

Agisoft Metashape

Processing Report

19 May 2020



Survey Data

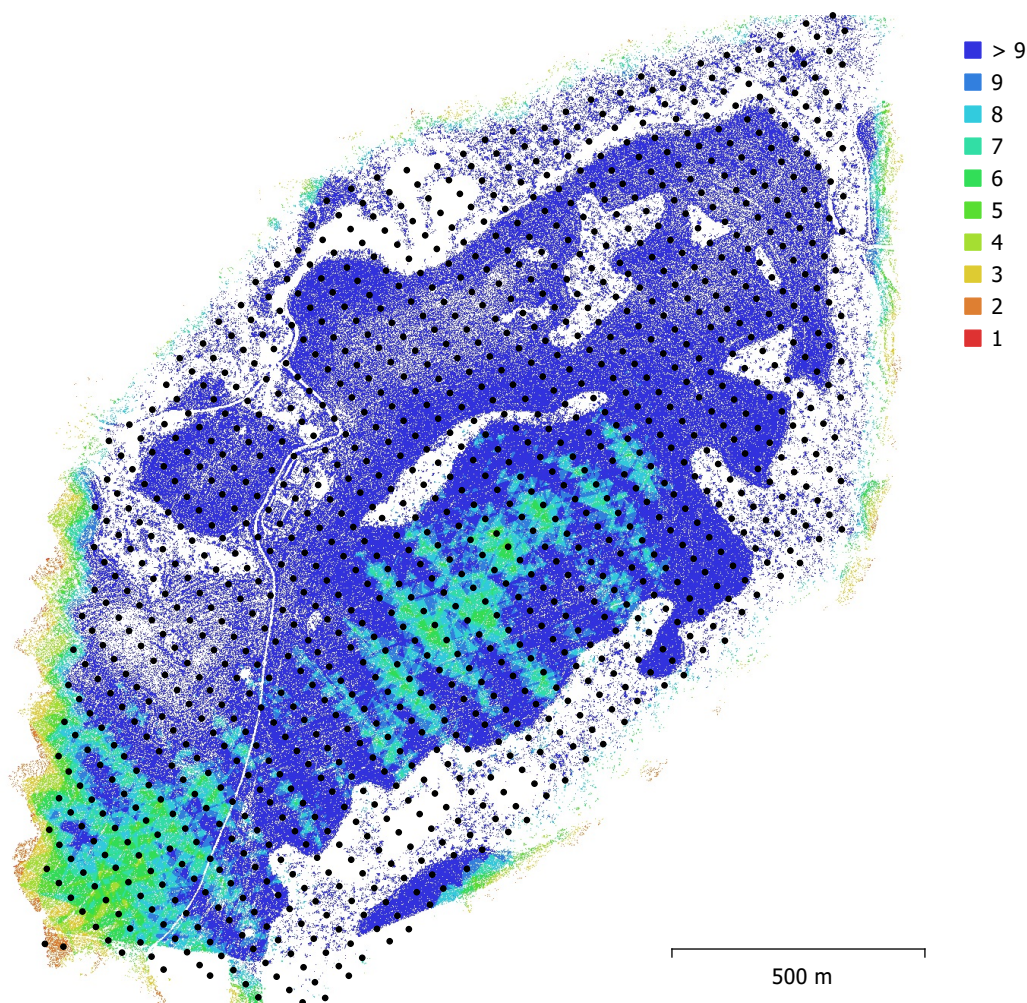


Fig. 1. Camera locations and image overlap.

Number of images:	1,056	Camera stations:	1,056
Flying altitude:	153 m	Tie points:	1,694,786
Ground resolution:	3.77 cm/pix	Projections:	5,611,935
Coverage area:	1.28 km^2	Reprojection error:	0.464 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
ILCE-6000, E 16mm F2.8 (16mm)	6000 x 4000	16 mm	4 x 4 um	Não

Table 1. Cameras.

Calibração da Câmara

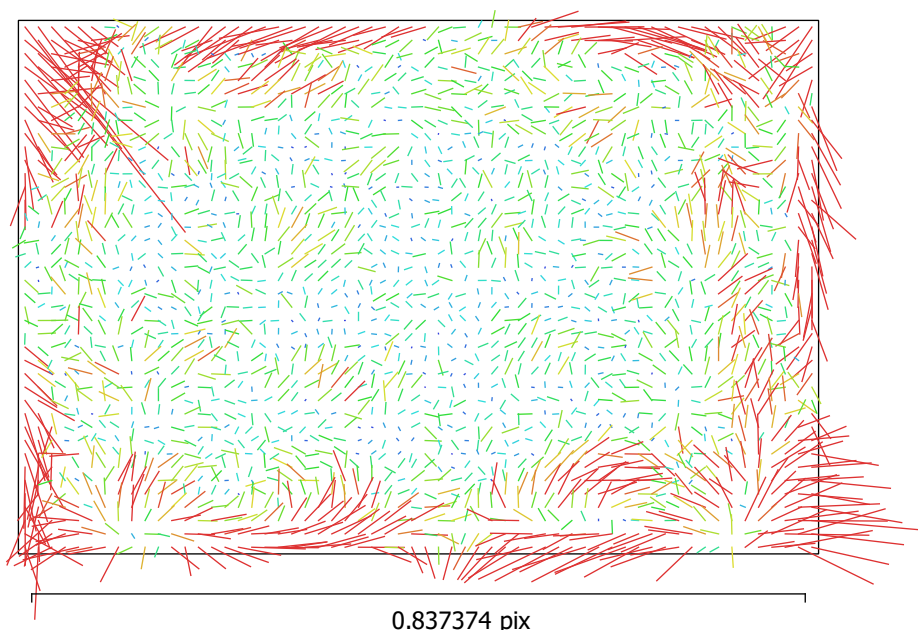


Fig. 2. Image residuals for ILCE-6000, E 16mm F2.8 (16mm).

ILCE-6000, E 16mm F2.8 (16mm)

1056 images

Type
Frame

Resolution
6000 x 4000

Focal Length
16 mm

Pixel Size
4 x 4 μ m

	Valor	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	4046.92	0.14	1.00	0.03	-0.14	-0.24	0.05	-0.90	0.88	-0.84	0.79	-0.01	0.05
Cx	3.52184	0.04		1.00	-0.04	-0.00	0.11	-0.01	0.02	-0.02	0.02	0.96	-0.01
Cy	22.3158	0.032			1.00	-0.13	0.02	-0.02	0.01	-0.01	0.01	-0.01	0.84
B1	-0.876644	0.0065				1.00	0.01	0.31	-0.30	0.27	-0.22	-0.02	-0.02
B2	-0.0080194	0.0041					1.00	-0.01	0.01	-0.01	0.01	0.00	0.04
K1	-0.0721168	0.00026						1.00	-0.99	0.96	-0.92	-0.00	-0.03
K2	0.106826	0.0008							1.00	-0.99	0.96	0.01	0.02
K3	-0.030574	0.0011								1.00	-0.99	-0.01	-0.02
K4	0.0264031	0.00054									1.00	0.02	0.02
P1	9.20474e-05	6.7e-06										1.00	-0.02
P2	-0.000506877	4.7e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

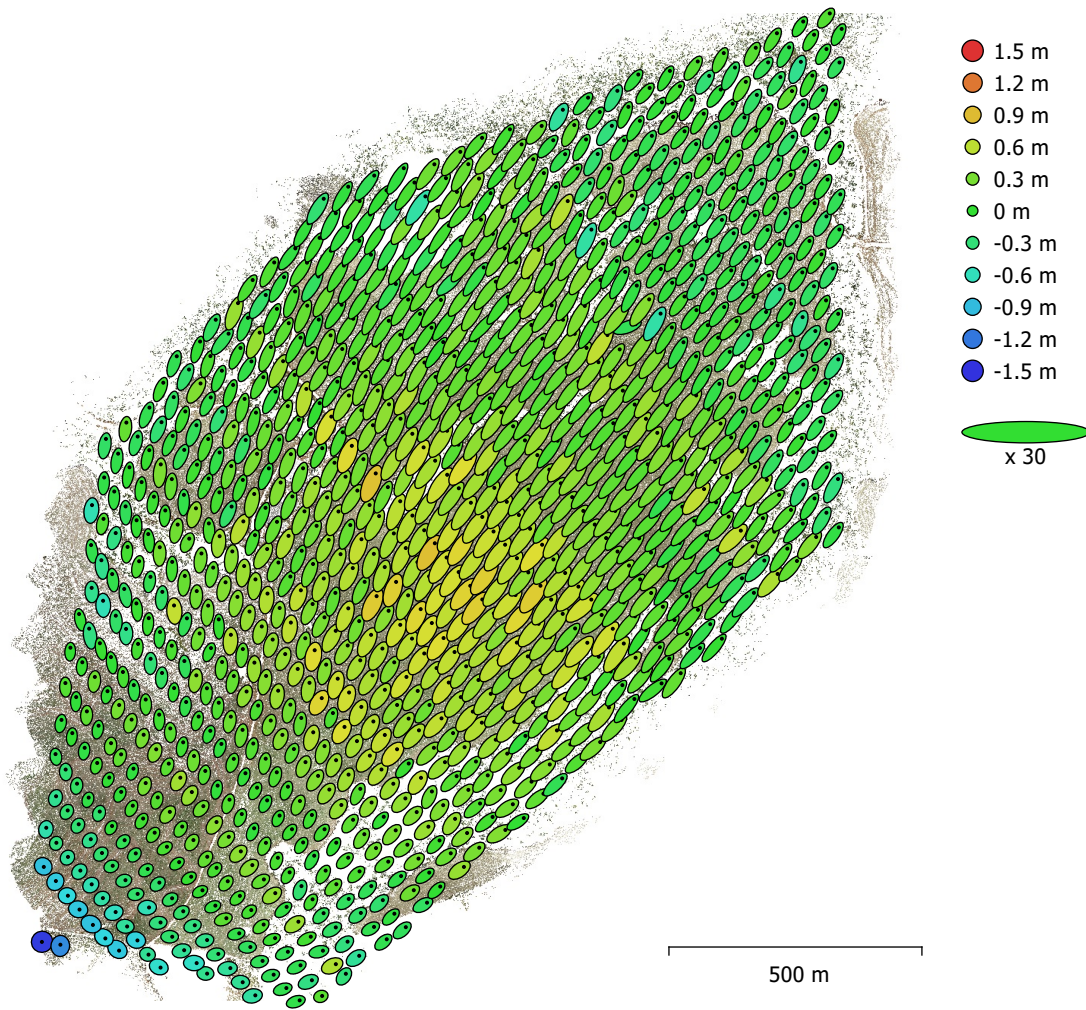


Fig. 3. Camera locations and error estimates.

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)
0.694506	1.03212	0.330831	1.24403	1.28727

Table 3. Average camera location error.

X - Longitude, Y - Latitude, Z - Altitude.

Ground Control Points

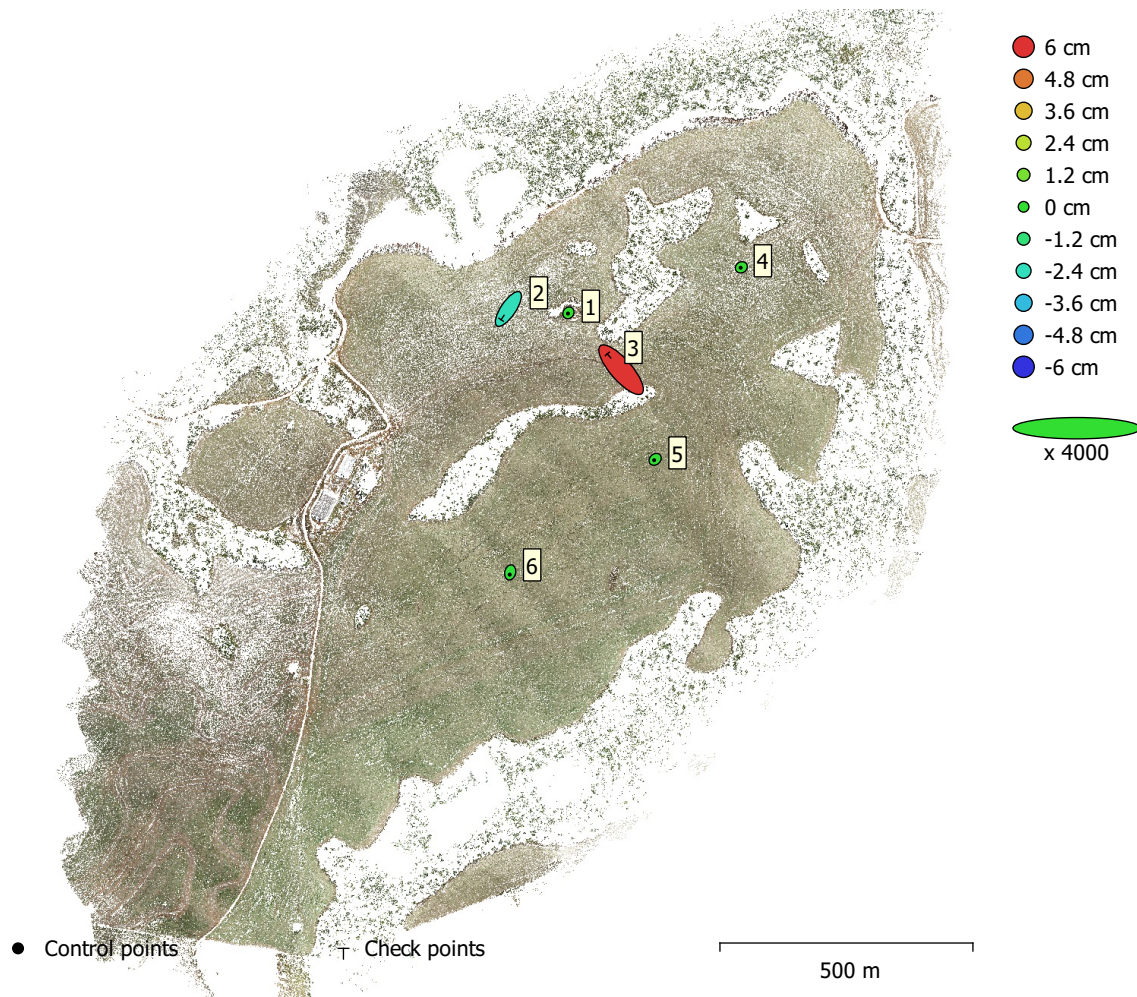


Fig. 4. GCP locations and error estimates.

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.

Número	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
4	0.0676824	0.120827	0.0709108	0.138492	0.15559

Table 4. Control points RMSE.

X - Longitude, Y - Latitude, Z - Altitude.

Número	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
2	1.09008	1.33513	4.54537	1.72361	4.86119

Table 5. Check points RMSE.

X - Longitude, Y - Latitude, Z - Altitude.

Rótulo	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Imagem (pix)
4	-0.0683428	-0.0418209	0.0735269	0.108747	1.169 (15)
5	-0.096075	-0.0847757	-0.014135	0.128907	1.191 (11)
6	-0.0487851	-0.212789	-0.120444	0.249331	2.946 (8)
1	-0.0451938	-0.0646618	0.000858479	0.0788946	0.668 (19)
Total	0.0676824	0.120827	0.0709108	0.15559	1.467

Table 6. Control points.
X - Longitude, Y - Latitude, Z - Altitude.

Rótulo	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Imagem (pix)
2	-0.719991	-1.06236	-2.35856	2.68511	0.519 (19)
3	-1.36314	1.56093	5.97979	6.32871	0.453 (19)
Total	1.09008	1.33513	4.54537	4.86119	0.487

Table 7. Check points.
X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

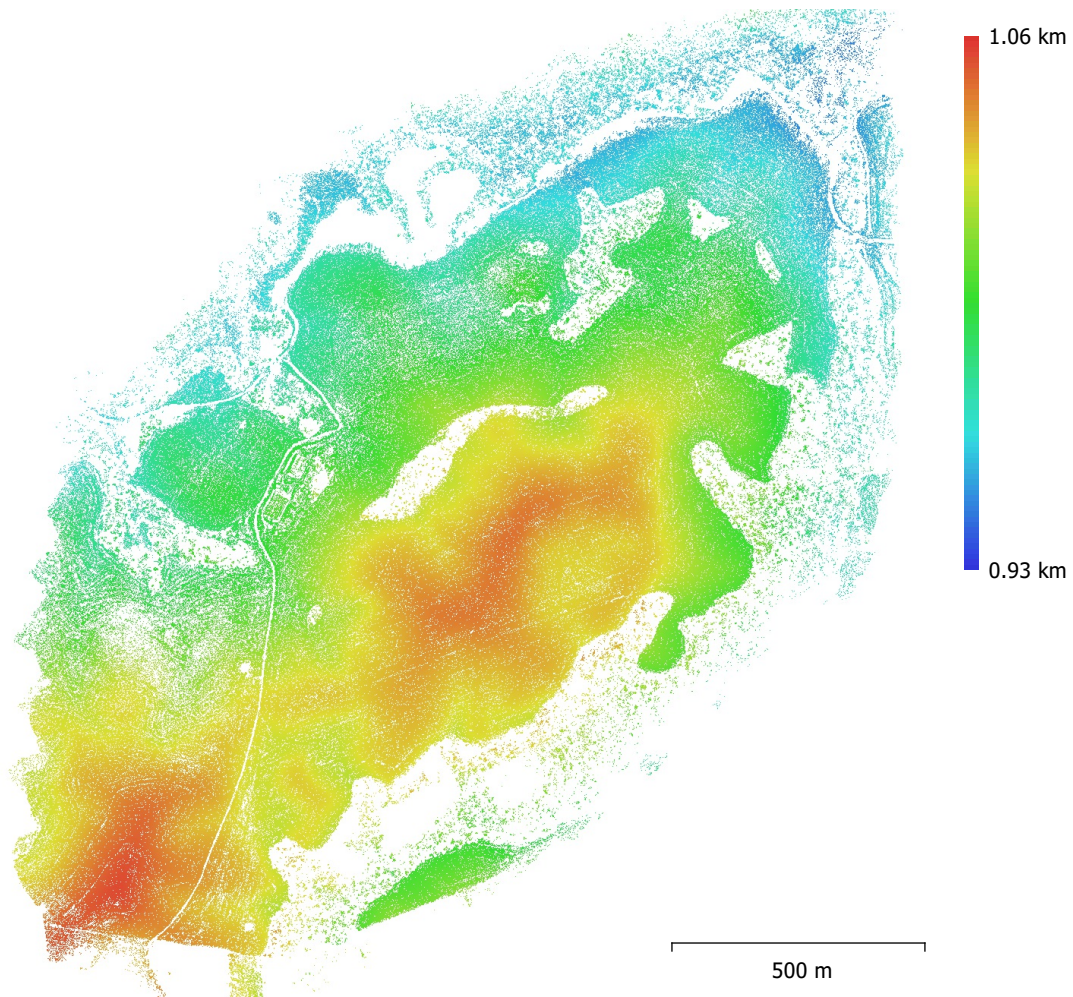


Fig. 5. Reconstructed digital elevation model.

Resolution: unknown
Point density: unknown

Processing Parameters

Geral

Câmaras	1056
Aligned cameras	1056
Marcadores	6
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Nuvem de Pontos

Pontos	1,694,786 of 2,402,826
RMS reprojection error	0.160357 (0.463537 pix)
Max reprojection error	0.703985 (3.48065 pix)
Mean key point size	2.82194 pix
Cores dos pontos	3 bands, uint8
Key points	Não
Average tie point multiplicity	3.7327

Parâmetros de alinhamento

Precisão	Elevada
Generic preselection	Não
Reference preselection	Source
Key point limit	40,000
Tie point limit	10,000
Filter points by mask	Sim
Mask tie points	Não
Guided image matching	Não
Adaptive camera model fitting	Sim
Matching time	1 hours 12 minutes
Matching memory usage	509.72 MB
Alignment time	11 minutes 50 seconds
Alignment memory usage	935.52 MB

Optimization parameters

Parâmetros	f, b1, b2, cx, cy, k1-k4, p1, p2
Fit additional corrections	Sim
Adaptive camera model fitting	Não
Optimization time	3 minutes 48 seconds
Software version	1.6.2.10247

System

Software name	Agisoft Metashape Professional
Software version	1.6.2 build 10247
OS	Windows 64 bit
RAM	31.95 GB
CPU	Intel(R) Core(TM) i7-7700K CPU @ 4.20GHz
GPU(s)	GeForce GTX 1060 6GB