Quercus_petraea_3F

Processing Report

07 November 2018

Survey Data

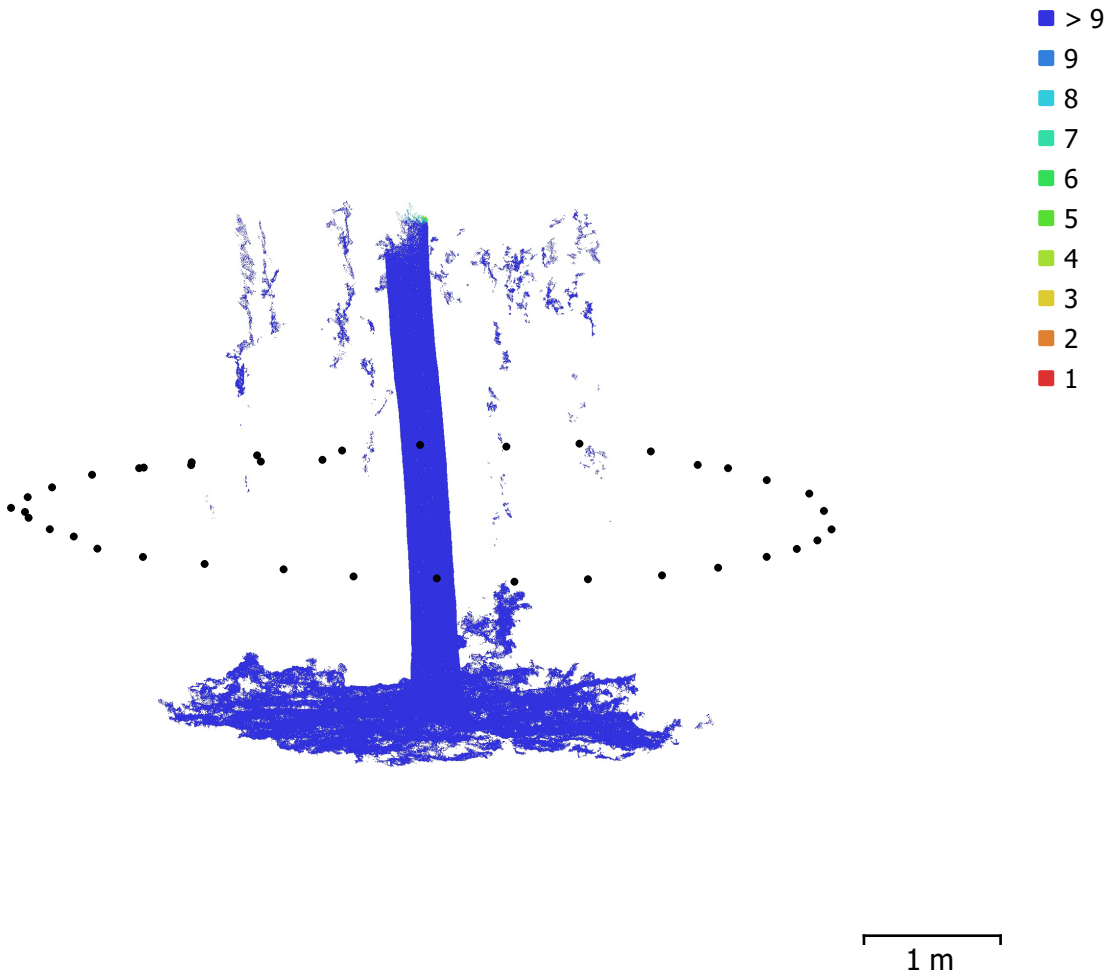

Fig. 1. Camera locations and image overlap.

Number of images:	39	Camera stations:	39
Flying altitude:	4.57 m	Tie points:	26,120
Ground resolution:	0.707 mm/pix	Projections:	69,547
Coverage area:	3.04 m²	Reprojection error:	0.428 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Canon EOS 70D (15 mm)	5472 x 3648	15 mm	4.17 x 4.17 µm	No

Table 1. Cameras.

Camera Calibration

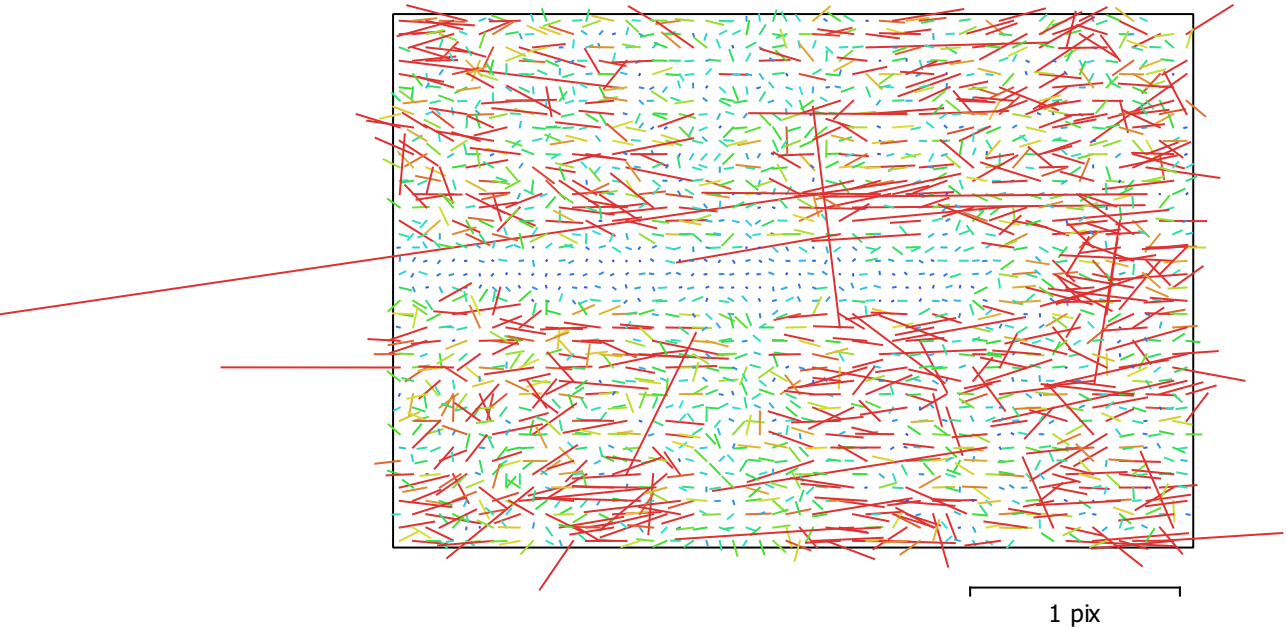

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

39 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**5472 x 3648**	**15 mm**	**4.17 x 4.17 µm**

	Value	Error	F	Cx	Cy	B2	K1	P1	P2
F	**3749.37**	0.31	1.00	-0.49	-0.12	-0.16	-0.33	0.43	0.02
Cx	**19.3676**	0.53		1.00	0.01	0.03	0.09	-0.78	-0.12
Cy	**-51.3355**	0.28			1.00	0.41	0.01	-0.03	0.37
B2	**-0.47561**	0.068				1.00	0.04	-0.04	0.26
K1	**-0.0339388**	3.3e-05					1.00	0.25	-0.13
P1	**0.000368918**	3e-05						1.00	0.03
P2	**-0.000110002**	7.9e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

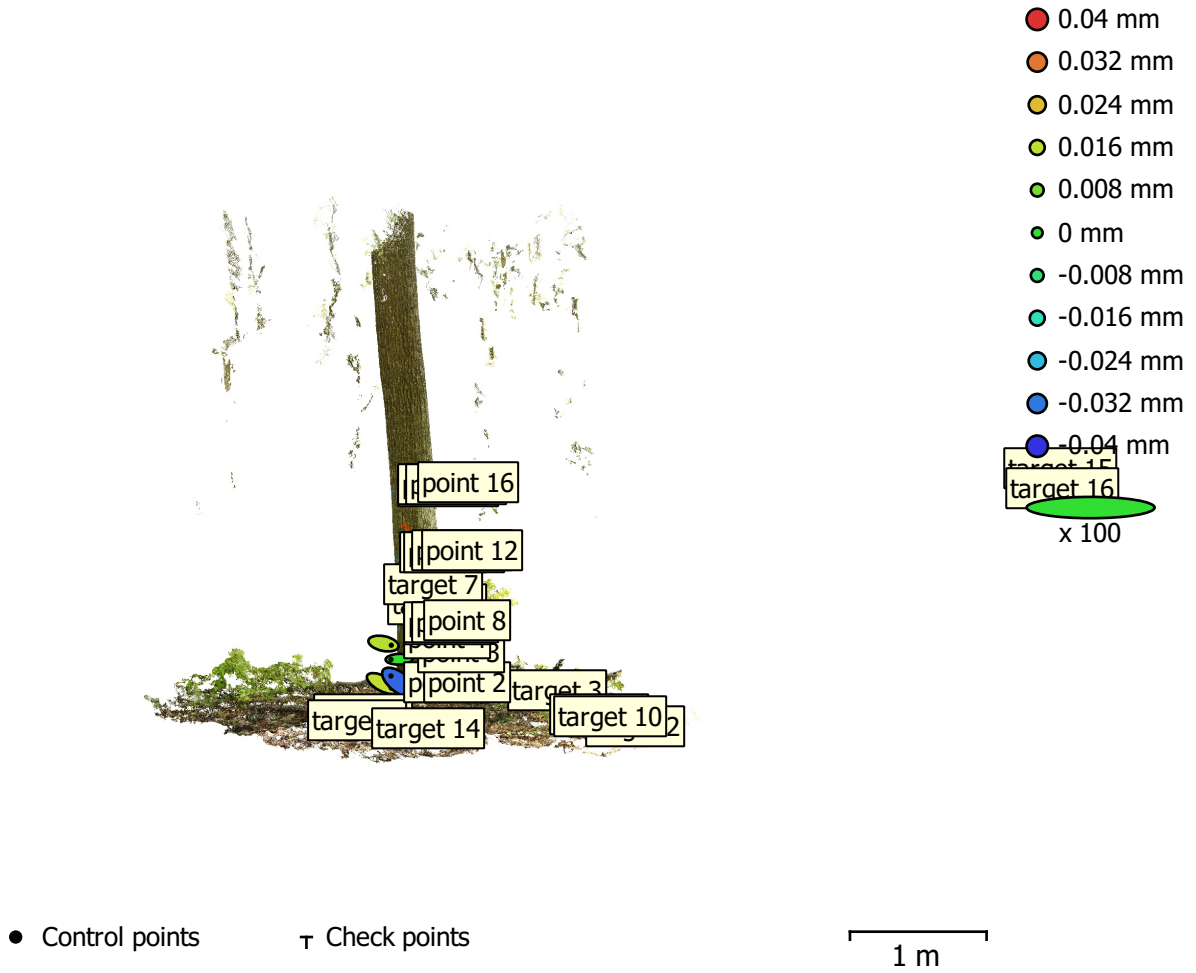

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	1.20889	0.596054	0.0202926	1.34785	1.348

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	1.27217	-0.669267	0.0165183	1.43757	0.004 (39)
point 2	-1.2199	0.955003	-0.0338083	1.54962	0.004 (39)
point 3	-1.19579	-0.0399894	0.0001939	1.19646	0.004 (39)
point 4	1.14418	-0.244075	0.0152074	1.17002	0.004 (39)
Total	**1.20889**	**0.596054**	**0.0202926**	**1.348**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 2					0.198 (5)
target 3					0.986 (2)
target 5					0.022 (2)
target 6					0.513 (8)
target 8					0.616 (15)
target 9					0.235 (2)
target 10					0.486 (13)
target 14					0.268 (5)
target 15					0.261 (8)
target 16					0.300 (8)
target 7					0.004 (39)
point 5					0.004 (39)
point 6					0.004 (39)
point 7					0.004 (39)
point 8					0.004 (39)
point 9					0.004 (39)
point 10					0.004 (39)
point 11					0.004 (39)
point 12					0.004 (39)
point 13					0.004 (39)
point 14					0.004 (39)
point 15					0.004 (39)
point 16					0.004 (39)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147755	-0.000244826
target 9_target 10	0.149688	0.00168804
target 15_target 16	0.147452	-0.000548301
target 8_target 7	0.147705	-0.000294813
Total		**0.00090788**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.0890354	
point 1_point 3	0.209621	
point 1_point 4	0.314064	
Total		

Table 7. Check scale bars.

Digital Elevation Model

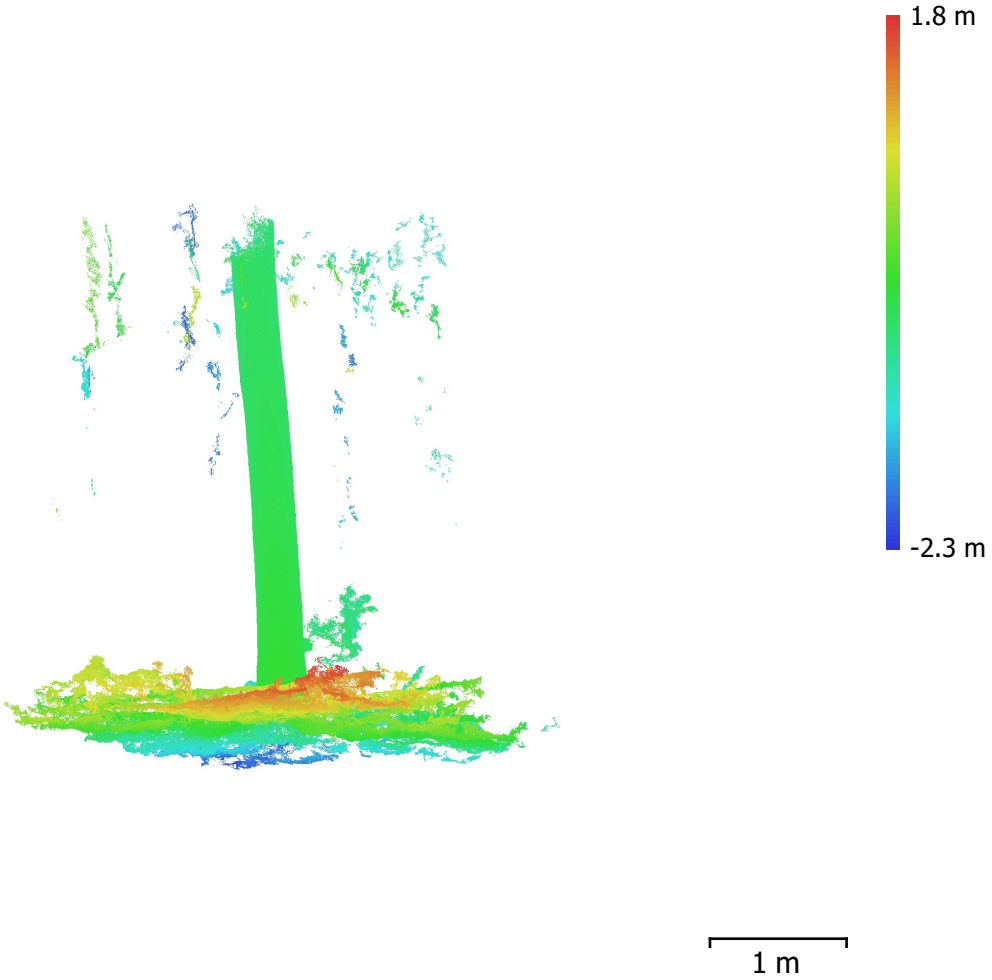

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	39
Aligned cameras	39
Markers	29
Scale bars	7
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	26,120 of 30,173
RMS reprojection error	0.100541 (0.427806 pix)
Max reprojection error	0.304564 (9.79186 pix)
Mean key point size	3.45363 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.7176
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	5 minutes 21 seconds
Alignment time	16 seconds
Depth Maps	
Count	39
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	21 minutes 48 seconds
Dense Point Cloud	
Points	1,835,484
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	21 minutes 48 seconds
Dense cloud generation time	4 minutes 55 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64