Quercus_petraea_5N

Processing Report

07 November 2018

Survey Data

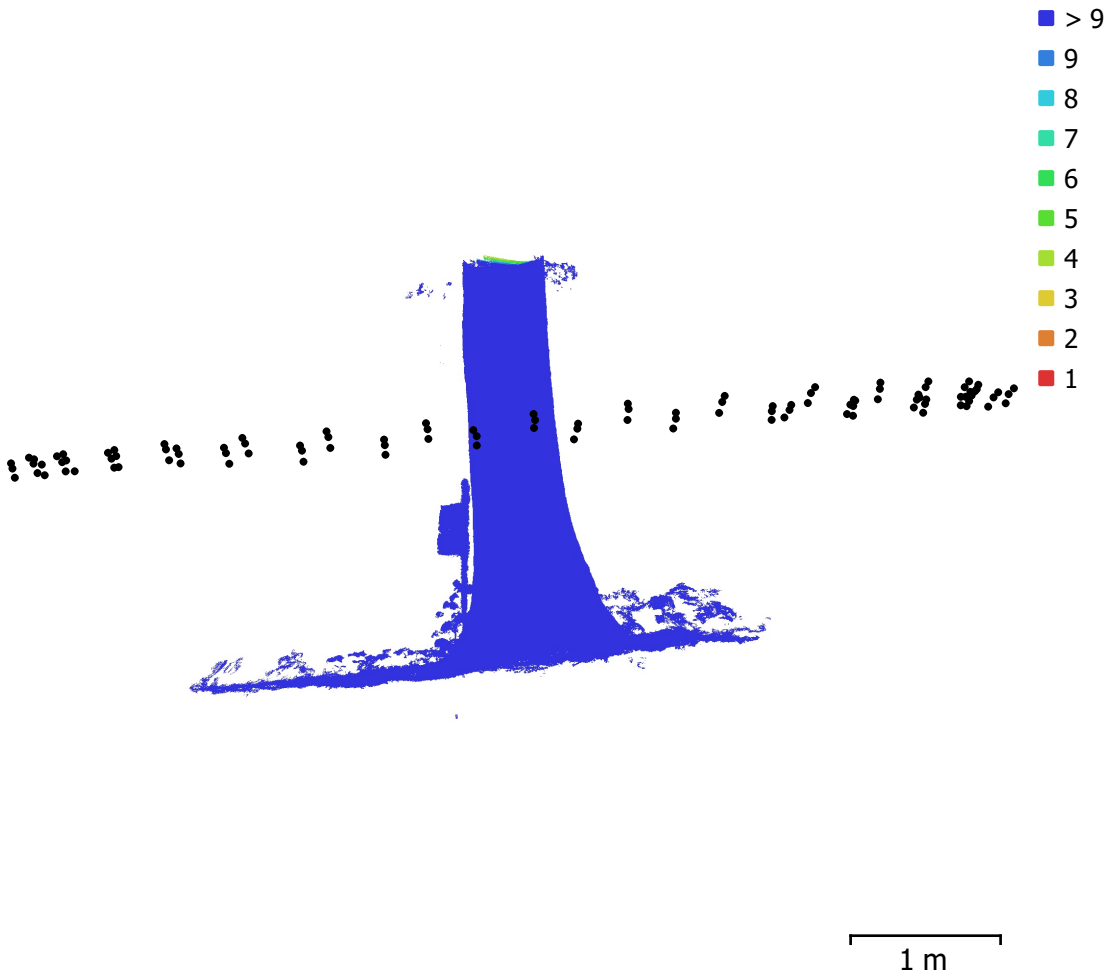

Fig. 1. Camera locations and image overlap.

Number of images:	108	Camera stations:	108
Flying altitude:	3.24 m	Tie points:	101,332
Ground resolution:	0.368 mm/pix	Projections:	363,378
Coverage area:	2.43 m²	Reprojection error:	0.668 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

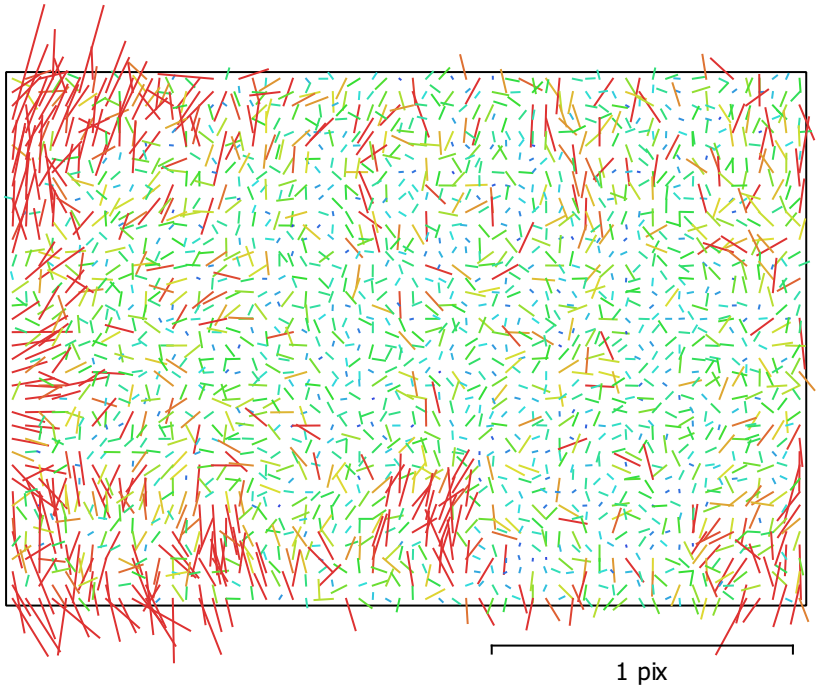

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

108 images

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

	Value	Error	F	Cx	Cy	K1	K2	P1	P2
F	**8459.91**	0.43	1.00	-0.10	-0.09	0.32	0.04	-0.17	-0.08
Cx	**-56.7236**	0.3		1.00	0.01	-0.10	0.02	0.89	0.01
Cy	**-13.2361**	0.43			1.00	-0.04	0.01	0.01	0.94
K1	**-0.0756902**	8.3e-05				1.00	-0.90	-0.10	-0.04
K2	**0.0837231**	0.00055					1.00	0.02	0.01
P1	**-0.000912423**	7.5e-06						1.00	0.01
P2	**8.60321e-05**	1e-05							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

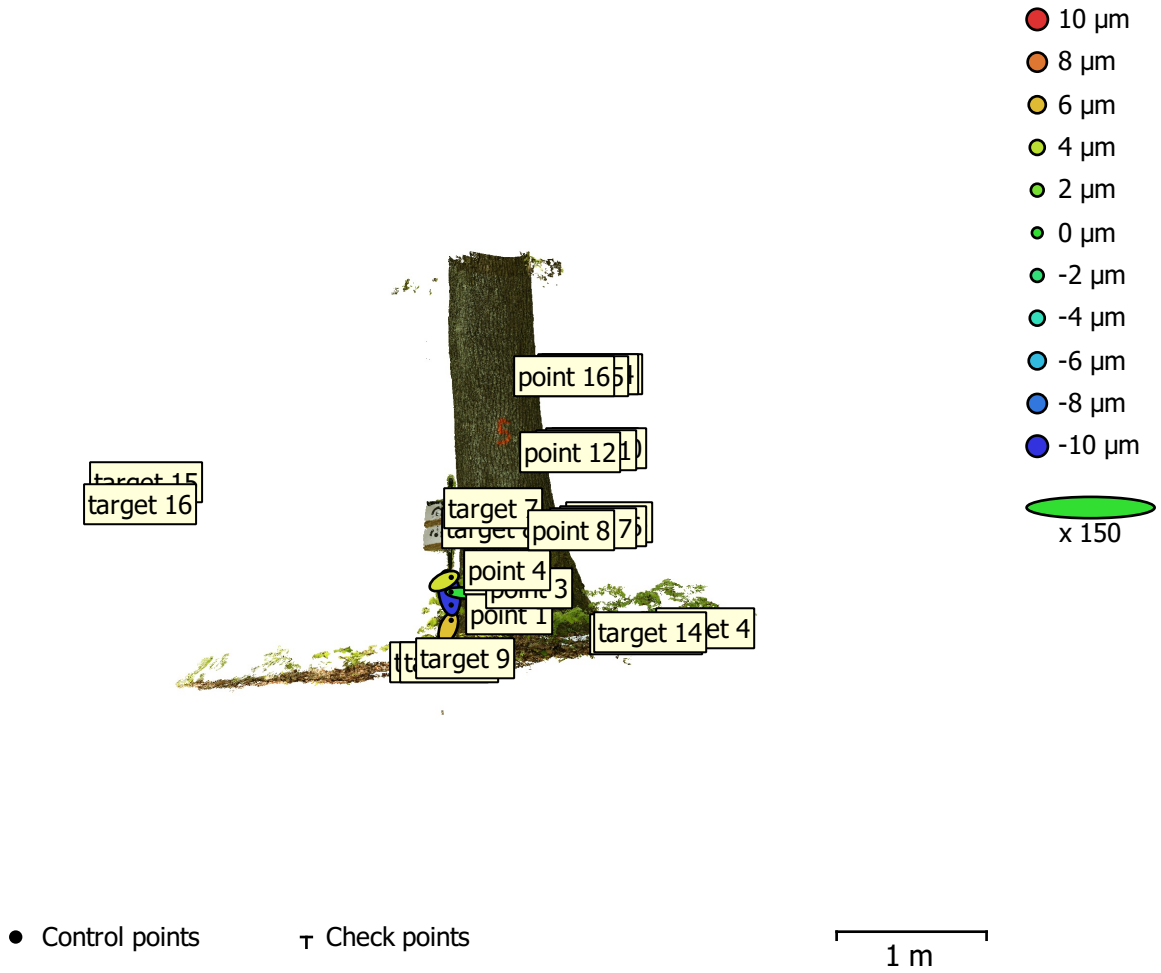

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.630964	0.652531	0.00615429	0.907696	0.907717

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	0.255615	0.66386	0.00585138	0.711395	0.003 (68)
point 2	0.163037	-1.0708	-0.00976329	1.08319	0.003 (74)
point 3	-1.04994	0.0744737	-0.000280425	1.05258	0.003 (79)
point 4	0.631002	0.332141	0.00467566	0.713094	0.003 (79)
Total	**0.630964**	**0.652531**	**0.00615429**	**0.907717**	**0.003**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 4					0.283 (2)
target 5					0.232 (4)
target 6					0.208 (4)
target 8					0.918 (8)
target 9					0.011 (2)
target 13					0.505 (17)
target 14					0.682 (21)
target 15					0.048 (2)
target 16					0.015 (2)
target 7					0.004 (58)
point 5					0.004 (108)
point 6					0.004 (108)
point 7					0.004 (108)
point 8					0.004 (108)
point 9					0.004 (74)
point 10					0.004 (74)
point 11					0.004 (74)
point 12					0.004 (74)
point 13					0.003 (72)
point 14					0.003 (72)
point 15					0.003 (72)
point 16					0.004 (72)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 13_target 14	0.147657	-0.000342797
target 15_target 16	0.155654	0.00765422
target 8_target 7	0.148198	0.000198015
Total		**0.00442507**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.101876	
point 1_point 3	0.187849	
point 1_point 4	0.286196	
Total		

Table 7. Check scale bars.

Digital Elevation Model

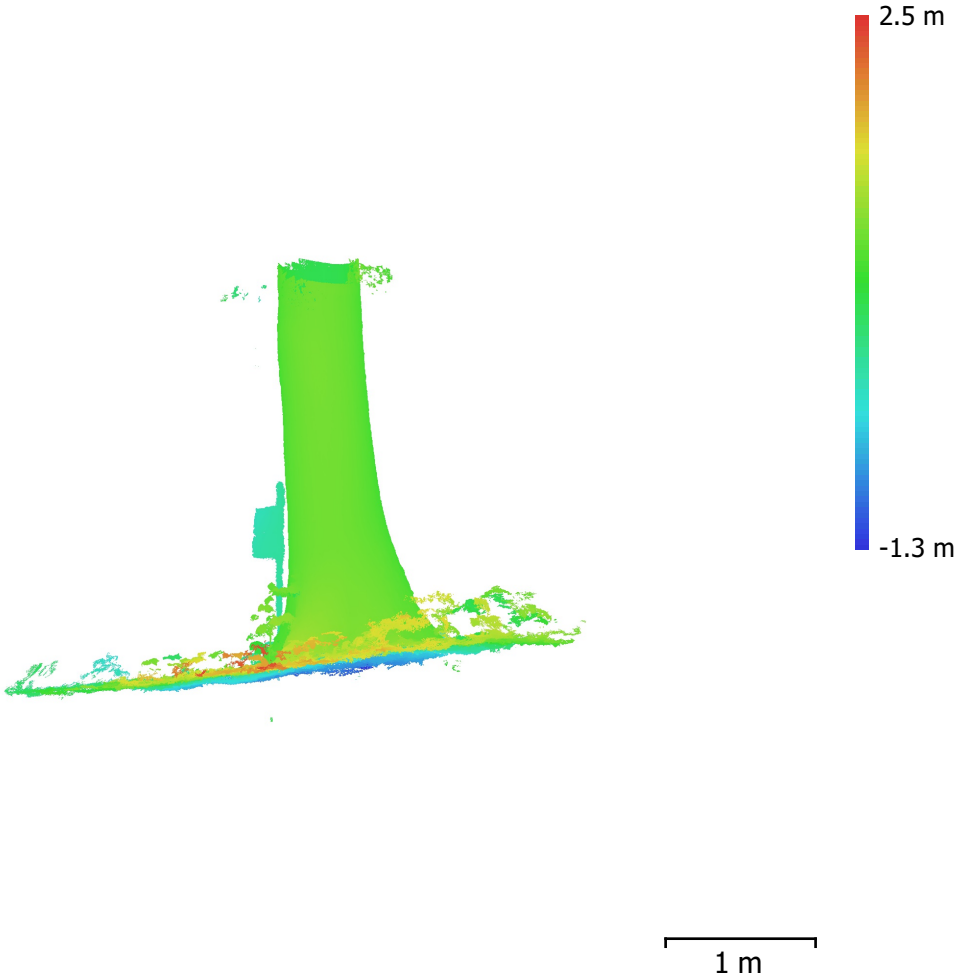

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	108
Aligned cameras	108
Markers	27
Scale bars	6
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	101,332 of 134,348
RMS reprojection error	0.15651 (0.668111 pix)
Max reprojection error	0.476455 (23.3769 pix)
Mean key point size	4.28005 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.7651
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	44 minutes 9 seconds
Alignment time	1 minutes 8 seconds
Depth Maps	
Count	108
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	2 hours 51 minutes
Dense Point Cloud	
Points	6,377,496
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	2 hours 51 minutes
Dense cloud generation time	24 minutes 26 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64