Abies_alba_5N

Processing Report

07 November 2018

Survey Data

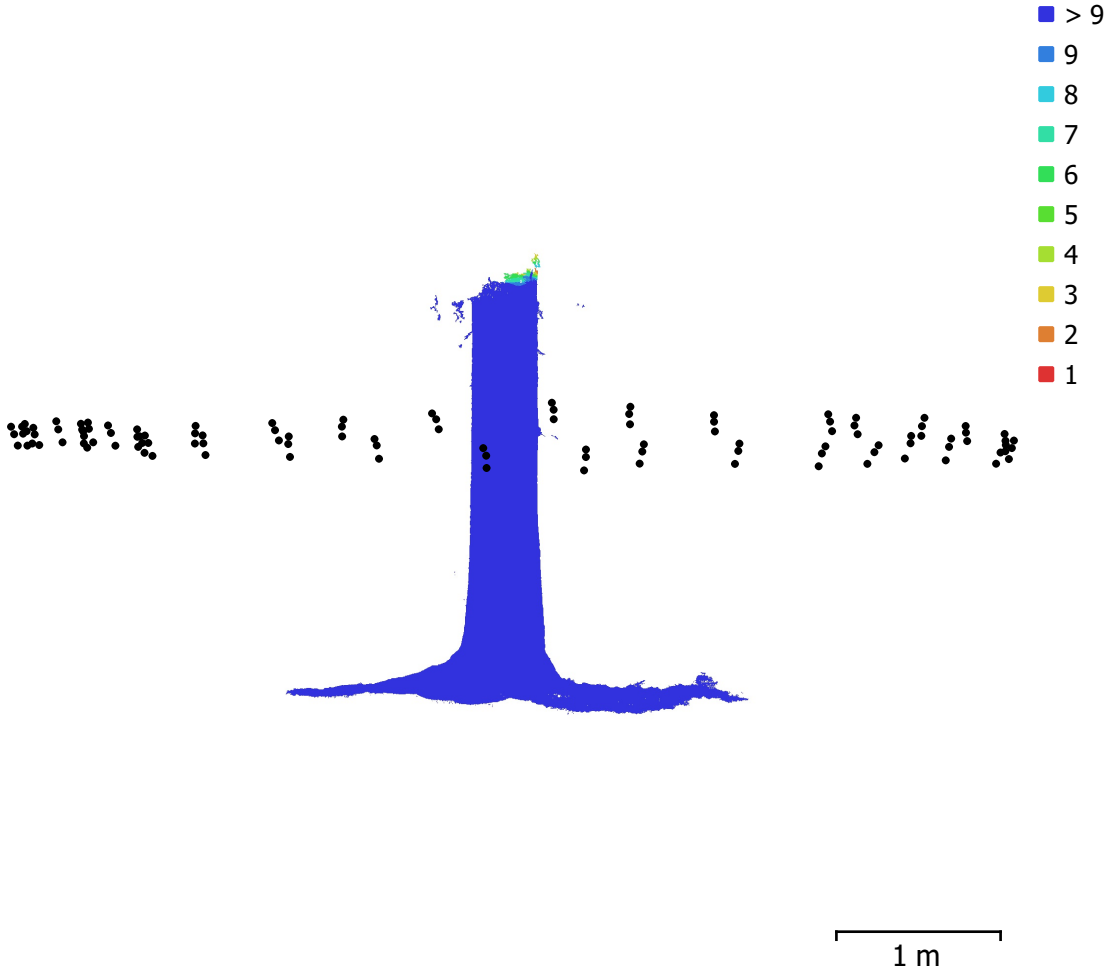

Fig. 1. Camera locations and image overlap.

Number of images:	111	Camera stations:	111
Flying altitude:	3.63 m	Tie points:	108,046
Ground resolution:	0.34 mm/pix	Projections:	376,723
Coverage area:	1.41 m²	Reprojection error:	0.924 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

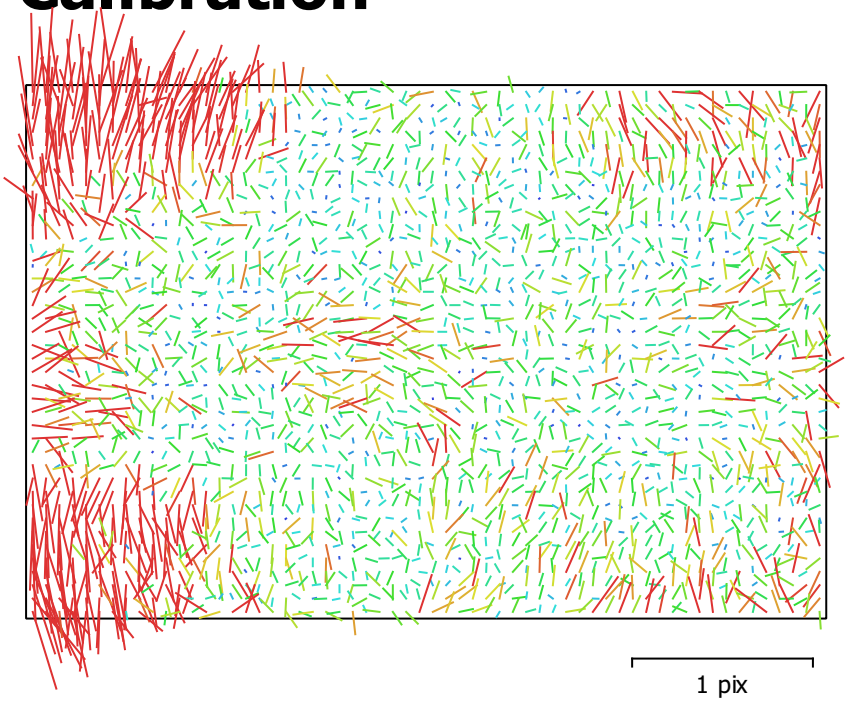

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

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	B2	K1	K2	P1	P2
F	**8456.49**	0.53	1.00	0.08	0.27	0.02	-0.19	0.03
B2	**2.37778**	0.092		1.00	0.03	-0.00	-0.04	-0.07
K1	**-0.0782066**	0.00012			1.00	-0.92	-0.03	0.00
K2	**0.0828099**	0.00082				1.00	-0.01	-0.01
P1	**0.00057314**	5.1e-06					1.00	-0.03
P2	**0.000186235**	4.4e-06						1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

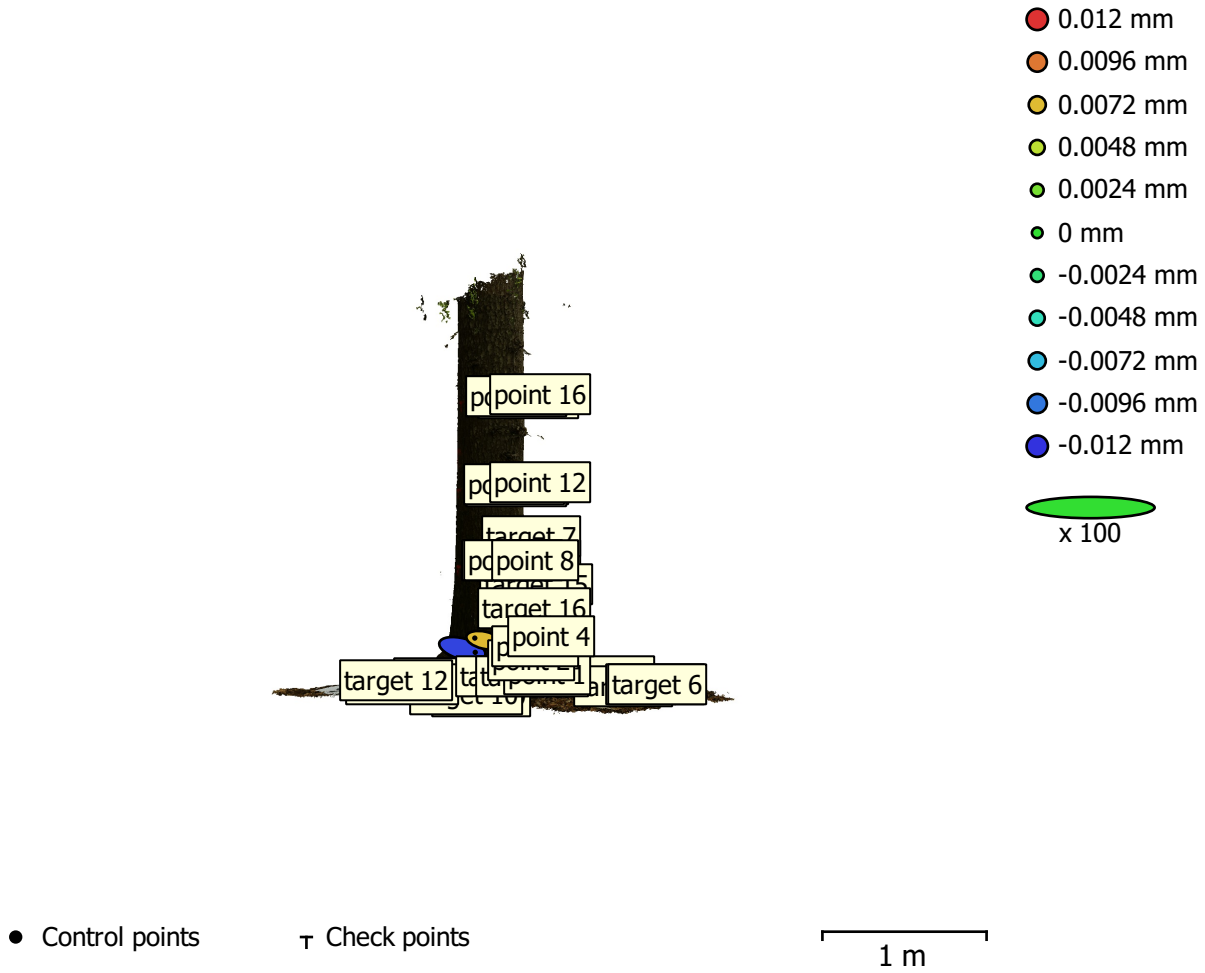

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	1.08499	0.256148	0.00807778	1.11482	1.11484

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-0.864801	0.101455	0.00790237	0.870767	0.004 (53)
point 2	0.43049	0.0715862	-0.00401112	0.43642	0.004 (58)
point 3	1.574	-0.427011	-0.0113922	1.63093	0.004 (63)
point 4	-1.13935	0.254344	0.00725838	1.16742	0.004 (70)
Total	**1.08499**	**0.256148**	**0.00807778**	**1.11484**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 2					1.209 (10)
target 3					0.104 (2)
target 4					0.039 (2)
target 5					2.002 (24)
target 6					2.175 (18)
target 8					1.777 (7)
target 9					1.977 (10)
target 10					1.028 (11)
target 11					1.134 (14)
target 12					1.058 (13)
target 13					1.006 (23)
target 14					1.075 (18)
target 15					0.876 (19)
target 16					1.420 (9)
target 7					0.003 (59)
point 5					0.004 (111)
point 6					0.004 (111)
point 7					0.004 (111)
point 8					0.004 (111)
point 9					0.004 (74)
point 10					0.004 (74)
point 11					0.004 (74)
point 12					0.004 (74)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 13					0.004 (74)
point 14					0.004 (73)
point 15					0.004 (73)
point 16					0.004 (72)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147735	-0.00026538
target 8_target 7	0.148402	0.000402137
target 9_target 10	0.148359	0.00035872
target 11_target 12	0.147911	-8.90768e-05
target 13_target 14	0.148034	3.36738e-05
target 15_target 16	0.147555	-0.000444886
Total		**0.000307629**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.0712489	
point 1_point 3	0.157288	
point 1_point 4	0.244166	
Total		

Table 7. Check scale bars.

Digital Elevation Model

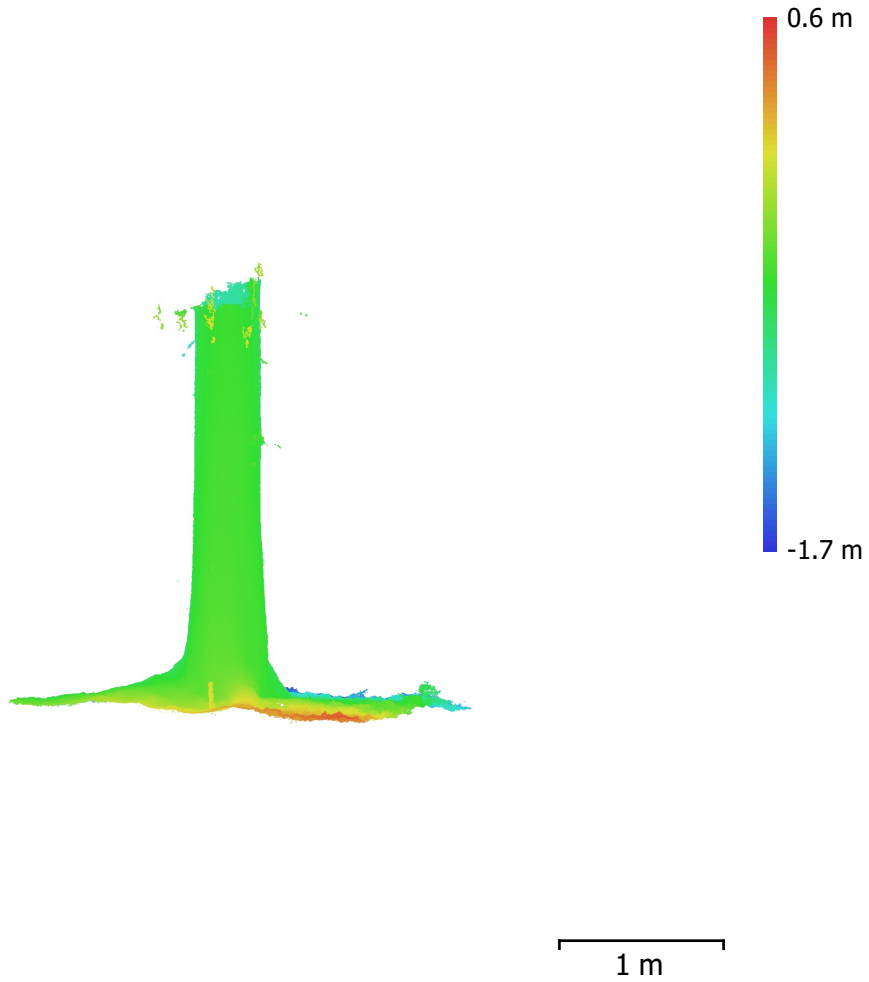

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	111
Aligned cameras	111
Markers	32
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	108,046 of 129,985
RMS reprojection error	0.164889 (0.923773 pix)
Max reprojection error	0.502123 (20.8422 pix)
Mean key point size	5.48132 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.78067
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	44 minutes 43 seconds
Alignment time	1 minutes 10 seconds
Depth Maps	
Count	111
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	3 hours 6 minutes
Dense Point Cloud	
Points	5,304,179
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	3 hours 6 minutes
Dense cloud generation time	31 minutes 30 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64