Agisoft PhotoScan

Processing Report
10 July 2019

Survey Data
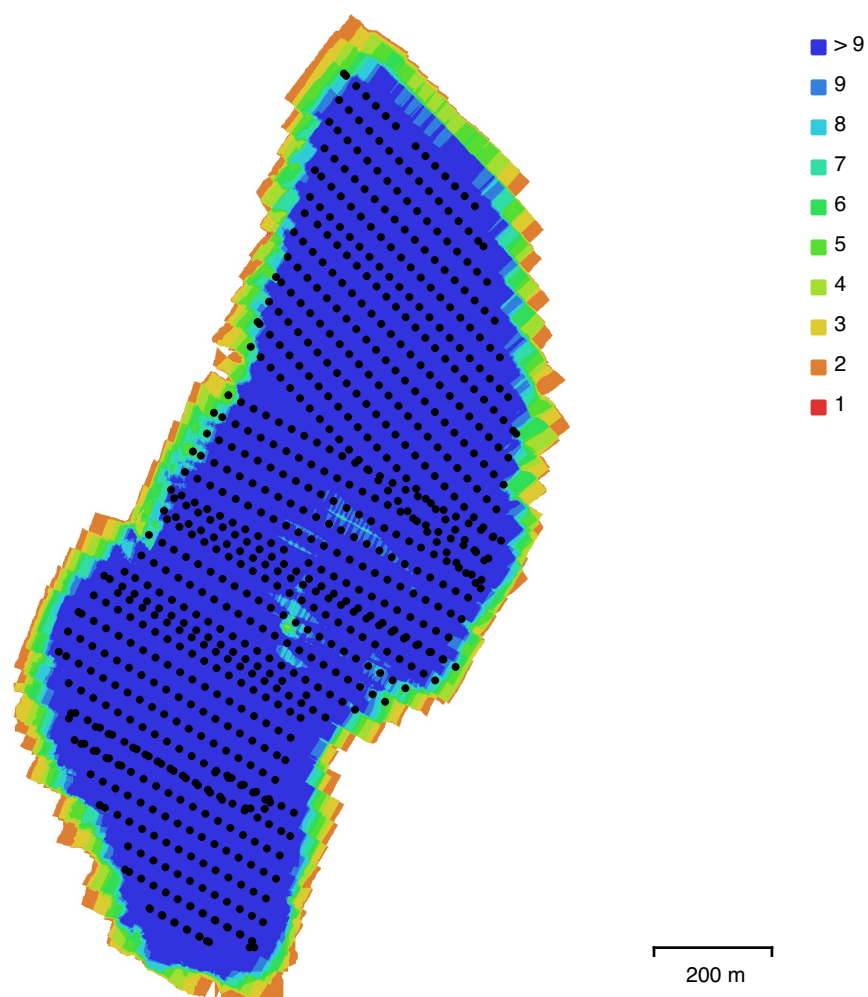

Fig. 1. Camera locations and image overlap.

Number of images:	810
Flying altitude:	111 m
Ground resolution:	2.77 cm/pix
Coverage area:	0.849 km²

Camera stations:	810
Tie points:	479,625
Projections:	2,887,435
Reprojection error:	1.1 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6310 (8.8mm)	5472 x 3648	8.8 mm	2.41 x 2.41 µm	No

Table 1. Cameras.

Camera Calibration
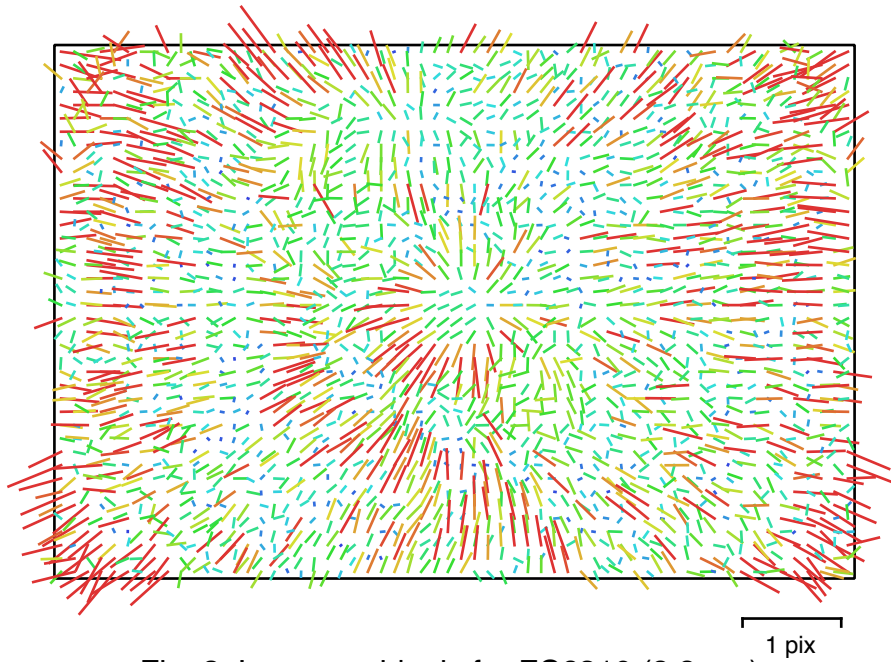
Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)
810 images

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	8.8 mm	2.41 x 2.41 μm

	Value	Error	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	3648											
Cx	-10.5292	0.013	1.00	0.05	-0.00	-0.07	0.01	-0.01	0.01	-0.01	0.60	0.00
Cy	15.355	0.011		1.00	0.07	-0.01	0.00	-0.01	0.01	-0.01	0.01	0.43
B1	0.771951	0.0061			1.00	-0.02	0.02	-0.02	0.02	-0.01	-0.01	-0.01
B2	0.891975	0.0062				1.00	-0.00	0.00	-0.00	-0.00	0.01	-0.01
K1	0.0136839	3.3e-05					1.00	-0.90	0.86	-0.82	0.06	0.08
K2	-0.0649009	0.00015						1.00	-0.99	0.96	-0.01	0.00
K3	0.114725	0.00029							1.00	-0.99	0.01	-0.00
K4	-0.0673404	0.00019								1.00	-0.01	0.00
P1	-0.000647281	9.5e-07									1.00	0.01
P2	-0.00041157	6.9e-07										1.00

Table 2. Calibration coefficients and correlation matrix.
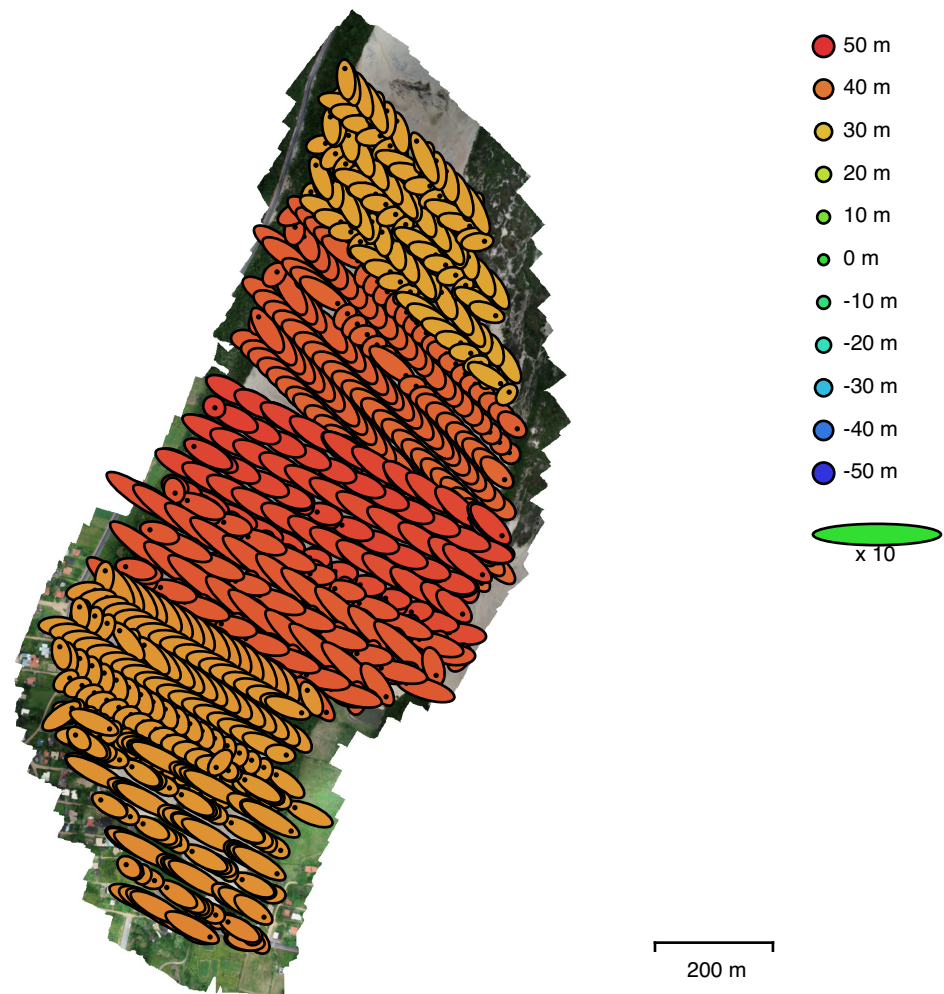
Camera Locations

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

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
3.33447	2.55112	40.9474	4.19844	41.162

Table 3. Average camera location error.
X - Easting, Y - Northing, Z - Altitude.

Ground Control Points

Fig. 4. 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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
6	2.22251	1.72644	16.562	2.81427	16.7994

Table 4. Control points RMSE.
X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
estac	1.88432	-2.92305	12.6412	13.1108	0.329 (24)
p43	-1.91439	-0.361818	-24.1871	24.2654	0.544 (13)
p21	-0.444987	2.98226	-10.7888	11.2022	0.452 (23)
p27	-3.05645	-0.497487	16.9952	17.2751	0.528 (20)
p39	-0.271322	0.138032	-12.2707	12.2745	0.450 (13)
p04	3.57886	0.218948	18.5791	18.9219	0.340 (12)
Total	2.22251	1.72644	16.562	16.7994	0.444

Table 5. Control points.
X - Easting, Y - Northing, Z - Altitude.

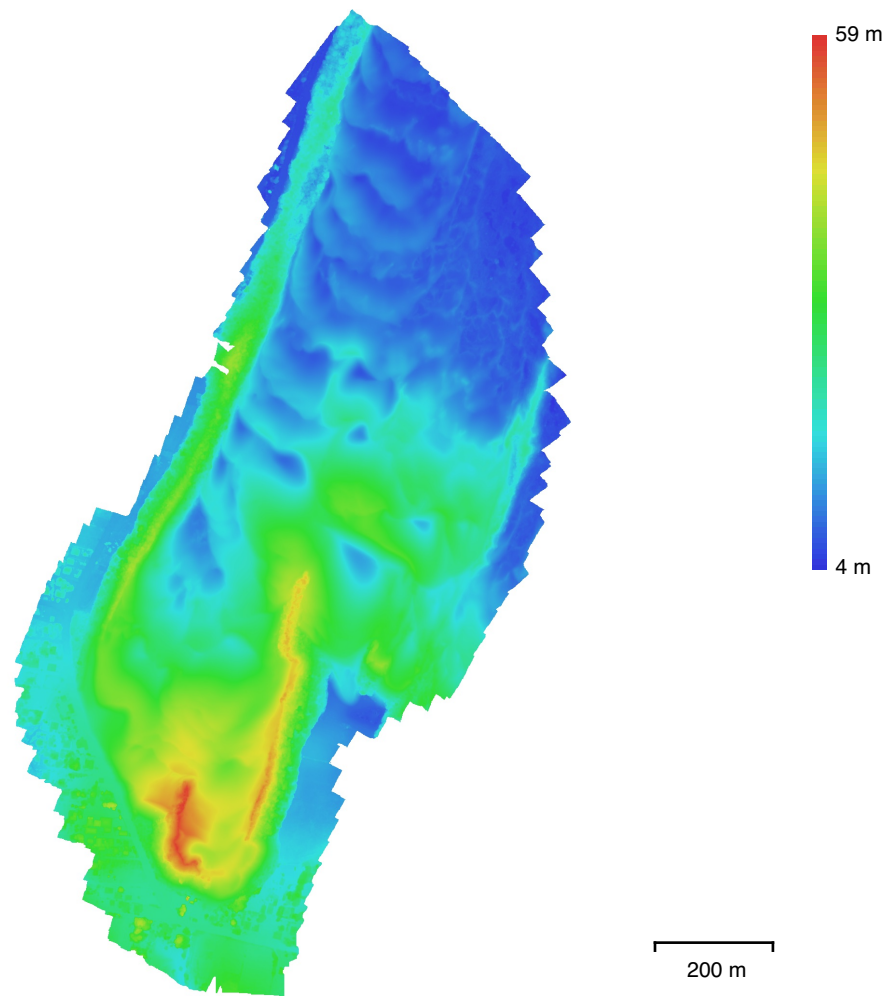# Digital Elevation Model

Fig. 5. Reconstructed digital elevation model.

Resolution: 5.54 cm/pix
Point density: 326 points/m²

Processing Parameters

General
    Cameras   810
    Aligned cameras   810
    Markers   6
    Coordinate system   WGS 84 / UTM zone 22S (EPSG::32722)
    Rotation angles   Omega, Phi, Kappa
Point Cloud
    Points   479,625 of 540,297
    RMS reprojection error   0.206099 (1.09835 pix)
    Max reprojection error   0.620856 (28.2242 pix)
    Mean key point size   4.89351 pix
    Point colors   3 bands, uint8
    Key points   No
    Average tie point multiplicity   6.4063
    Alignment parameters
        Accuracy   High
        Generic preselection   No
        Reference preselection   Yes
        Key point limit   40,000
        Tie point limit   4,000
        Adaptive camera model fitting   Yes
        Matching time   44 minutes 9 seconds
        Alignment time   3 minutes 49 seconds
Dense Point Cloud
    Points   344,595,132
    Point colors   None
    Reconstruction parameters
        Quality   High
        Depth filtering   Aggressive
        Depth maps generation time   8 hours 50 minutes
        Dense cloud generation time   3 hours 43 minutes
DEM
    Size   25,843 x 36,235
    Coordinate system   WGS 84 / UTM zone 22S (EPSG::32722)
    Reconstruction parameters
        Source data   Dense cloud
        Interpolation   Enabled
        Processing time   7 minutes 16 seconds
Orthomosaic
    Size   9,442 x 16,742
    Coordinate system   WGS 84 / UTM zone 22S (EPSG::32722)
    Colors   3 bands, uint8
    Reconstruction parameters
        Blending mode   Mosaic
        Surface   DEM
        Enable hole filling   Yes
        Processing time   7 minutes 43 seconds
Software
    Version   1.5.1 build 7618
    Platform   Mac OS 64