Fagus_sylvatica_1F

Processing Report

07 November 2018

Survey Data

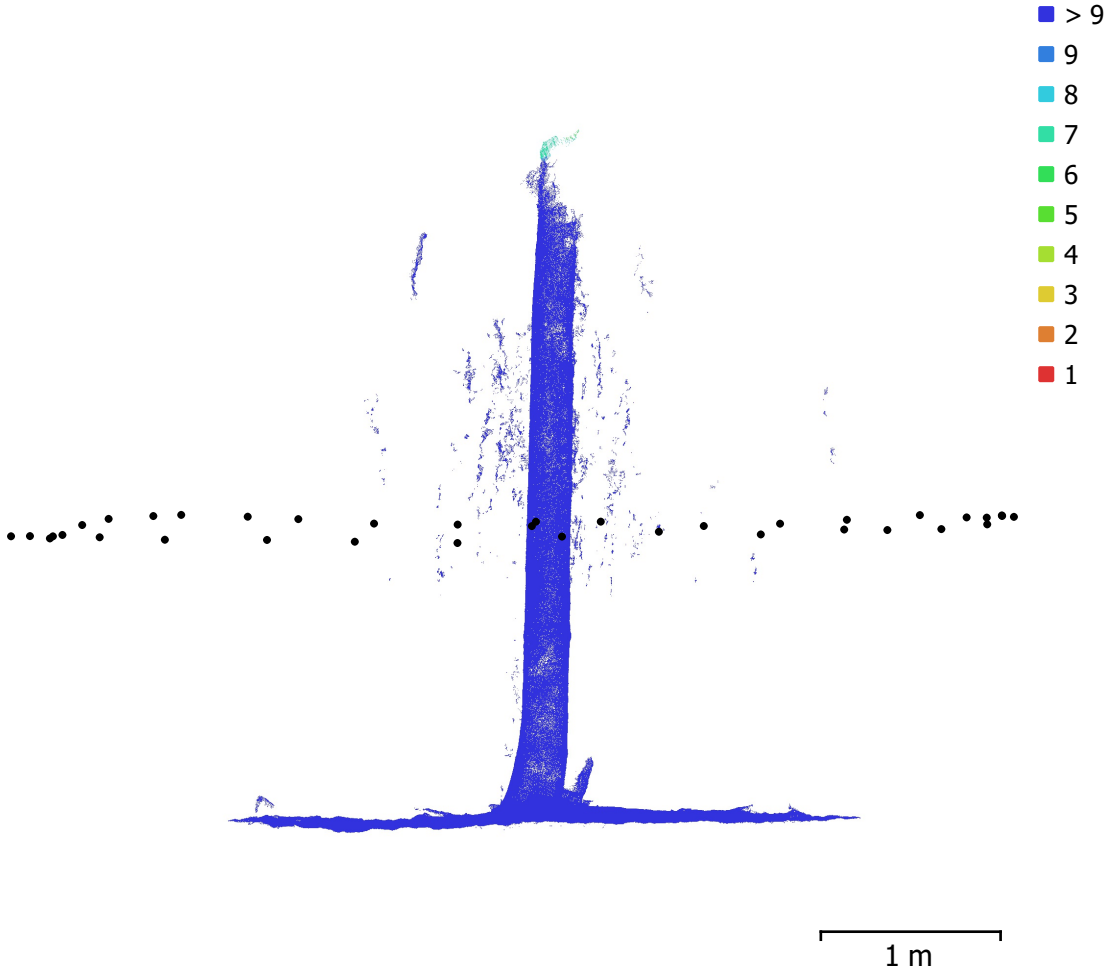

Fig. 1. Camera locations and image overlap.

Number of images:	37	Camera stations:	37
Flying altitude:	3 m	Tie points:	30,164
Ground resolution:	0.682 mm/pix	Projections:	71,511
Coverage area:	1.14 m²	Reprojection error:	0.58 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

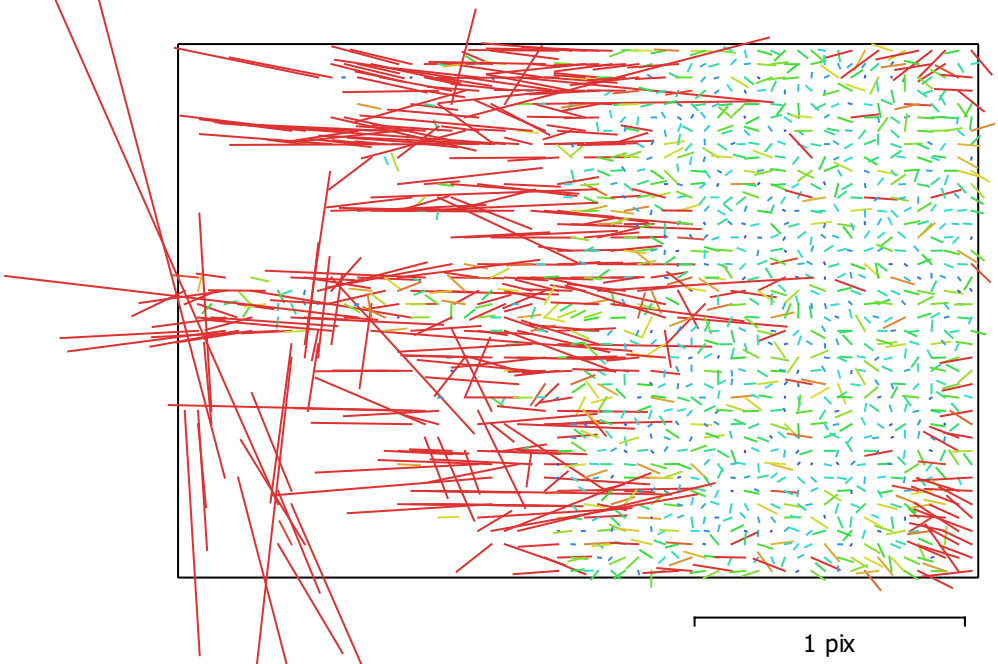

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

37 images

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

	Value	Error	F	B2	K1	P1	P2
F	**3749.61**	0.098	1.00	0.08	-0.05	0.12	-0.00
B2	**-5.56041**	0.069		1.00	-0.03	0.02	-0.93
K1	**-0.0348419**	8.6e-05			1.00	-0.79	0.04
P1	**0.000576871**	3.2e-05				1.00	0.01
P2	**-1.75246e-05**	1e-05					1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

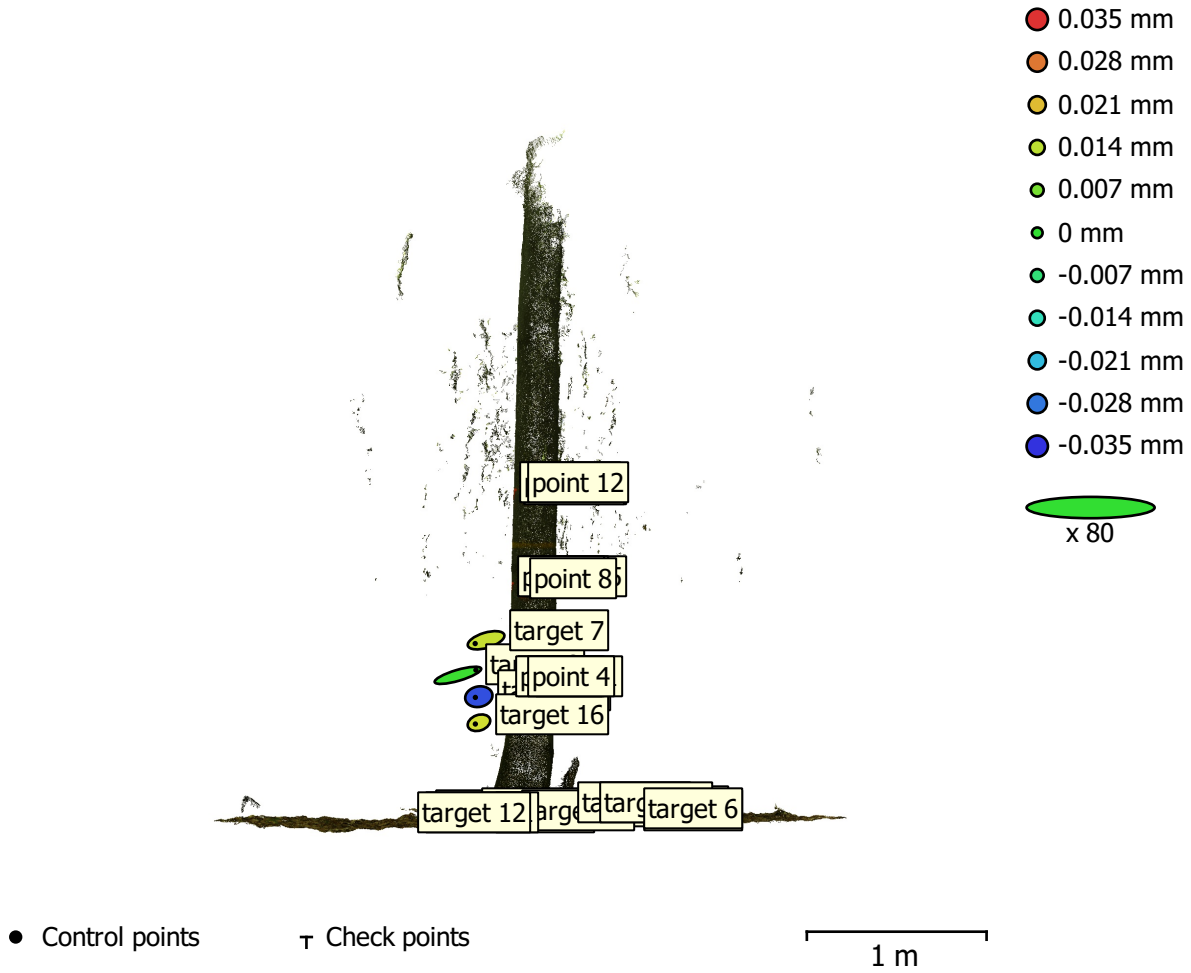

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	1.50235	0.443573	0.0194763	1.56646	1.56658

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8	2.49918	0.732678	0.00093516	2.60436	0.135 (17)
target 15	-0.481633	-0.100356	-0.0320637	0.493021	0.161 (22)
target 16	-0.501374	-0.174302	0.0161891	0.531055	0.181 (15)
target 7	-1.51623	-0.457995	0.0150421	1.58396	0.103 (37)
Total	**1.50235**	**0.443573**	**0.0194763**	**1.56658**	**0.139**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.149 (22)
target 2					0.145 (26)
target 4					0.228 (25)
target 5					0.161 (9)
target 9					0.098 (10)
target 10					0.184 (13)
target 11					0.134 (28)
target 12					0.120 (29)
target 13					0.257 (29)
target 14					0.247 (27)
target 6					0.004 (37)
point 1					0.004 (37)
point 2					0.004 (37)
point 3					0.004 (37)
point 4					0.004 (37)
point 5					0.004 (37)
point 6					0.004 (37)
point 7					0.004 (37)
point 8					0.004 (37)
point 9					0.003 (37)
point 10					0.004 (37)
point 11					0.004 (37)
point 12					0.004 (37)

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	0.149047	0.00104719
target 8_target 7	0.147572	-0.000428448
target 9_target 10	0.148339	0.000338541
target 11_target 12	0.147808	-0.000191927
target 13_target 14	0.147268	-0.000731608
target 15_target 16	0.147952	-4.8233e-05
Total		**0.000572887**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
target 8_target 16	0.300032	
target 16_target 7	0.447529	
Total		

Table 7. Check scale bars.

Digital Elevation Model

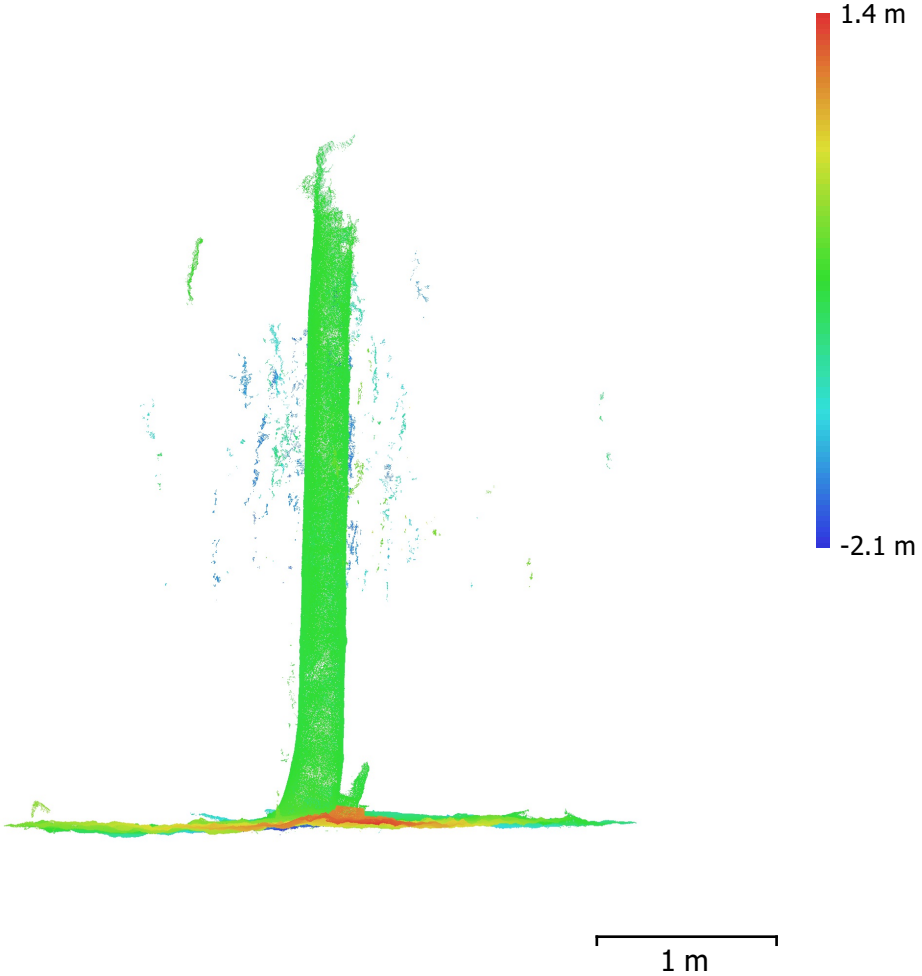

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	37
Aligned cameras	37
Markers	27
Scale bars	8
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	30,164 of 32,209
RMS reprojection error	0.090913 (0.580336 pix)
Max reprojection error	0.275489 (17.3505 pix)
Mean key point size	4.96548 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.43777
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 18 seconds
Alignment time	5 seconds
Depth Maps	
Count	37
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	32 minutes 10 seconds
Dense Point Cloud	
Points	1,712,393
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	32 minutes 10 seconds
Dense cloud generation time	12 minutes 17 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64