

## Calibration Report

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<b>Camera name:</b>	<b>Parrot Sequoia</b>
<b>Serial number:</b>	<b>XXXXXXXXXXXXXXXXXXXX</b>
<b>Report date:</b>	<b>2016-06-21 15:14:07</b>
<b>Generated with version:</b>	<b>2.2.7</b>

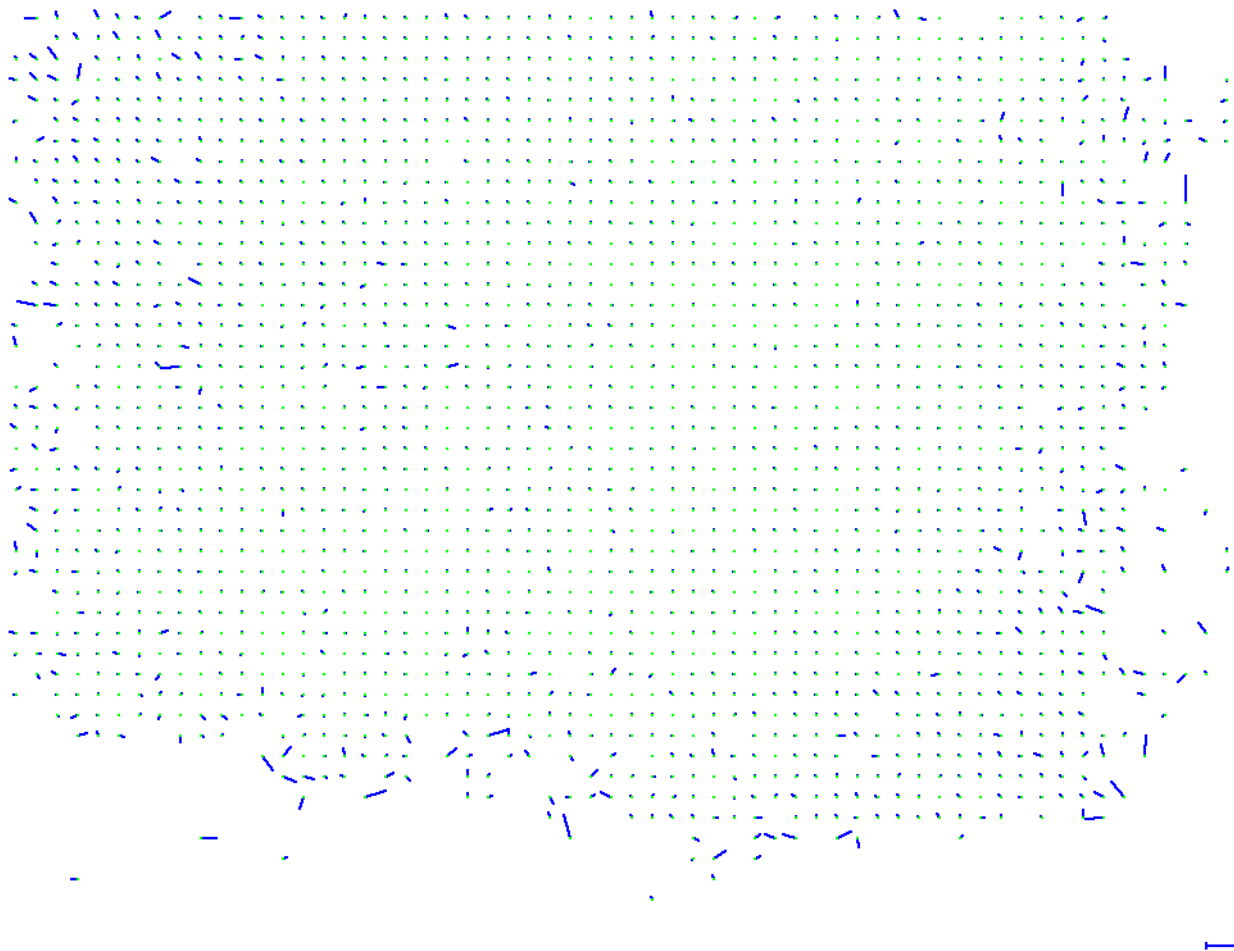
# Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	160018
Number of 3D Points for Bundle Block Adjustment	55363
Mean Reprojection Error [pixels]	0.2446

# Internal Camera Parameters

Sequoia\_4.0\_1280x960 (xxxxxxxxxxxxxxxxxxx) (Green)

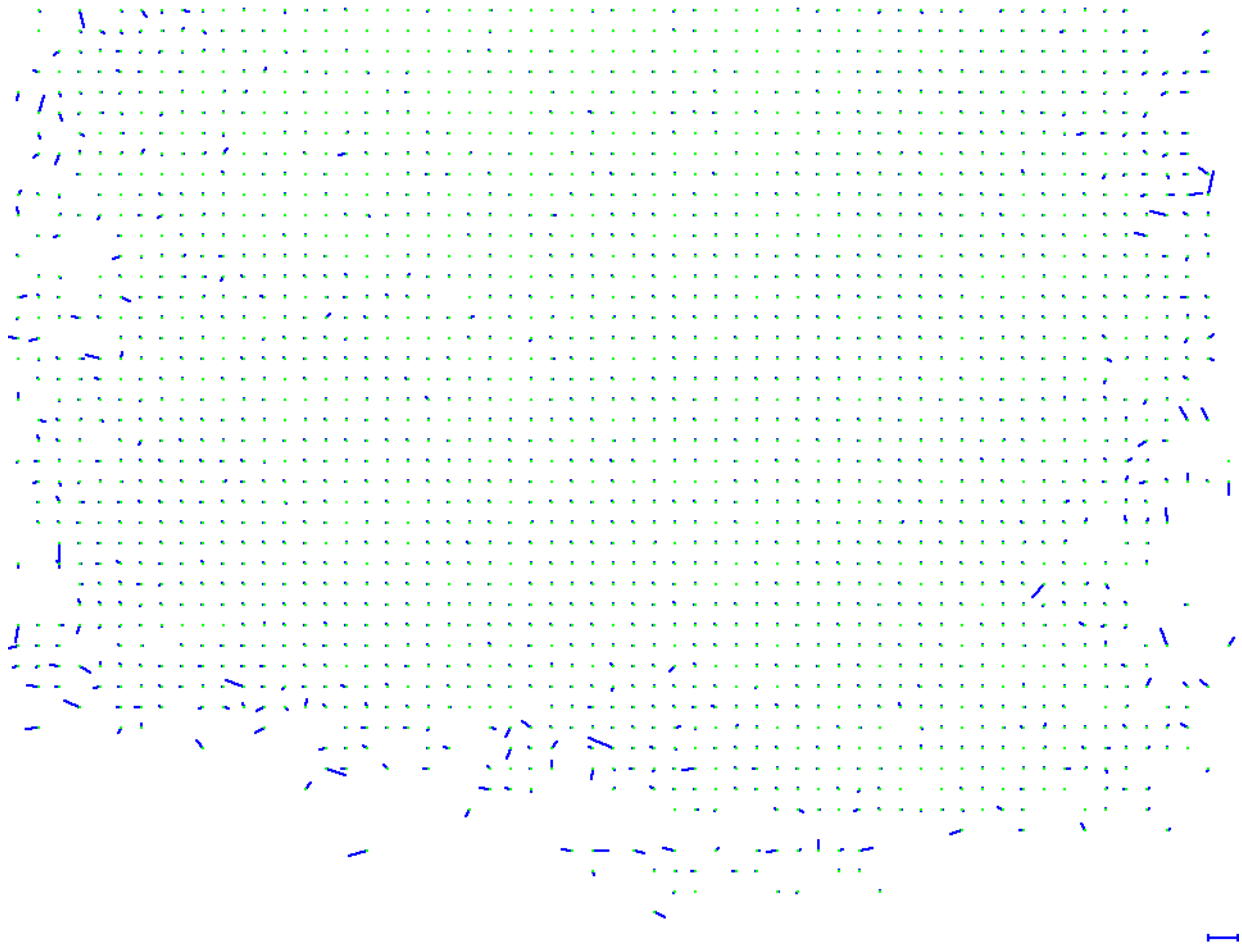
	Poly[0]	Poly[1]	Poly[2]	Poly[3]	Poly[4]	c	d	e	f	Principal Point x	Principal Point y
Initial Values	0	1	0.015265	-0.161096	0	1674.3	0	0	1674.3	640 pixel 2.4 mm	480 pixel 1.8 mm
Optimized Values	0	1	0.011098	-0.146976	0	1667.2	0	0	1667.2	630.7 pixel 2.365048 mm	458.7 pixel 1.72009 mm
Uncertainties (Sigma)			0.002877	0.005285		0.75			0.75	0.7 pixel	0.6 pixel



Average direction and magnitude of the reprojection error. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxxx) (Red)

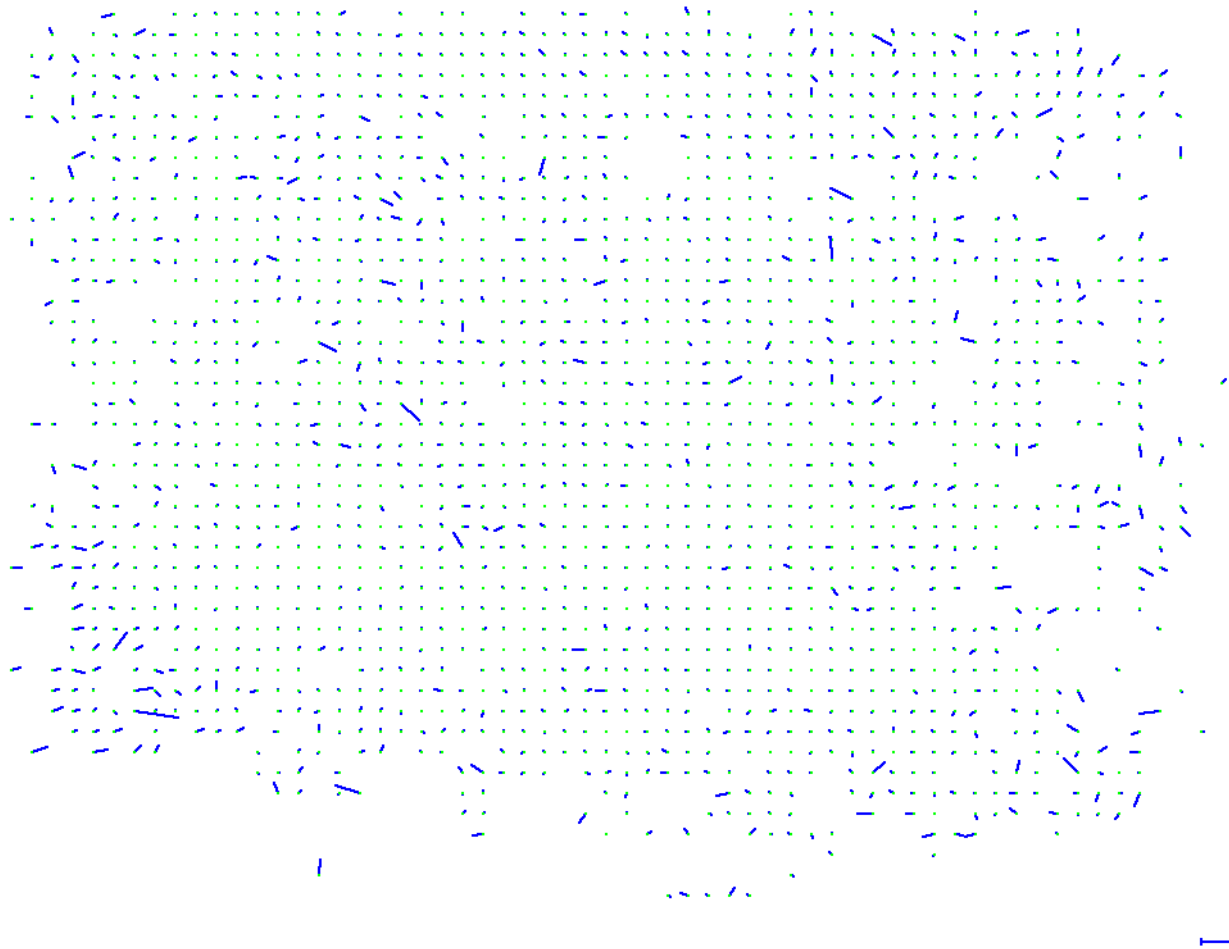
	Poly[0]	Poly[1]	Poly[2]	Poly[3]	Poly[4]	c	d	e	f	Principal Point x	Principal Point y
Initial Values	0	1	0.015265	-0.161096	0	1674.3	0	0	1674.3	640 pixel 2.4 mm	480 pixel 1.8 mm
Optimized Values	0	1	0.006035	-0.140021	0	1660.1	0	0	1660.1	664.9 pixel 2.493247 mm	453.7 pixel 1.701496 mm
Uncertainties (Sigma)			0.002604	0.00467		0.71			0.71	0.6 pixel	0.5 pixel



Average direction and magnitude of the reprojection error. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxxx) (Red edge)

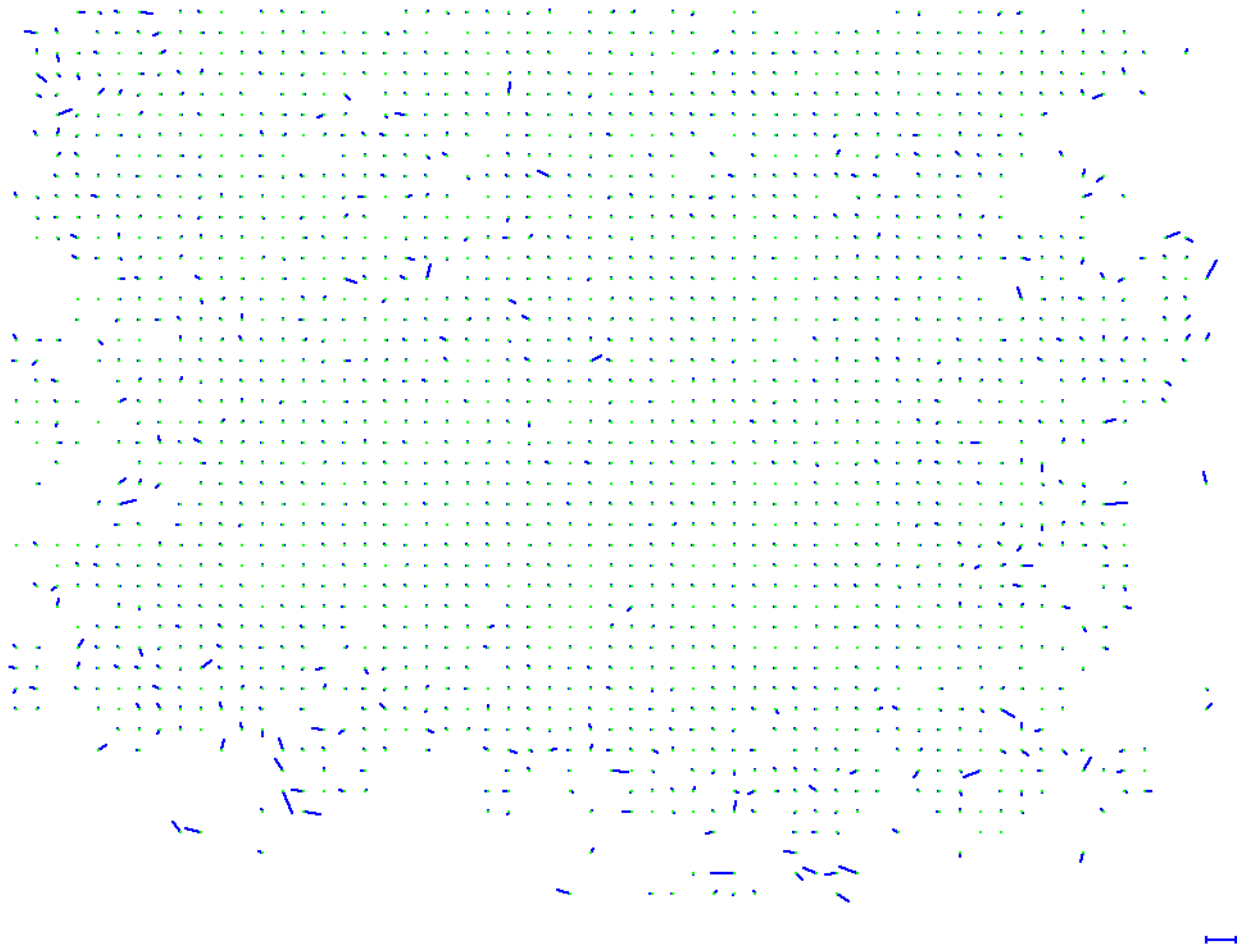
	Poly[0]	Poly[1]	Poly[2]	Poly[3]	Poly[4]	c	d	e	f	Principal Point x	Principal Point y
Initial Values	0	1	0.015265	-0.161096	0	1674.3	0	0	1674.3	640 pixel 2.4 mm	480 pixel 1.8 mm
Optimized Values	0	1	0.008029	-0.140825	0	1660.5	0	0	1660.5	630.2 pixel 2.363127 mm	484.6 pixel 1.817064 mm
Uncertainties (Sigma)			0.003144	0.005733		0.81			0.81	0.7 pixel	0.6 pixel



Average direction and magnitude of the reprojection error. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxxx) (NIR)

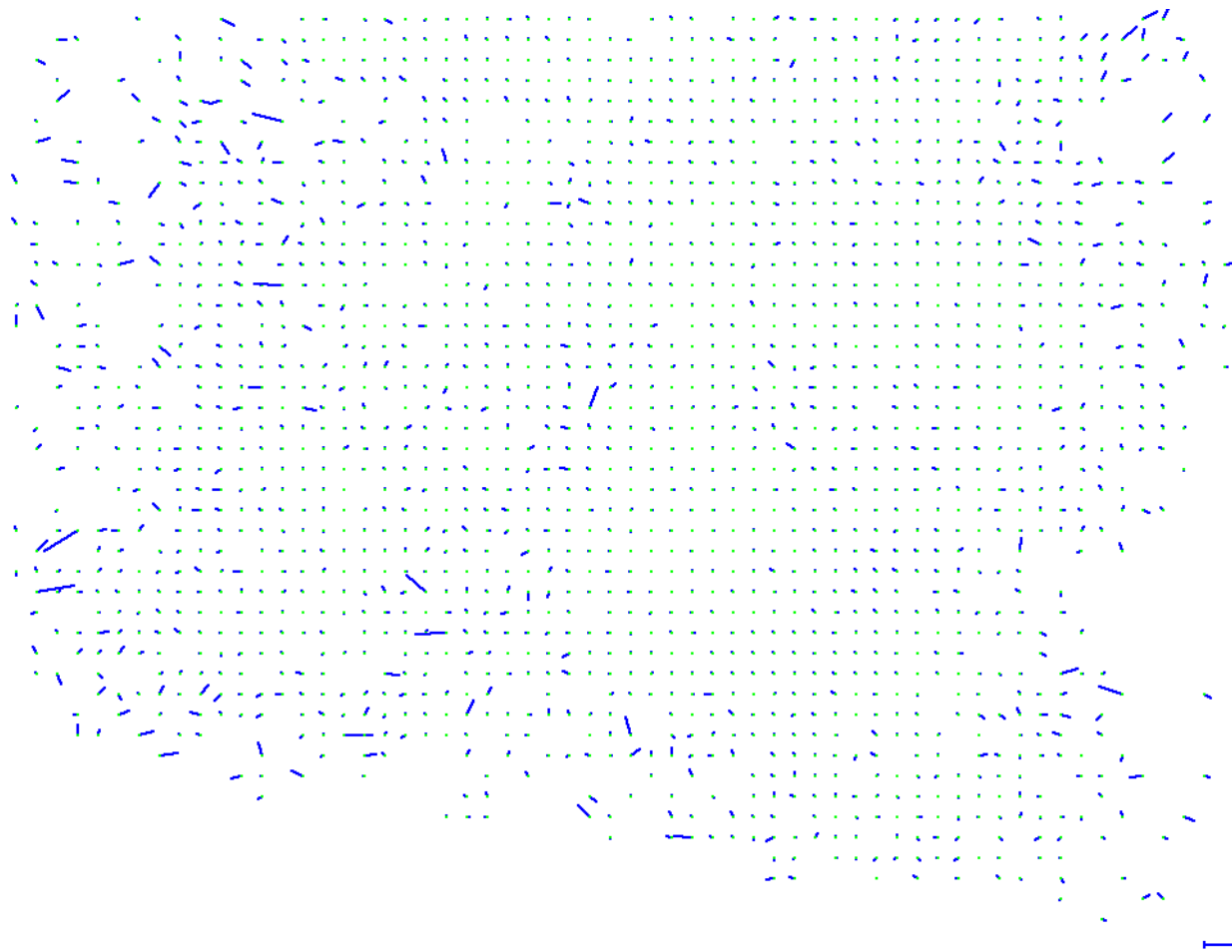
	Poly[0]	Poly[1]	Poly[2]	Poly[3]	Poly[4]	c	d	e	f	Principal Point x	Principal Point y
Initial Values	0	1	0.015265	-0.161096	0	1674.3	0	0	1674.3	640 pixel 2.4 mm	480 pixel 1.8 mm
Optimized Values	0	1	0.009806	-0.147261	0	1663.1	0	0	1663.1	655.4 pixel 2.457784 mm	473.7 pixel 1.776462 mm
Uncertainties (Sigma)			0.002841	0.005031		0.77			0.77	0.7 pixel	0.6 pixel



Average direction and magnitude of the reprojection error. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

Sequoia\_4.9\_4608x3456 (Pxxxxxxxxxxxxxxxxxxx) (RGB)

	Focal length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	4.7826	2345.3 pixel 3.1046 mm	1715 pixel 2.27029 mm	0.183277	-0.432997	0.328382	0.000305	0.00011
Optimized Values	4.8345	2304.9 pixel 3.051128 mm	1729.9 pixel 2.290037 mm	0.166785	-0.453542	0.387437	-0.00105	-0.000436
Uncertainties (Sigma)	0.001255	1.2 pixel	1.4 pixel	0.001406	0.005278	0.006267	0.000145	0.00013



Average direction and magnitude of the reprojection error. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

# Camera Rig «Sequoia» Relatives

	Transl X [mm]	Transl Y [mm]	Transl Z [mm]	Rot X [degree]	Rot Y [degree]	Rot Z [degree]
Sequoia_4.0_1280x960 (Pxxxxxxxxxxxxxxxxxx)(Green)	Reference Camera					
Sequoia_4.0_1280x960 (Pxxxxxxxxxxxxxxxxxx)(Red)						
Initial Values	0	-15	0	0	0	0
Optimized Values	0	-15	0	-0.3877	0.1979	0.1111
Uncertainties (Sigma)				0.0278	0.0404	0.003
Sequoia_4.0_1280x960 (Pxxxxxxxxxxxxxxxxxx) (Red edge)						
Initial Values	15	0	0	0	0	0
Optimized Values	15	0	0	0.0724	0.2724	0.1893
Uncertainties (Sigma)				0.0308	0.0436	0.0033
Sequoia_4.0_1280x960 (Pxxxxxxxxxxxxxxxxxx) (NIR)						
Initial Values	15	-15	0	0	0	0
Optimized Values	15	-15	0	-0.359	0.2837	0.0839
Uncertainties (Sigma)				0.0301	0.0435	0.0033
Sequoia_4.9_4608x3456 (Pxxxxxxxxxxxxxxxxxx)(RGB)						
Initial Values	26.9	-7.5	-2	0	0	0
Optimized Values	26.9	-7.5	-2	0.0976	0.2321	-1.0784
Uncertainties (Sigma)				0.0233	0.0343	0.0025

## 2D Keypoints and matches

### General 2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9769	3295
Mn	8825	1522
Max	10000	4563
Mean	9635	3200

### 2D Keypoints Table for Camera Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxx) (Green)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9874	3551
Mn	9241	3056
Max	10000	4219
Mean	9757	3585

### 2D Keypoints Table for Camera Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxx) (Red)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9955	4118
Mn	9243	3567
Max	10000	4563
Mean	9786	4085

### 2D Keypoints Table for Camera Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxx) (Red edge)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9204	1923
Mn	8825	1522
Max	9607	3413
Mean	9185	2190

### 2D Keypoints Table for Camera Sequoia\_4.0\_1280x960 (Pxxxxxxxxxxxxxxxxxxx) (NIR)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	9298	3041
Mn	9214	2663
Max	9905	3866
Mean	9447	3162

### 2D Keypoints Table for Camera Sequoia\_4.9\_4608x3456 (Pxxxxxxxxxxxxxxxxxxx) (RGB)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	10000	2719
Mn	10000	2453
Max	10000	3722
Mean	10000	2979

### Median / 75% / Maximal Number of Matches Between Bands

	Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Green)	Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Red)	Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Red edge)	Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(NIR)	Sequoia_4.9_4608x3456 (Pxxxxxxxxxxx)(RGB)
Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Green)	432 / 1079 / 2220	224 / 514 / 1014	115 / 209 / 631	82 / 167 / 441	36 / 57 / 163
Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Red)	224 / 514 / 1014	469 / 1229 / 2947	183 / 276 / 1349	88 / 191 / 578	11 / 35 / 164
Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(Red edge)	115 / 209 / 631	183 / 276 / 1349	195 / 381 / 1600	95 / 186 / 593	11 / 21 / 86
Sequoia_4.0_1280x960 (Pxxxxxxxxxxx)(NIR)	82 / 167 / 441	88 / 191 / 578	95 / 186 / 593	357 / 879 / 2493	8 / 20 / 61
Sequoia_4.9_4608x3456 (Pxxxxxxxxxxx)(RGB)	36 / 57 / 163	11 / 35 / 164	11 / 21 / 86	8 / 20 / 61	360 / 1080 / 2165

## Geolocation Details

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### Ground Control Points

GCP Name	Error X [m]	Error Y [m]	Error Z [m]	Projection Error [pixel]
<b>Mean [m]</b>	0.0000052819	0.0000007376	-0.0000137775	0.7185
<b>Sigma [m]</b>	0.0008871864	0.0007116038	0.0006480264	
<b>RMS Error [m]</b>	0.0008872021	0.0007116042	0.0006481728	