Fagus_sylvatica_7N

Processing Report

07 November 2018

Survey Data

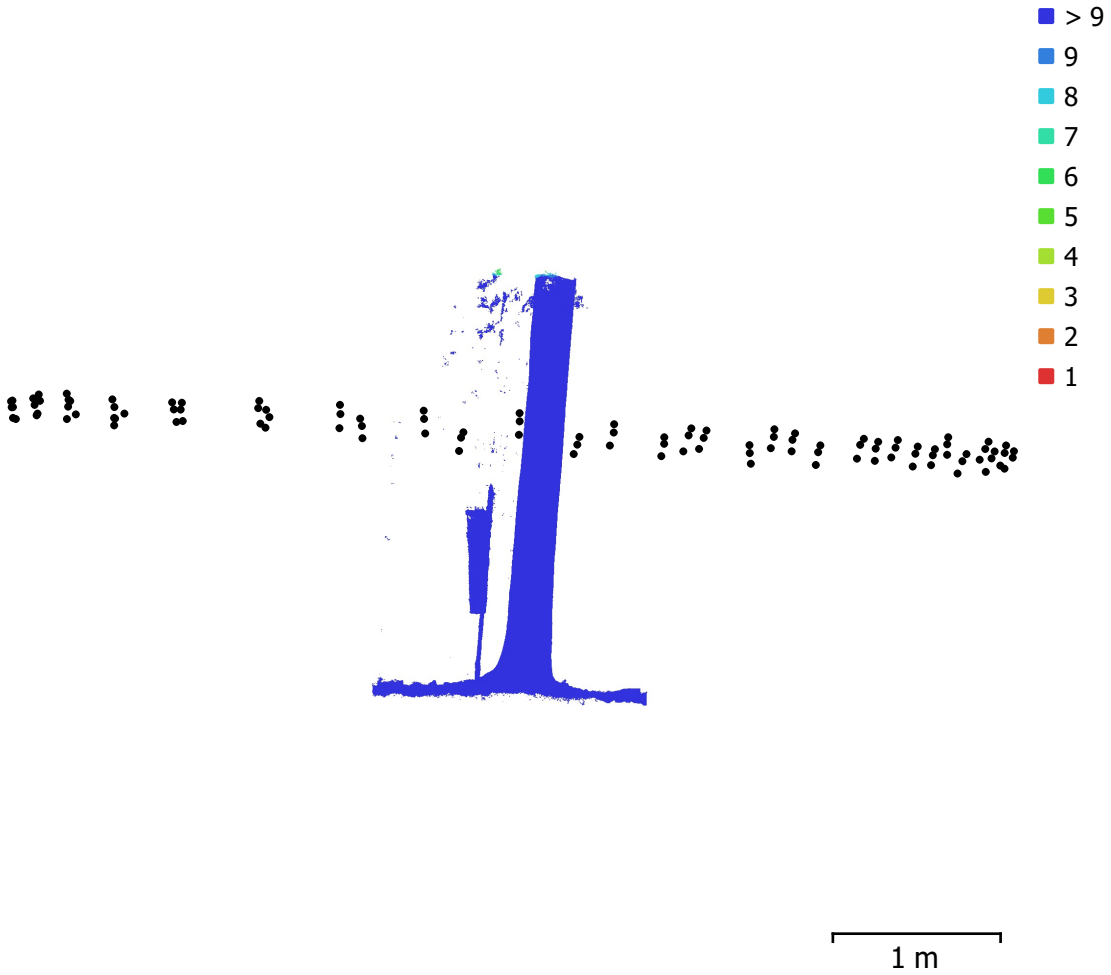

Fig. 1. Camera locations and image overlap.

Number of images:	111	Camera stations:	111
Flying altitude:	4.8 m	Tie points:	132,565
Ground resolution:	0.347 mm/pix	Projections:	369,583
Coverage area:	8.73e+03 cm²	Reprojection error:	0.743 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

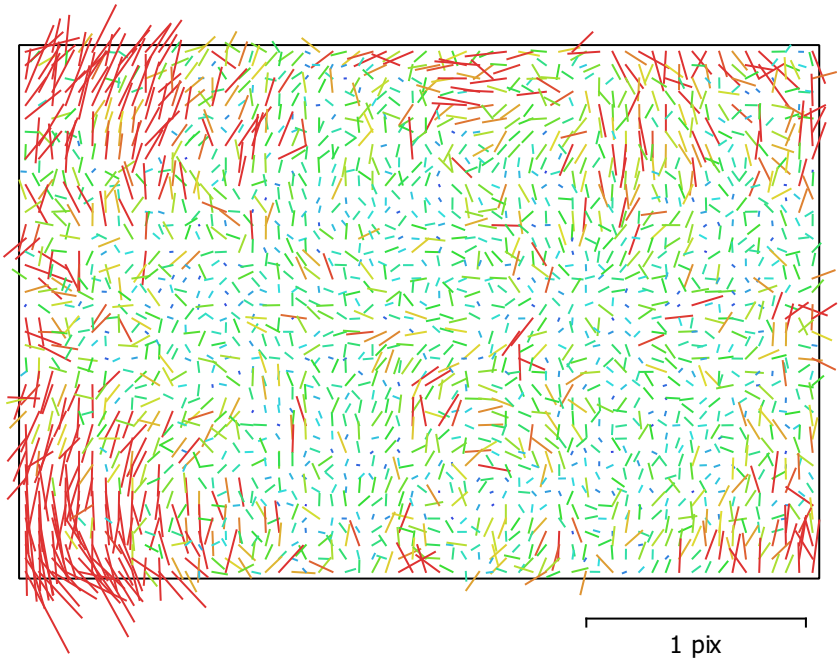

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

111 images

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

	Value	Error	F	B1	B2	K1	K2	P1	P2
F	**8464.39**	0.67	1.00	-0.37	-0.06	0.22	0.02	-0.06	-0.08
B1	**5.55738**	0.6		1.00	0.33	0.24	-0.04	-0.25	0.25
B2	**0.103174**	0.11			1.00	0.11	-0.02	-0.13	0.06
K1	**-0.0773521**	0.00012				1.00	-0.89	-0.14	0.08
K2	**0.0896925**	0.00079					1.00	0.06	-0.03
P1	**0.000803921**	4.9e-06						1.00	-0.08
P2	**0.000626374**	4.4e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

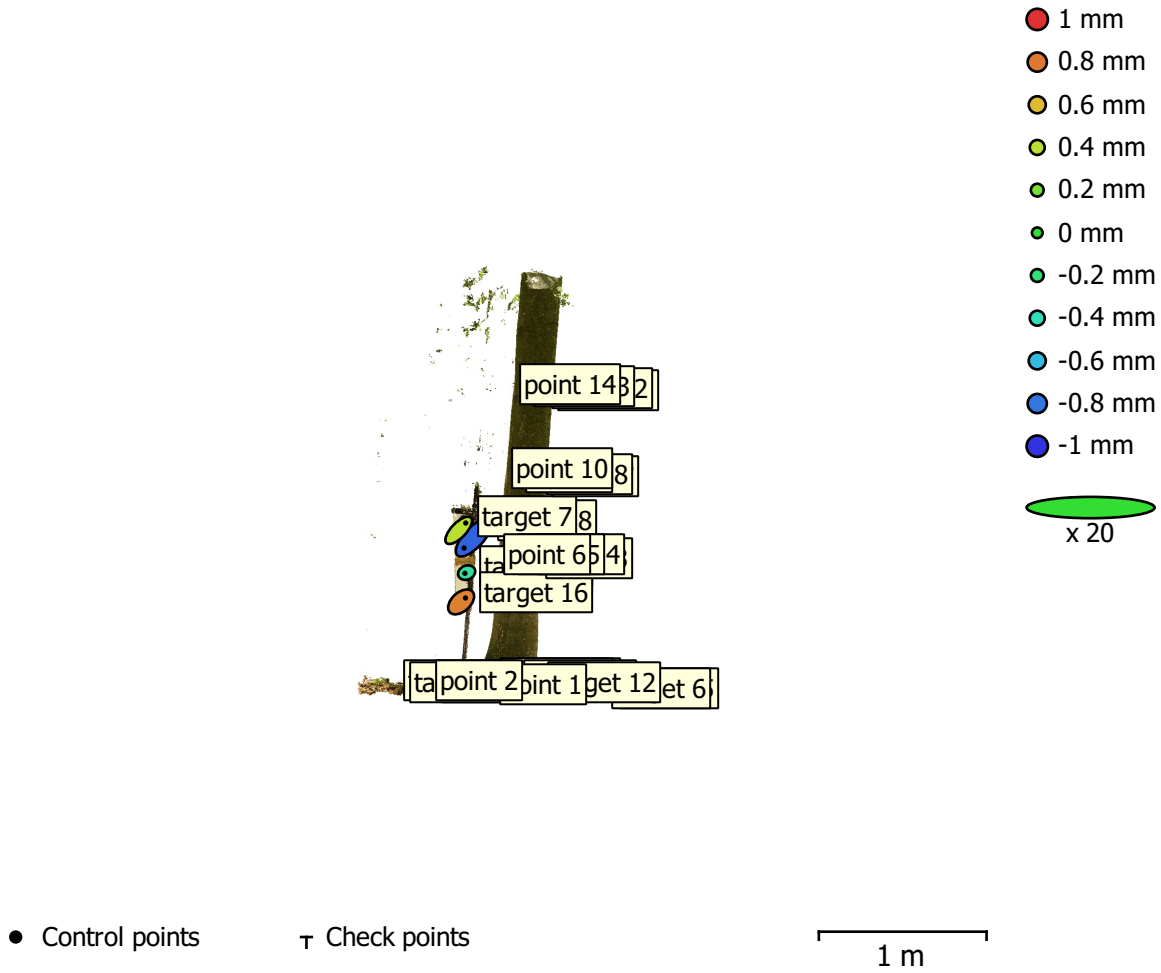

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	3.83424	4.00557	0.627887	5.5449	5.58034

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8	-5.77047	-6.28689	-0.857038	8.57659	2.094 (16)
target 15	-1.03486	-0.422965	-0.307931	1.15959	1.812 (35)
target 16	2.60239	2.36404	0.768298	3.59881	1.079 (23)
target 7	4.20285	4.34576	0.396678	6.05862	10.319 (88)
Total	**3.83424**	**4.00557**	**0.627887**	**5.58034**	**7.691**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 4					1.049 (14)
target 5					0.209 (3)
target 6					0.291 (3)
target 9					1.927 (25)
target 10					1.119 (21)
target 11					1.093 (19)
target 12					0.911 (17)
target 13					0.502 (5)
target 14					0.246 (6)
point 1					10.833 (54)
point 2					0.874 (52)
point 3					0.004 (111)
point 4					0.003 (111)
point 5					0.004 (111)
point 6					0.004 (111)
point 7					0.004 (74)
point 8					0.004 (74)
point 9					0.004 (74)
point 10					0.004 (74)
point 11					0.003 (73)
point 12					0.004 (73)
point 13					0.003 (73)
point 14					0.004 (73)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147355	-0.000644939
target 8_target 7	0.149964	0.00196397
target 9_target 10	0.147035	-0.000964728
target 11_target 12	0.147204	-0.000796279
target 13_target 14	0.147281	-0.000718845
target 15_target 16	0.146995	-0.00100479
target 8_target 15	0.150742	
point 1_point 2	0.397659	-0.00434113
Total		**0.001935**

Table 6. Check scale bars.

Digital Elevation Model

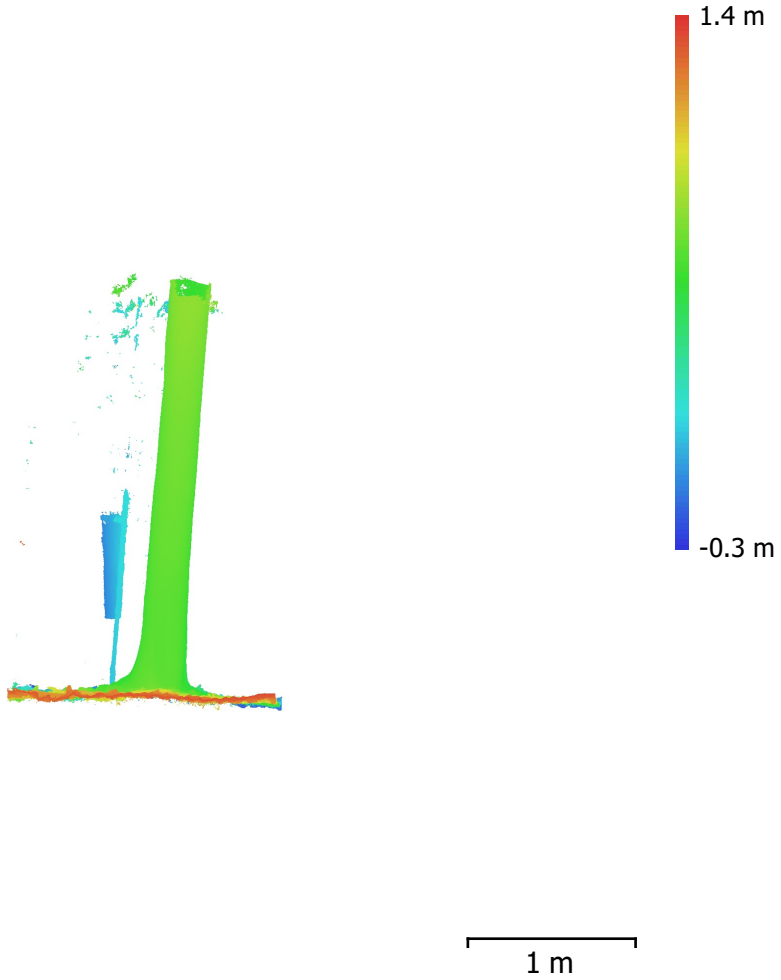

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	111
Aligned cameras	111
Markers	27
Scale bars	8
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	132,565 of 165,193
RMS reprojection error	0.145077 (0.742944 pix)
Max reprojection error	0.444447 (19.7498 pix)
Mean key point size	5.10381 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.04533
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	34 minutes 50 seconds
Alignment time	4 minutes 28 seconds
Depth Maps	
Count	111
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	2 hours 26 minutes
Dense Point Cloud	
Points	3,217,375
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	2 hours 26 minutes
Dense cloud generation time	28 minutes 27 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64