Abies_alba_7N

Processing Report

07 November 2018

Survey Data

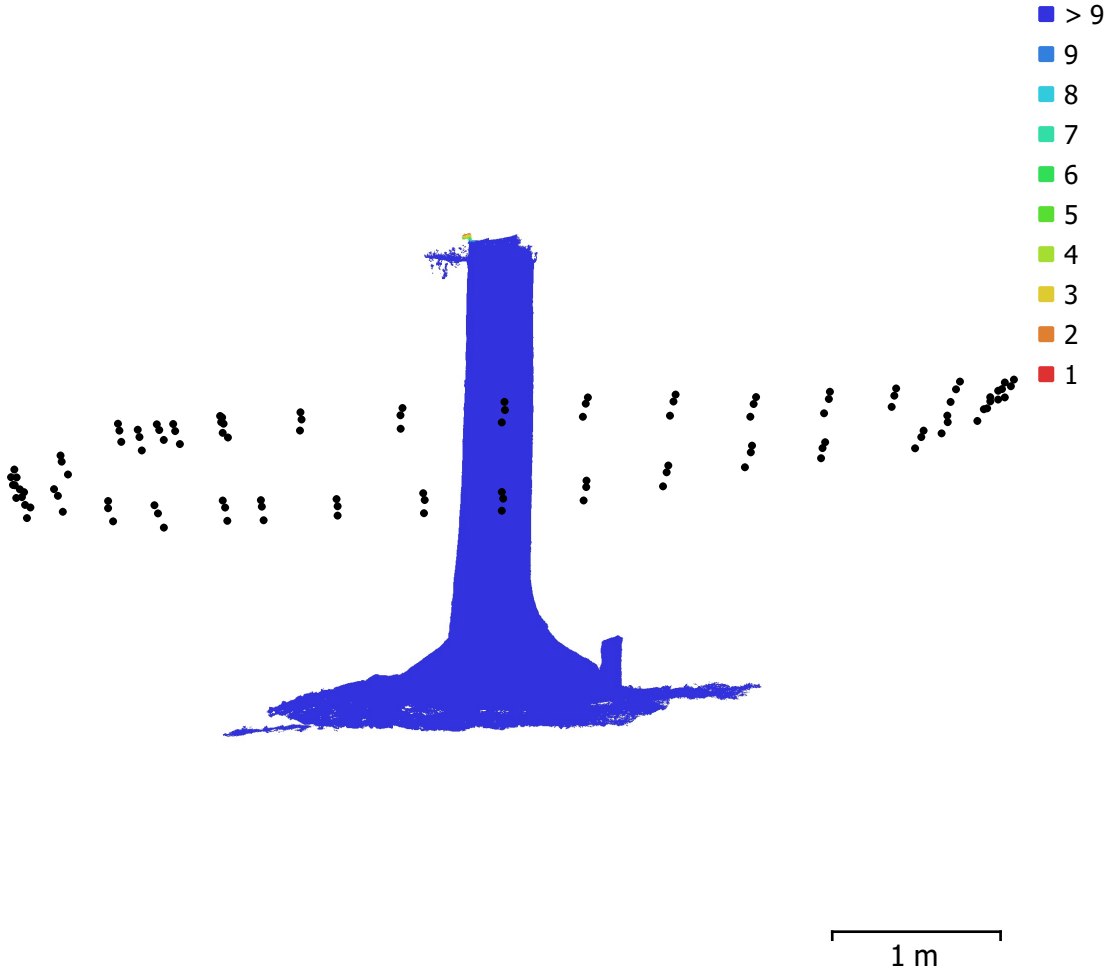

Fig. 1. Camera locations and image overlap.

Number of images:	114	Camera stations:	114
Flying altitude:	4.16 m	Tie points:	96,498
Ground resolution:	0.335 mm/pix	Projections:	337,697
Coverage area:	1.93 m²	Reprojection error:	0.981 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

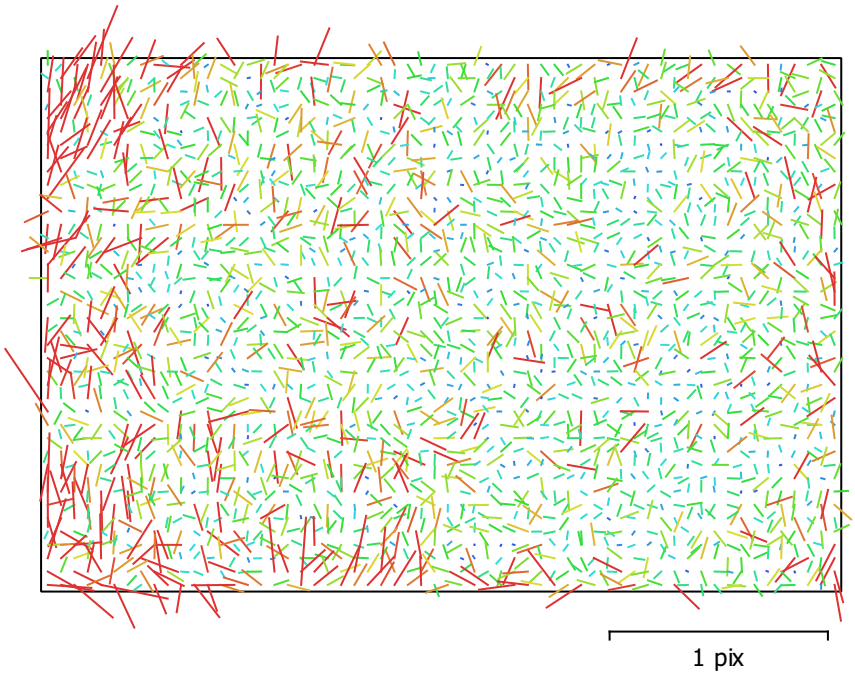

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

114 images

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

	Value	Error	F	Cx	Cy	B2	K1	K2	P1	P2
F	**8468.02**	0.44	1.00	-0.24	-0.07	0.04	0.21	0.03	-0.28	-0.06
Cx	**-36.3752**	0.3		1.00	-0.01	-0.02	-0.07	-0.02	0.84	-0.00
Cy	**-31.6907**	0.4			1.00	0.18	-0.02	0.01	-0.00	0.91
B2	**-0.262833**	0.066				1.00	0.01	0.00	-0.02	0.14
K1	**-0.076732**	0.00012					1.00	-0.93	-0.04	-0.01
K2	**0.0902692**	0.00079						1.00	-0.05	-0.01
P1	**-0.000110309**	9.2e-06							1.00	0.00
P2	**-0.000462681**	1.1e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

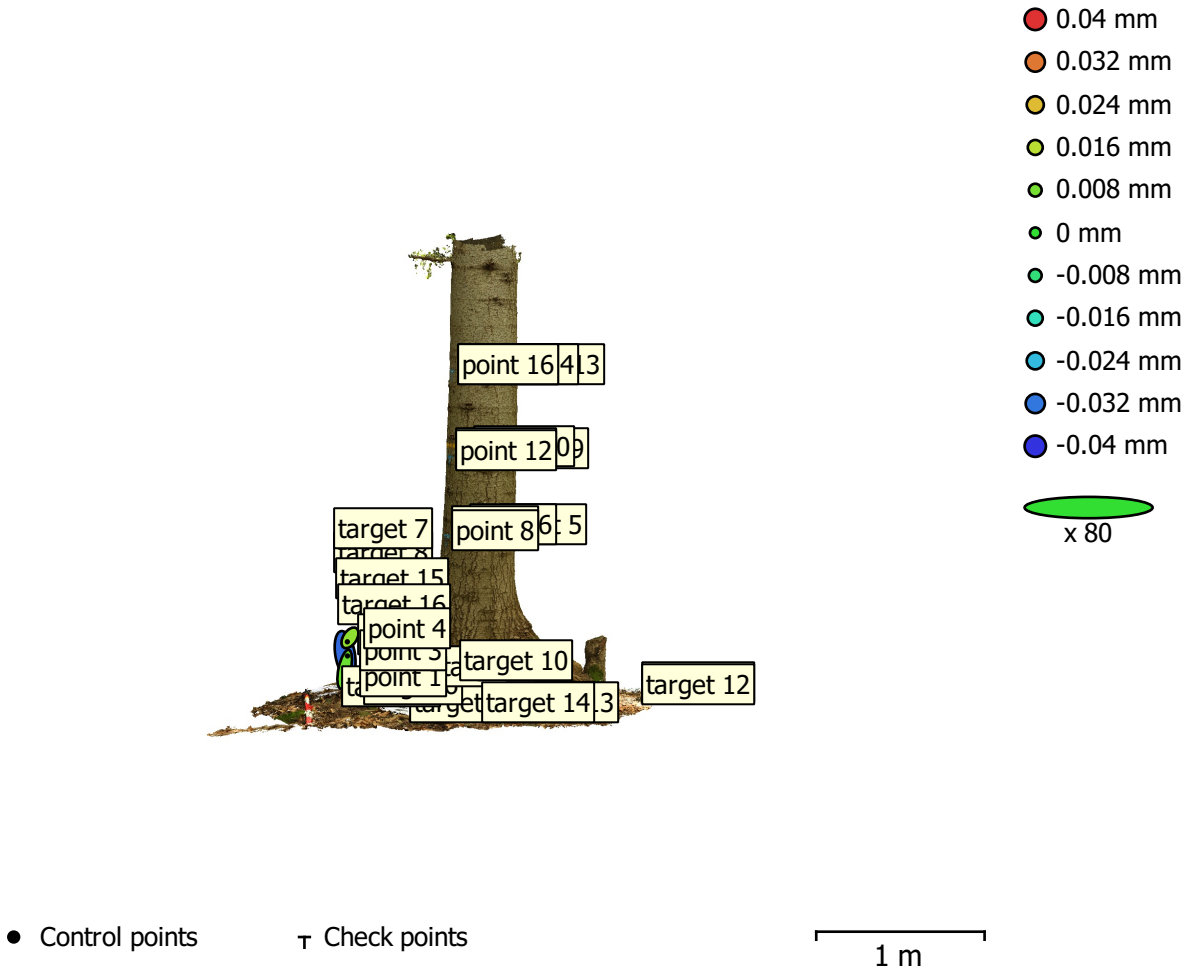

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.383774	1.48785	0.0194866	1.53655	1.53667

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-0.377989	0.650158	0.015458	0.75221	0.004 (39)
point 2	0.349396	-2.04106	-0.0334521	2.07102	0.004 (38)
point 3	0.416654	1.97969	0.00646381	2.02307	0.004 (40)
point 4	-0.38804	-0.589047	0.0109148	0.705457	0.003 (41)
Total	**0.383774**	**1.48785**	**0.0194866**	**1.53667**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 2					0.009 (2)
target 5					0.598 (6)
target 6					0.938 (12)
target 8					0.792 (5)
target 9					0.672 (13)
target 10					0.108 (5)
target 11					0.881 (5)
target 12					0.575 (4)
target 13					0.789 (7)
target 14					0.865 (8)
target 15					1.337 (9)
target 16					1.006 (4)
target 7					0.297 (42)
point 5					0.004 (107)
point 6					0.004 (107)
point 7					0.004 (108)
point 8					0.004 (109)
point 9					0.004 (76)
point 10					0.004 (76)
point 11					0.004 (76)
point 12					0.004 (76)
point 13					0.004 (76)
point 14					0.004 (76)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 15					0.004 (76)
point 16					0.004 (76)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.148317	0.000317055
target 8_target 7	0.146485	-0.00151503
target 9_target 10	0.147782	-0.000217729
target 11_target 12	0.148314	0.000314106
target 13_target 14	0.148297	0.000296981
target 15_target 16	0.148783	0.000783248
Total		**0.000735254**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.0805893	
point 1_point 3	0.15383	
point 1_point 4	0.237807	
Total		

Table 7. Check scale bars.

Digital Elevation Model

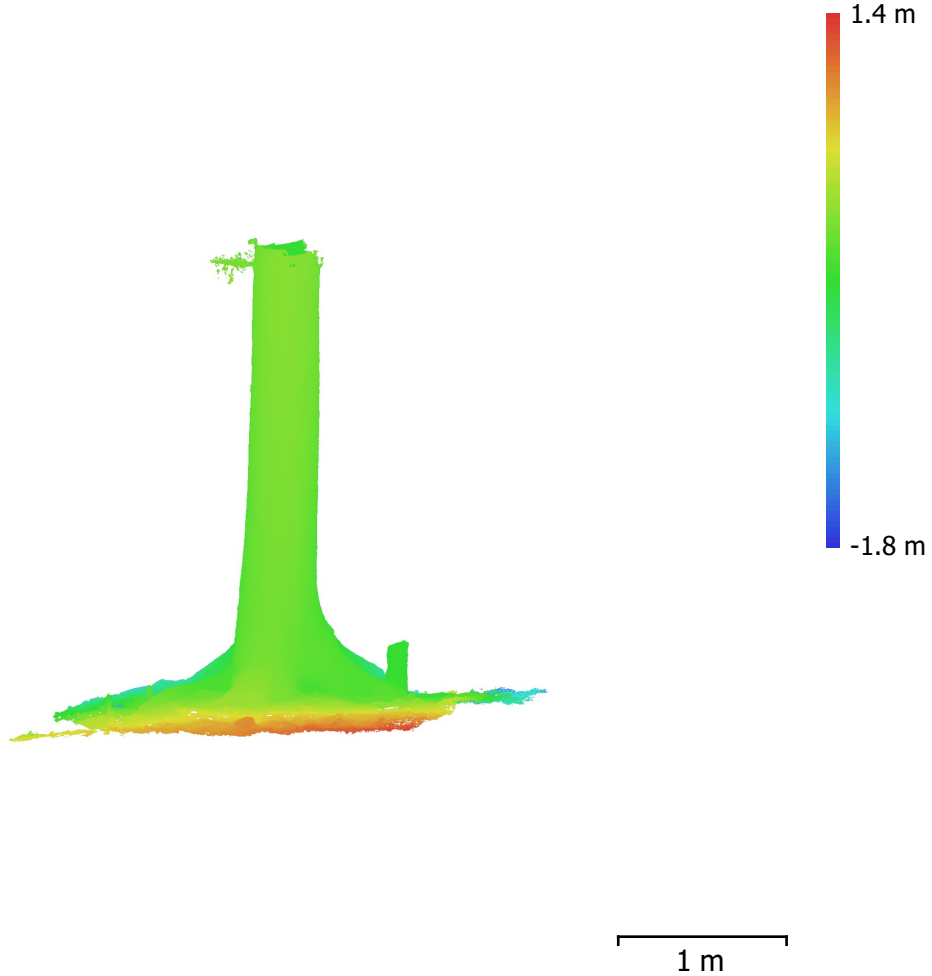

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	114
Aligned cameras	114
Markers	30
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	96,498 of 131,921
RMS reprojection error	0.160483 (0.980707 pix)
Max reprojection error	0.491139 (24.2336 pix)
Mean key point size	6.11405 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.86559
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	53 minutes 13 seconds
Alignment time	1 minutes 16 seconds
Depth Maps	
Count	114
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	2 hours 56 minutes
Dense Point Cloud	
Points	6,638,822
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	2 hours 56 minutes
Dense cloud generation time	22 minutes 26 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64