Fagus_sylvatica_5F

Processing Report

07 November 2018

Survey Data

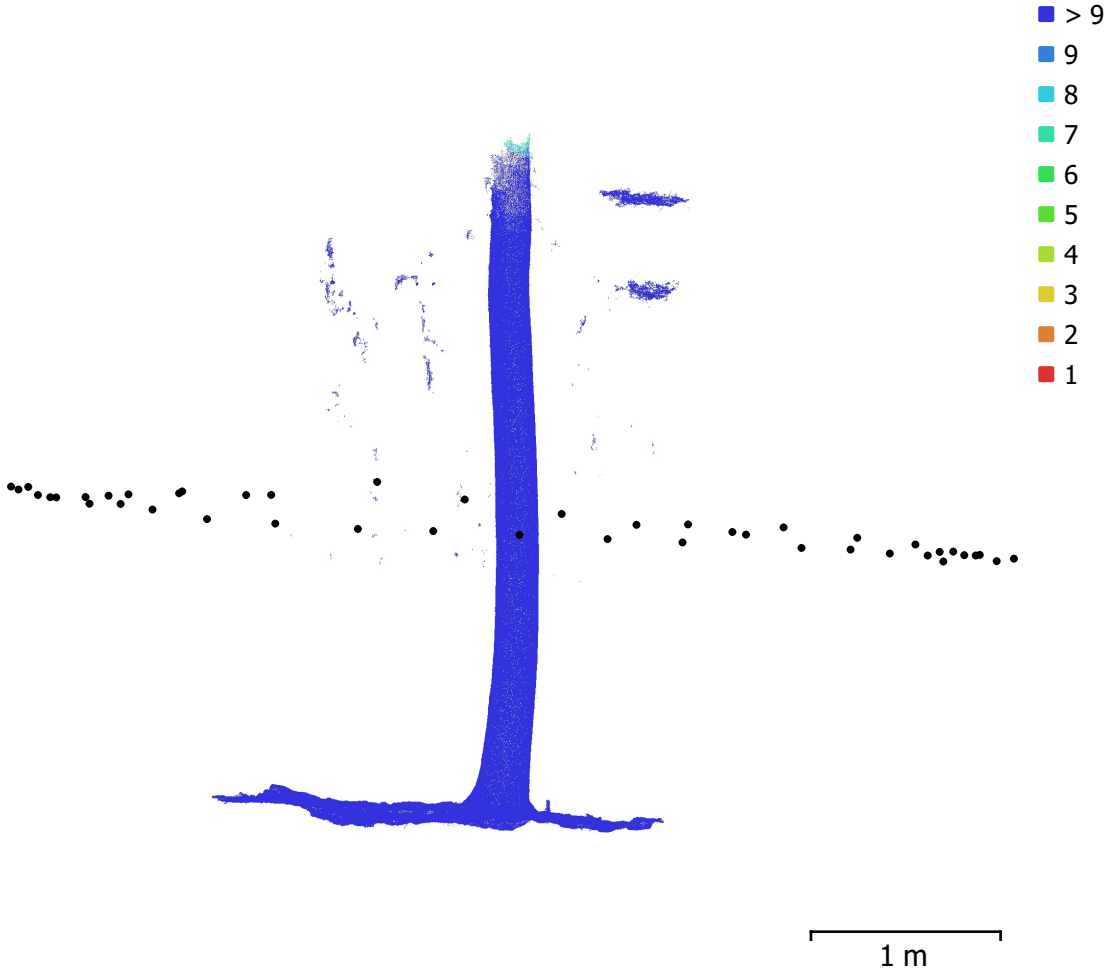

Fig. 1. Camera locations and image overlap.

Number of images:	45	Camera stations:	45
Flying altitude:	2.87 m	Tie points:	52,704
Ground resolution:	0.661 mm/pix	Projections:	132,864
Coverage area:	1.02 m²	Reprojection error:	0.602 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

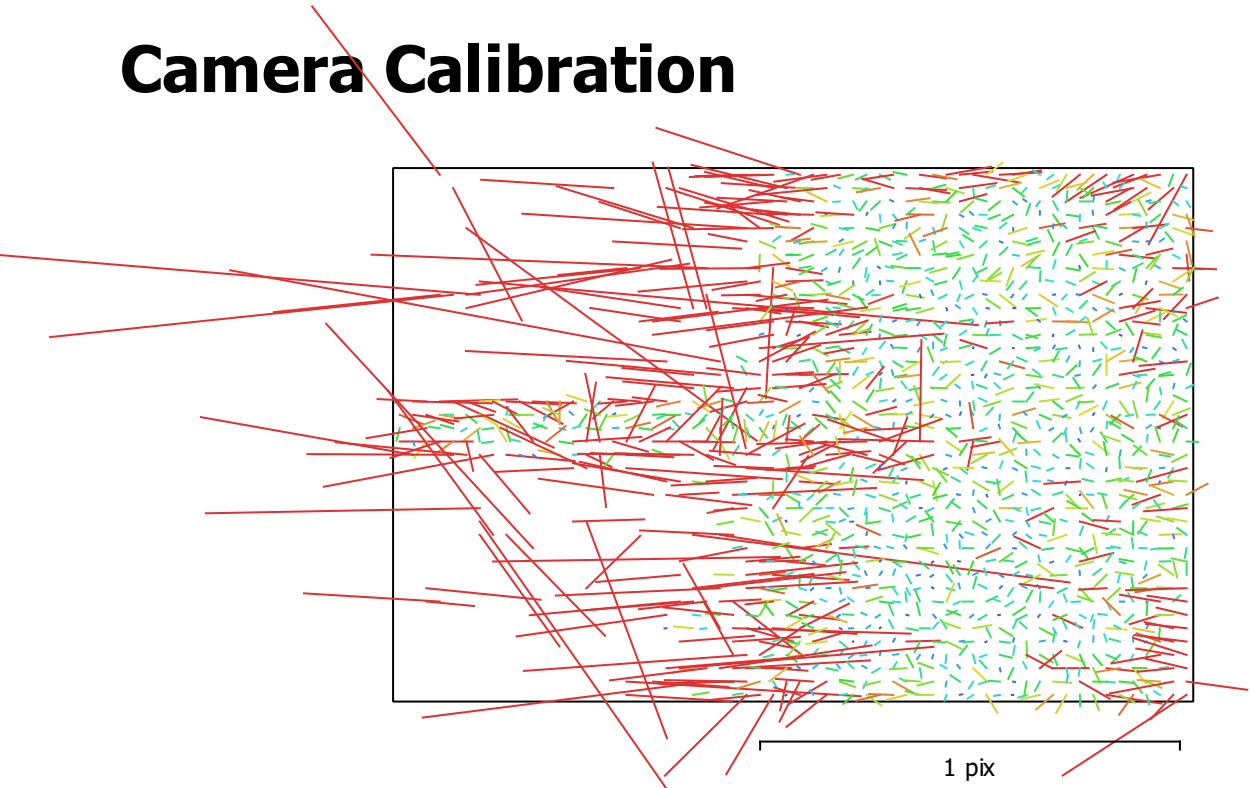

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

45 images

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

	Value	Error	F	K1	P1	P2
F	**3750.28**	0.17	1.00	-0.40	-0.11	-0.10
K1	**-0.0338971**	6e-05		1.00	-0.46	0.07
P1	**0.000845388**	2.2e-05			1.00	0.11
P2	**-0.000259915**	8.9e-06				1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

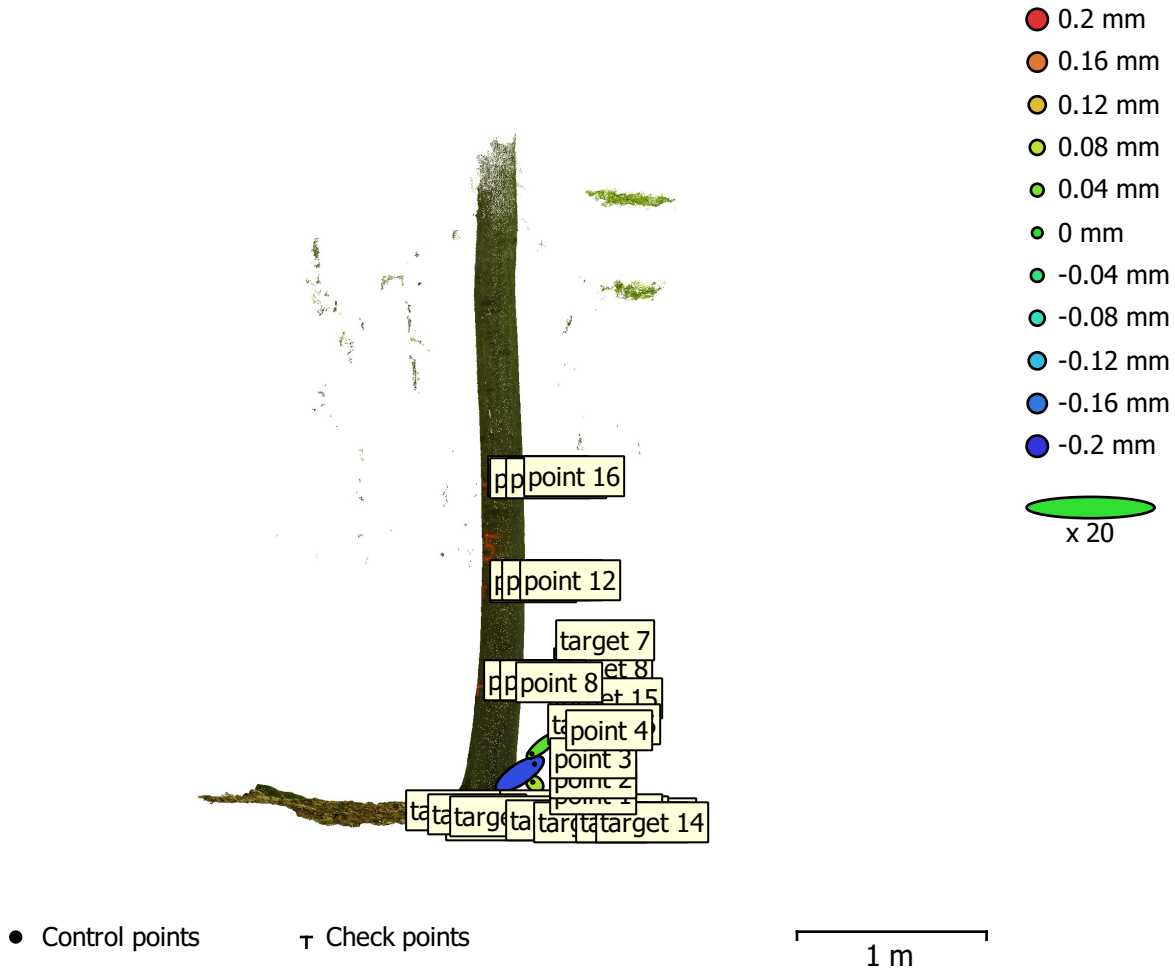

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	4.88591	3.56439	0.110047	6.04789	6.0489

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-0.963263	-1.47308	0.0936363	1.76255	0.004 (45)
point 2	-0.989754	0.866992	0.0679283	1.31754	0.004 (45)
point 3	7.74681	5.18742	-0.185682	9.32506	0.004 (45)
point 4	-5.79379	-4.58133	0.0241179	7.38629	0.004 (45)
Total	**4.88591**	**3.56439**	**0.110047**	**6.0489**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.343 (20)
target 2					0.388 (10)
target 3					0.422 (34)
target 4					0.446 (23)
target 5					0.393 (31)
target 6					0.347 (34)
target 8					1.657 (19)
target 9					0.377 (35)
target 10					0.447 (36)
target 11					0.538 (33)
target 12					0.562 (35)
target 13					0.493 (33)
target 14					0.459 (33)
target 15					1.241 (24)
target 16					1.090 (20)
target 7					0.004 (45)
point 5					0.004 (45)
point 6					0.004 (45)
point 7					0.004 (45)
point 8					0.004 (45)
point 9					0.004 (45)
point 10					0.004 (45)
point 11					0.004 (45)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 12					0.004 (45)
point 13					0.004 (45)
point 14					0.004 (45)
point 15					0.004 (45)
point 16					0.004 (45)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147691	-0.000308939
target 8_target 7	0.150017	0.00201661
target 9_target 10	0.147456	-0.000543799
target 11_target 12	0.147534	-0.000465737
target 13_target 14	0.147724	-0.000276305
target 15_target 16	0.147512	-0.000488329
Total		**0.00091192**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.126141	
point 1_point 3	0.221784	
point 1_point 4	0.274996	
Total		

Table 7. Check scale bars.

Digital Elevation Model

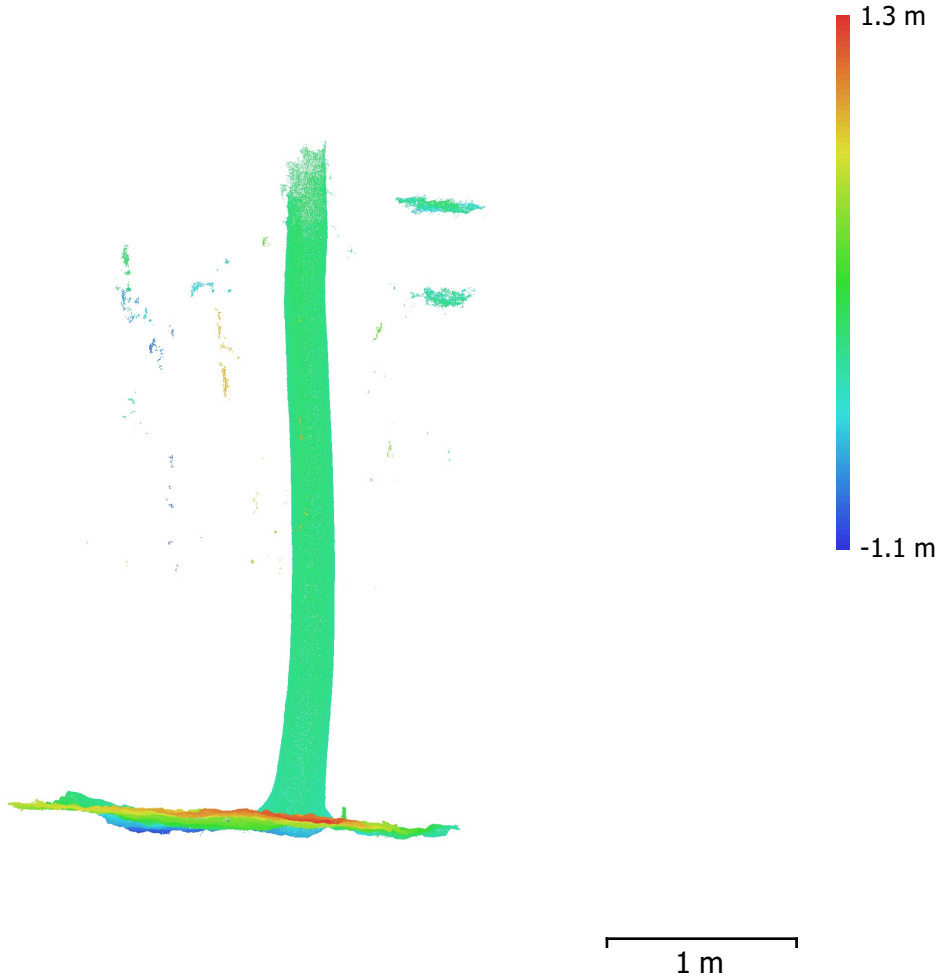

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	45
Aligned cameras	45
Markers	32
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	52,704 of 56,379
RMS reprojection error	0.0899573 (0.602302 pix)
Max reprojection error	0.273094 (22.8076 pix)
Mean key point size	5.28525 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.64497
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	7 minutes 8 seconds
Alignment time	30 seconds
Depth Maps	
Count	45
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	46 minutes 39 seconds
Dense Point Cloud	
Points	1,186,185
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	46 minutes 39 seconds
Dense cloud generation time	18 minutes 11 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64