEdge-P_5.5_1... (NIR)	RedEdge-P_... (Red edge)	RedEdge-P_1... (Panchro)	RedEdge-P_... (Blue-444)	RedEdge-P... (Green-531)	RedEdge... (Red edge-740)	RedEdge-P_5... (Red-650)	RedEdge (Red edge-705)
RedEdge-P_5.5_1456x1088 (Blue)	87 / 908 / 3318	10 / 54 / 1525	25 / 83 / 821	13 / 43 / 646	31 / 100 / 1147	16 / 48 / 461	61 / 182 / 2597	51 / 142 / 1520	18 / 55 / 697	33 / 101 / 1885	32 / 105 / 1351
RedEdge-P_5.5_1456x1088 (Green)		36 / 181 / 6035	7 / 36 / 856	9 / 40 / 1694	16 / 80 / 3222	12 / 59 / 1229	9 / 49 / 1435	24 / 157 / 4003	11 / 48 / 1913	8 / 47 / 1410	15 / 77 / 3528
RedEdge-P_5.5_1456x1088 (Red)			71 / 928 / 4532	8 / 35 / 299	18 / 67 / 714	10 / 39 / 249	22 / 76 / 1190	28 / 88 / 870	10 / 36 / 345	42 / 124 / 1807	23 / 77 / 895
RedEdge-P_5.5_1456x1088 (NIR)				83 / 1327 / 4544	43 / 143 / 1822	21 / 63 / 693	14 / 44 / 585	34 / 108 / 1667	54 / 177 / 3172	13 / 43 / 581	24 / 81 / 1468
RedEdge-P_5.5_1456x1088 (Red edge)					22 / 639 / 4261	44 / 127 / 1139	31 / 92 / 1087	72 / 277 / 2988	49 / 187 / 2033	27 / 89 / 1180	55 / 231 / 2867
RedEdge-P_10.4_2464x2056 (Panchro)						47 / 596 / 5591	15 / 48 / 446	42 / 128 / 1146	24 / 83 / 772	13 / 47 / 414	33 / 106 / 1139
RedEdge-P_5.5_1456x1088 (Blue-444)							47 / 890 / 3270	45 / 132 / 1437	17 / 51 / 658	29 / 93 / 1020	31 / 97 / 1342
RedEdge-P_5.5_1456x1088 (Green-531)								32 / 525 / 4090	38 / 134 / 1854	39 / 112 / 1410	65 / 284 / 3109
RedEdge-P_5.5_1456x1088 (Red edge-740)									42 / 1121 / 4286	15 / 49 / 643	31 / 107 / 1622
RedEdge-P_5.5_1456x1088 (Red-650)										67 / 1005 / 4357	34 / 104 / 1419
RedEdge-P_5.5_1456x1088 (Red edge-705)											21 / 630 / 4300

3D Points from 2D Keypoint Matches



	Number of 3D Points Observed
In 2 Images	1784384
In 3 Images	327341
In 4 Images	151866
In 5 Images	64038
In 6 Images	36828
In 7 Images	22706
In 8 Images	15925
In 9 Images	11612
In 10 Images	8541
In 11 Images	6925
In 12 Images	5368
In 13 Images	4383
In 14 Images	3583
In 15 Images	2966
In 16 Images	2587
In 17 Images	2141
In 18 Images	1793
In 19 Images	1449

In 20 Images	1233
In 21 Images	1068
In 22 Images	861
In 23 Images	723
In 24 Images	575
In 25 Images	543
In 26 Images	471
In 27 Images	412
In 28 Images	346
In 29 Images	303
In 30 Images	292
In 31 Images	278
In 32 Images	266
In 33 Images	233
In 34 Images	217
In 35 Images	221
In 36 Images	193
In 37 Images	172
In 38 Images	182
In 39 Images	177
In 40 Images	154
In 41 Images	160
In 42 Images	159
In 43 Images	142
In 44 Images	114
In 45 Images	129
In 46 Images	117
In 47 Images	132
In 48 Images	120
In 49 Images	120
In 50 Images	135
In 51 Images	106
In 52 Images	130
In 53 Images	116
In 54 Images	121
In 55 Images	106
In 56 Images	91
In 57 Images	99
In 58 Images	116
In 59 Images	115
In 60 Images	100
In 61 Images	114
In 62 Images	114
In 63 Images	103
In 64 Images	90
In 65 Images	93
In 66 Images	85
In 67 Images	100
In 68 Images	88
In 69 Images	94
In 70 Images	89
In 71 Images	88
In 72 Images	75
In 73 Images	60
In 74 Images	78
In 75 Images	56
In 76 Images	61
In 77 Images	54
In 78 Images	50
In 79 Images	44
In 80 Images	47

In 81 Images	44
In 82 Images	39
In 83 Images	34
In 84 Images	26
In 85 Images	24
In 86 Images	26
In 87 Images	19
In 88 Images	30
In 89 Images	25
In 90 Images	15
In 91 Images	19
In 92 Images	12
In 93 Images	13
In 94 Images	16
In 95 Images	6
In 96 Images	10
In 97 Images	10
In 98 Images	6
In 99 Images	11
In 100 Images	4
In 101 Images	5
In 102 Images	3
In 103 Images	3
In 104 Images	4
In 105 Images	2
In 106 Images	2
In 107 Images	4
In 108 Images	2
In 109 Images	2
In 111 Images	1
In 113 Images	2
In 114 Images	2
In 115 Images	3
In 116 Images	1
In 120 Images	1
In 122 Images	2
In 123 Images	1
In 130 Images	1
In 132 Images	2

 **2D Keypoint Matches**



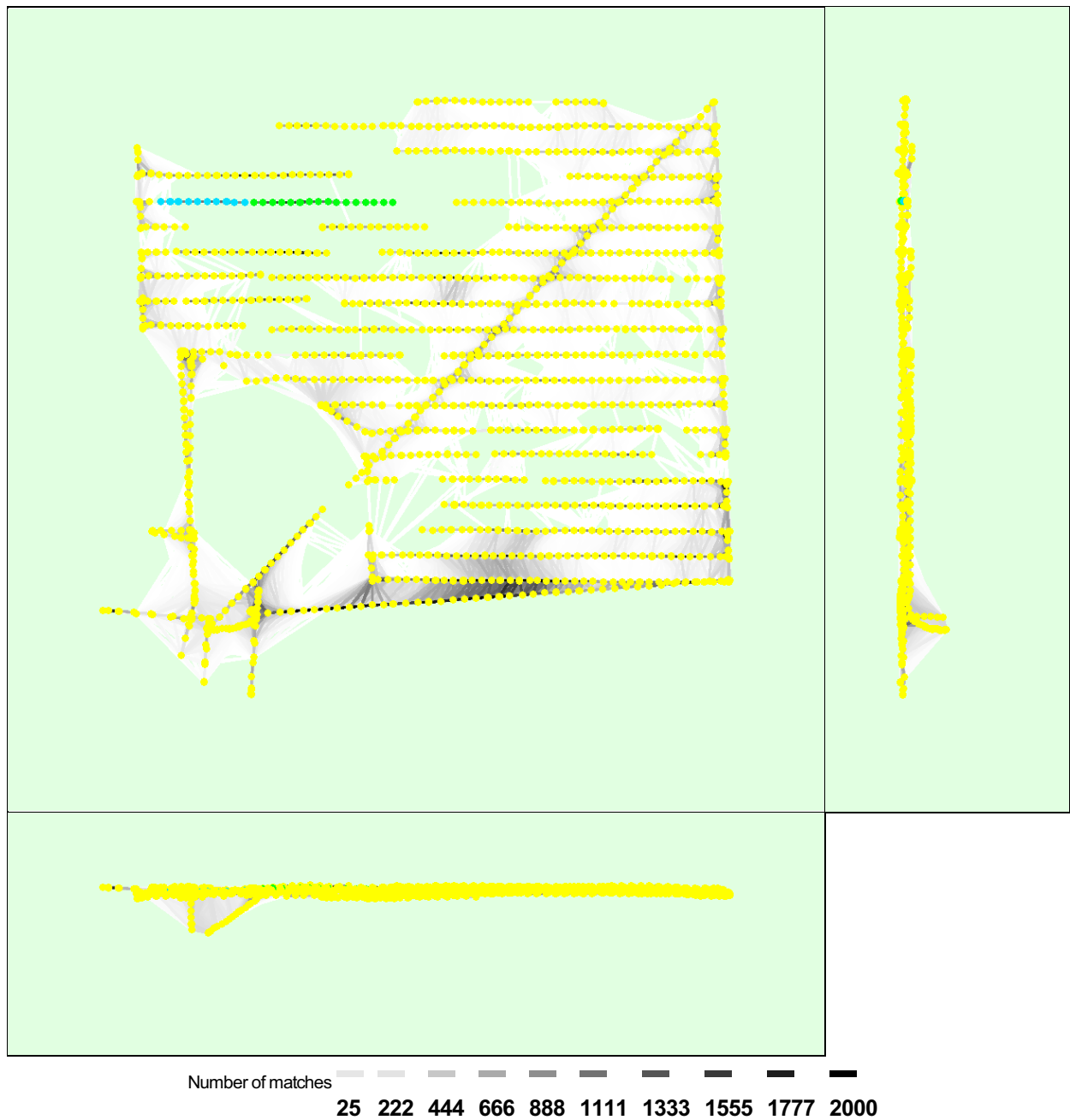


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Geolocation Details

Ground Control Points

GCP Name	Accuracy XYZ [m]	Error X [m]	Error Y [m]	Error Z [m]	Projection Error [pixel]	Verified/Marked
8 (3D)	0.020/ 0.020	-0.004	0.018	-0.025	0.382	72 / 83
1 (3D)	0.020/ 0.020	0.006	-0.004	0.005	0.497	39 / 39
12 (3D)	0.020/ 0.020	0.002	-0.008	0.045	0.424	65 / 65
2 (3D)	0.020/ 0.020	-0.000	-0.005	-0.018	0.317	44 / 66
Mean [m]		0.001024	0.000477	0.001505		
Sigma [m]		0.003603	0.010201	0.027162		
RMS Error [m]		0.003746	0.010212	0.027203		

Localisation accuracy per GCP and mean errors in the three coordinate directions. The last column counts the number of calibrated images where the GCP has been automatically verified v.s. manually marked.

? Absolute Geolocation Variance



Min Error [m]	Max Error [m]	Geolocation Error X[%]	Geolocation Error Y[%]	Geolocation Error Z[%]
-	-3.88	0.07	0.07	1.32
-3.88	-3.10	0.00	0.32	0.80
-3.10	-2.33	0.75	0.60	1.90
-2.33	-1.55	6.98	3.30	8.18
-1.55	-0.78	16.26	10.70	16.77
-0.78	0.00	27.58	36.79	23.25
0.00	0.78	21.53	31.55	20.37
0.78	1.55	13.91	11.82	11.99
1.55	2.33	8.37	3.63	7.94
2.33	3.10	3.91	1.03	3.75
3.10	3.88	0.50	0.18	1.93
3.88	-	0.15	0.00	1.81
Mean [m]		0.090519	-2.788831	-10.499189
Sigma [m]		1.202050	0.897953	1.540527
RMS Error [m]		1.205453	2.929829	10.611607

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.

Geolocation Bias	X	Y	Z
Translation [m]	0.014444	-2.791309	-10.540092

Bias between image initial and computed geolocation given in output coordinate system.

? Relative Geolocation Variance



Relative Geolocation Error	Images X[%]	Images Y[%]	Images Z[%]
[-1.00, 1.00]	56.51	78.96	64.73
[-2.00, 2.00]	86.62	96.49	91.10
[-3.00, 3.00]	97.13	99.27	96.20
Mean of Geolocation Accuracy [m]	0.981351	0.981351	1.301946
Sigma of Geolocation Accuracy [m]	0.228159	0.228159	0.313258

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: AMD Ryzen Threadripper PRO 3995WX 64-Cores RAM: 512GB GPU: unknown graphics card (Driver: unknown)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems



Image Coordinate System	WGS 84 (EGM96 Geoid)
Ground Control Point (GCP) Coordinate System	NAD83(CSRS) / MTM zone 7 (2D)
Output Coordinate System	NAD83(CSRS) / MTM zone 7 (2D)

Processing Options



Detected Template	No Template Available
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Aerial Grid or Corridor
Advanced: Matching Strategy	Use Geometrically Verified Matching: yes
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Custom, Number of Keypoints: 10000
Advanced: Calibration	Calibration Method: Alternative Internal Parameters Optimization: All External Parameters Optimization: All Rematch: Custom, yes
Rig «RedEdge-P» processing	optimize relative rotation using a subset of secondary cameras

Point Cloud Densification details



Processing Options



Image Scale	multiscale, 1/2 (Half image size, Default)
Point Density	Low (Fast)
Minimum Number of Matches	3
3D Textured Mesh Generation	no
LOD	Generated: no
Advanced: Image Groups	Blue, Red-650, Red edge-705, Green, Red, NIR, Red edge, Panchro, Blue-444, Green-531, Red edge-740
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Time for Point Cloud Densification	02m:54s
Time for Point Cloud Classification	NA
Time for 3D Textured Mesh Generation	NA

Results



Number of Generated Tiles	1
Number of 3D Densified Points	2823735
Average Density (per m ³)	3.25

DSM, Orthomosaic and Index Details



Processing Options



DSM and Orthomosaic Resolution	1 x GSD (5.87 [cm/pixel])
DSM Filters	Noise Filtering: yes Surface Smoothing: yes, Type: Sharp
Radiometric calibration with reflectance target	yes
Index Calculator: Reflectance Map	Generated: yes Resolution: 1 x GSD (5.87 [cm/pixel]) Merge Tiles: yes
Index Calculator: Indices	ndvi
Index Calculator: Index Values	Polygon Shapefile [cm/grid]: 400
Time for DSM Generation	00s
Time for Orthomosaic Generation	00s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	04h:17m:10s
Time for Index Map Generation	01m:58s

Camera Radiometric Correction



Camera Name	Band	Radiometric Correction Type	Reflectance target
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RedEdge-P_5.5_1456x1088	Blue	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Green	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Red	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	NIR	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Red edge	Camera and Sun Irradiance	✓
RedEdge-P_10.4_2464x2056	Panchro	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Blue-444	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Green-531	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Red edge-740	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Red-650	Camera and Sun Irradiance	✓
RedEdge-P_5.5_1456x1088	Red edge-705	Camera and Sun Irradiance	✓