Fagus_sylvatica_7F

Processing Report

07 November 2018

Survey Data

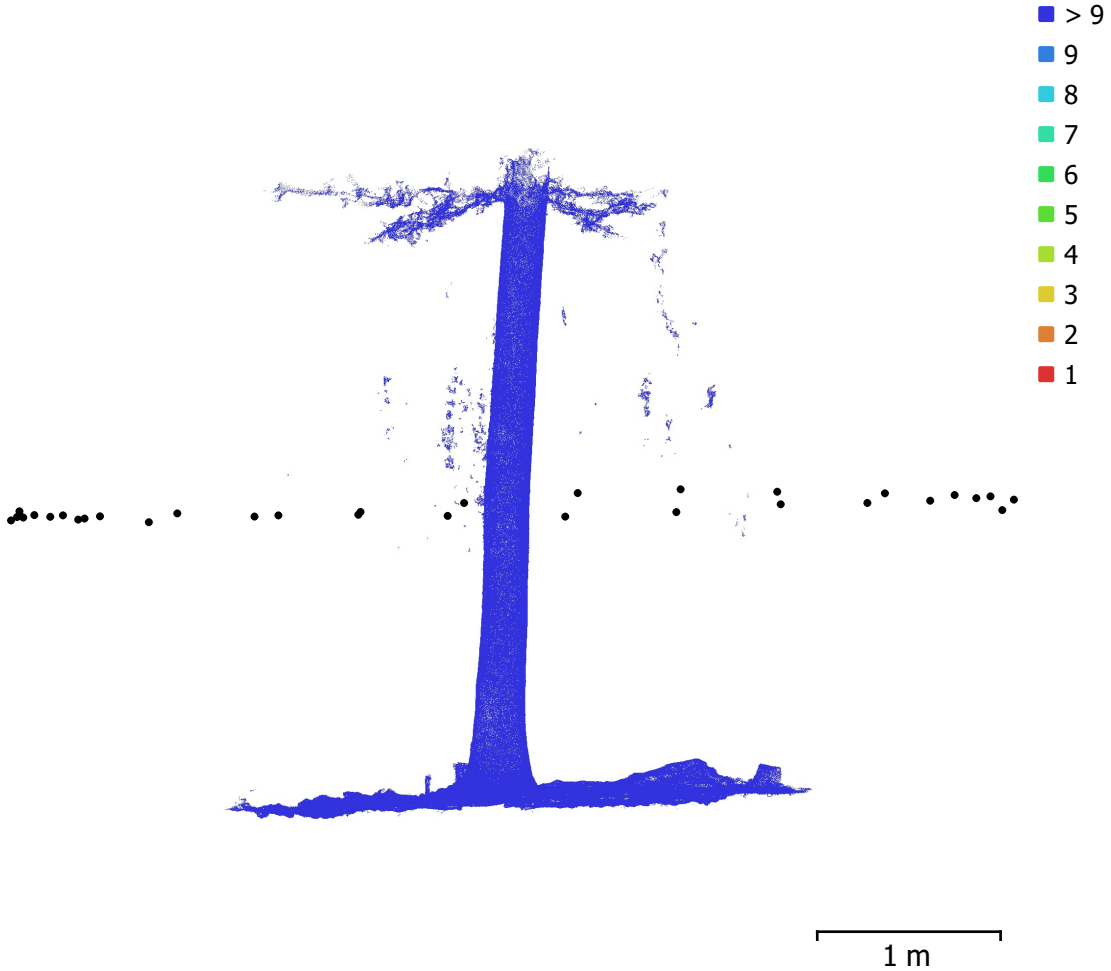

Fig. 1. Camera locations and image overlap.

Number of images:	33	Camera stations:	33
Flying altitude:	3.06 m	Tie points:	17,133
Ground resolution:	0.673 mm/pix	Projections:	38,122
Coverage area:	1.37 m²	Reprojection error:	0.346 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

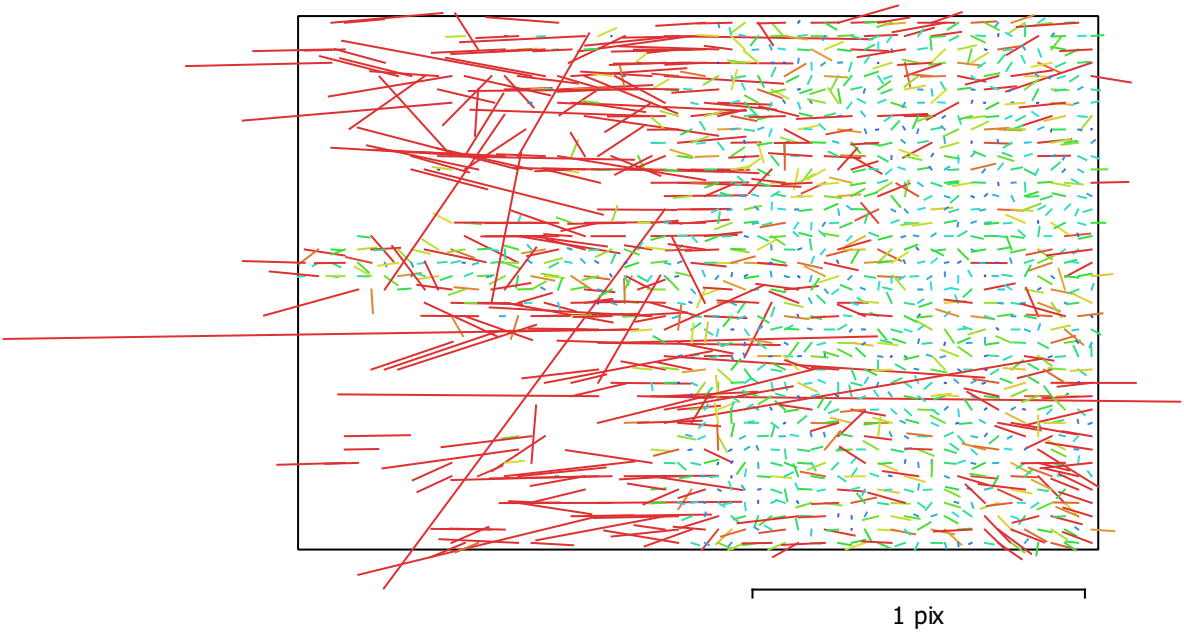

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

33 images

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

	Value	Error	F	K1
F	**3754.13**	0.3	1.00	-0.38
K1	**-0.0343778**	9.8e-05		1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

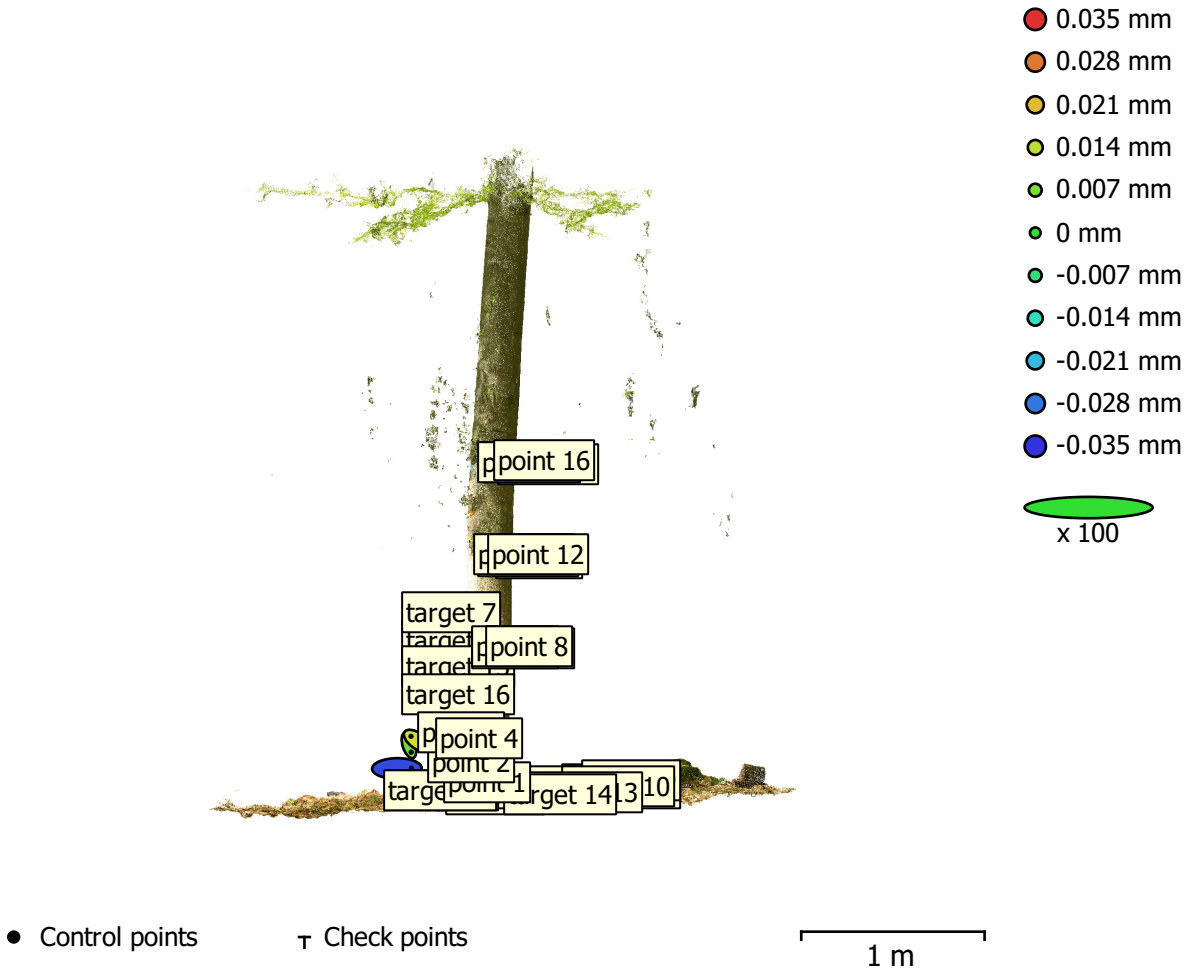

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	1.0437	0.459267	0.0191244	1.14028	1.14044

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-1.14705	0.233337	0.0100025	1.17058	0.004 (33)
point 2	1.58505	0.0213492	-0.0325073	1.58553	0.004 (33)
point 3	0.246415	-0.742311	0.00610583	0.782166	0.004 (33)
point 4	-0.684417	0.487625	0.0163989	0.84052	0.004 (33)
Total	**1.0437**	**0.459267**	**0.0191244**	**1.14044**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.213 (3)
target 2					0.540 (11)
target 3					0.382 (7)
target 4					0.562 (12)
target 5					0.316 (8)
target 6					0.556 (15)
target 8					2.580 (14)
target 9					0.599 (27)
target 10					287.321 (22)
target 11					0.171 (5)
target 12					0.225 (2)
target 13					0.318 (3)
target 14					0.690 (11)
target 15					0.754 (8)
target 16					1.971 (14)
target 7					0.004 (33)
point 5					0.004 (33)
point 6					0.004 (33)
point 7					0.004 (33)
point 8					0.004 (33)
point 9					0.004 (33)
point 10					0.004 (33)
point 11					0.004 (33)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 12					0.004 (33)
point 13					0.004 (33)
point 14					0.004 (33)
point 15					0.004 (33)
point 16					0.004 (33)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147717	-0.00028328
target 8_target 7	0.148771	0.000770641
target 11_target 12	0.147411	-0.000589044
target 13_target 14	0.147954	-4.60086e-05
target 15_target 16	0.147921	-7.85183e-05
Total		**0.000453738**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
target 9_target 10	0.153442	0.00544163
point 1_point 2	0.0849707	
point 1_point 3	0.172513	
point 1_point 4	0.258897	
Total		**0.00544163**

Table 7. Check scale bars.

Digital Elevation Model

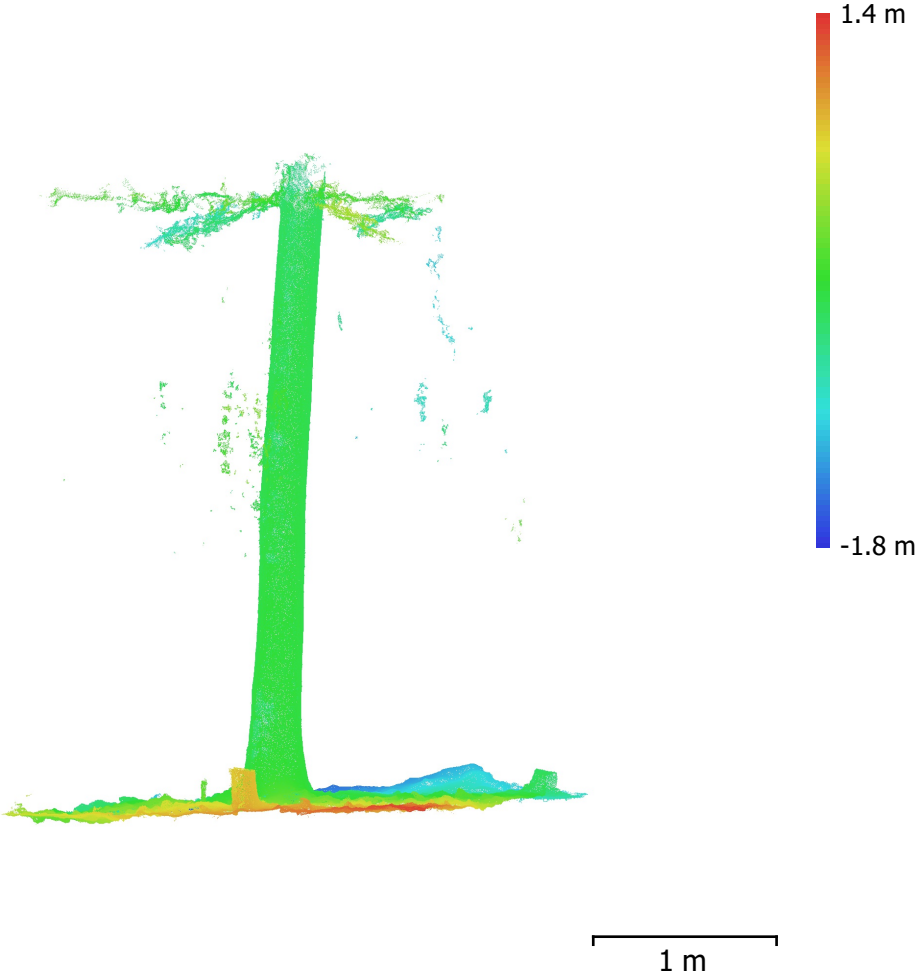

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	33
Aligned cameras	33
Markers	32
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	17,133 of 18,013
RMS reprojection error	0.0826717 (0.346467 pix)
Max reprojection error	0.250234 (9.15681 pix)
Mean key point size	3.52311 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.26614
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	3 minutes 15 seconds
Alignment time	9 seconds
Depth Maps	
Count	33
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	19 minutes 27 seconds
Dense Point Cloud	
Points	1,602,484
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	19 minutes 27 seconds
Dense cloud generation time	8 minutes 34 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64