Quercus_petraea_8N

Processing Report

07 November 2018

Survey Data

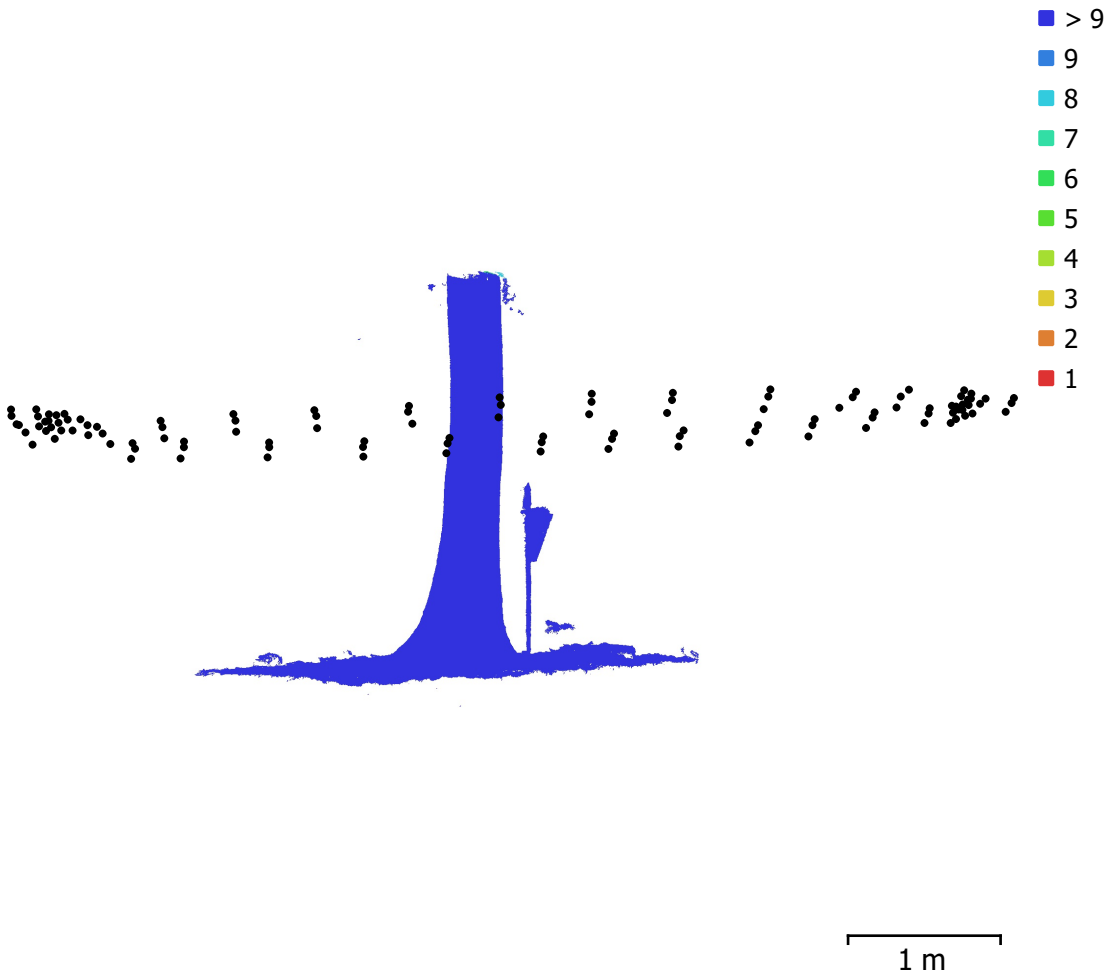

Fig. 1. Camera locations and image overlap.

Number of images:	114	Camera stations:	114
Flying altitude:	4.29 m	Tie points:	115,052
Ground resolution:	0.361 mm/pix	Projections:	375,257
Coverage area:	1.51 m²	Reprojection error:	0.756 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Canon EOS 70D (35 mm)	5472 x 3648	35 mm	4.17 x 4.17 µm	No

Table 1. Cameras.

Camera Calibration

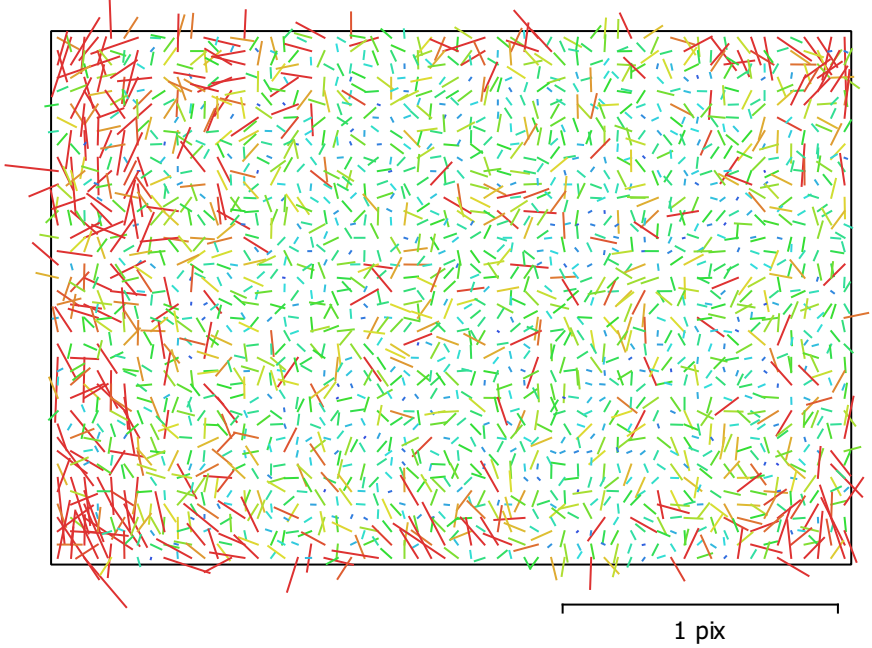

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

114 images

Type	Resolution	Focal Length	Pixel Size
Frame	**5472 x 3648**	**35 mm**	**4.17 x 4.17 µm**

	Value	Error	F	Cx	Cy	B2	K1	K2	P1	P2
F	**8459.28**	0.53	1.00	-0.22	-0.06	0.08	0.37	-0.01	-0.30	-0.04
Cx	**-43.5073**	0.32		1.00	-0.03	-0.02	-0.21	0.08	0.89	-0.02
Cy	**0.235253**	0.41			1.00	0.11	-0.02	-0.00	-0.02	0.93
B2	**0.940663**	0.1				1.00	0.03	-0.01	-0.05	0.10
K1	**-0.0761538**	0.0001					1.00	-0.89	-0.21	-0.01
K2	**0.0835018**	0.00063						1.00	0.06	-0.01
P1	**-0.000488461**	8.2e-06							1.00	-0.01
P2	**0.00048682**	1e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

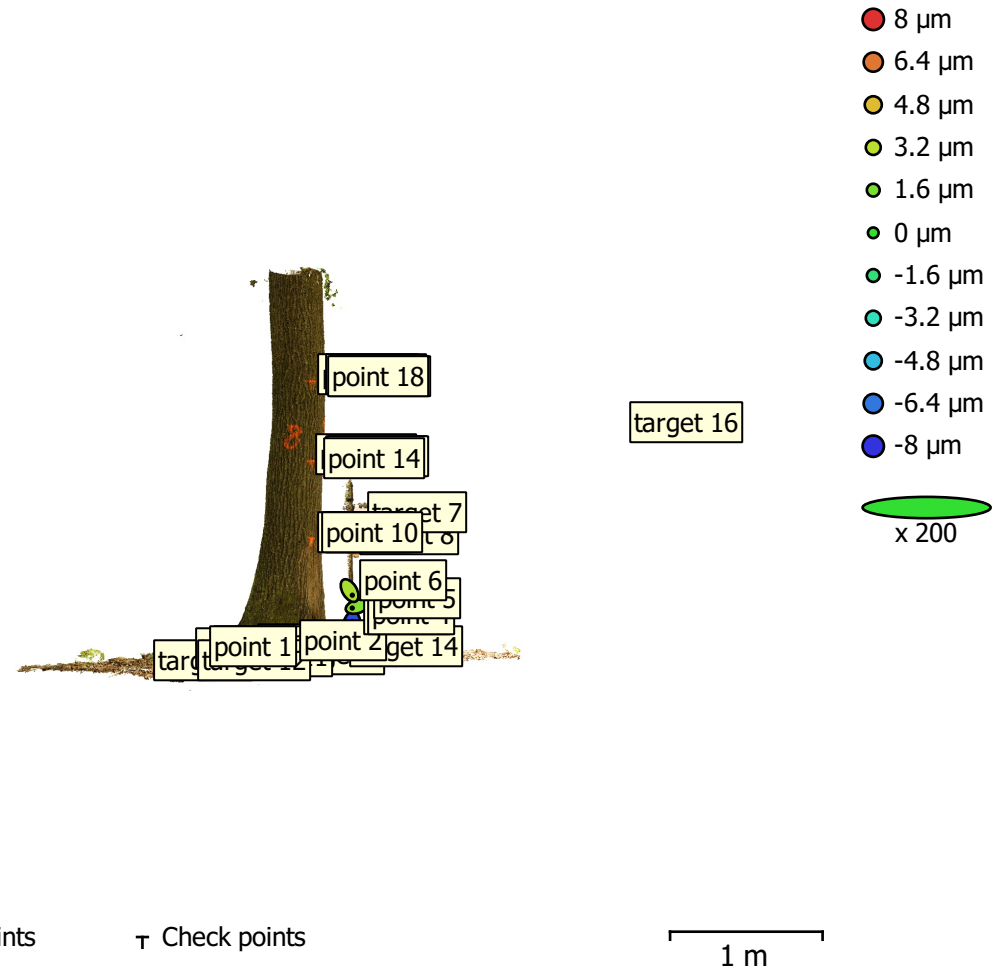

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.190187	0.573115	0.00437617	0.603848	0.603864

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 3	0.0302107	-0.554614	0.00303892	0.555444	0.004 (75)
point 4	0.106085	0.951959	-0.00747804	0.957881	0.004 (83)
point 5	-0.316305	-0.0964604	0.00198348	0.330692	0.004 (85)
point 6	0.18019	-0.301192	0.00274099	0.350988	0.004 (92)
Total	**0.190187**	**0.573115**	**0.00437617**	**0.603864**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.290 (5)
target 2					0.189 (2)
target 4					0.391 (2)
target 5					0.791 (17)
target 6					0.735 (26)
target 8					0.958 (19)
target 11					0.974 (11)
target 12					0.728 (15)
target 14					0.039 (2)
target 16					0.418 (2)
target 7					0.003 (94)
point 1					0.131 (44)
point 2					0.662 (65)
point 7					0.004 (114)
point 8					0.004 (114)
point 9					0.004 (114)
point 10					0.004 (114)
point 11					0.004 (76)
point 12					0.004 (76)
point 13					0.004 (76)
point 14					0.004 (76)
point 15					0.003 (69)
point 16					0.004 (70)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 17					0.004 (70)
point 18					0.004 (70)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.14736	-0.000639533
target 11_target 12	0.147727	-0.000273359
target 8_target 7	0.147042	-0.000957709
point 1_point 2	0.603457	0.00045652
Total		**0.0006343**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 3_point 4	0.108815	
point 3_point 5	0.196631	
point 3_point 6	0.281121	
Total		

Table 7. Check scale bars.

Digital Elevation Model

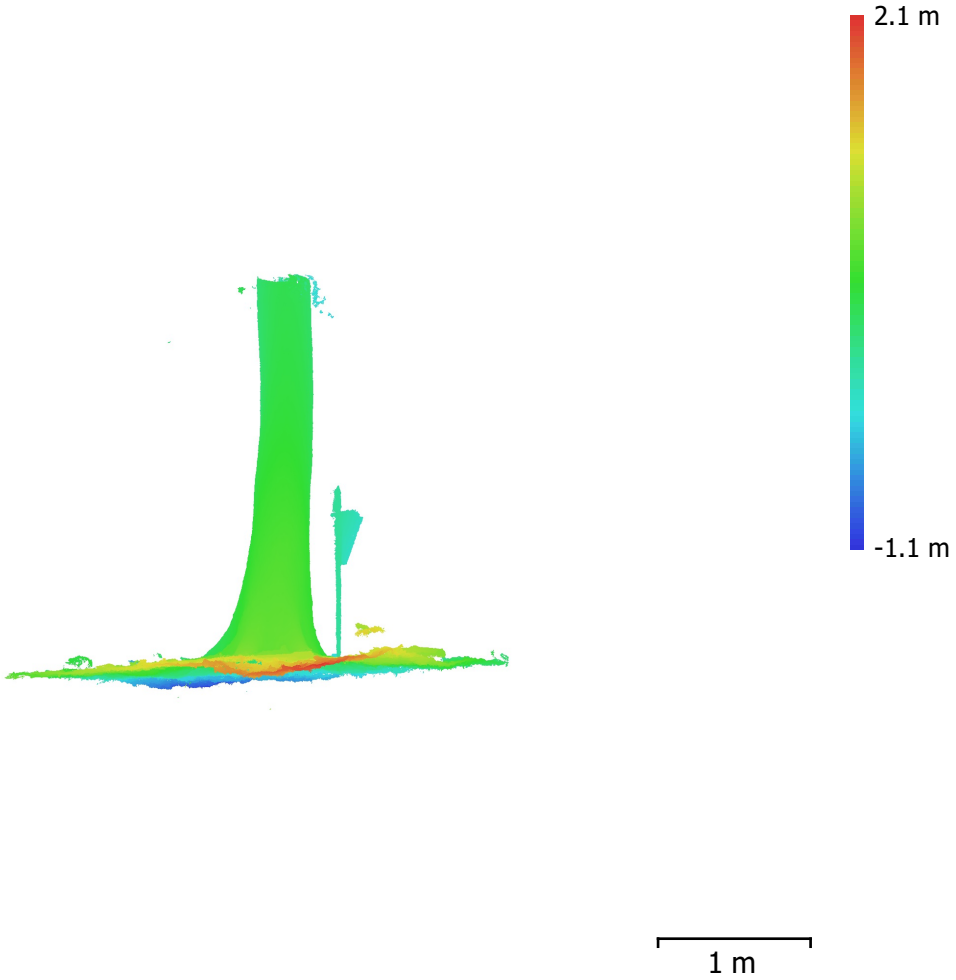

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	114
Aligned cameras	114
Markers	29
Scale bars	7
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	115,052 of 147,466
RMS reprojection error	0.165079 (0.756089 pix)
Max reprojection error	0.504471 (16.6286 pix)
Mean key point size	4.50697 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.49415
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	43 minutes 1 seconds
Alignment time	1 minutes 36 seconds
Depth Maps	
Count	114
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	3 hours 13 minutes
Dense Point Cloud	
Points	5,572,440
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	3 hours 13 minutes
Dense cloud generation time	30 minutes 55 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64