Abies_alba_3F

Processing Report

07 November 2018

Survey Data

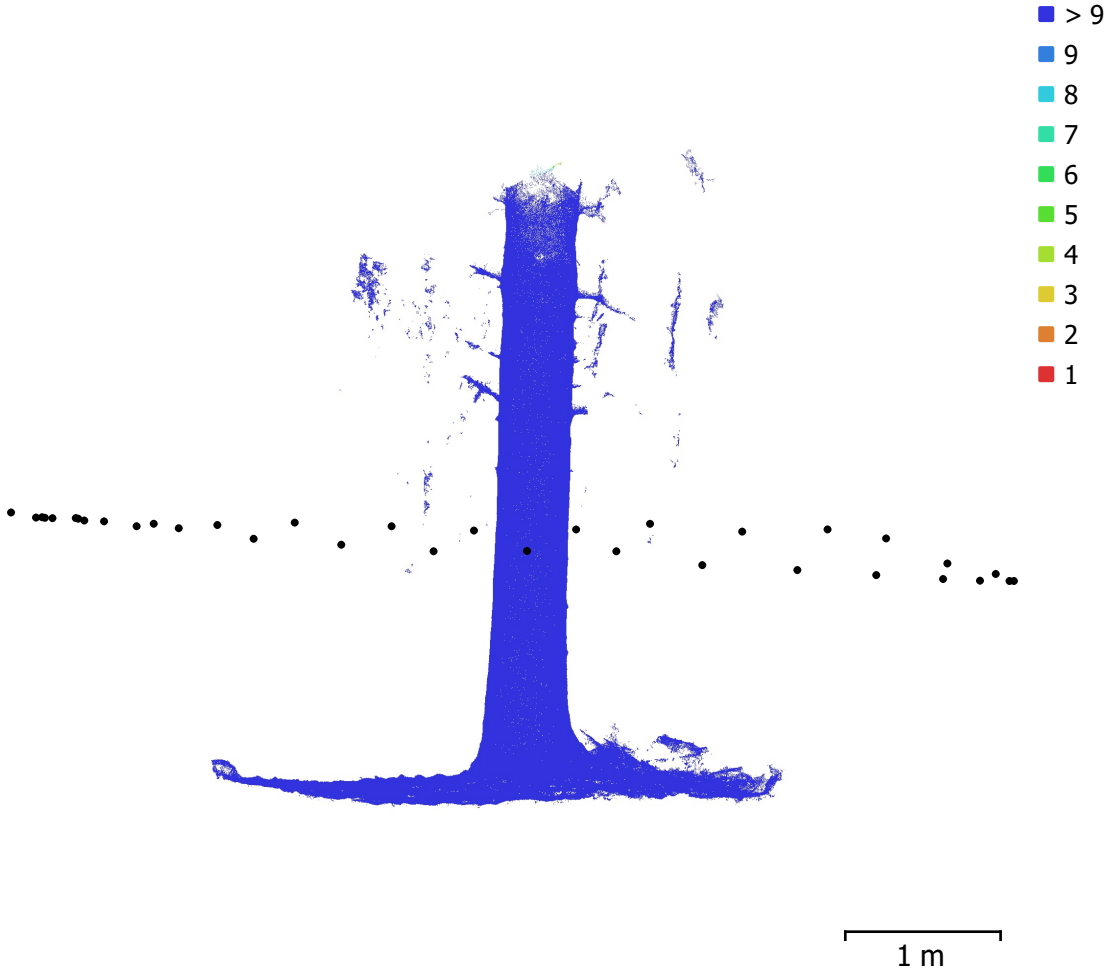

Fig. 1. Camera locations and image overlap.

Number of images:	35	Camera stations:	35
Flying altitude:	2.92 m	Tie points:	28,696
Ground resolution:	0.713 mm/pix	Projections:	76,835
Coverage area:	2.59 m²	Reprojection error:	0.545 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Canon EOS 70D (15 mm)	5472 x 3648	15 mm	4.17 x 4.17 µm	No

Table 1. Cameras.

Camera Calibration

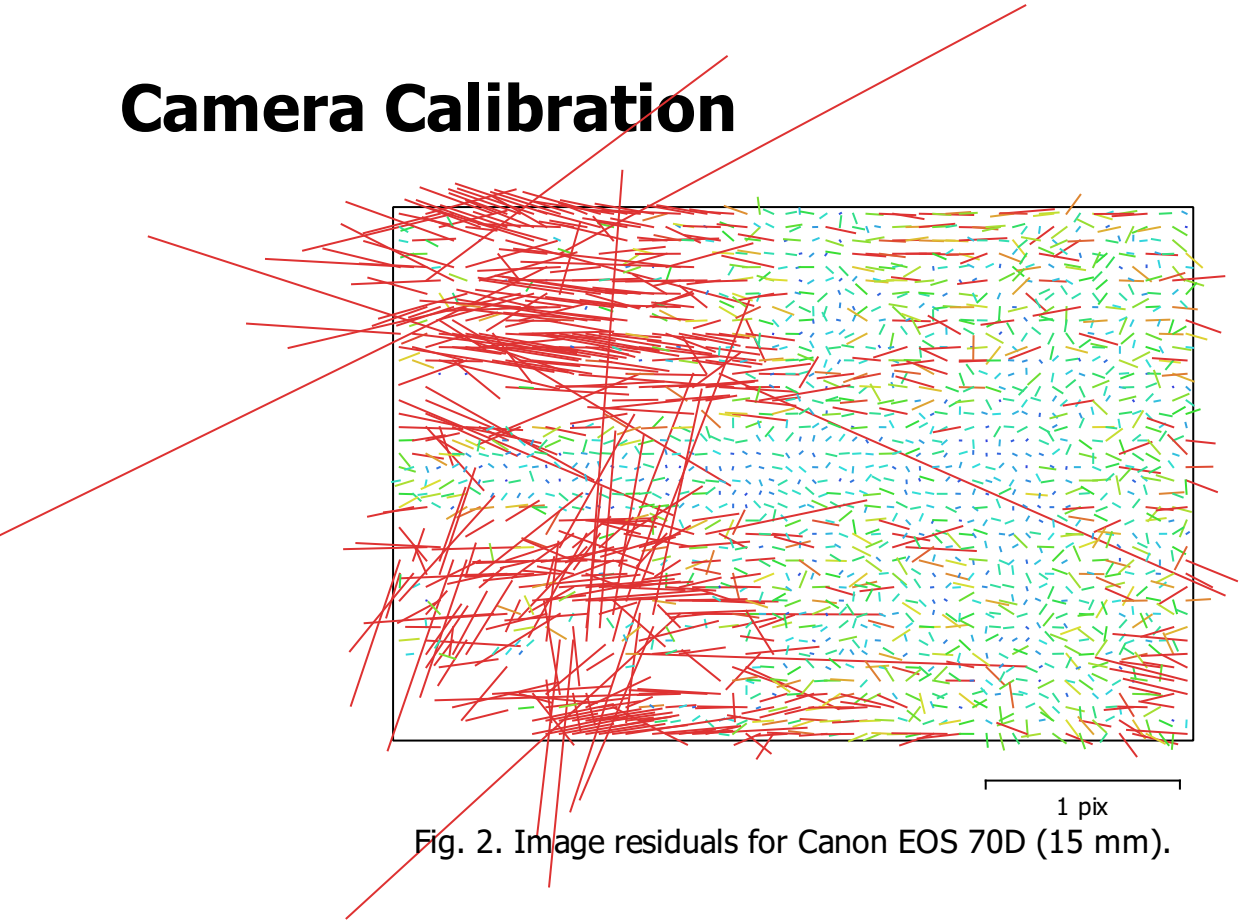

Fig. 2. Image residuals for Canon EOS 70D (15 mm).

Canon EOS 70D (15 mm)

35 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**5472 x 3648**	**15 mm**	**4.17 x 4.17 µm**

	Value	Error	F	B2	K1	P1	P2
F	**3749.43**	0.28	1.00	-0.03	-0.55	-0.01	-0.01
B2	**1.88745**	0.063		1.00	-0.02	0.12	-0.32
K1	**-0.0345526**	6.9e-05			1.00	-0.05	0.04
P1	**0.000789829**	1.9e-05				1.00	0.11
P2	**-0.000284007**	1.1e-05					1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

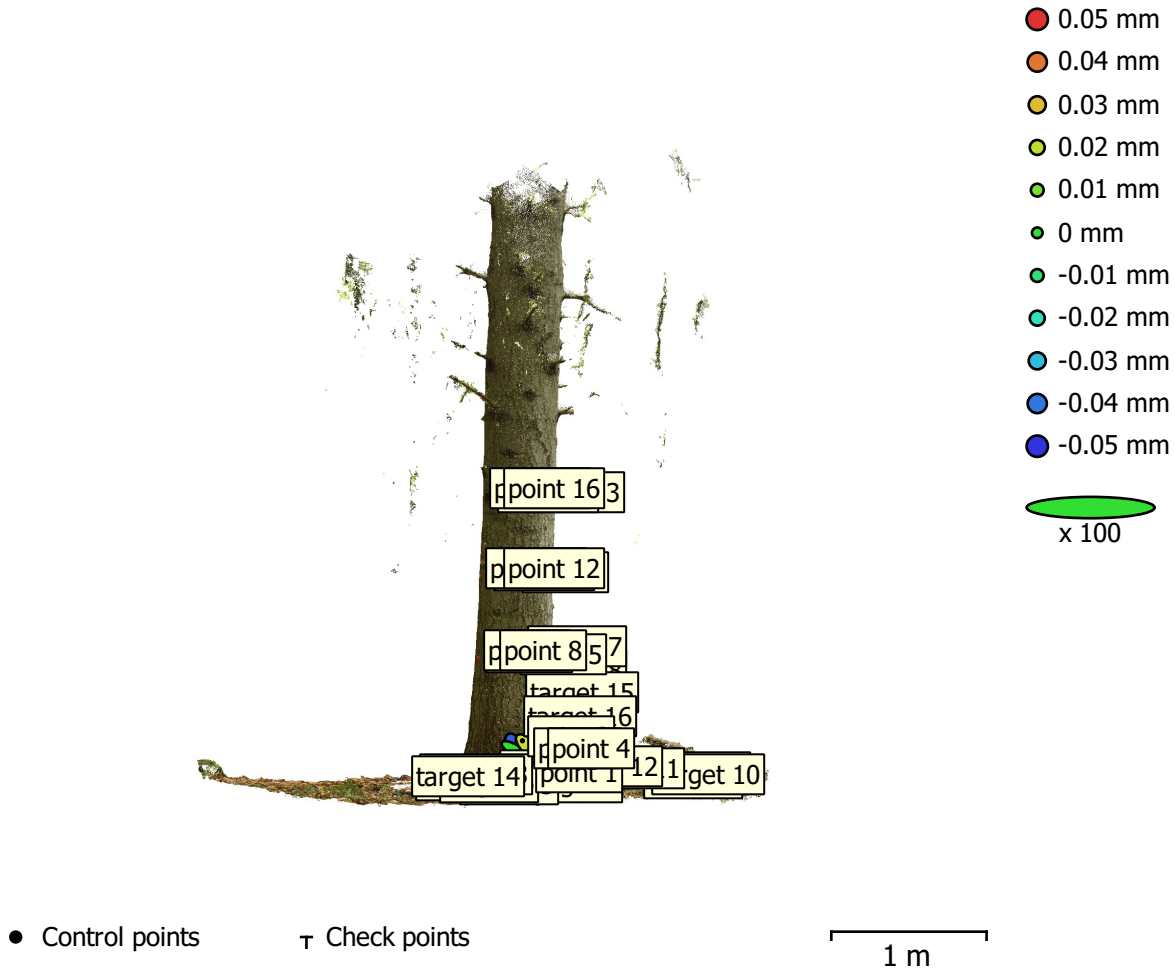

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.857295	1.10624	0.0270583	1.39955	1.39981

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-0.836964	1.25682	0.0230518	1.51018	0.004 (35)
point 2	0.648885	-1.49548	-0.0440071	1.63079	0.004 (35)
point 3	1.04287	-0.605429	-0.000500669	1.20587	0.004 (35)
point 4	-0.854795	0.844091	0.021456	1.20151	0.004 (35)
Total	**0.857295**	**1.10624**	**0.0270583**	**1.39981**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 1					1.481 (5)
target 2					1.290 (20)
target 3					0.694 (5)
target 4					1.558 (10)
target 5					1.659 (18)
target 6					1.023 (13)
target 8					0.861 (22)
target 9					1.891 (8)
target 10					2.813 (5)
target 11					0.552 (2)
target 12					0.848 (3)
target 13					1.980 (11)
target 14					1.796 (21)
target 15					1.098 (23)
target 16					1.416 (16)
target 7					0.003 (35)
point 5					0.005 (35)
point 6					0.004 (35)
point 7					0.004 (35)
point 8					0.004 (35)
point 9					0.004 (35)
point 10					0.004 (35)
point 11					0.004 (35)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 12					0.004 (35)
point 13					0.004 (35)
point 14					0.004 (35)
point 15					0.004 (35)
point 16					0.004 (35)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 5_target 6	0.147267	-0.000733338
target 8_target 7	0.147937	-6.25402e-05
target 9_target 10	0.147388	-0.000611605
target 11_target 12	0.148869	0.000868661
target 13_target 14	0.148258	0.000258281
target 15_target 16	0.148272	0.000271669
Total		**0.000549369**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 1_point 2	0.0739901	
point 1_point 3	0.14902	
point 1_point 4	0.237975	
Total		

Table 7. Check scale bars.

Digital Elevation Model

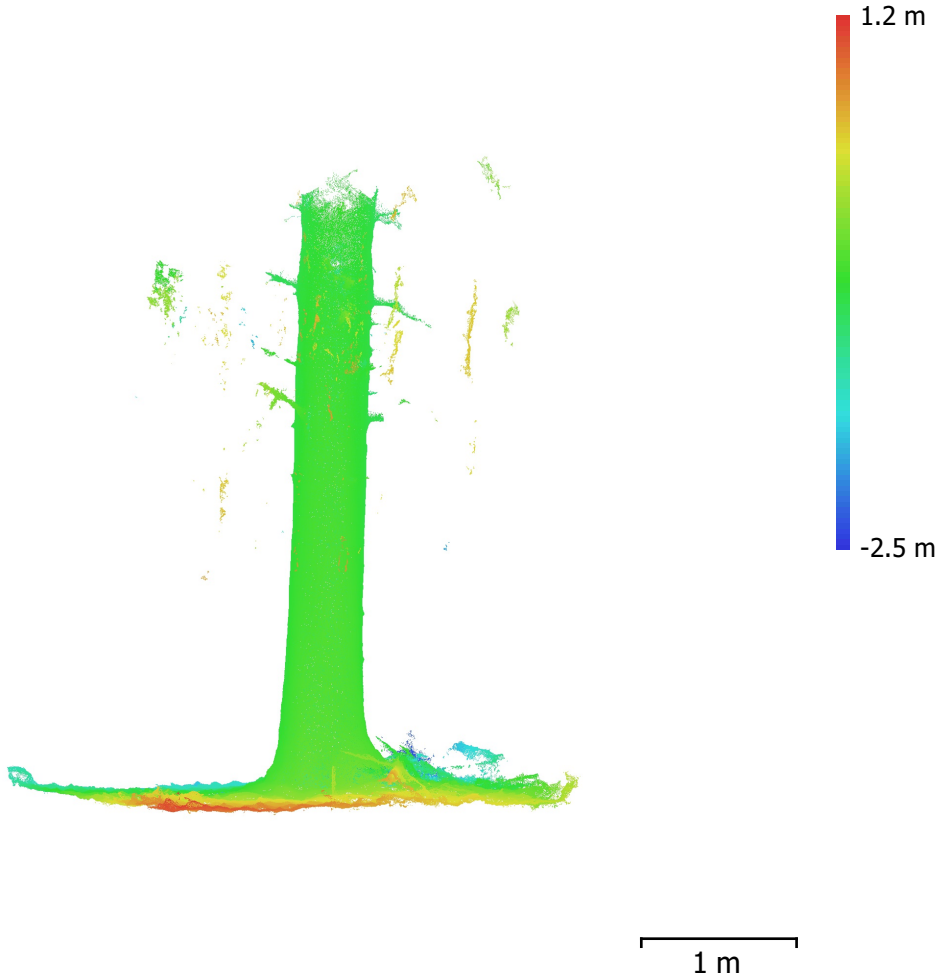

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	35
Aligned cameras	35
Markers	32
Scale bars	9
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	28,696 of 31,298
RMS reprojection error	0.106774 (0.545455 pix)
Max reprojection error	0.322316 (20.5874 pix)
Mean key point size	4.3344 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.79226
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	5 minutes 25 seconds
Alignment time	10 seconds
Depth Maps	
Count	35
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	37 minutes 46 seconds
Dense Point Cloud	
Points	2,038,489
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	37 minutes 46 seconds
Dense cloud generation time	8 minutes 10 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64