Agisoft PhotoScan

Processing Report

16 April 2018

Survey Data

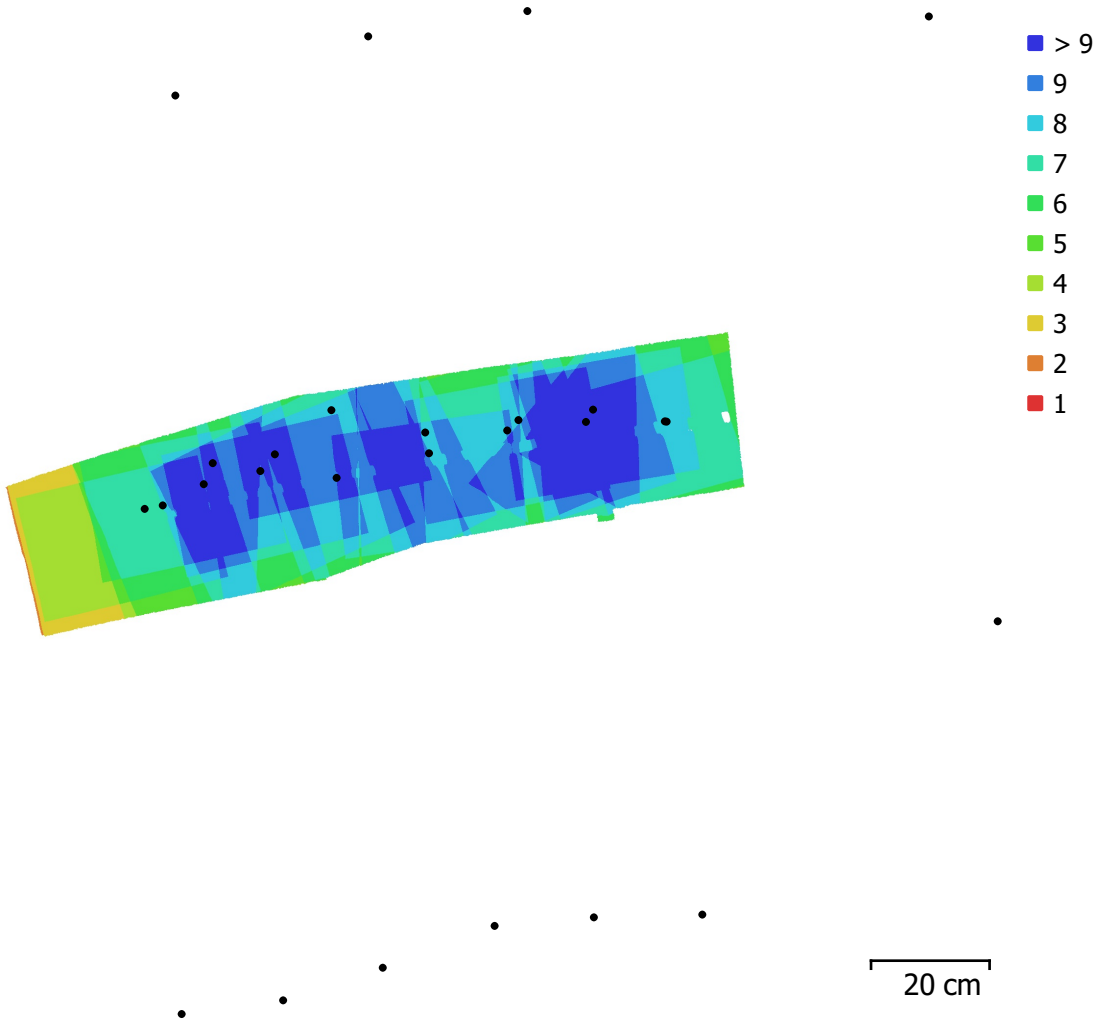

Fig. 1. Camera locations and image overlap.

Number of images:	27	Camera stations:	27
Flying altitude:	88.5 cm	Tie points:	91,284
Ground resolution:	0.0678 mm/pix	Projections:	230,512
Coverage area:	3.43e+03 cm²	Reprojection error:	0.604 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D600 (62 mm)	6034 x 4028	62 mm	5.96 x 5.96 µm	No
NIKON D600 (62 mm)	4028 x 6034	62 mm	5.96 x 5.96 µm	No
NIKON D600 (100 mm)	4028 x 6034	100 mm	5.96 x 5.96 µm	No
NIKON D600 (100 mm)	6034 x 4028	100 mm	5.96 x 5.96 µm	No
NIKON D600 (90 mm)	6034 x 4028	90 mm	5.96 x 5.96 µm	No

Table 1. Cameras.

Camera Calibration

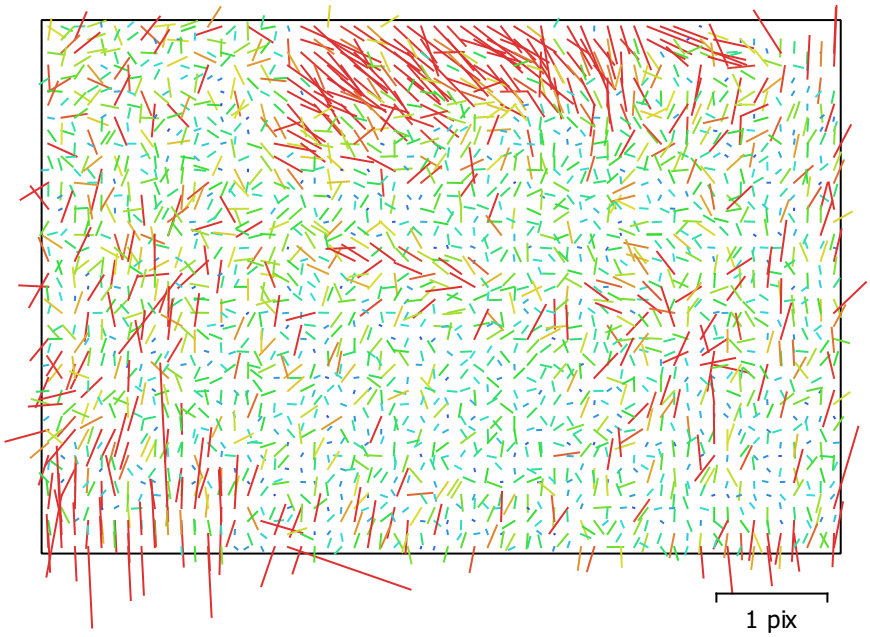

Fig. 2. Image residuals for NIKON D600 (62 mm).

NIKON D600 (62 mm)

5 images

Type	Resolution	Focal Length	Pixel Size
Frame	**6034 x 4028**	**62 mm**	**5.96 x 5.96 µm**

F:	10011.6		
Cx:	-25.944	B1:	6.77166
Cy:	-26.1993	B2:	0.0679776
K1:	-0.0354689	P1:	0.000374132
K2:	0.270336	P2:	0.000645868
K3:	-1.51686	P3:	0
K4:	0	P4:	0

Camera Calibration

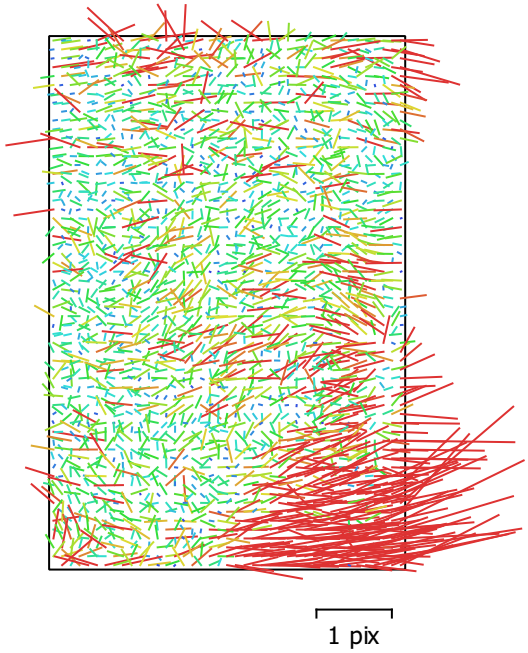

Fig. 3. Image residuals for NIKON D600 (62 mm).

NIKON D600 (62 mm)

3 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4028 x 6034**	**62 mm**	**5.96 x 5.96 µm**

F:	9806.37		
Cx:	21.278	B1:	-9.67033
Cy:	-80.1001	B2:	-4.25667
K1:	-0.0278465	P1:	0.000223861
K2:	0.0708176	P2:	-0.00159528
K3:	-0.581653	P3:	0
K4:	0	P4:	0

Camera Calibration

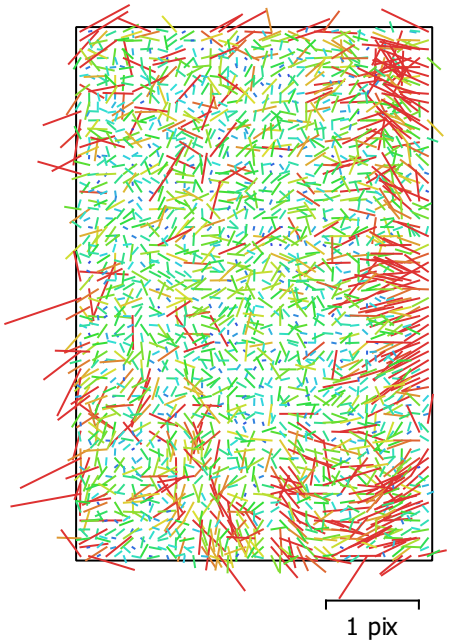

Fig. 4. Image residuals for NIKON D600 (100 mm).

NIKON D600 (100 mm)

5 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4028 x 6034**	**100 mm**	**5.96 x 5.96 µm**

F:	14836.4		
Cx:	-10.8098	B1:	-17.8116
Cy:	-37.8511	B2:	-6.96697
K1:	0.0810166	P1:	-0.000277875
K2:	-2.00059	P2:	0.000115542
K3:	15.9219	P3:	0
K4:	0	P4:	0

Camera Calibration

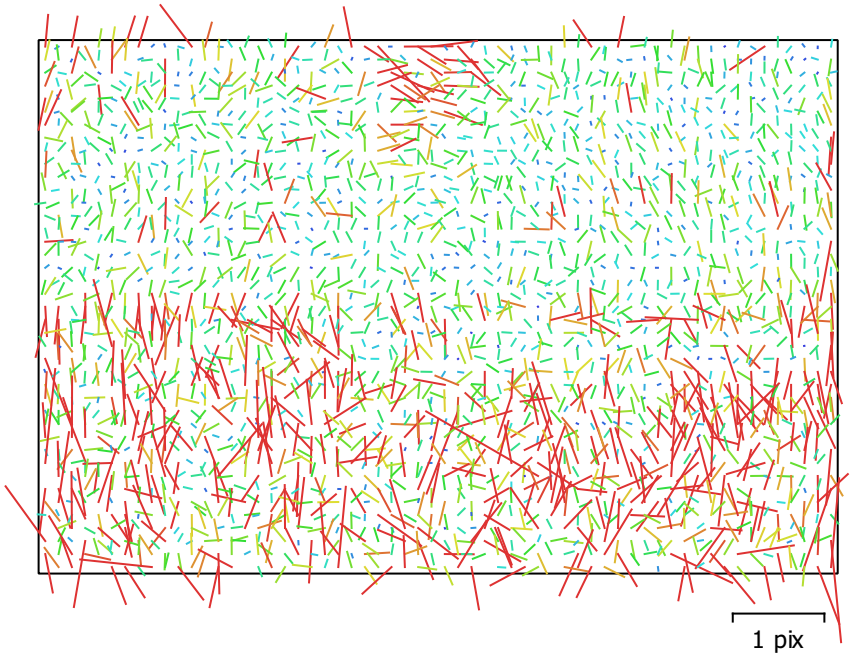

Fig. 5. Image residuals for NIKON D600 (100 mm).

NIKON D600 (100 mm)

3 images

Type	Resolution	Focal Length	Pixel Size
Frame	**6034 x 4028**	**100 mm**	**5.96 x 5.96 µm**

F:	15125.6		
Cx:	2.83776	B1:	8.50529
Cy:	-68.871	B2:	2.74256
K1:	0.0507448	P1:	0.000779426
K2:	-0.963003	P2:	-6.26611e-05
K3:	7.31682	P3:	0
K4:	0	P4:	0

Camera Calibration

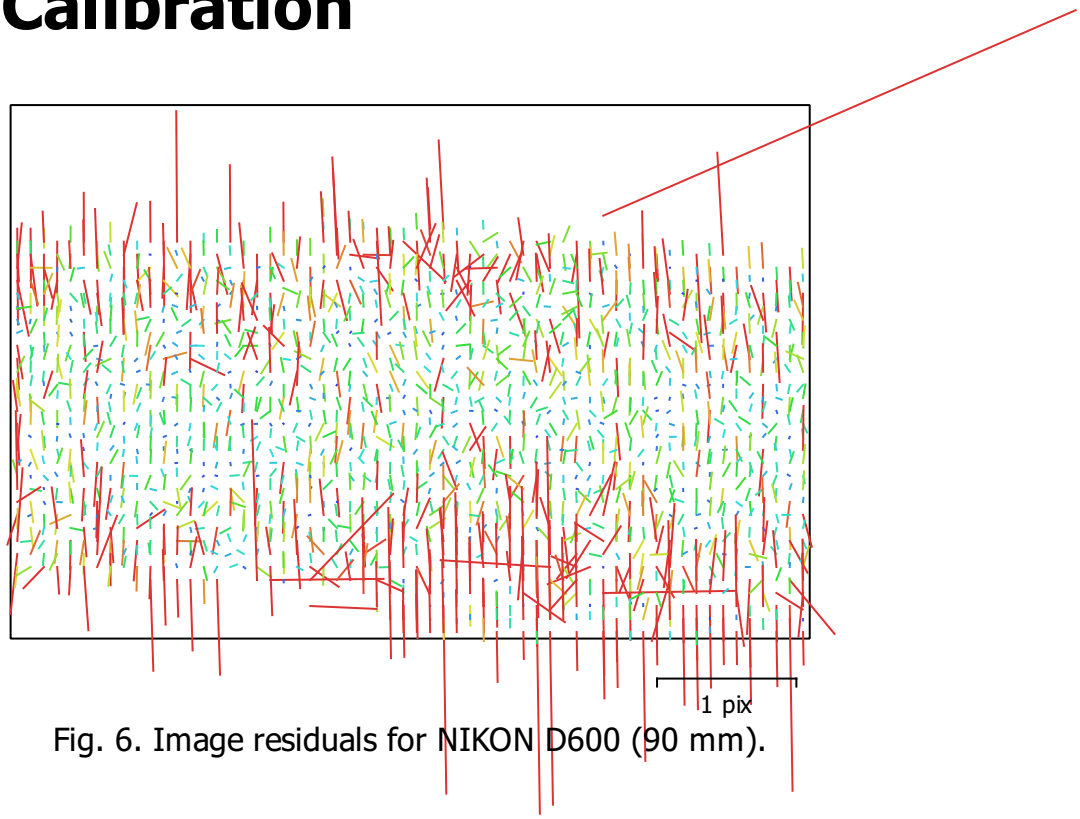

Fig. 6. Image residuals for NIKON D600 (90 mm).

NIKON D600 (90 mm)

11 images

Type	Resolution	Focal Length	Pixel Size
Frame	**6034 x 4028**	**90 mm**	**5.96 x 5.96 µm**

F:	14526.8		
Cx:	32.9432	B1:	-33.2431
Cy:	187.011	B2:	8.80328
K1:	0.0235176	P1:	-0.000507988
K2:	0.0542355	P2:	0.00392319
K3:	-5.70258	P3:	0
K4:	0	P4:	0

Ground Control Points

Fig. 7. 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	0.52661	0.473196	4.89265	0.707978	4.94361

Table 2. Control points RMSE.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	-0.446794	0.506693	4.72457	4.77263	0.956 (9)
point 2	0.865669	-0.0759679	-4.74553	4.82444	0.131 (6)
point 3	-0.0189951	-0.735164	5.05579	5.109	0.010 (7)
point 4	-0.39988	0.304439	-5.03483	5.05986	0.103 (9)
Total	**0.52661**	**0.473196**	**4.89265**	**4.94361**	**0.521**

Table 3. Control points.

Digital Elevation Model

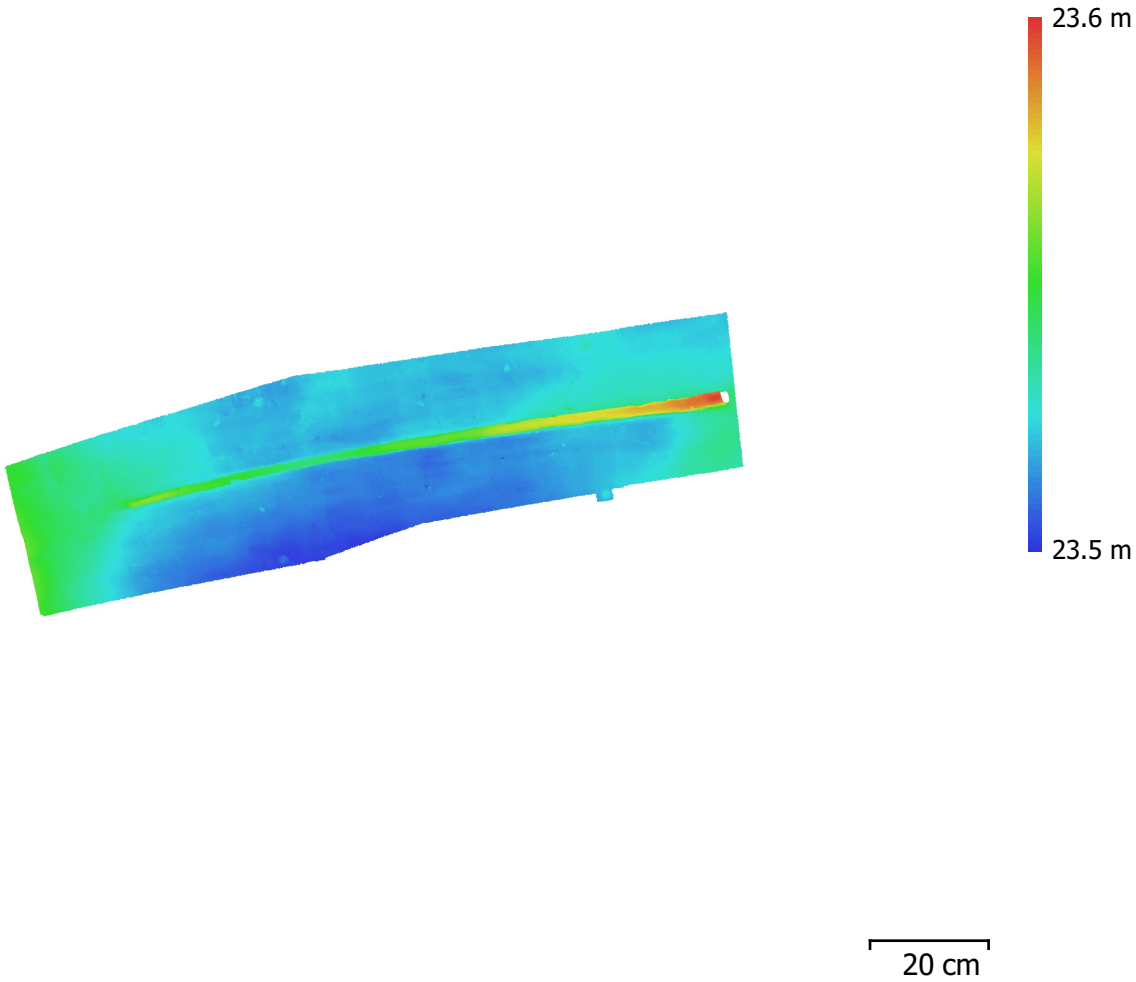

Fig. 8. Reconstructed digital elevation model.

Resolution:	0.136 mm/pix
Point density:	5.44e+04 points/mm²

Processing Parameters

General	
Cameras	27
Aligned cameras	27
Markers	4
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	91,284 of 100,748
Point colors	3 bands, uint8
Reprojection error	0.603593 (5.78881 max)
Effective overlap	2.60723
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Reference preselection	No
Key point limit	30,000
Filter points by mask	Yes
Matching time	1 minutes 4 seconds
Alignment time	25 seconds
Optimization parameters	
Parameters	f, b1, b2, cx, cy, k1-k3, p1, p2
Optimization time	4 seconds
Dense Point Cloud	
Points	27,093,336
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	High
Depth filtering	Moderate
Dense cloud generation time	8 minutes 13 seconds
Model	
Faces	477,956
Vertices	240,802
Vertex colors	3 bands, uint8
Texture	3,500 x 3,500, 4 bands, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Moderate
Face count	604,888
Processing time	25 minutes 39 seconds
Texturing parameters	
Blending mode	Mosaic
Texture size	3,500 x 3,500
UV mapping time	5 minutes 45 seconds
Blending time	3 minutes 0 seconds
Software	
Version	1.4.1 build 5925
Platform	Windows 64