Quercus_petraea_1F

Processing Report

07 November 2018

Survey Data

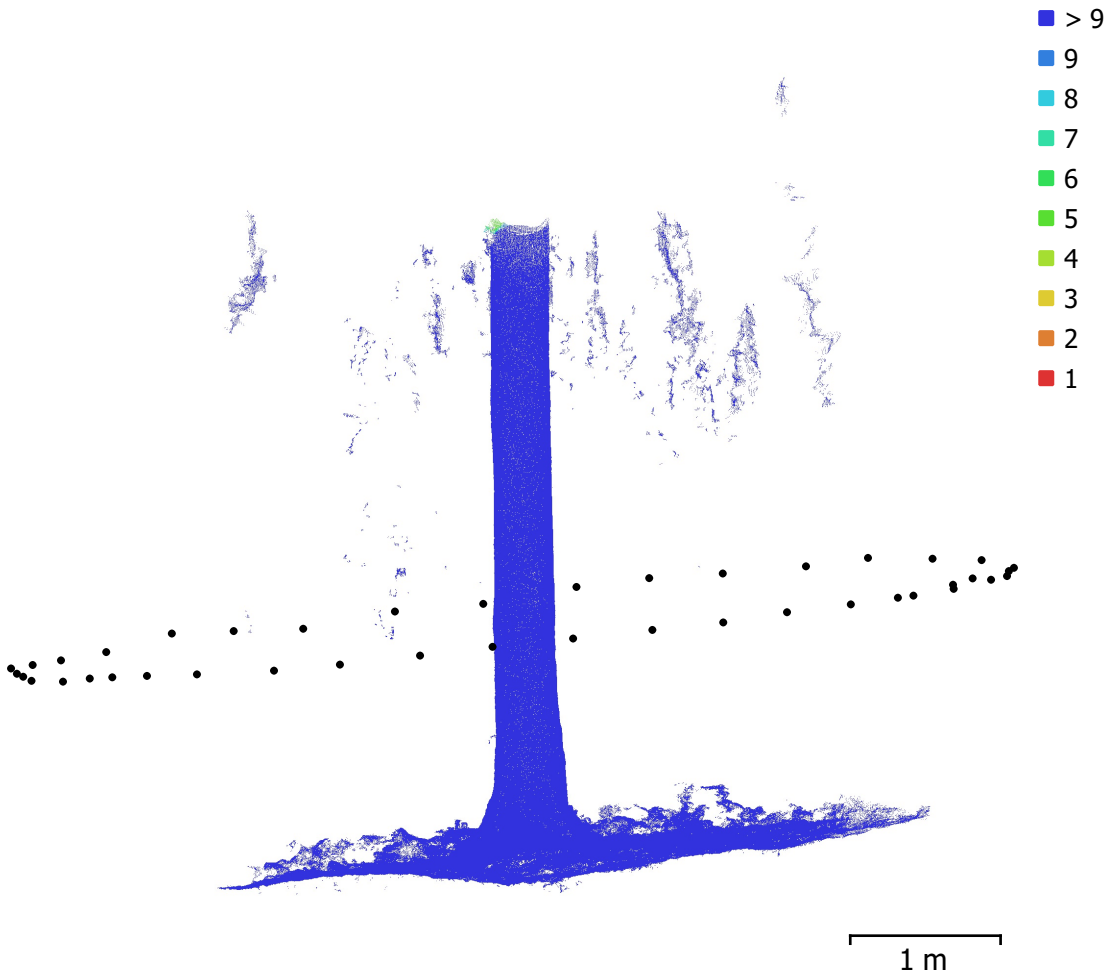

Fig. 1. Camera locations and image overlap.

Number of images:	42	Camera stations:	42
Flying altitude:	3.22 m	Tie points:	38,505
Ground resolution:	0.791 mm/pix	Projections:	112,907
Coverage area:	2.87 m²	Reprojection error:	0.433 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

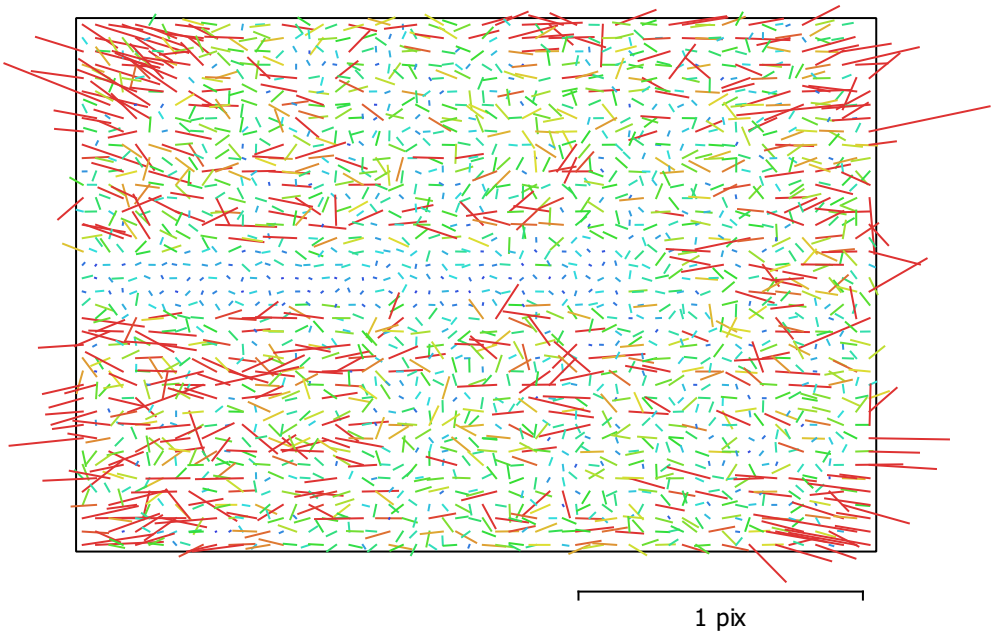

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

42 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	**3743.09**	0.16	1.00	-0.35	0.04	0.03	-0.47	0.17	0.01
Cx	**21.0431**	0.29		1.00	0.06	-0.01	0.17	-0.80	-0.03
Cy	**-38.8983**	0.22			1.00	0.29	-0.02	-0.14	0.09
B2	**0.533455**	0.037				1.00	-0.04	-0.09	0.06
K1	**-0.034511**	3e-05					1.00	0.11	-0.14
P1	**-3.41246e-05**	1.9e-05						1.00	-0.01
P2	**-5.07107e-05**	6.2e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

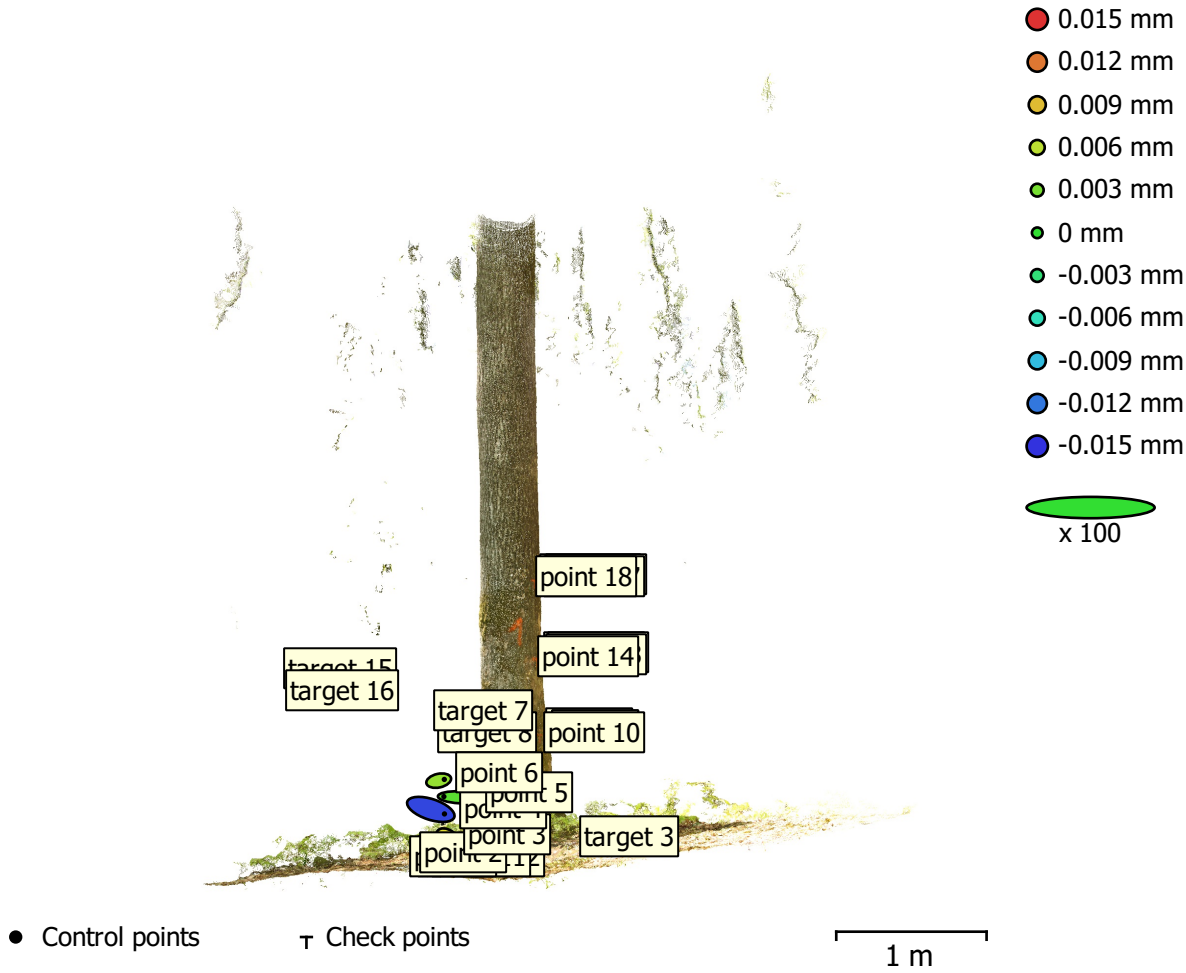

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	1.45113	0.357978	0.00839405	1.49463	1.49465

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 3	-0.480199	0.3393	0.00778989	0.588027	0.004 (42)
point 4	1.81736	-0.601133	-0.0141349	1.91425	0.004 (42)
point 5	-2.08194	0.0976853	0.00177321	2.08423	0.004 (42)
point 6	0.745111	0.162991	0.00426842	0.762741	0.004 (42)
Total	**1.45113**	**0.357978**	**0.00839405**	**1.49465**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 3					0.003 (2)
target 8					0.316 (10)
target 12					0.181 (2)
target 15					0.130 (15)
target 16					0.149 (16)
target 7					0.004 (42)
target 11					0.004 (42)
point 1					0.004 (42)
point 2					0.004 (42)
point 7					0.004 (42)
point 8					0.004 (42)
point 9					0.004 (42)
point 10					0.004 (42)
point 11					0.004 (42)
point 12					0.004 (42)
point 13					0.004 (42)
point 14					0.004 (42)
point 15					0.004 (42)
point 16					0.004 (42)
point 17					0.004 (42)
point 18					0.004 (42)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 8_target 7	0.153324	0.00532359
target 15_target 16	0.147133	-0.000867305
target 12_target 11	0.146123	-0.00187681
point 1_point 2	0.144684	-0.00331645
Total		**0.00330205**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 3_point 4	0.144253	
point 3_point 5	0.259591	
point 3_point 6	0.373693	
Total		

Table 7. Check scale bars.

Digital Elevation Model

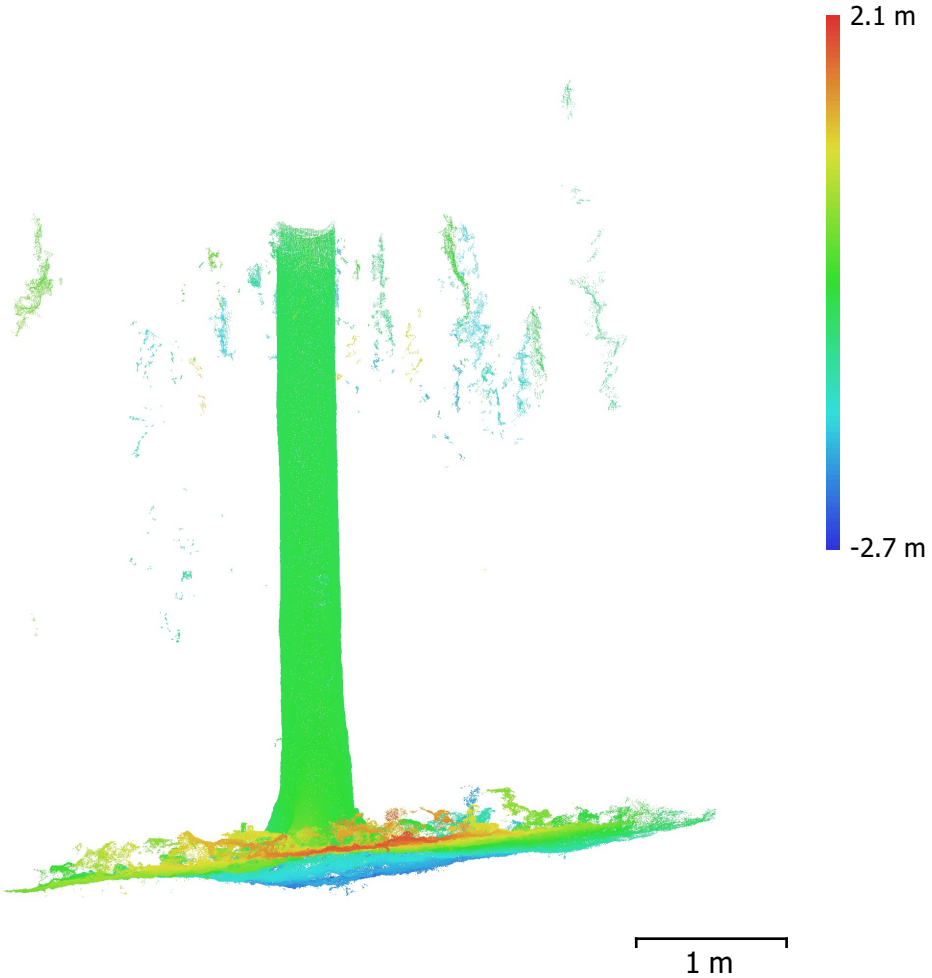

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	42
Aligned cameras	42
Markers	27
Scale bars	7
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	38,505 of 42,127
RMS reprojection error	0.0818079 (0.433059 pix)
Max reprojection error	0.248517 (17.2064 pix)
Mean key point size	4.49305 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.07406
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	6 minutes 26 seconds
Alignment time	23 seconds
Depth Maps	
Count	42
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	23 minutes 12 seconds
Dense Point Cloud	
Points	2,049,680
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	23 minutes 12 seconds
Dense cloud generation time	9 minutes 1 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64