Fagus_sylvatica_9N

Processing Report

07 November 2018

Survey Data

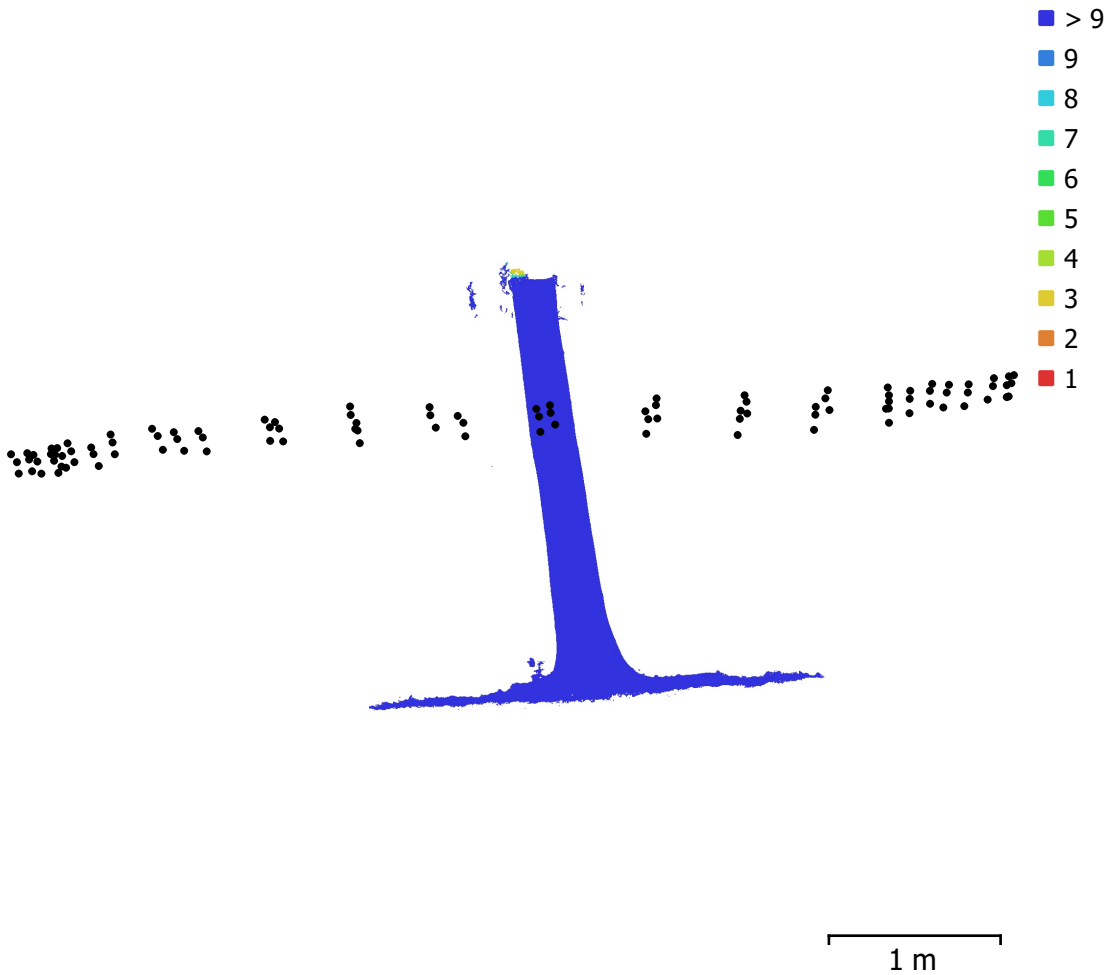

Fig. 1. Camera locations and image overlap.

Number of images:	105	Camera stations:	105
Flying altitude:	4.63 m	Tie points:	123,436
Ground resolution:	0.333 mm/pix	Projections:	365,524
Coverage area:	8.93e+03 cm²	Reprojection error:	0.729 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

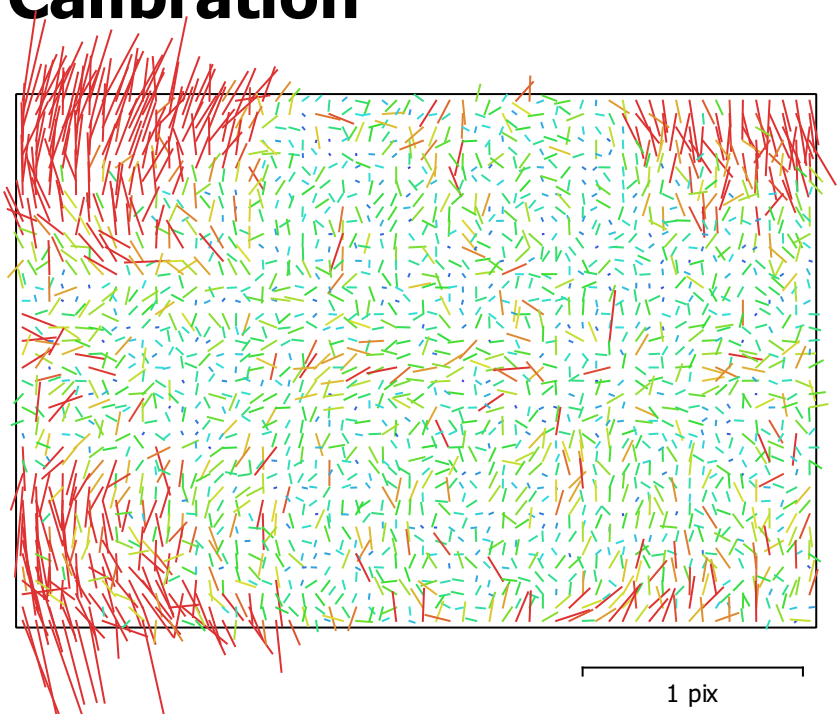

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

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	K1	K2	P1	P2
F	**8469.17**	0.53	1.00	0.29	0.02	-0.17	-0.01
K1	**-0.0781547**	0.00011		1.00	-0.92	-0.05	0.01
K2	**0.0877742**	0.00075			1.00	0.01	-0.03
P1	**0.000595929**	4.5e-06				1.00	0.01
P2	**0.000574279**	4e-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	3.97246	0.58065	0.297163	4.01468	4.02566

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8	6.11976	0.919333	-0.470468	6.20629	1.483 (37)
target 15	0.731379	-0.559654	-0.0231284	0.921229	1.595 (53)
target 16	-2.51276	0.0707127	0.315821	2.53351	1.570 (21)
target 7	-4.33838	-0.430385	0.17778	4.3633	0.056 (89)
Total	**3.97246**	**0.58065**	**0.297163**	**4.02566**	**1.158**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.013 (2)
target 2					1.019 (3)
target 3					0.351 (4)
target 4					0.215 (2)
target 5					1.047 (13)
target 6					1.029 (10)
target 9					1.051 (25)
target 10					0.966 (18)
target 11					2.034 (10)
target 12					1.231 (13)
target 13					0.746 (15)
target 14					0.233 (4)
point 1					1.017 (23)
point 2					0.317 (29)
point 3					0.182 (33)
point 4					0.074 (37)
point 5					0.004 (105)
point 6					0.004 (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)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 12					0.004 (70)
point 13					0.003 (68)
point 14					0.003 (68)
point 15					0.003 (68)
point 16					0.004 (68)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147652	-0.000347912
target 8_target 7	0.149022	0.0010218
target 9_target 10	0.147003	-0.00099696
target 11_target 12	0.147	-0.000999877
target 13_target 14	0.14759	-0.000410142
target 15_target 16	0.147698	-0.000301971
target 8_target 15	0.151336	
point 1_point 2	0.600177	-0.00282339
point 3_point 4	0.598784	-0.00421575
Total		**0.00190926**

Table 6. Check scale bars.

Digital Elevation Model

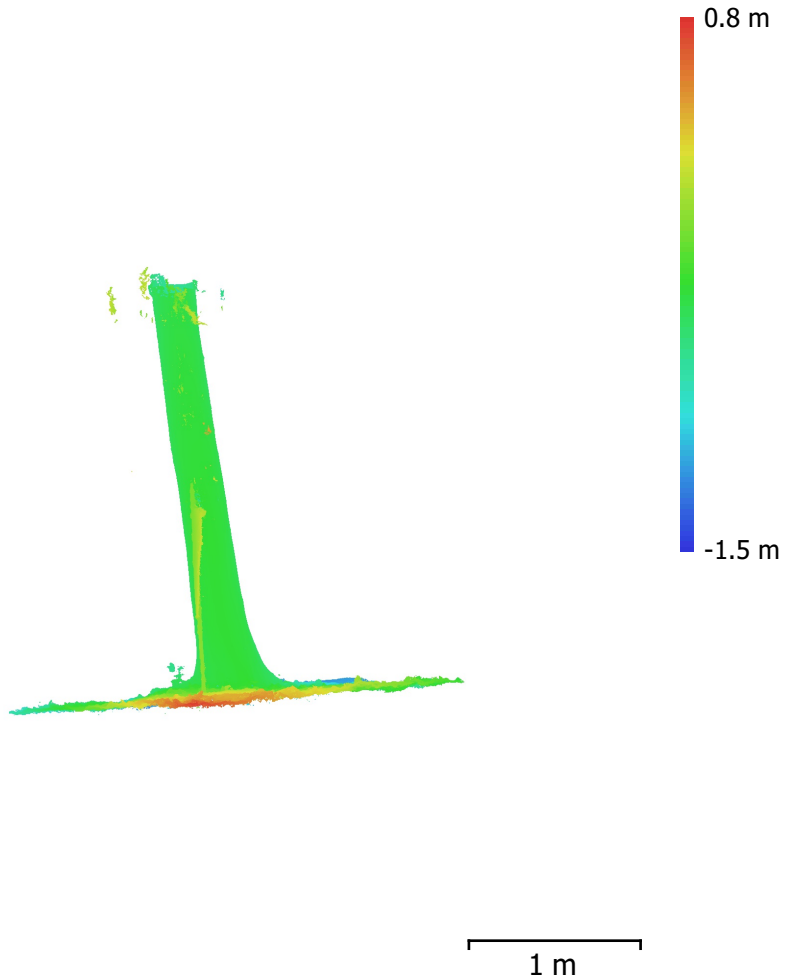

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	105
Aligned cameras	105
Markers	32
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	123,436 of 147,880
RMS reprojection error	0.138429 (0.729365 pix)
Max reprojection error	0.423633 (20.1672 pix)
Mean key point size	5.15175 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.27477
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	36 minutes 23 seconds
Alignment time	1 minutes 25 seconds
Depth Maps	
Count	105
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	3 hours 2 minutes
Dense Point Cloud	
Points	4,480,018
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	3 hours 2 minutes
Dense cloud generation time	29 minutes 2 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64