Fagus_sylvatica_10N

Processing Report

07 November 2018

Survey Data

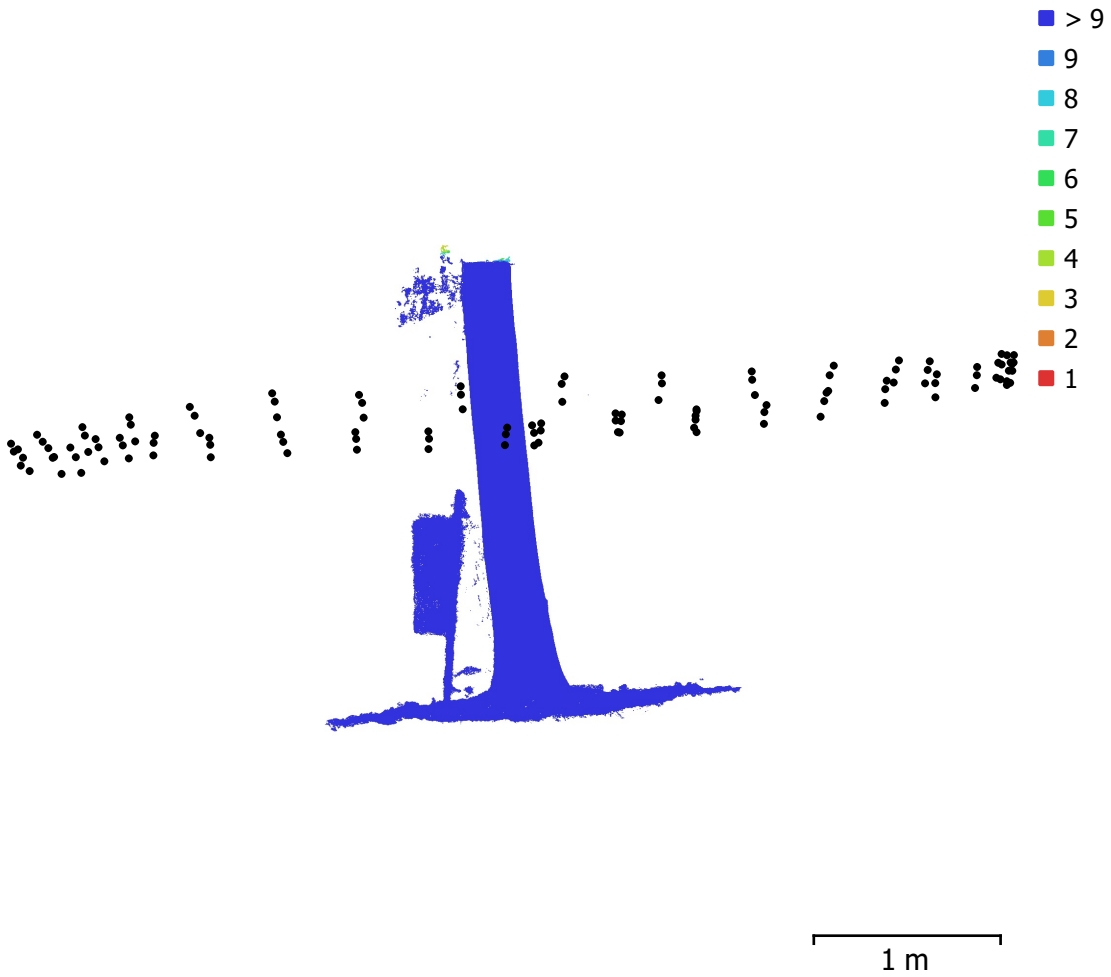

Fig. 1. Camera locations and image overlap.

Number of images:	123	Camera stations:	123
Flying altitude:	4.3 m	Tie points:	141,108
Ground resolution:	0.326 mm/pix	Projections:	404,728
Coverage area:	1.13 m²	Reprojection error:	0.772 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

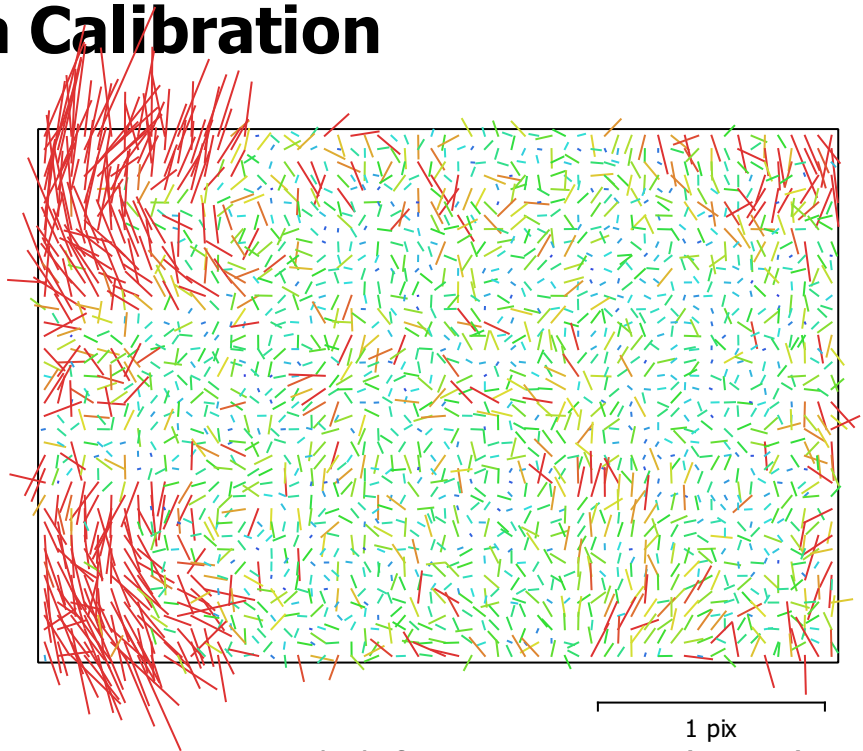

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

123 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	**8476.67**	0.53	1.00	0.05	0.26	0.02	-0.16	-0.00
B2	**0.461341**	0.077		1.00	0.02	0.00	-0.04	-0.11
K1	**-0.0766536**	0.00012			1.00	-0.92	-0.02	0.01
K2	**0.0808844**	0.00081				1.00	-0.01	-0.01
P1	**0.000569222**	4.7e-06					1.00	0.02
P2	**0.000363345**	4.3e-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	1.4471	1.96619	0.218241	2.44131	2.45104

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8	2.40898	-3.26685	-0.341477	4.07334	3.540 (54)
target 15	-0.476377	0.585311	-0.0389918	0.755675	6.527 (65)
target 16	-0.477042	0.687577	0.192596	0.858734	6.451 (33)
target 7	-1.45556	1.99396	0.187873	2.47585	0.793 (102)
Total	**1.4471**	**1.96619**	**0.218241**	**2.45104**	**4.385**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.234 (6)
target 3					0.815 (8)
target 4					0.220 (5)
target 5					0.588 (27)
target 6					0.547 (30)
target 9					1.069 (19)
target 10					0.716 (16)
target 11					0.961 (5)
target 12					0.187 (2)
target 13					1.531 (7)
target 14					2.107 (6)
point 1					16.164 (28)
point 2					0.530 (35)
point 3					0.167 (31)
point 4					41.432 (31)
point 5					0.004 (121)
point 6					0.004 (122)
point 7					0.004 (121)
point 8					0.004 (122)
point 9					0.004 (82)
point 10					0.004 (82)
point 11					0.004 (82)
point 12					0.004 (82)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 13					0.004 (69)
point 14					0.004 (69)
point 15					0.004 (72)
point 16					0.004 (70)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147487	-0.000513194
target 8_target 7	0.148673	0.000672724
target 9_target 10	0.147437	-0.000562744
target 11_target 12	0.147675	-0.000325017
target 13_target 14	0.147635	-0.000364776
target 15_target 16	0.147768	-0.000231552
target 8_target 15	0.15167	
point 1_point 2	0.596446	-0.00655402
point 3_point 4	0.602788	-0.000212148
Total		**0.00235386**

Table 6. Check scale bars.

Digital Elevation Model

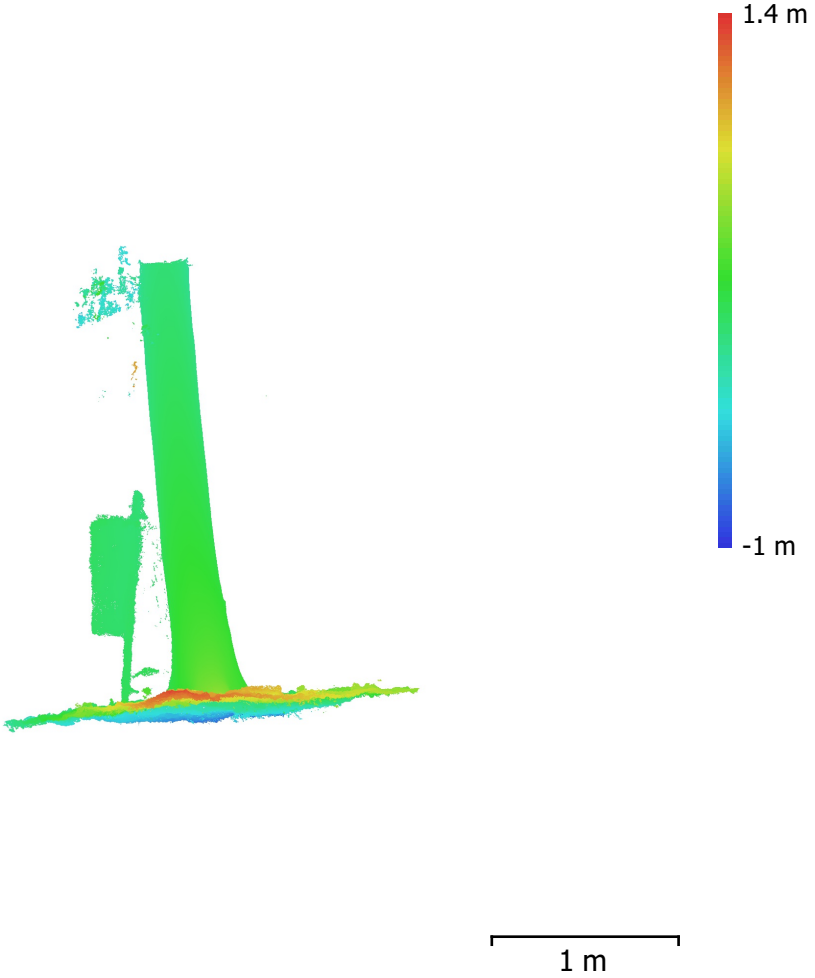

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	123
Aligned cameras	123
Markers	31
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	141,108 of 165,795
RMS reprojection error	0.141574 (0.77232 pix)
Max reprojection error	0.437176 (27.5768 pix)
Mean key point size	5.42938 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.34654
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	49 minutes 53 seconds
Alignment time	1 minutes 50 seconds
Depth Maps	
Count	123
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	3 hours 55 minutes
Dense Point Cloud	
Points	4,050,329
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	3 hours 55 minutes
Dense cloud generation time	45 minutes 30 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64