Quality Report

Generated with Pro version 2.2.22

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	gsm_tower
Processed	2016-08-22 13:15:20
Camera Model Name(s)	albris_8.0_7152x5368 (RGB)
Average Ground Sampling Distance (GSD)	0.68 cm / 0.27 in

Quality Check

Images	median of 20000 keypoints per image	✓
Dataset	83 out of 83 images calibrated (100%), all images enabled	✓
Camera Optimization	0.25% relative difference between initial and optimized internal camera parameters	✓
Matching	median of 6673.68 matches per calibrated image	✓
Georeferencing	yes, no 3D GCP	⚠

Calibration Details

Number of Calibrated Images	83 out of 83
Number of Geolocated Images	83 out of 83

Initial Image Positions

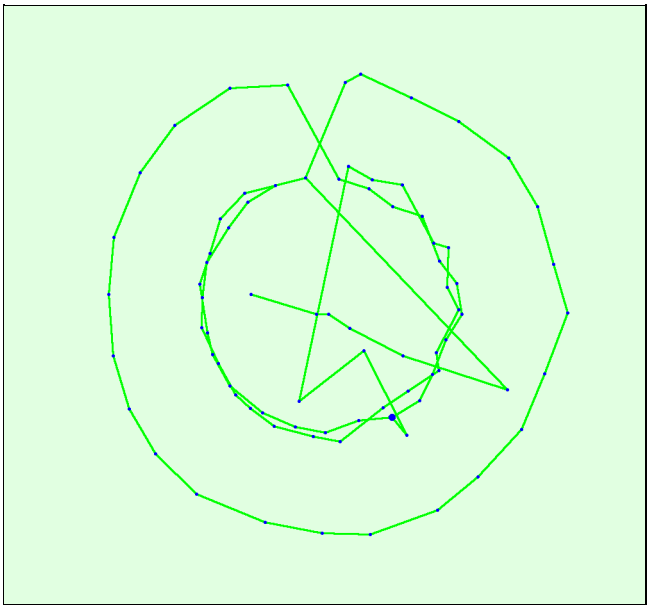


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions

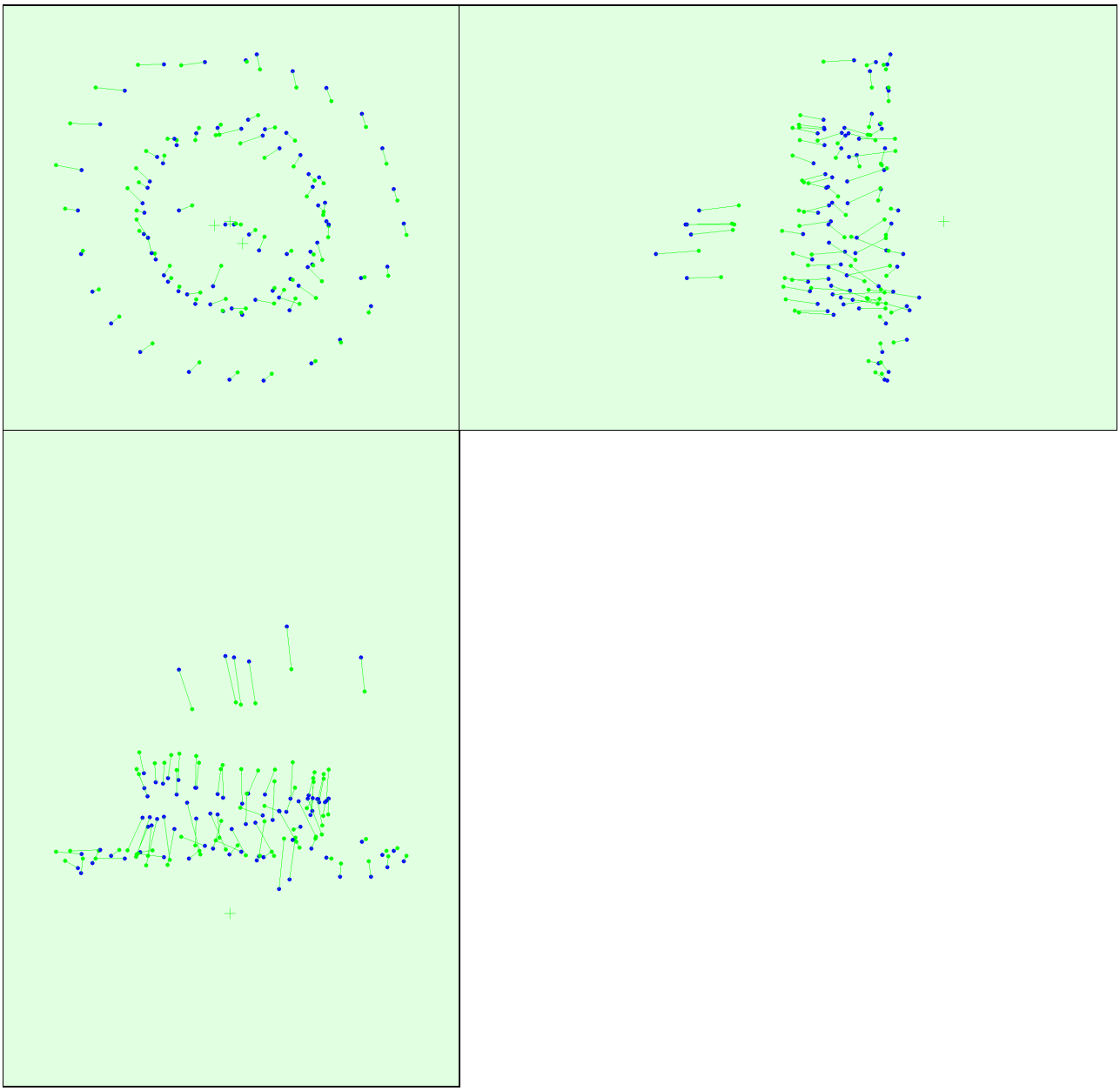


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	514897
Number of 3D Points for Bundle Block Adjustment	181172
Mean Reprojection Error [pixels]	0.146

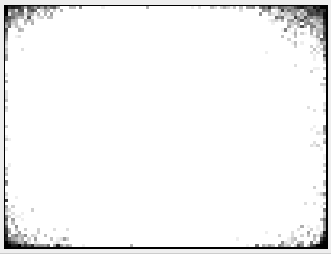
Internal Camera Parameters

albris_8.0_7152x5368 (RGB). Sensor Dimensions: 10.013 [mm] x 7.515 [mm]

EXIF ID: eXom_8.0_7152x5368

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2

Initial Values	5672.979 [pixel] 7.942 [mm]	3576.000 [pixel] 5.006 [mm]	2684.000 [pixel] 3.758 [mm]	0.242	-0.643	0.506	0.000	0.001
Optimized Values	5658.649 [pixel] 7.922 [mm]	3567.212 [pixel] 4.994 [mm]	2568.826 [pixel] 3.596 [mm]	0.242	-0.640	0.501	-0.001	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, in average, more than 16 ATPs are extracted at this pixel location. Black indicates that, in average, 0 ATP has been extracted at this 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	20000	6674
Min	19862	4295
Max	20000	10343
Mean	19992	6687

3D Points from 2D Keypoint Matches

	Number of 3D Points Observed
In 2 Images	122521
In 3 Images	29476
In 4 Images	11759
In 5 Images	6270
In 6 Images	3411
In 7 Images	2071
In 8 Images	1327
In 9 Images	967
In 10 Images	691
In 11 Images	531
In 12 Images	429
In 13 Images	298
In 14 Images	255
In 15 Images	188
In 16 Images	175
In 17 Images	135
In 18 Images	112
In 19 Images	83
In 20 Images	89
In 21 Images	56
In 22 Images	50
In 23 Images	31
In 24 Images	33
In 25 Images	37
In 26 Images	25
In 27 Images	23
In 28 Images	20
In 29 Images	19
In 30 Images	8
In 31 Images	20
In 32 Images	20
In 33 Images	9
In 34 Images	4
In 35 Images	4
In 36 Images	4

In 37 Images	5
In 38 Images	4
In 39 Images	4
In 40 Images	4
In 41 Images	1
In 43 Images	3

2D Keypoint Matches

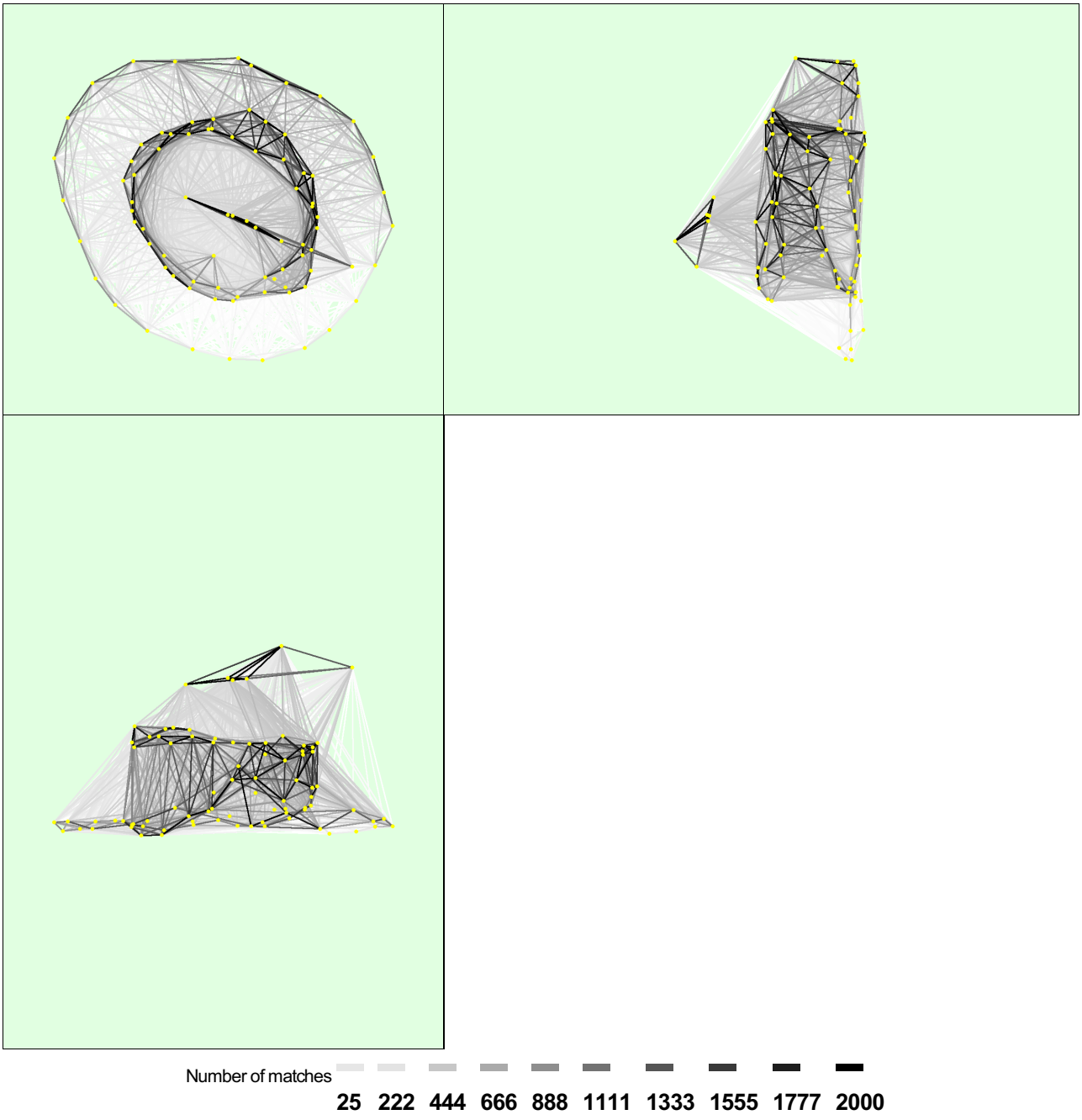


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Manual Tie Points

MTP Name	Projection Error [pixel]	Verified/Marked
mtp1	0.393	4 / 4
mtp2	0.372	4 / 4
mtp3	0.673	6 / 6

Projection errors for manual tie points.The last column counts the number of images where the manual tie point has been automatically verified vs. manually marked.

Geolocation Details

Scale Constraints

Scale Name	Initial Length [m]	Initial Length Accuracy [m]	Computed Length [m]	Computed Length Error [m]	GCP/MTP Label 1	GCP/MTP Label 2
Scale 1	1.996	0.001	1.995	-0.001	mtp1(4)	mtp2(4)

Scale constraints errors.

Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-2.20	0.00	0.00	3.61
-2.20	-1.76	0.00	0.00	10.84
-1.76	-1.32	0.00	0.00	15.66
-1.32	-0.88	4.82	4.82	6.02
-0.88	-0.44	16.87	9.64	12.05
-0.44	0.00	45.78	42.17	14.46
0.00	0.44	14.46	21.69	6.02
0.44	0.88	7.23	16.87	2.41
0.88	1.32	3.61	4.82	1.20
1.32	1.76	6.02	0.00	6.02
1.76	2.20	1.20	0.00	10.84
2.20	-	0.00	0.00	10.84
Mean [m]		-0.028867	0.014861	-0.081290
Sigma [m]		0.641128	0.499268	1.590779
RMS Error [m]		0.641778	0.499489	1.592855

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 intial 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]	80.72	91.57	38.55
[-2.00, 2.00]	98.80	100.00	87.95
[-3.00, 3.00]	100.00	100.00	100.00
Mean of Geolocation Accuracy [m]	0.873079	0.873079	1.219535
Sigma of Geolocation Accuracy [m]	0.088390	0.088390	0.107378

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

Geolocation Orientational Variance	RMS [degree]
Omega	2.211
Phi	2.396
Kappa	4.420

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) i7-4900MQ CPU @ 2.80GHz RAM: 32GB GPU: Intel(R) HD Graphics 4600 (Driver: 10.18.10.3621)
Operating System	Windows 8.1 Pro, 64-bit

Coordinate Systems

Image Coordinate System	WGS84
Output Coordinate System	WGS84 / UTM zone 32N

Processing Options

Detected Template	No Template Available
Keypoints Image Scale	Full, Image Scale: 1
Advanced: Matching Image Pairs	Free Flight or Terrestrial
Advanced: Matching Strategy	Use Geometrically Verified Matching: no
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Custom, Number of Keypoints: 20000
Advanced: Calibration	Calibration Method: Standard Internal Parameters Optimization: All External Parameters Optimization: All Rematch: Auto, yes

Point Cloud Densification details

Processing Options

Image Scale	multiscale, 1/2 (Half image size, Default)
Point Density	Optimal
Minimum Number of Matches	4
3D Textured Mesh Generation	no
Advanced: Matching Window Size	9x9 pixels
Advanced: Image Groups	group1
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Advanced: Limit Camera Depth Automatically	yes

Results

Number of Generated Tiles	1
Number of 3D Densified Points	11239732
Average Density (per m^3)	8776.69