Quercus_petraea_4F

Processing Report

07 November 2018

Survey Data

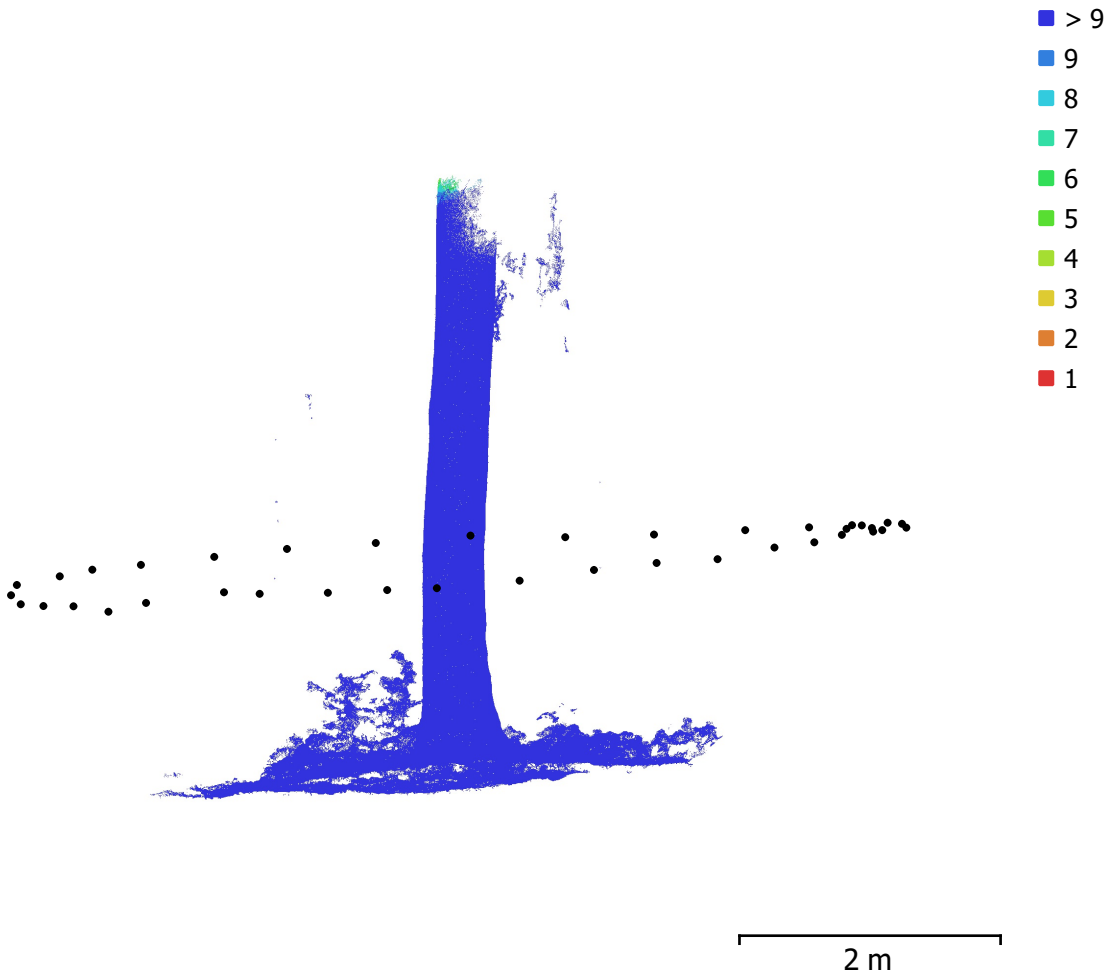


Fig. 1. Camera locations and image overlap.

Number of images:	39	Camera stations:	39
Flying altitude:	3.36 m	Tie points:	27,872
Ground resolution:	0.778 mm/pix	Projections:	74,306
Coverage area:	3.31 m²	Reprojection error:	0.376 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

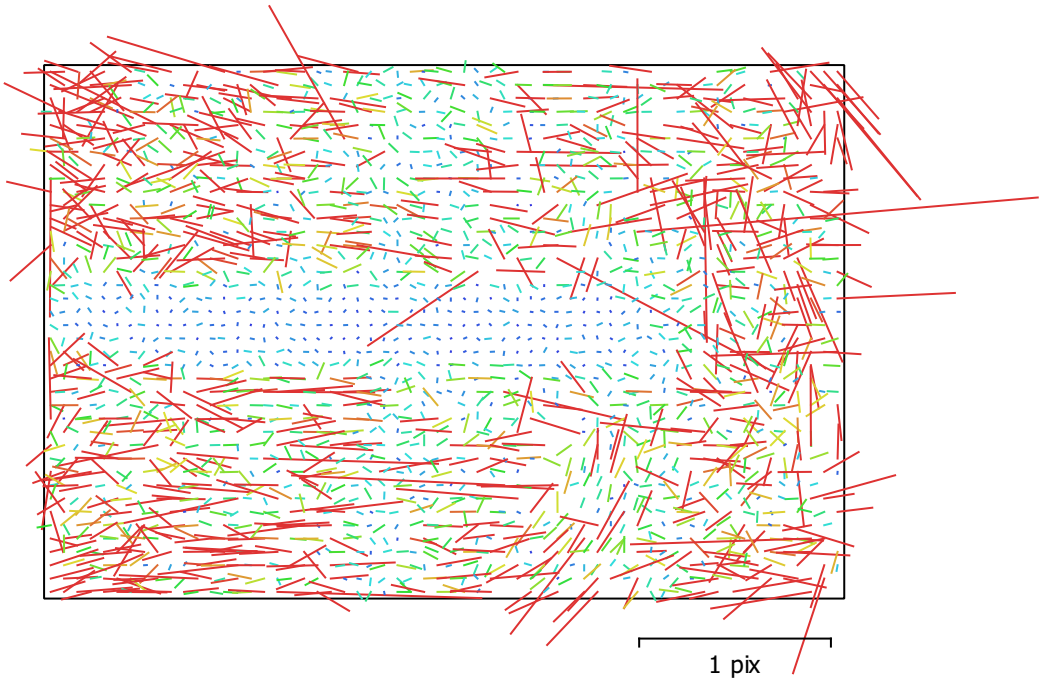


Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

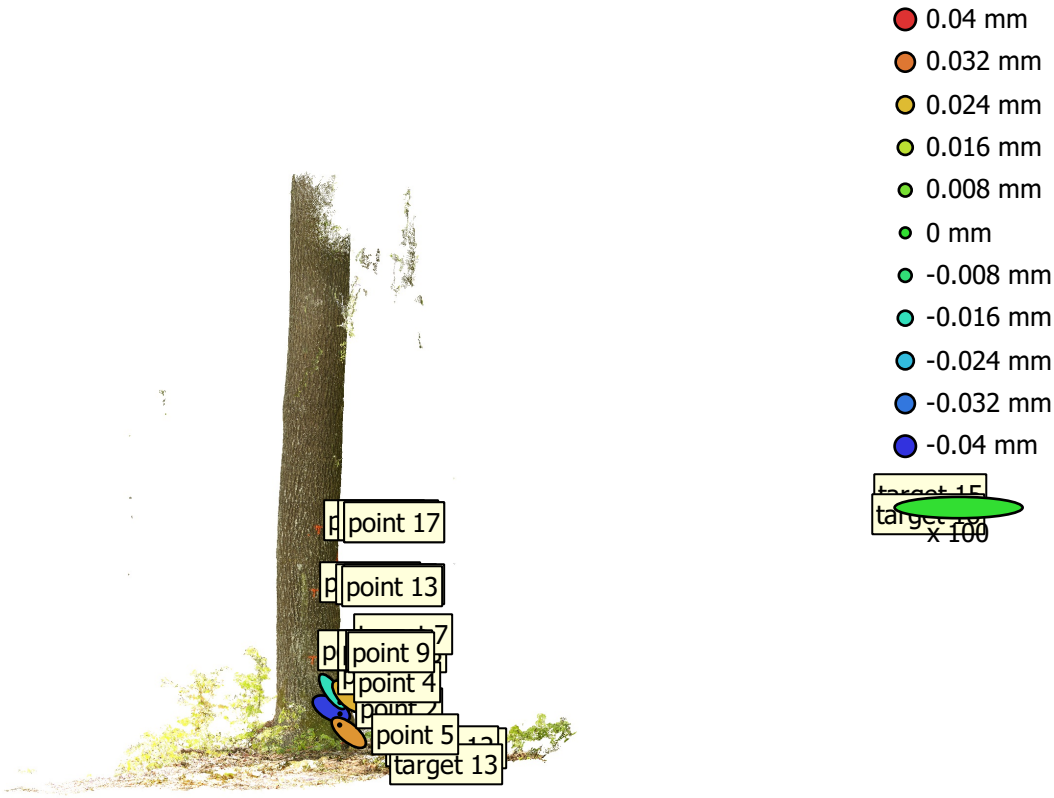
39 images

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	**3750.74**	0.35	1.00	-0.42	-0.10	-0.04	-0.37	0.29	-0.02
Cx	**26.665**	0.48		1.00	0.11	-0.01	-0.03	-0.76	-0.13
Cy	**-59.4139**	0.26			1.00	0.48	-0.05	-0.17	0.24
B2	**0.131887**	0.061				1.00	-0.07	-0.13	0.27
K1	**-0.0345869**	4e-05					1.00	0.38	-0.23
P1	**-0.000281345**	3e-05						1.00	0.07
P2	**-0.000122775**	8.3e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points



● Control points ⊤ Check points 2 m

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	1.25999	1.25017	0.028248	1.77496	1.77519

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 2	1.34226	-0.757194	-0.0385152	1.54158	0.004 (39)
point 3	1.1671	-1.65957	-0.0159256	2.02893	0.004 (39)
point 4	-1.11682	1.2426	0.0253885	1.67092	0.004 (39)
point 5	-1.39257	1.17478	0.0284637	1.82213	0.004 (39)
Total	**1.25999**	**1.25017**	**0.028248**	**1.77519**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8					0.267 (17)
target 11					0.098 (2)
target 12					0.044 (2)
target 13					0.097 (4)
target 15					0.255 (9)
target 16					0.262 (9)
target 7					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)
point 17					0.004 (39)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 8_target 7	0.147653	-0.000346928
target 11_target 12	0.14868	0.000680176
target 15_target 16	0.147671	-0.000329395
Total		**0.000480104**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 2_point 5	0.0848231	
point 3_point 5	0.17287	
point 4_point 5	0.282584	
Total		

Table 7. Check scale bars.

Digital Elevation Model

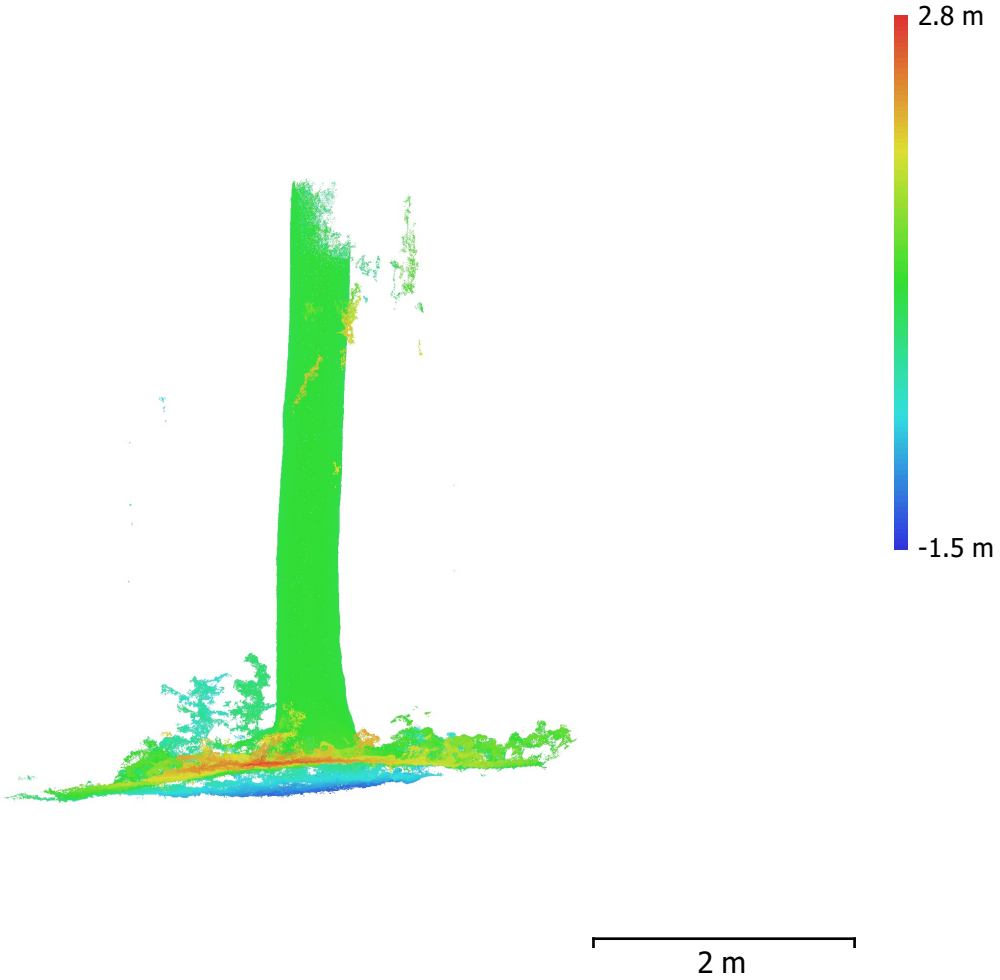


Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	39
Aligned cameras	39
Markers	23
Scale bars	6
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	27,872 of 31,642
RMS reprojection error	0.0982177 (0.375606 pix)
Max reprojection error	0.298228 (20.0686 pix)
Mean key point size	3.20102 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.73415
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 26 seconds
Alignment time	19 seconds
Depth Maps	
Count	39
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	16 minutes 37 seconds
Dense Point Cloud	
Points	1,824,084
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	16 minutes 37 seconds
Dense cloud generation time	3 minutes 59 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64