Abies_alba_2N

Processing Report

07 November 2018

Survey Data

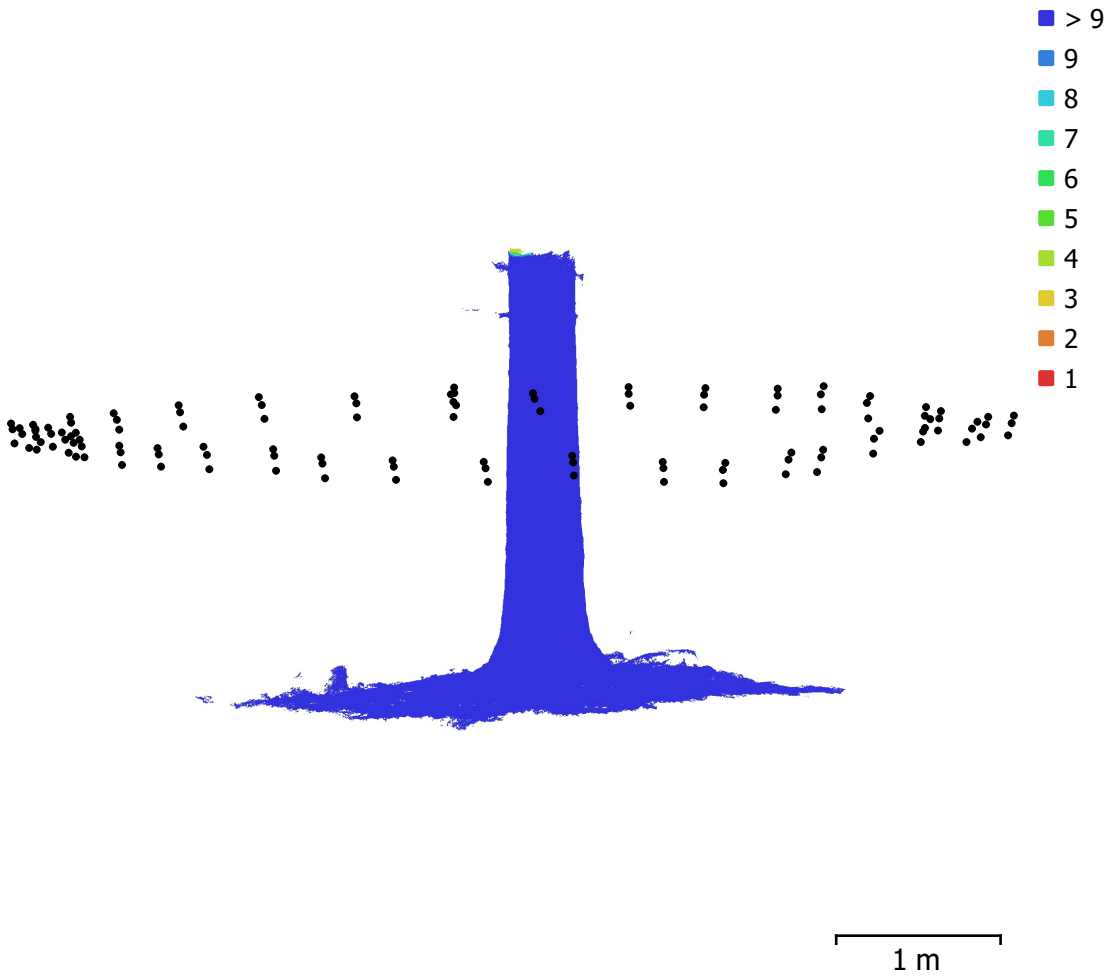

Fig. 1. Camera locations and image overlap.

Number of images:	120	Camera stations:	120
Flying altitude:	3.18 m	Tie points:	111,462
Ground resolution:	0.33 mm/pix	Projections:	384,812
Coverage area:	1.9 m²	Reprojection error:	0.829 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

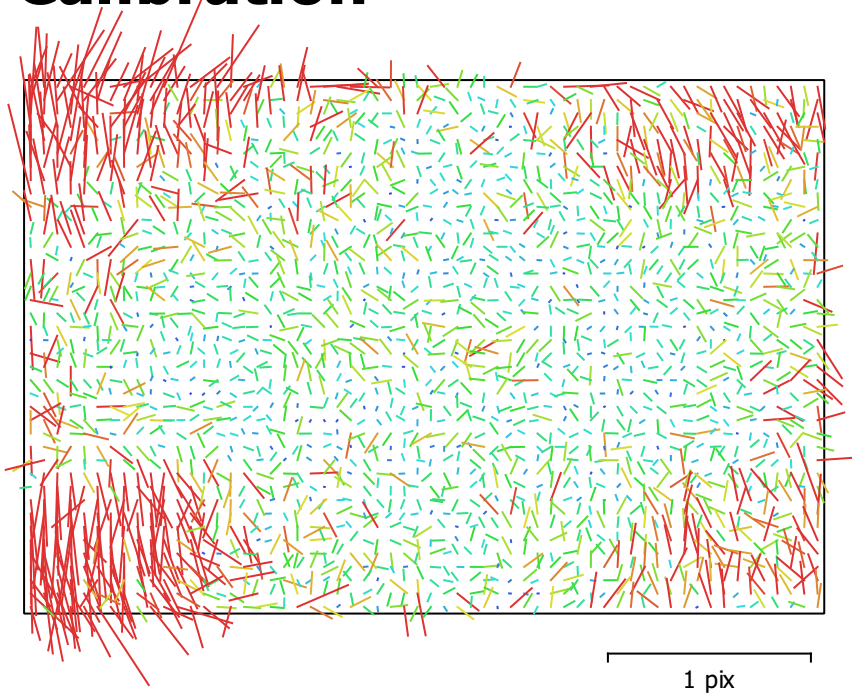

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

Canon EOS 70D (35 mm)

120 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	**8471.35**	0.38	1.00	0.03	0.15	0.05	-0.06	0.04
B2	**1.40753**	0.057		1.00	0.01	-0.00	-0.03	-0.05
K1	**-0.0777643**	0.00012			1.00	-0.95	0.01	0.01
K2	**0.0869552**	0.00084				1.00	-0.01	-0.01
P1	**0.000607281**	4.5e-06					1.00	0.01
P2	**0.00028237**	4.4e-06						1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

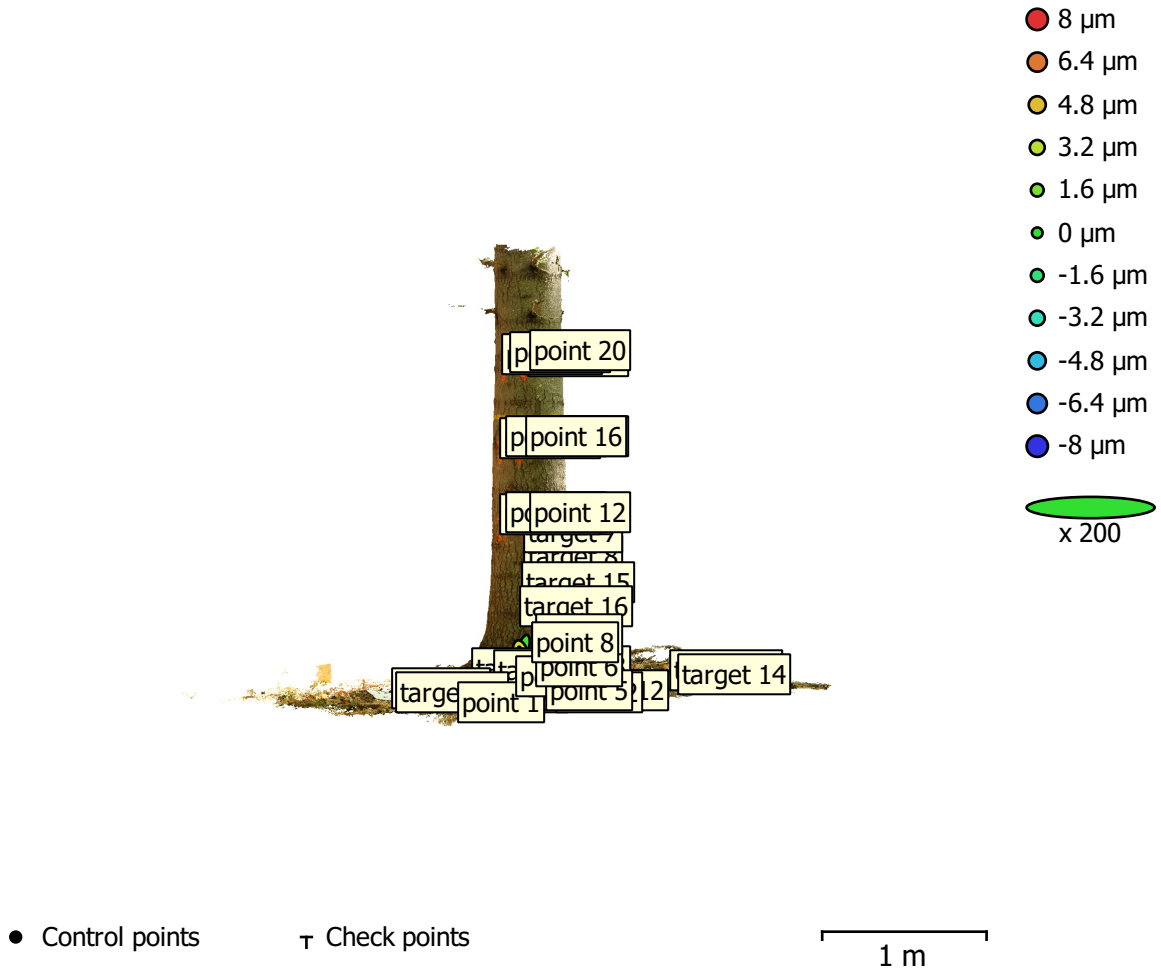

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.427132	0.44307	0.00462703	0.615429	0.615446

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 5	-0.410613	0.357017	0.00351967	0.544129	0.004 (55)
point 6	0.714799	-0.23037	-0.00770891	0.751044	0.003 (57)
point 7	-0.196619	-0.609565	0.000453013	0.640491	0.004 (60)
point 8	-0.107552	0.48285	0.00369011	0.494697	0.004 (60)
Total	**0.427132**	**0.44307**	**0.00462703**	**0.615446**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					0.653 (5)
target 5					0.537 (7)
target 6					0.478 (5)
target 8					1.150 (6)
target 9					0.301 (5)
target 10					1.275 (11)
target 11					1.883 (11)
target 12					1.000 (9)
target 13					0.698 (6)
target 14					0.242 (2)
target 15					0.935 (9)
target 16					0.554 (4)
target 7					0.003 (57)
point 1					12.709 (25)
point 2					0.186 (23)
point 3					0.097 (25)
point 4					5.223 (30)
point 9					0.004 (103)
point 10					0.004 (104)
point 11					0.004 (104)
point 12					0.004 (100)
point 13					0.004 (80)
point 14					0.004 (80)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 15					0.004 (80)
point 16					0.004 (80)
point 17					0.004 (70)
point 18					0.004 (70)
point 19					0.003 (69)
point 20					0.003 (66)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147857	-0.00014319
target 8_target 7	0.1481	0.000100341
target 9_target 10	0.147803	-0.000196799
target 11_target 12	0.14799	-1.03683e-05
target 13_target 14	0.14822	0.0002204
target 15_target 16	0.148035	3.4836e-05
Total		**0.000140949**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.614404	
point 3_point 4	0.237706	
point 5_point 6	0.0750775	
point 5_point 7	0.149723	
point 5_point 8	0.224908	
Total		

Table 7. Check scale bars.

Digital Elevation Model

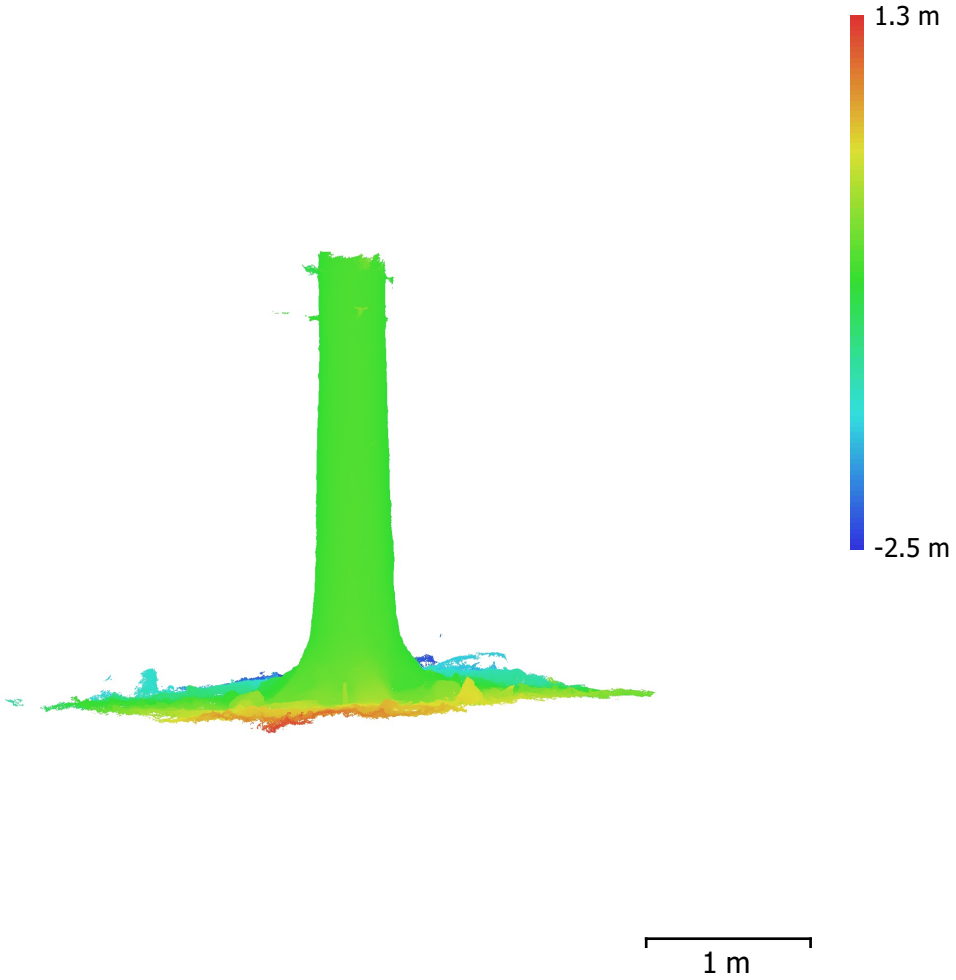

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	120
Aligned cameras	120
Markers	34
Scale bars	11
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	111,462 of 135,944
RMS reprojection error	0.158377 (0.828881 pix)
Max reprojection error	0.481503 (19.7516 pix)
Mean key point size	5.20179 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.95777
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	52 minutes 42 seconds
Alignment time	1 minutes 16 seconds
Depth Maps	
Count	120
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	3 hours 5 minutes
Dense Point Cloud	
Points	6,959,037
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	3 hours 5 minutes
Dense cloud generation time	28 minutes 36 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64