Abies_alba_6N

Processing Report

07 November 2018

Survey Data

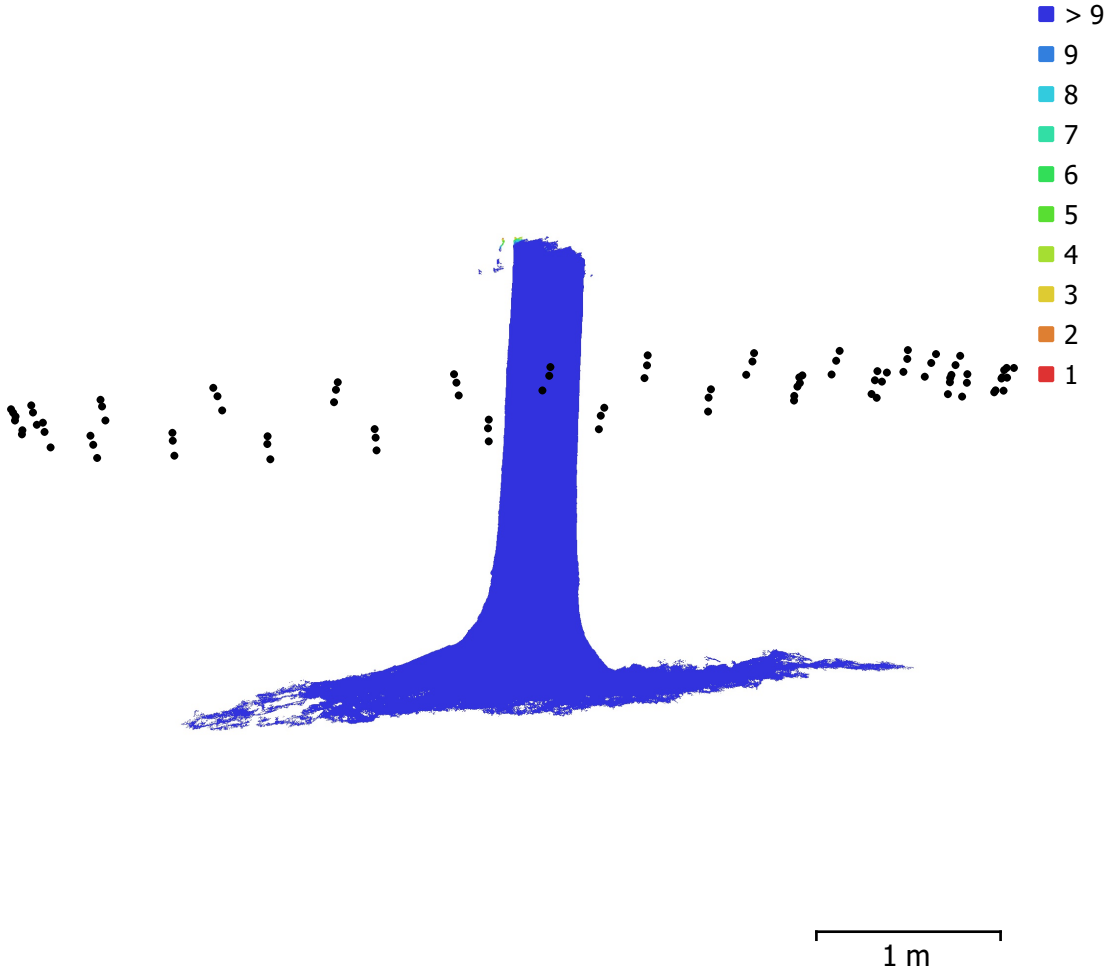

Fig. 1. Camera locations and image overlap.

Number of images:	93	Camera stations:	93
Flying altitude:	3.03 m	Tie points:	91,055
Ground resolution:	0.319 mm/pix	Projections:	320,325
Coverage area:	1.68 m²	Reprojection error:	0.926 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

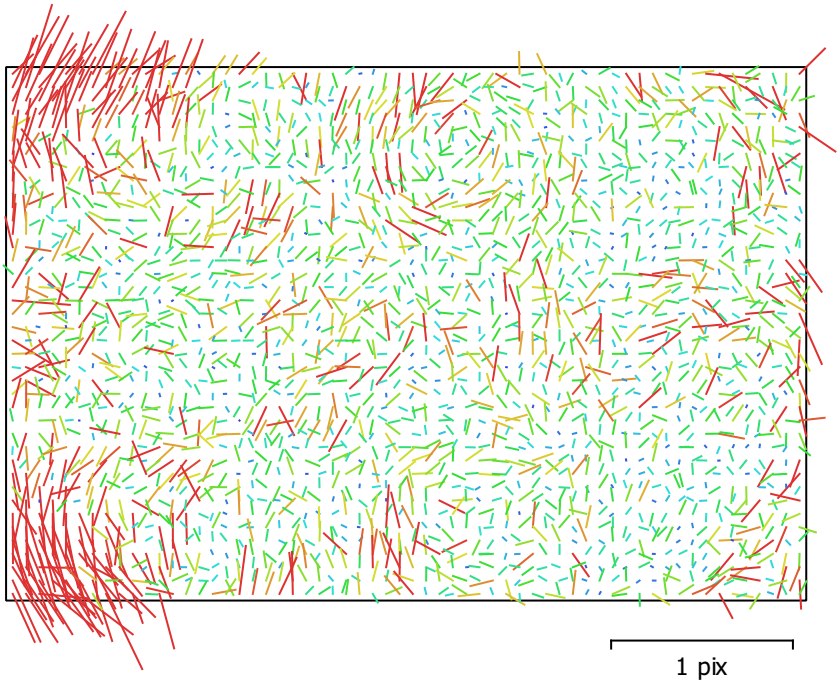

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

93 images

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

	Value	Error	F	B1	K1	K2	P1	P2
F	**8466.91**	0.57	1.00	-0.36	0.14	0.04	-0.06	-0.03
B1	**-0.409364**	0.53		1.00	0.19	-0.02	-0.22	0.08
K1	**-0.0784225**	0.00014			1.00	-0.92	-0.05	0.01
K2	**0.0914891**	0.00093				1.00	-0.00	-0.01
P1	**0.00114096**	6e-06					1.00	-0.01
P2	**0.000304568**	5.3e-06						1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

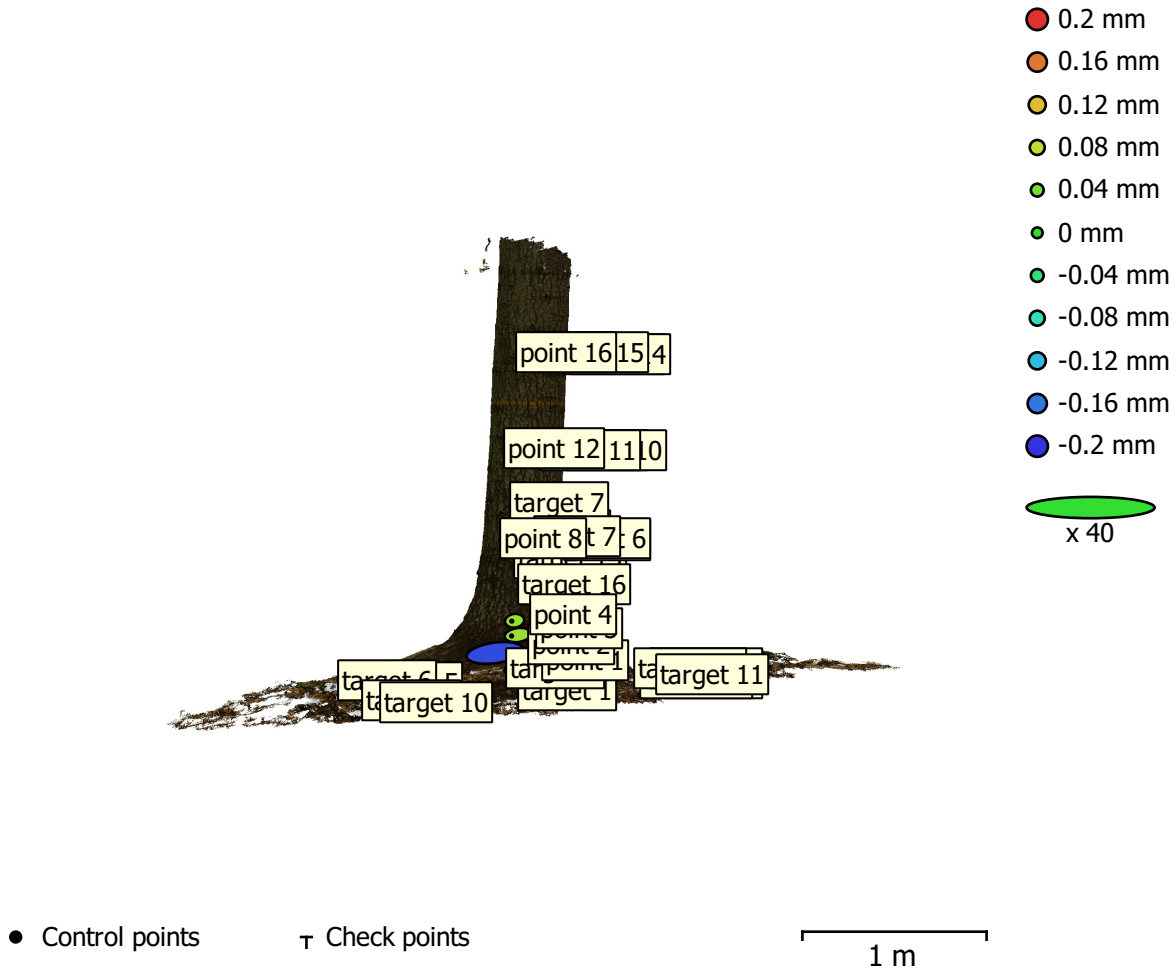

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	2.87307	0.405732	0.107468	2.90158	2.90357

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-2.38279	-0.336178	0.065922	2.40729	0.004 (46)
point 2	4.87505	0.688418	-0.186062	4.92694	0.004 (50)
point 3	-1.73048	-0.245121	0.0623237	1.74886	0.004 (58)
point 4	-0.761405	-0.107028	0.0578658	0.771065	0.003 (59)
Total	**2.87307**	**0.405732**	**0.107468**	**2.90357**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.250 (2)
target 2					0.011 (2)
target 4					1.055 (5)
target 5					0.653 (3)
target 6					1.353 (8)
target 8					1.430 (7)
target 9					2.009 (7)
target 10					1.546 (4)
target 12					3.286 (10)
target 13					2.256 (9)
target 14					1.225 (8)
target 15					2.194 (19)
target 16					2.769 (9)
target 7					0.003 (43)
target 11					0.004 (22)
point 5					0.003 (93)
point 6					0.003 (93)
point 7					0.004 (93)
point 8					0.004 (93)
point 9					0.004 (62)
point 10					0.004 (62)
point 11					0.004 (62)
point 12					0.004 (62)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 13					0.004 (51)
point 14					0.004 (50)
point 15					0.004 (49)
point 16					0.004 (49)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.148538	0.000538096
target 8_target 7	0.1491	0.00109996
target 9_target 10	0.147502	-0.000498267
target 12_target 11	0.147193	-0.000806699
target 13_target 14	0.147737	-0.000262899
target 15_target 16	0.147903	-9.72826e-05
Total		**0.000642531**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.10725	
point 1_point 3	0.18525	
point 1_point 4	0.265506	
Total		

Table 7. Check scale bars.

Digital Elevation Model

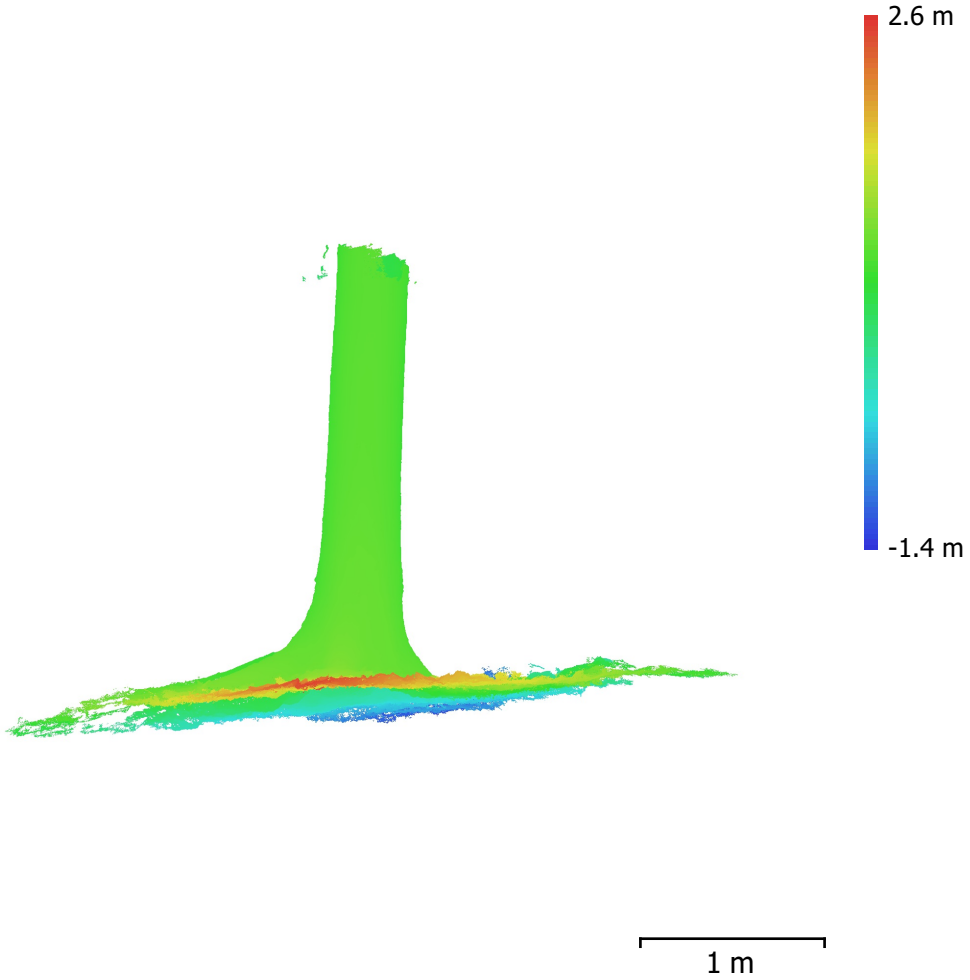

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	93
Aligned cameras	93
Markers	31
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	91,055 of 110,299
RMS reprojection error	0.157807 (0.926026 pix)
Max reprojection error	0.477372 (20.0999 pix)
Mean key point size	5.82741 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.84163
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	37 minutes 36 seconds
Alignment time	47 seconds
Depth Maps	
Count	93
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	2 hours 25 minutes
Dense Point Cloud	
Points	6,535,633
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	2 hours 25 minutes
Dense cloud generation time	17 minutes 59 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64