

20m_LO_LO

Processing Report
30 October 2019



Survey Data

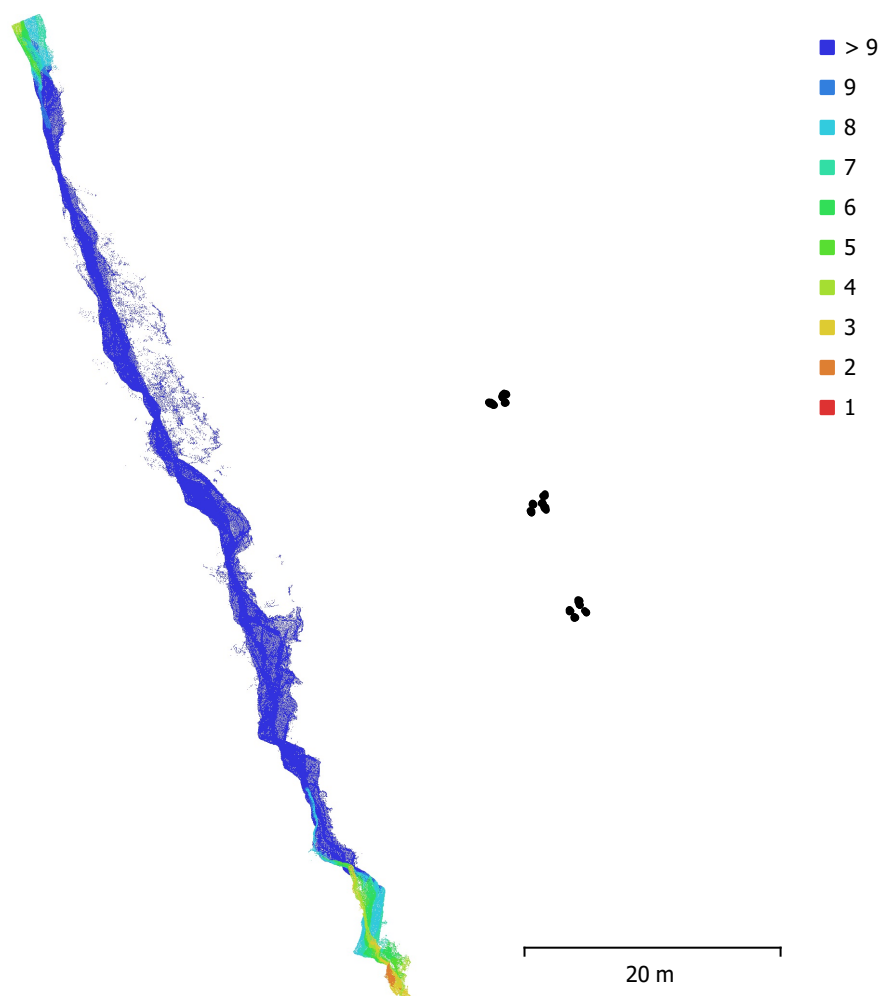


Fig. 1. Camera locations and image overlap.

Number of images:	84	Camera stations:	84
Flying altitude:	27.5 m	Tie points:	27,147
Ground resolution:	7.08 mm/pix	Projections:	184,448
Coverage area:	145 m ²	Reprojection error:	2.87 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

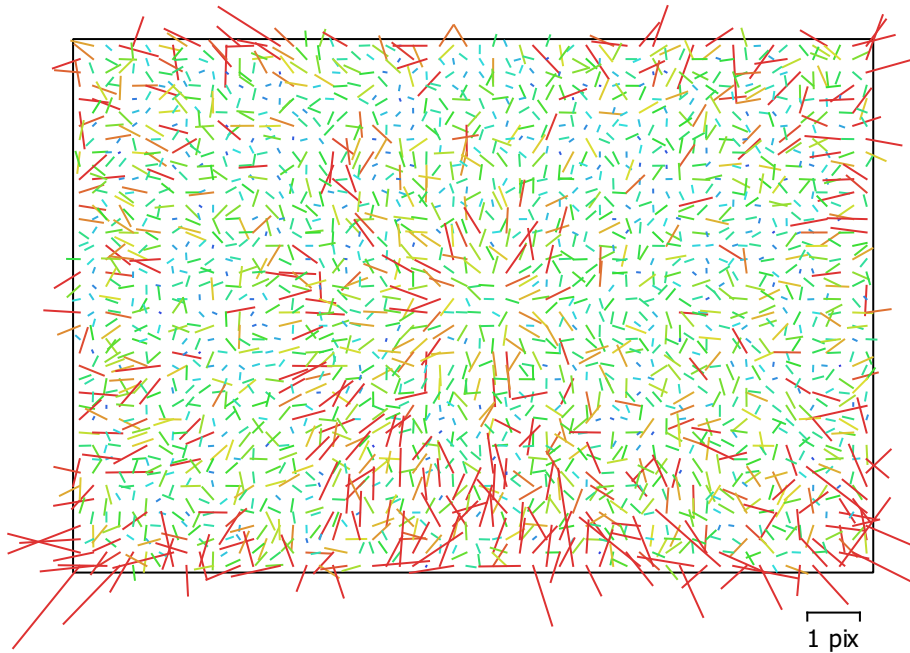


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

84 images

Type
Frame

Resolution
5472 x 3648

Focal Length
8.8 mm

Pixel Size
2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	3662.43	0.27	1.00	-0.08	-0.03	-0.05	0.16	-0.14	-0.12	-0.06
Cx	-11.4739	1.1		1.00	0.10	0.00	-0.00	0.01	0.99	0.10
Cy	14.8769	0.67			1.00	0.01	0.02	-0.03	0.10	0.98
K1	0.00441789	0.00017				1.00	-0.95	0.90	0.00	0.02
K2	-0.0128847	0.0005					1.00	-0.99	-0.00	0.01
K3	0.0127073	0.00046						1.00	0.00	-0.02
P1	-0.000628988	7.4e-005							1.00	0.10
P2	-0.0004665	4.3e-005								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

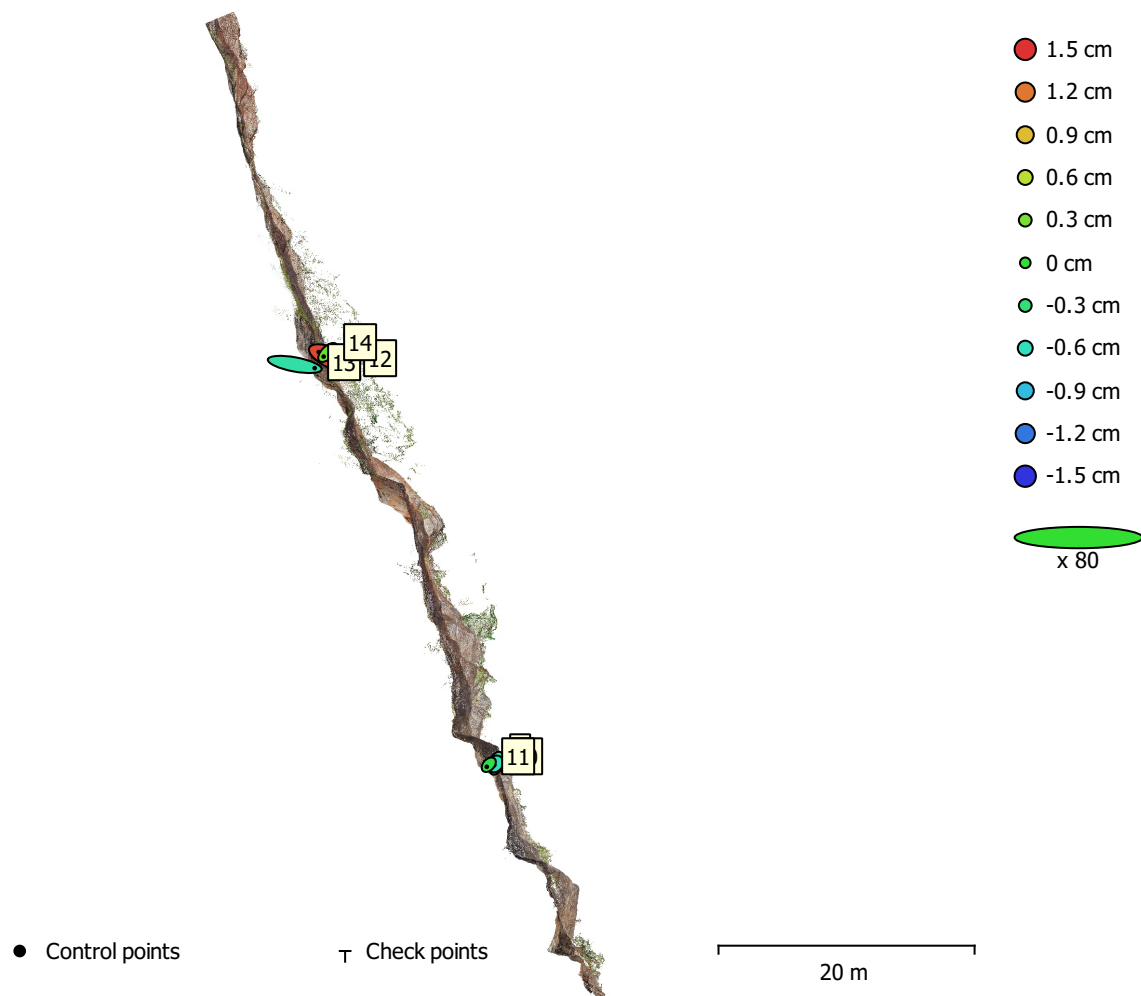


Fig. 3. GCP locations and error estimates.

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
6	2.01728	0.801786	0.68906	2.17078	2.27752

Table 3. Control points RMSE.

X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
9	0.310255	0.902042	-0.456855	1.05766	1.413 (16)
10	-0.1769	-0.243985	-0.587758	0.660516	0.946 (39)
11	-0.380301	-0.403581	-0.0808832	0.560401	1.426 (43)
12	-2.89018	1.28965	1.40658	3.46335	7.541 (22)
13	3.89042	-0.719149	-0.502568	3.98812	6.717 (50)
14	-0.809903	-0.800448	0.23888	1.1635	0.766 (50)
Total	2.01728	0.801786	0.68906	2.27752	4.096

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

Digital Elevation Model

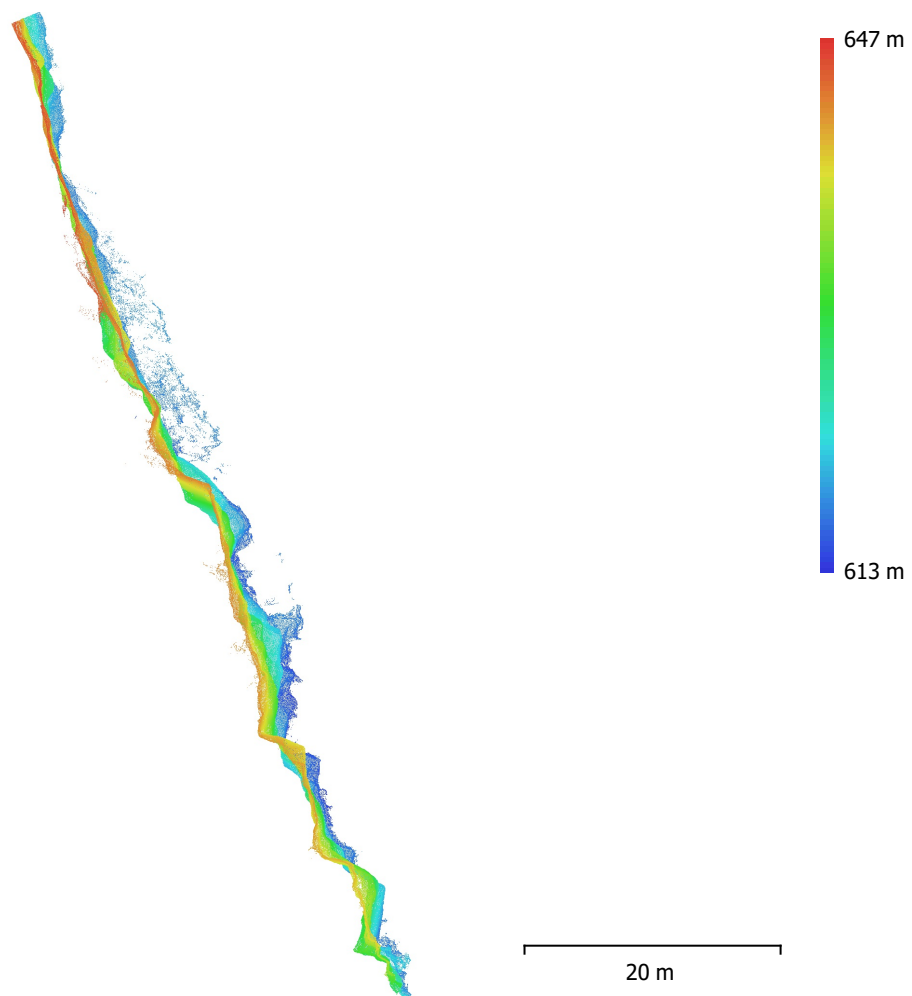


Fig. 4. Reconstructed digital elevation model.

Resolution: unknown
Point density: unknown

Processing Parameters

General

Cameras	84
Aligned cameras	84
Markers	6
Coordinate system	SIRGAS 2000 / UTM zone 23S (EPSG::31983)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	27,147 of 33,378
RMS reprojection error	0.179845 (2.87372 pix)
Max reprojection error	0.544597 (64.8246 pix)
Mean key point size	14.235 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	8.58155

Alignment parameters

Accuracy	Low
Generic preselection	No
Reference preselection	Yes
Key point limit	30,000
Tie point limit	4,000
Filter points by mask	Yes
Mask tie points	No
Adaptive camera model fitting	No
Matching time	31 seconds
Alignment time	25 seconds
Software version	1.5.2.7838

Depth Maps

Count	84
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Depth maps generation parameters

Quality	Low
Filtering mode	Mild
Processing time	10 minutes 41 seconds
Software version	1.5.2.7838

Dense Point Cloud

Points	849,038
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	Low
Filtering mode	Mild
Processing time	10 minutes 41 seconds

Dense cloud generation parameters

Processing time	56 seconds
Software version	1.5.2.7838

Software

Version	1.5.2 build 7838
Platform	Windows 64