Quercus_petraea_8F

Processing Report

07 November 2018

Survey Data

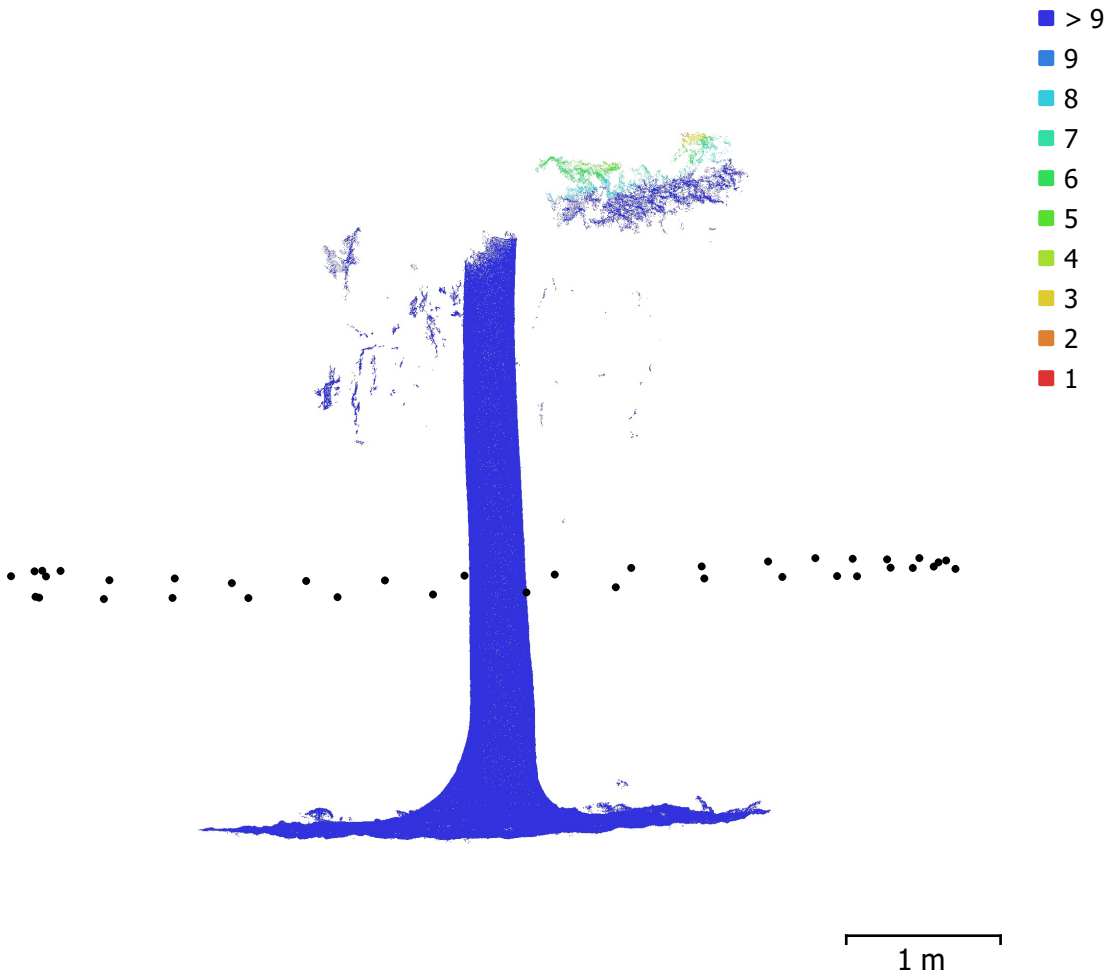

Fig. 1. Camera locations and image overlap.

Number of images:	38	Camera stations:	38
Flying altitude:	3.14 m	Tie points:	40,969
Ground resolution:	0.721 mm/pix	Projections:	106,670
Coverage area:	2.07 m²	Reprojection error:	0.392 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

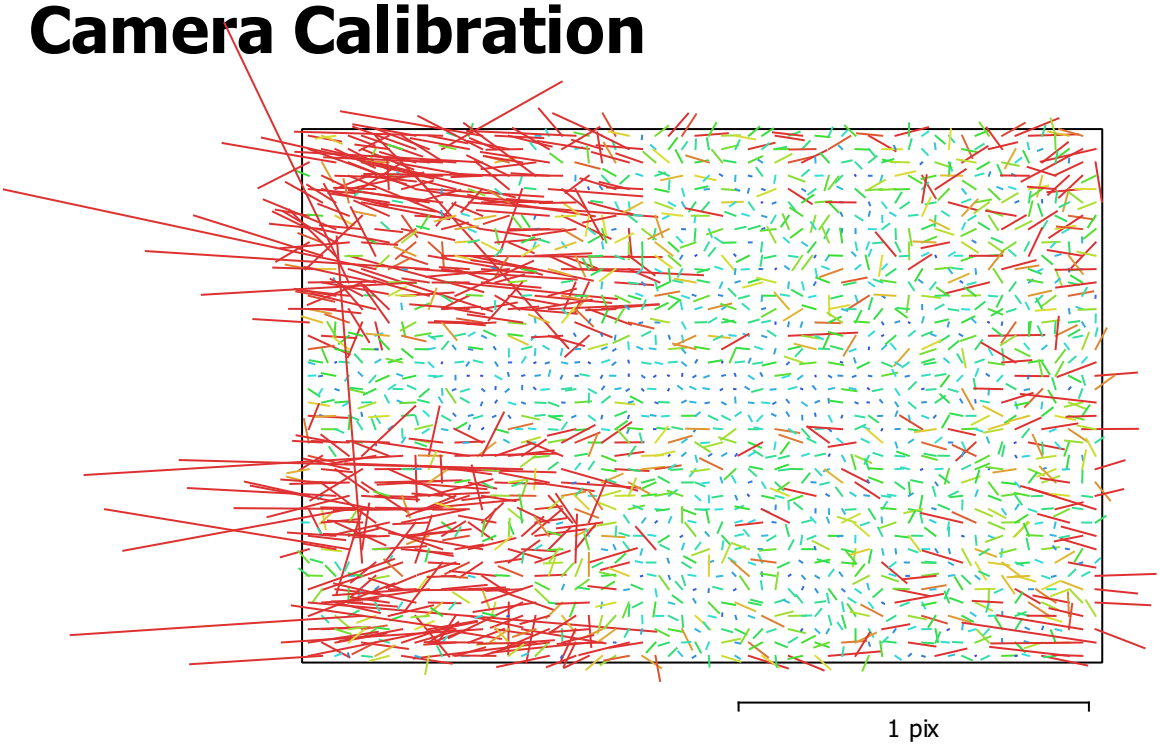

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

38 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	**3742.83**	0.2	1.00	-0.77	-0.00	0.00	-0.43	0.51	0.04
Cx	**17.3222**	0.34		1.00	0.01	0.04	0.32	-0.77	-0.05
Cy	**-42.8045**	0.21			1.00	0.19	0.01	-0.06	0.17
B2	**0.350877**	0.042				1.00	0.00	-0.08	-0.18
K1	**-0.03429**	2.5e-05					1.00	-0.04	-0.11
P1	**-6.45848e-05**	1.7e-05						1.00	0.02
P2	**-0.000124231**	5.4e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

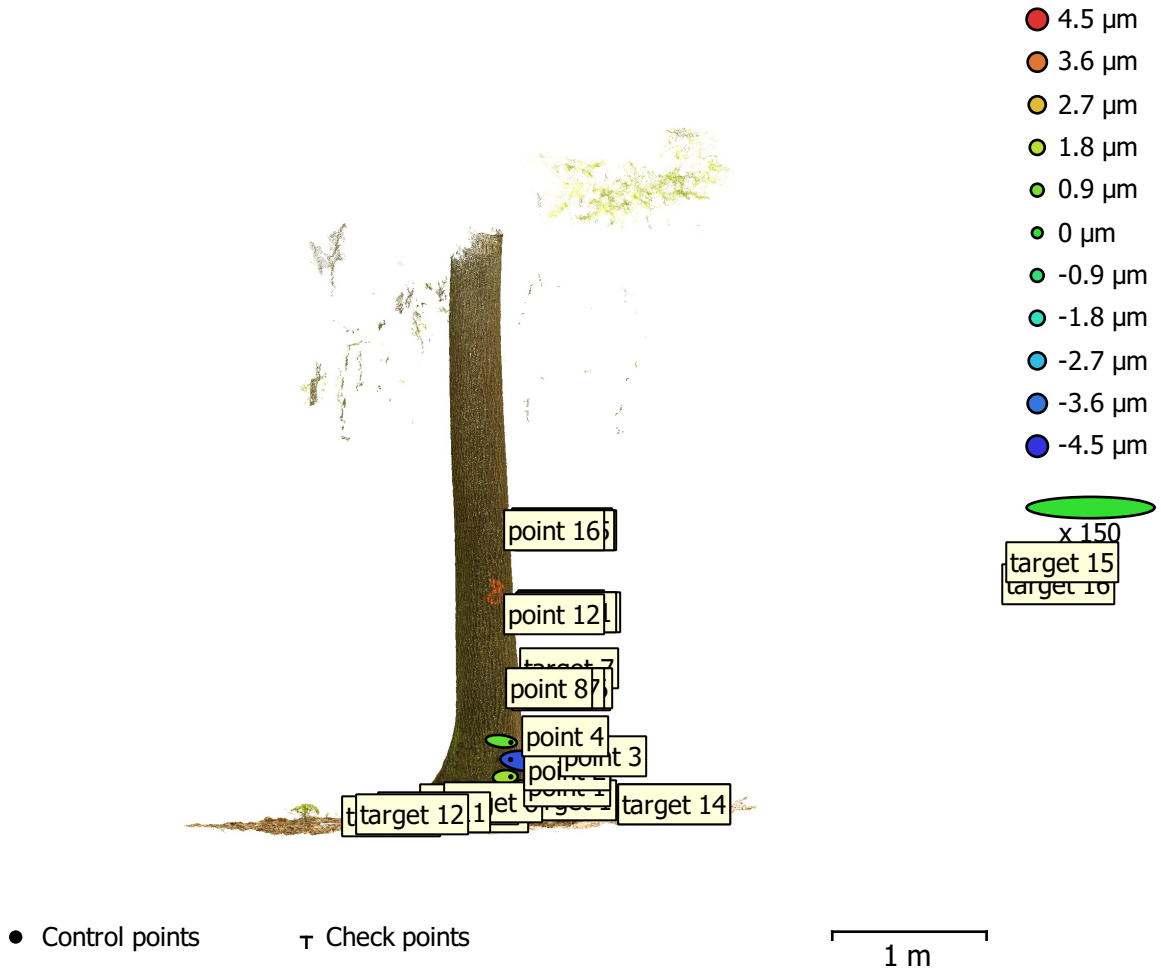

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.88743	0.0929636	0.00246109	0.892286	0.892289

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	0.187864	-0.0648692	0.00228028	0.198762	0.004 (38)
point 2	0.473003	0.022586	0.00138699	0.473544	0.004 (38)
point 3	-1.48601	0.141678	-0.00408687	1.49275	0.004 (38)
point 4	0.826368	-0.0988849	0.000634037	0.832263	0.004 (38)
Total	**0.88743**	**0.0929636**	**0.00246109**	**0.892289**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.380 (16)
target 2					0.223 (13)
target 4					0.207 (9)
target 5					0.171 (18)
target 6					0.212 (19)
target 8					0.235 (13)
target 11					0.179 (8)
target 12					0.139 (8)
target 13					0.208 (12)
target 14					0.163 (6)
target 16					0.163 (11)
target 15					0.046 (12)
target 7					0.004 (38)
point 5					0.004 (38)
point 6					0.004 (38)
point 7					0.004 (38)
point 8					0.004 (38)
point 9					0.004 (38)
point 10					0.004 (38)
point 11					0.004 (38)
point 12					0.004 (38)
point 13					0.004 (38)
point 14					0.004 (38)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 15					0.004 (38)
point 16					0.003 (38)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147491	-0.000509236
target 11_target 12	0.147514	-0.000486157
target 13_target 14	0.148314	0.000314195
target 16_target 15	0.147503	-0.00049713
target 8_target 7	0.149161	0.0011611
Total		**0.000661769**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.0978976	
point 1_point 3	0.209415	
point 1_point 4	0.32069	
Total		

Table 7. Check scale bars.

Digital Elevation Model

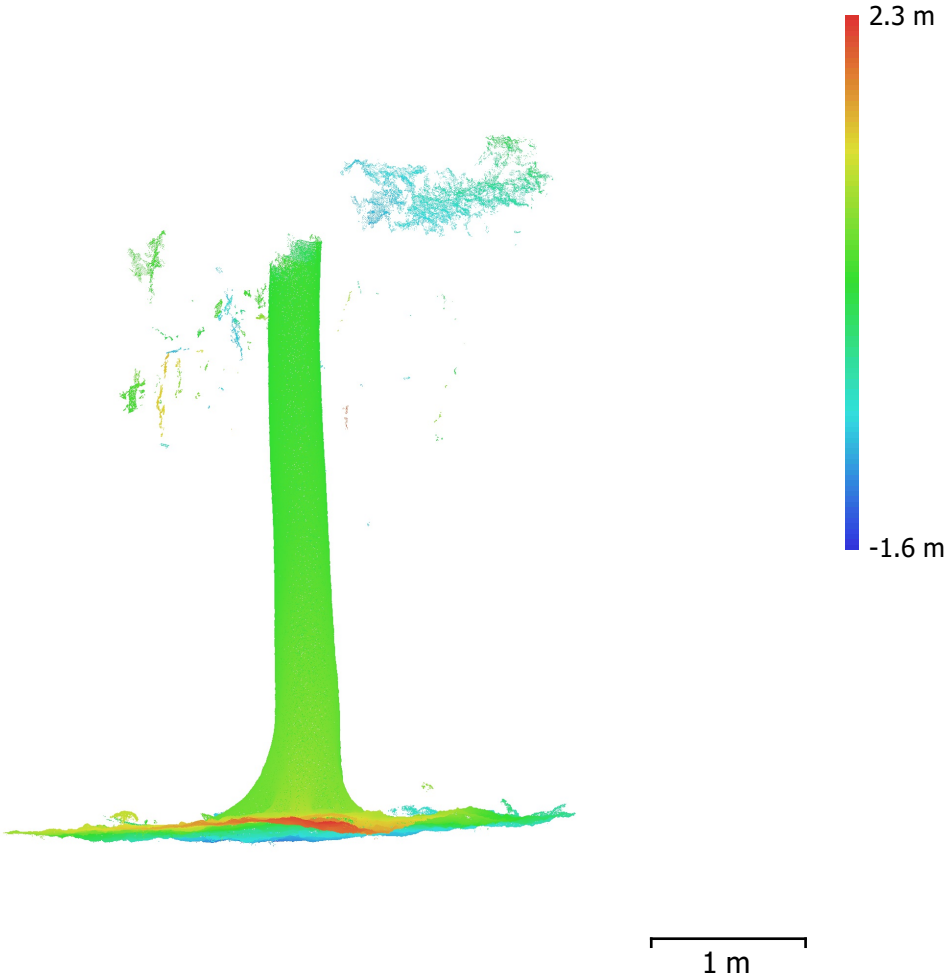

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	38
Aligned cameras	38
Markers	29
Scale bars	8
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	40,969 of 44,353
RMS reprojection error	0.0897434 (0.391876 pix)
Max reprojection error	0.271108 (10.4278 pix)
Mean key point size	3.70698 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.69666
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 14 seconds
Alignment time	17 seconds
Depth Maps	
Count	38
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	42 minutes 22 seconds
Dense Point Cloud	
Points	1,886,183
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	42 minutes 22 seconds
Dense cloud generation time	13 minutes 54 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64