Quercus_petraea_4N

Processing Report

07 November 2018

Survey Data

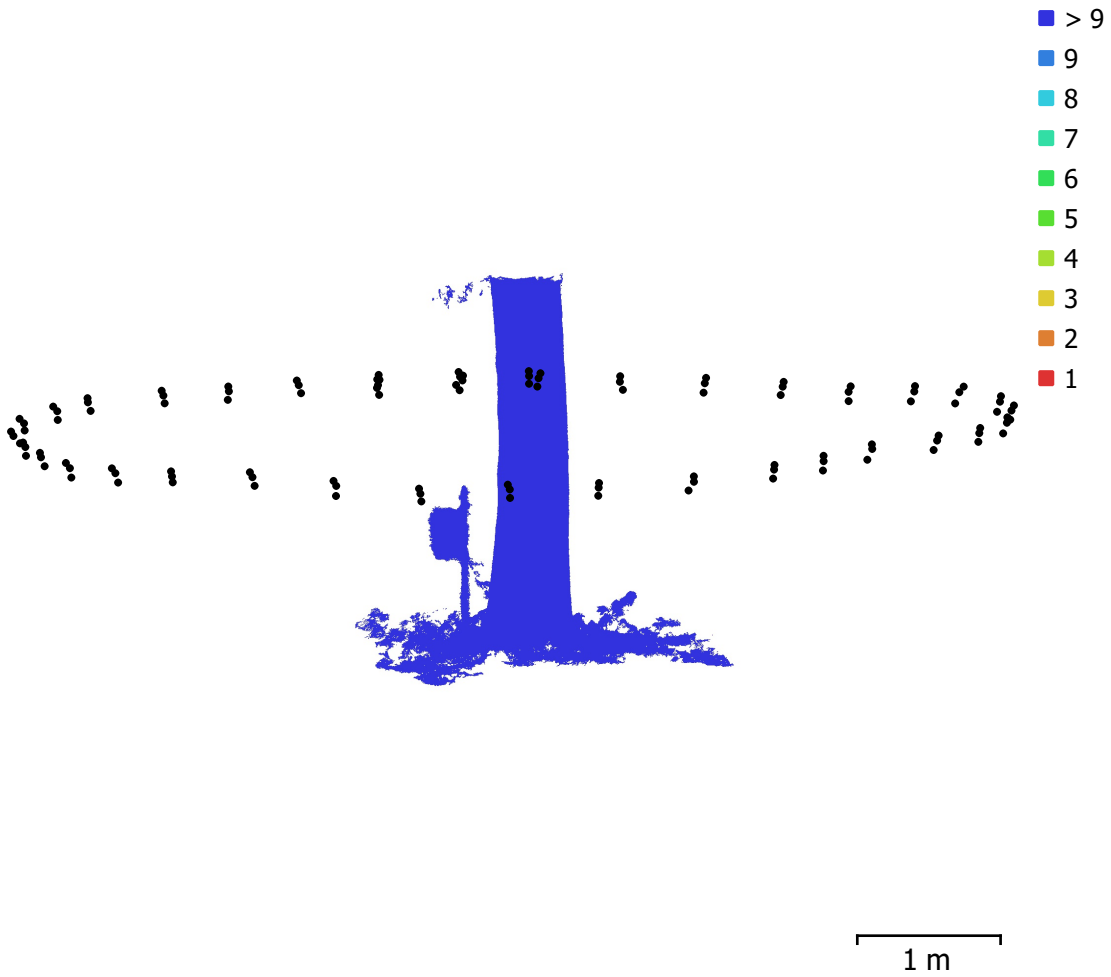

Fig. 1. Camera locations and image overlap.

Number of images:	114	Camera stations:	114
Flying altitude:	3.49 m	Tie points:	115,630
Ground resolution:	0.391 mm/pix	Projections:	376,906
Coverage area:	2.04 m²	Reprojection error:	0.671 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

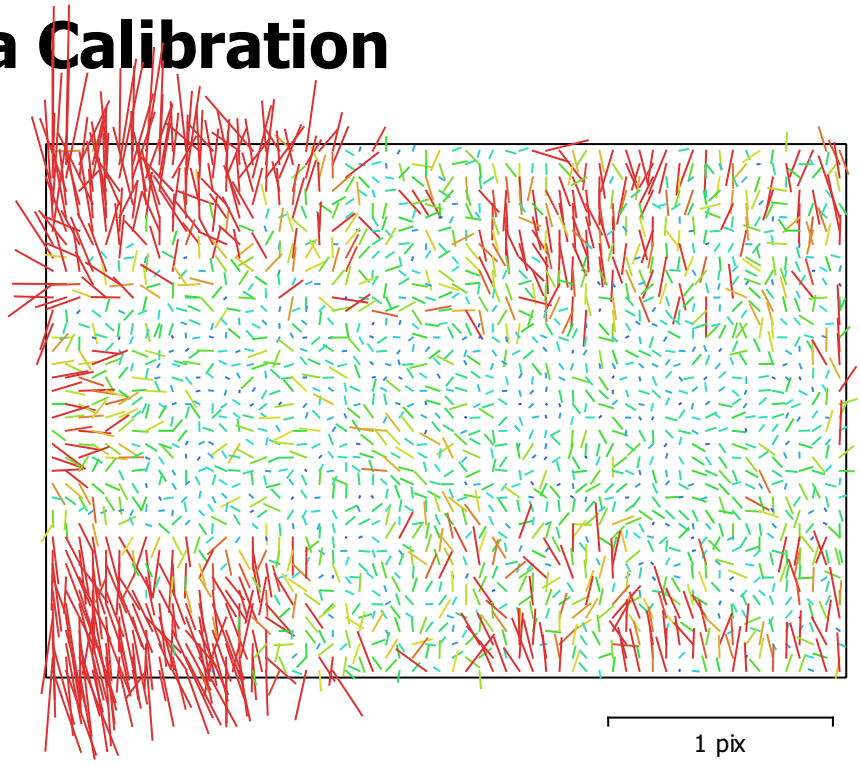

Fig. 2. Image residuals for Canon EOS 70D (35 mm).

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	B2	K1	K2	P1	P2
F	**8469.43**	0.68	1.00	0.04	0.44	0.05	-0.16	-0.04
B2	**0.845673**	0.11		1.00	0.03	-0.00	-0.05	0.01
K1	**-0.0753769**	9.7e-05			1.00	-0.84	-0.06	-0.01
K2	**0.0840606**	0.00064				1.00	0.04	-0.01
P1	**0.000389125**	3.6e-06					1.00	0.03
P2	**0.000367383**	4e-06						1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

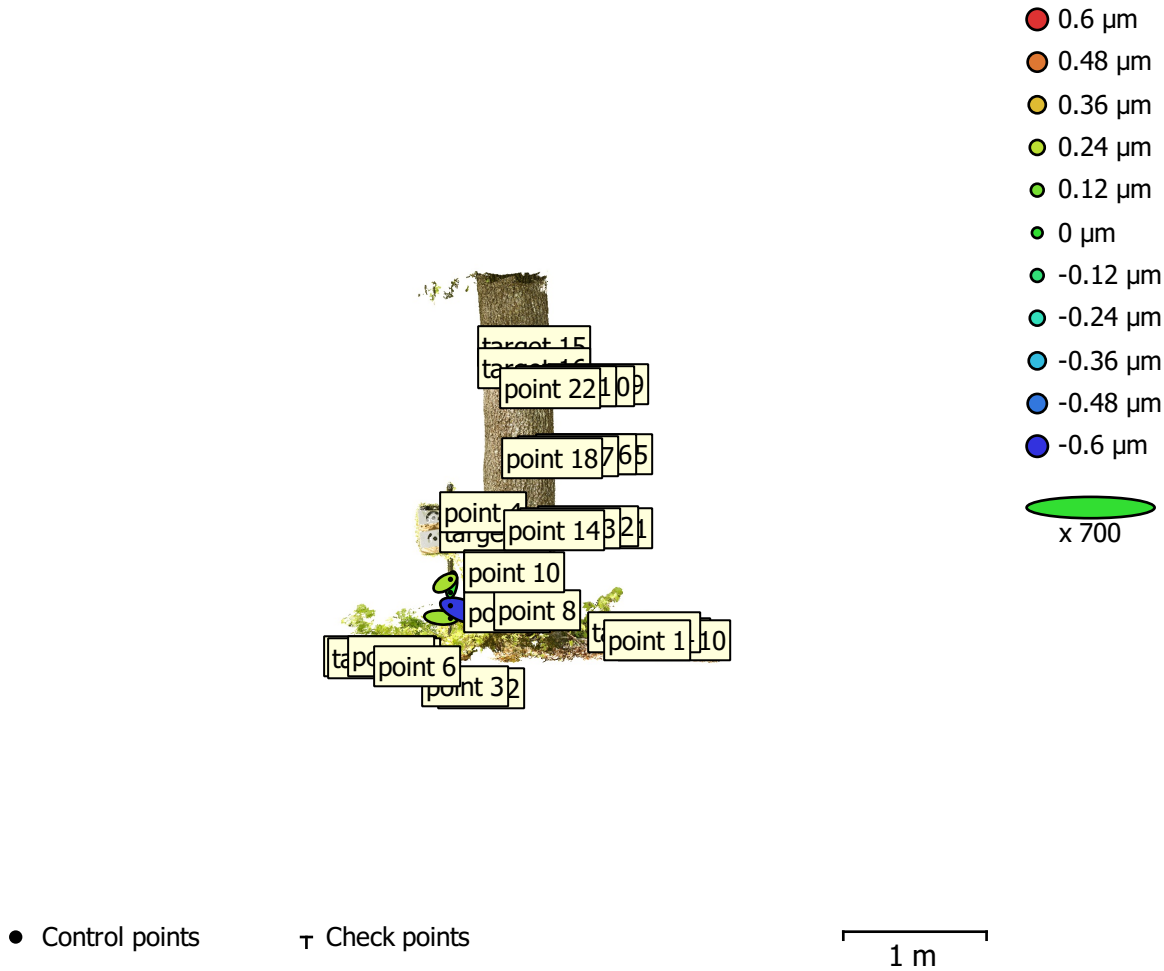

Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	0.174765	0.100221	0.000325439	0.201462	0.201463

Table 3. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 7	0.191668	-0.0171157	0.000185852	0.192431	0.004 (77)
point 8	-0.272714	0.103047	-0.000588993	0.291534	0.004 (92)
point 9	-0.0219518	-0.156169	9.18744e-06	0.157705	0.004 (101)
point 10	0.10286	0.0698324	0.000205194	0.124325	0.004 (112)
Total	**0.174765**	**0.100221**	**0.000325439**	**0.201463**	**0.004**

Table 4. Control points.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
target 8					1.011 (17)
target 9					1.034 (2)
target 10					0.078 (2)
target 11					0.344 (4)
target 13					1.696 (4)
target 14					0.150 (2)
target 15					0.118 (2)
target 16					0.133 (2)
point 1					41.673 (38)
point 2					33.945 (29)
point 3					28.975 (29)
point 4					0.003 (113)
point 5					5.500 (24)
point 6					9.069 (24)
point 11					0.004 (114)
point 12					0.004 (114)
point 13					0.004 (114)
point 14					0.004 (114)
point 15					0.004 (77)
point 16					0.004 (77)
point 17					0.004 (77)
point 18					0.004 (77)
point 19					0.003 (76)

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 20					0.003 (76)
point 21					0.004 (76)
point 22					0.004 (76)
Total					

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 9_target 10	0.148775	0.000775023
target 13_target 14	0.148157	0.000157289
target 15_target 16	0.14803	2.958e-05
target 8_point 4	0.147026	-0.000974422
Total		**0.000627649**

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
point 7_point 8	0.0882745	
point 7_point 9	0.180545	
point 7_point 10	0.272545	
Total		

Table 7. Check scale bars.

Digital Elevation Model

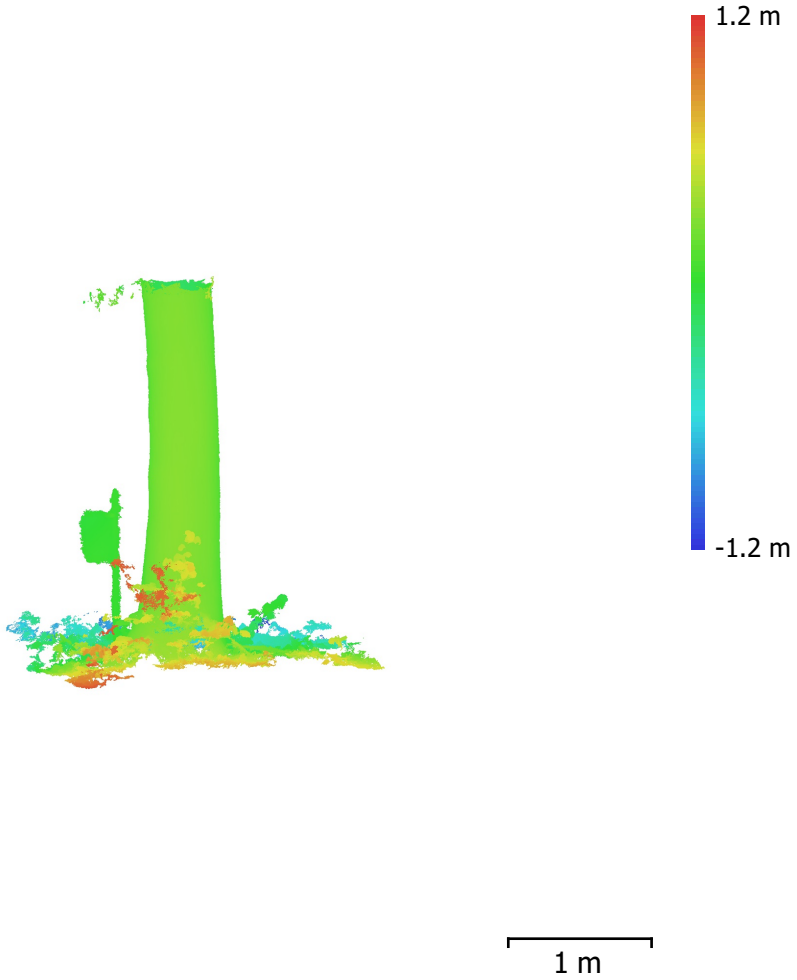

Fig. 4. Reconstructed digital elevation model.

Resolution:	unknown
Point density:	unknown

Processing Parameters

General	
Cameras	114
Aligned cameras	114
Markers	30
Scale bars	7
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	115,630 of 151,498
RMS reprojection error	0.157545 (0.671302 pix)
Max reprojection error	0.482732 (16.7971 pix)
Mean key point size	4.24421 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.48342
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	45 minutes 19 seconds
Alignment time	1 minutes 47 seconds
Depth Maps	
Count	114
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	2 hours 27 minutes
Dense Point Cloud	
Points	4,192,048
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	2 hours 27 minutes
Dense cloud generation time	23 minutes 29 seconds
Software	
Version	1.4.4 build 6848
Platform	Windows 64