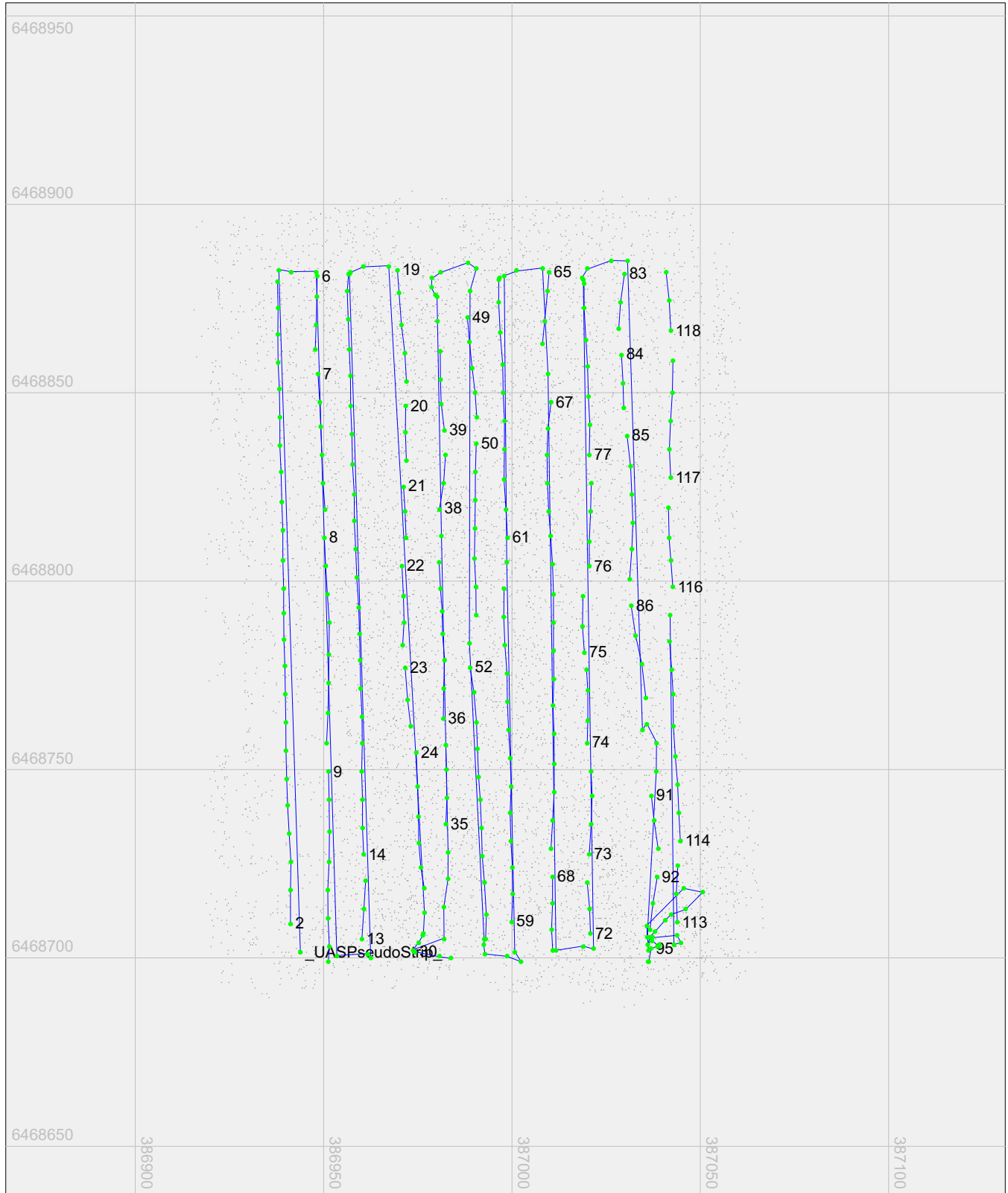


Processing Report

General project information

Project name	uasbox_iter
Process	Geo-referencing
Processing date / time	Sun Nov 22 03:13:18 2015
Result file	C:\Users\mwuethrich\AppData\Local\Temp\UASBox\10.10-Adjustment Report\uasbox_iter.prj
Number of used images	339 of 339
Number of used cameras	1 of 1
Number of strips	45
Flying height (min/avg/max)	43.0 / 45.1 / 49.0 [m]
Terrain height (min/avg/max)	6.8 / 8.0 / 19.8 [m]
Average photo scale	1 : 2960
Coordinate system	<pre> PROJCS["Zone_50", GEOGCS["Australia/ GDA94",DATUM["GDA94",SPHEROID["Geodetic_Ref_System_1980", 6378137,298.257222101004], TOWGS84[0,0,0,0,0,0,0]], PRIMEM["Greenwich",0.0], UNIT["Degree",0.0174532925199433]], PROJECTION["Transverse_Mercator"], PARAMETER["central_meridian",117], PARAMETER["scale_factor",0.9996], PARAMETER["latitude_of_origin",0], PARAMETER["false_easting",500000], PARAMETER["false_northing",1000000], UNIT["Meter",1]] </pre>

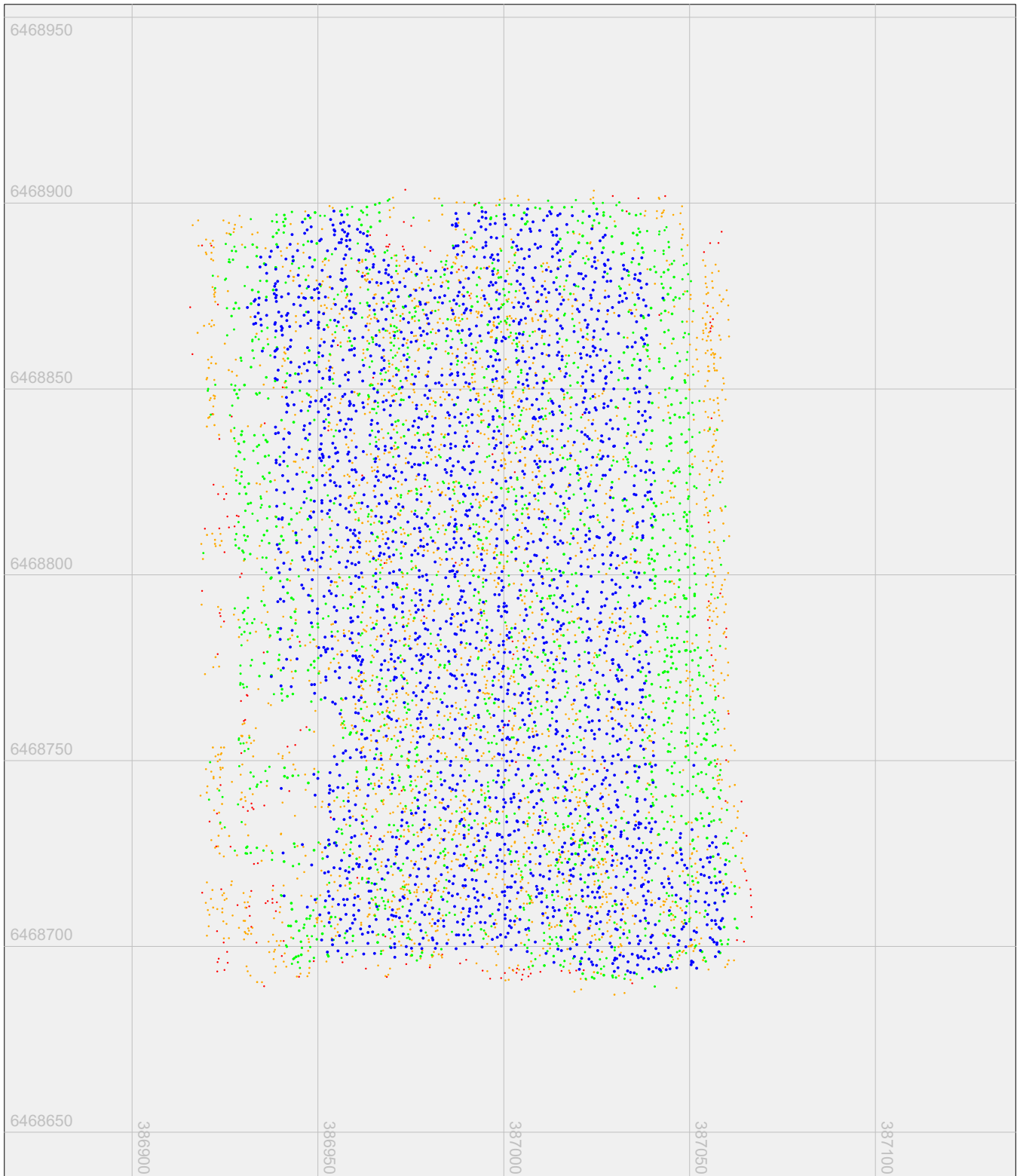
Flight overview



Graphic with 45 strip definitions for the aerial triangulation. The area has a planimetric extent of about: 251 x 316 [m].

- : Camera location for 339 adjusted photos.
- : Camera location for 0 eliminated photos.
- : Defined strip in the project.
- : Tie point location for 7854 points.

Tie point distribution



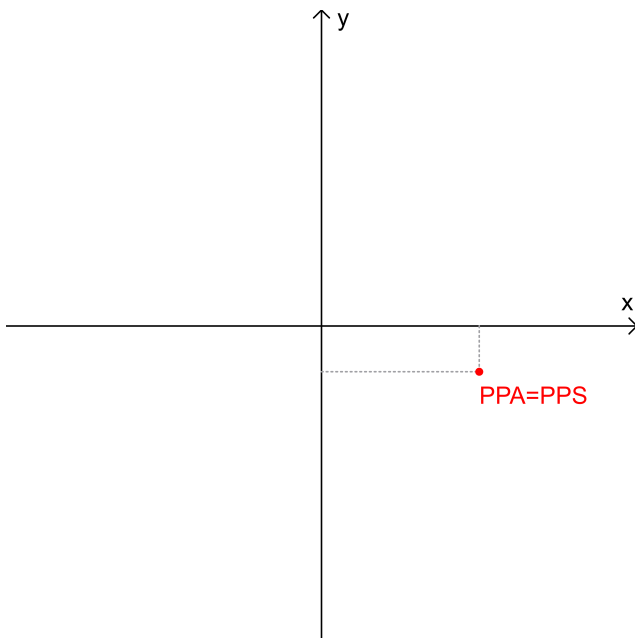
Tie point distribution of 7854 points in the project. The point size and colour reflects the number of images containing the point. The area has a planimetric extent of about: 251 x 316 [m] and a height range of about: 7 - 20 [m].

- : Point found in (0-2) images.
- : Point found in (3-4) images.
- : Point found in (5-10) images.
- : Point found in (>10) images.

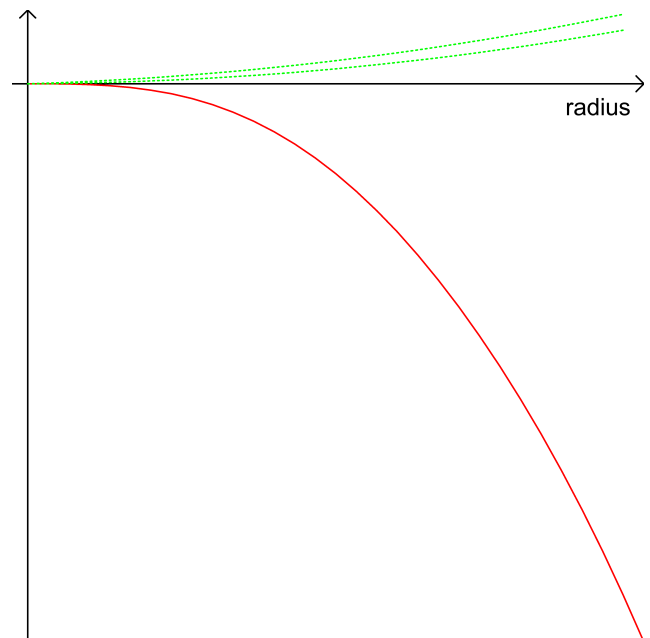
Camera calibration

Camera data (Camera: 1184_calibrated_0)

	calibrated
Manufacturer	UAS_Digital
Serial number	
Sensor (width / height) [pixel]	4608 / 3456
Pixel size (x / y) [micron]	3.7603 / 3.7608
Distortion type	Polynomial
Focal length [mm pixel]	14.8905 3959.6293
Focal length (Fx / Fy) [pixel]	3959.9103 / 3959.3484
Principal point (x / y) [mm pixel]	0.3735 / -0.1082 2402.8386 / 1756.2739
Distortion parameter:	
K0	0.000000E+00
K1	-1.768020E-04
K2	7.012560E-07
K3	-2.065210E-09
K4	0.000000E+00
K5	0.000000E+00
P1	1.180130E-04
P2	-6.137370E-05



Position of the principle point ($x=0.3735$, $y=-0.1082$ [mm]) in the image.



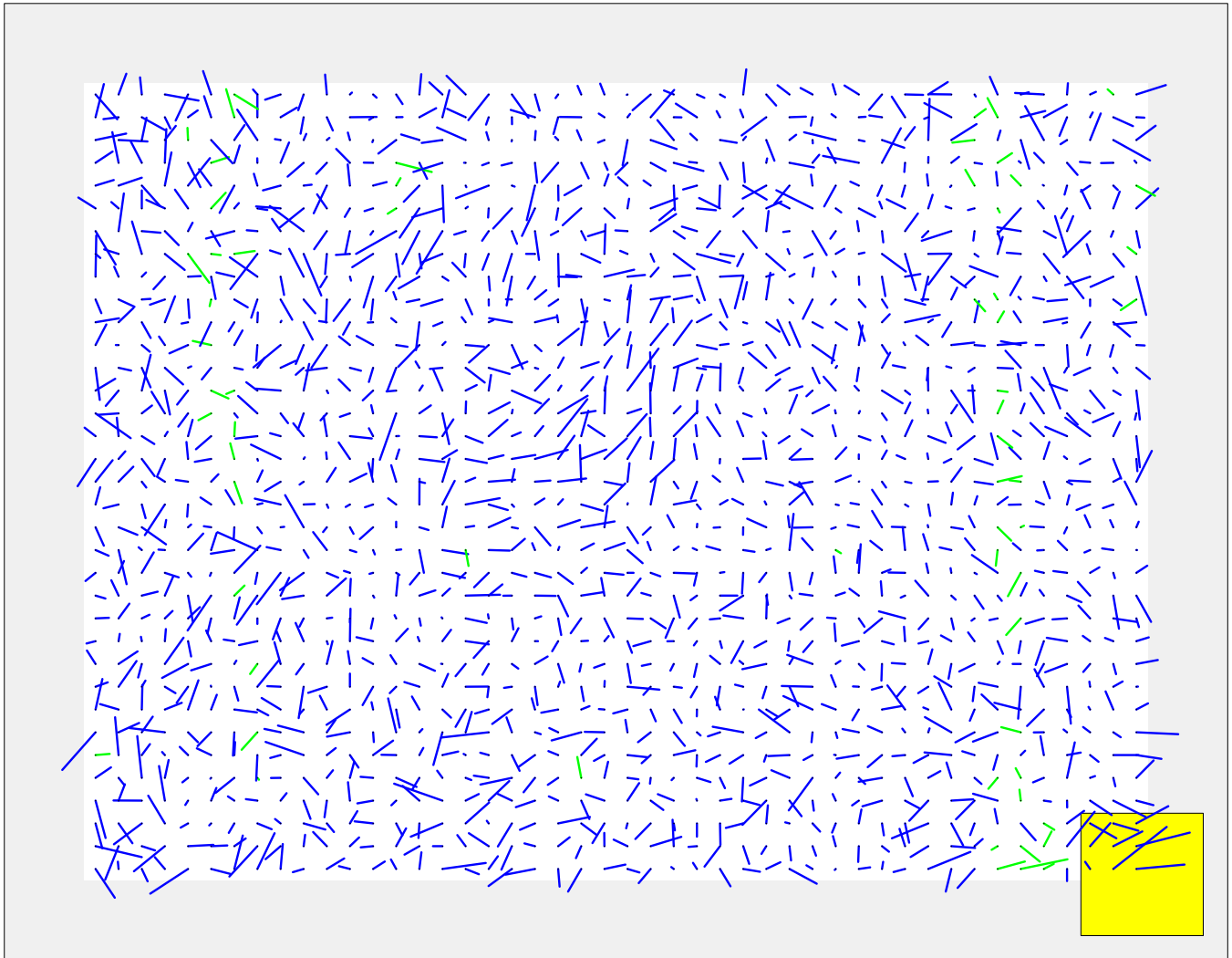
The dashed green lines show the magnitude of the decentering distortions on the four image diagonals. This gives an impression of what will be missed if only radial distortion components are used.

Distortion values (Camera: 1184_calibrated_0)

	Radius [mm]	calibrated Distortion [micron]
1	0.0000	0.0000
2	0.5000	-0.0221
3	1.0000	-0.1761
4	1.5000	-0.5914
5	2.0000	-1.3922
6	2.5000	-2.6953
7	3.0000	-4.6078
8	3.5000	-7.2254
9	4.0000	-10.6311
10	4.5000	-14.8942
11	5.0000	-20.0702
12	5.5000	-26.2005
13	6.0000	-33.3144
14	6.5000	-41.4301
15	7.0000	-50.5579
16	7.5000	-60.7039
17	8.0000	-71.8749
18	8.5000	-84.0840
19	9.0000	-97.3580
20	9.5000	-111.7459
21	10.0000	-127.3285
22	10.5000	-144.2300
23	11.0000	-162.6306

Distortion error of radial symmetric components of parameters: K0, K1, ... and P1, P2.

Image residuals (Camera: 1184_calibrated_0)



Average image residual vectors (min=0.004, avg=0.816, max=2.775 [pixel]) for image matrix elements. An image matrix element is defined with about (100 x 100) pixels.

- : Scale for the residual vectors. Symbol in the graphic is correlated to 1 [pixel] in the image.
- : Average image residual vector for points in (0-2) images.
- : Average image residual vector for points in (3-4) images.
- : Average image residual vector for points in (5-10) images.
- : Average image residual vector for points in (>10) images.

Block adjustment results

Parameters for block adjustment

GNSS-Mode	ON
Earth curvature correction	ON
Refraction correction	ON

Accuracy of block adjustment

Sigma naught [micron]	2.7118
-----------------------	--------

Mean standard deviation of translations

X [m]	Y [m]	Z [m]	Total [m]
0.0073	0.0086	0.0065	0.0130

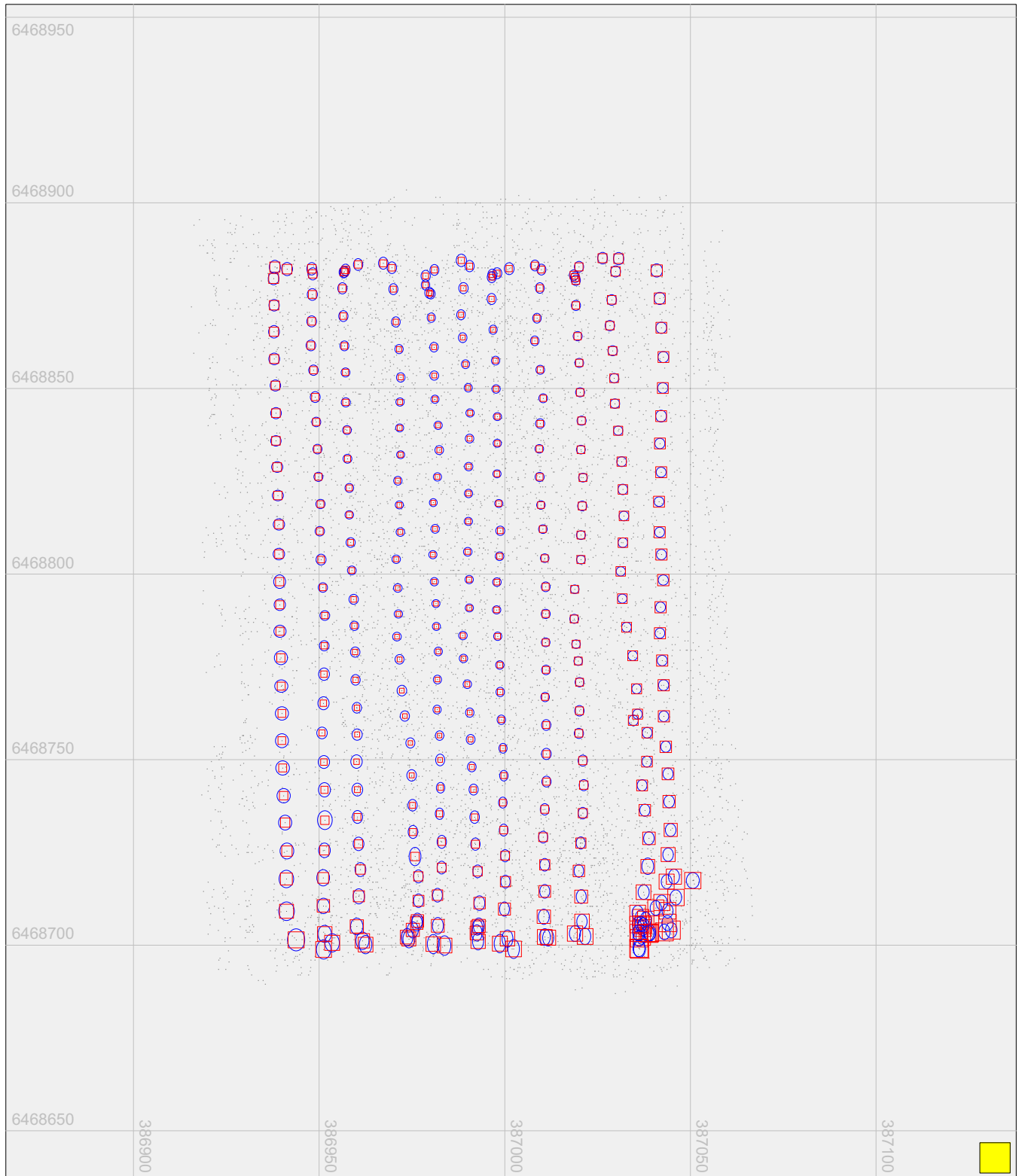
Mean standard deviation of rotations

Omega [deg/1000]	Phi [deg/1000]	Kappa [deg/1000]
12.6453	10.3584	2.9010





Mean standard deviation of ground control points

X [m]	Y [m]	Z [m]	Total [m]
0.0034	0.0030	0.0105	0.0114

Exterior orientation statistics



Graphic with 339 photos from the project. The camera locations are shown with its standard deviations in XYZ. The area has a planimetric extent of about: 251 x 316 [m].

-  : Scale for the symbols. Symbol in the graphic is correlated to 0.022 [m] in the object.
-  : Standard deviation XY for 339 projection centers (min=0.008, avg=0.011, max=0.021 [m]).
-  : Standard deviation Z for 339 projection centers (min=0.003, avg=0.006, max=0.014 [m]).
-  : Tie point location for 7854 points.

GNSS statistics



Graphic with 339 GNSS locations from the adjustment. The points are shown with its residuals from the adjustment. The area has a planimetric extent of about: 251 x 316 [m].

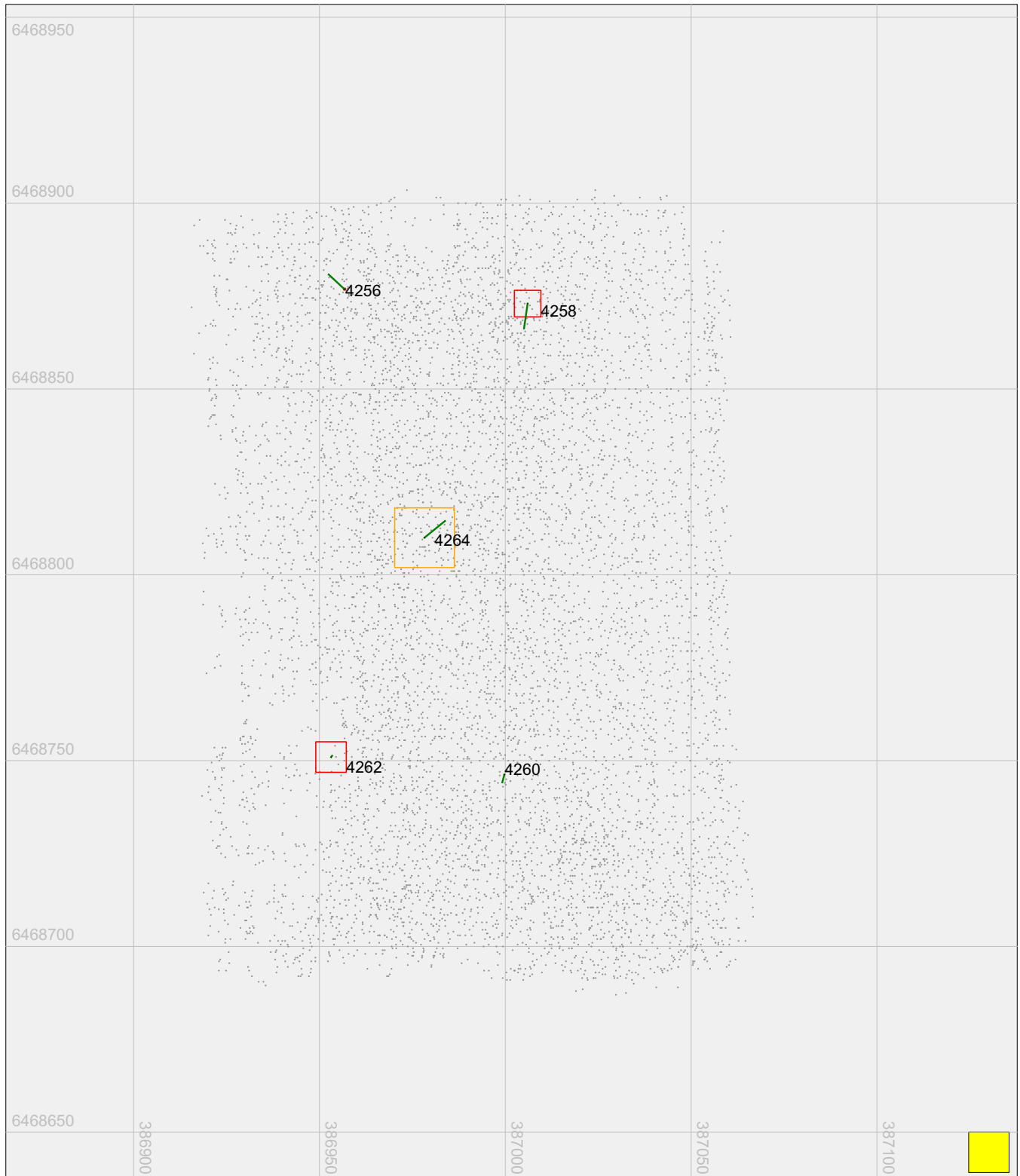
- : Scale for the symbols. Symbol in the graphic is correlated to 2.673 [m] in the object.
- : Residual XY (326) for GNSS positions (min=0.026, avg=0.575, max=4.648 [m]).
- : Residual Z (pos.:75/neg.:251) for GNSS positions (min=-2.108, avg=-0.003, max=3.561 [m]).
- : Extreme residual XYZ (13) for GNSS positions.
- : Tie point location for 7854 points.

Ground Control points

Ground Control point errors

	ID	Fold	X [m]	Y [m]	Z [m]	Total [m]	Remark
1	4256	8	0.0013	-0.0012	-0.0002	0.0018	
2	4258	6	0.0003	0.0021	-0.0022	0.0031	
3	4260	7	0.0002	0.0006	-0.0001	0.0007	
4	4262	7	-0.0001	-0.0001	-0.0026	0.0026	
5	4264	8	-0.0017	-0.0014	0.0050	0.0054	
	Mean		-0.0000	0.0000	0.0000		
	Sigma		0.0011	0.0014	0.0030		
	RMS		0.0010	0.0013	0.0027		
	Maximum		-0.0017	0.0021	0.0050		

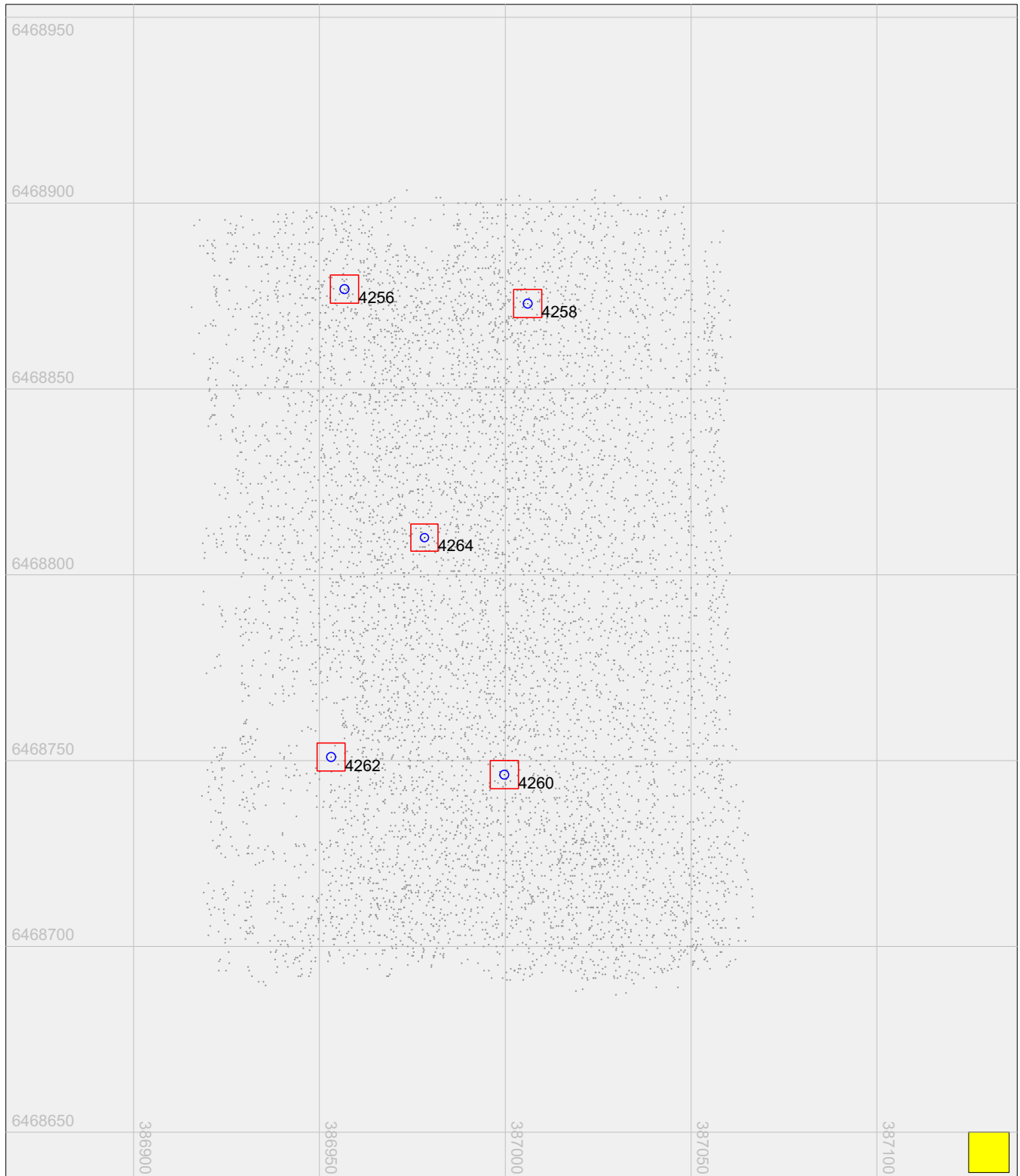
Ground Control point residuals







Graphic with 5 ground control points from the project. The points are shown with its residuals in XYZ from the adjustment. The area has a planimetric extent of about: 251 x 316 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.003 [m] in the object.
- : Residual XY (5) for ground control points (min=0.000, avg=0.001, max=0.002 [m]).
- : Residual Z (pos.:4/neg.:1) for ground control points (min=-0.005, avg=-0.000, max=0.003 [m]).
- : Tie point location for 7854 points.

Ground Control point standard deviations



Graphic with 5 ground control points from the project. The points are shown with its standard deviations in XYZ from the adjustment. The area has a planimetric extent of about: 251 x 316 [m].

-  : Scale for the symbols. Symbol in the graphic is correlated to 0.003 [m] in the object.
-  : Standard deviation XY for 5 ground control points (min=0.001, avg=0.001, max=0.001 [m]).
-  : Standard deviation Z for 5 ground control points (min=0.002, avg=0.002, max=0.002 [m]).
-  : Tie point location for 7854 points.