Fagus_sylvatica_8N

Processing Report

07 November 2018

Survey Data

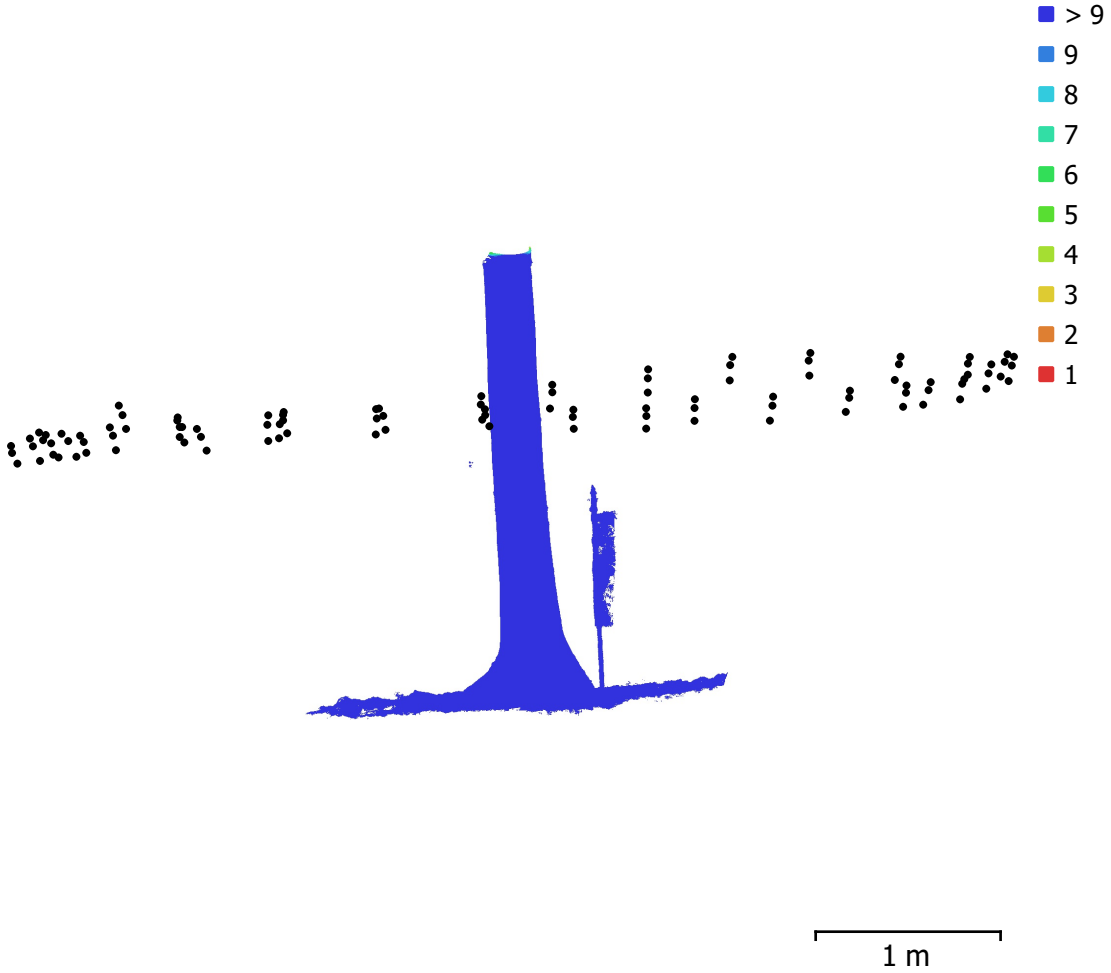

Fig. 1. Camera locations and image overlap.

Number of images:	105	Camera stations:	105
Flying altitude:	4.66 m	Tie points:	136,493
Ground resolution:	0.319 mm/pix	Projections:	362,344
Coverage area:	1.01 m²	Reprojection error:	0.677 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Canon EOS 70D (35 mm)	5472 x 3648	35 mm	4.17 x 4.17 µm	No

Table 1. Cameras.

Camera Calibration

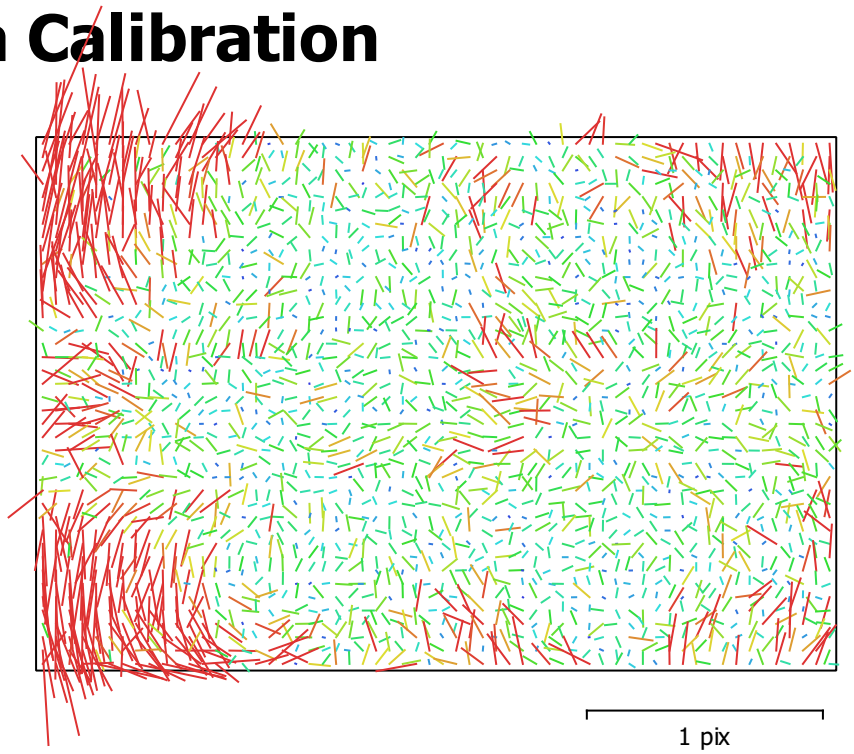

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

105 images

Type	Resolution	Focal Length	Pixel Size
Frame	**5472 x 3648**	**35 mm**	**4.17 x 4.17 µm**

	Value	Error	F	B2	K1	K2	P1	P2
F	**8457.73**	0.63	1.00	-0.02	0.35	-0.00	-0.16	-0.00
B2	**0.615978**	0.095		1.00	-0.00	-0.01	-0.05	-0.03
K1	**-0.0773293**	0.00012			1.00	-0.90	-0.07	-0.02
K2	**0.0798912**	0.0008				1.00	0.02	0.02
P1	**0.000694297**	4.5e-06					1.00	0.01
P2	**0.000370254**	4.1e-06						1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

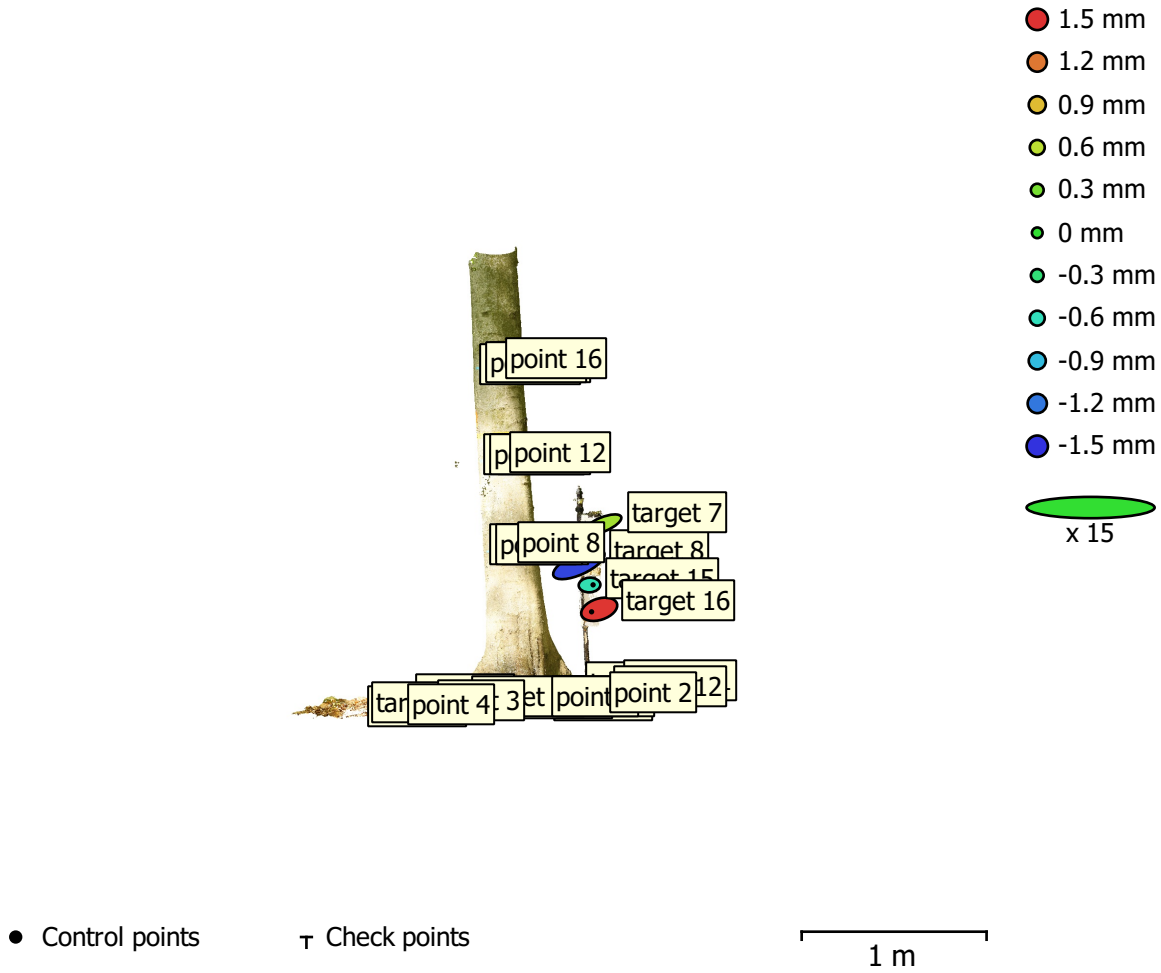

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	7.74996	3.27664	1.0894	8.41417	8.4844

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8	11.4507	5.21184	-1.41662	12.6605	1.023 (5)
target 15	2.55504	0.134683	-0.552612	2.61759	0.568 (7)
target 16	-5.4998	-1.81531	1.48265	5.97841	1.827 (5)
target 7	-8.50604	-3.5311	0.486589	9.2227	1.936 (54)
Total	**7.74996**	**3.27664**	**1.0894**	**8.4844**	**1.786**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 2					0.748 (2)
target 4					1.581 (4)
target 6					1.108 (18)
target 9					1.599 (2)
target 10					1.005 (5)
target 11					1.067 (3)
target 12					0.714 (12)
target 13					0.898 (11)
target 14					1.691 (11)
target 5					106.148 (52)
point 1					0.271 (31)
point 2					1.251 (42)
point 3					1.769 (29)
point 4					2.045 (27)
point 5					0.004 (104)
point 6					0.003 (105)
point 7					0.004 (105)
point 8					0.004 (105)
point 9					0.004 (70)
point 10					0.004 (70)
point 11					0.004 (70)
point 12					0.004 (70)
point 13					0.004 (61)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 14					0.003 (63)
point 15					0.004 (62)
point 16					0.004 (61)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 6_target 5	0.18839	
target 8_target 7	0.151478	0.00347833
target 9_target 10	0.146176	-0.00182385
target 11_target 12	0.146721	-0.00127942
target 13_target 14	0.146762	-0.00123821
target 15_target 16	0.1462	-0.00180018
target 8_target 15	0.150595	
point 1_point 2	0.400955	-0.00104525
point 3_point 4	0.1992	-0.00180036
Total		**0.00193353**

Table 6. Check scale bars.

Digital Elevation Model

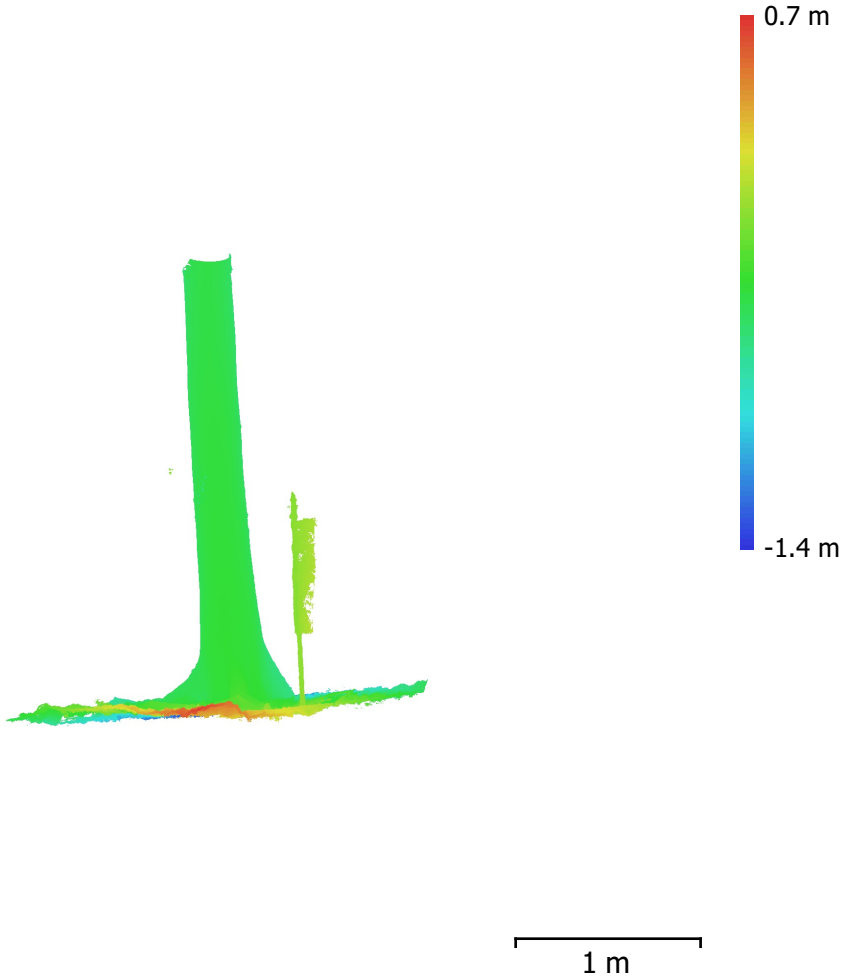

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	105
Aligned cameras	105
Markers	31
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	136,493 of 162,396
RMS reprojection error	0.140569 (0.677264 pix)
Max reprojection error	0.430587 (21.7634 pix)
Mean key point size	5.04181 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.87014
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	28 minutes 43 seconds
Alignment time	1 minutes 26 seconds
Depth Maps	
Count	104
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	1 hours 22 minutes
Dense Point Cloud	
Points	3,890,108
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	1 hours 22 minutes
Dense cloud generation time	19 minutes 7 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64