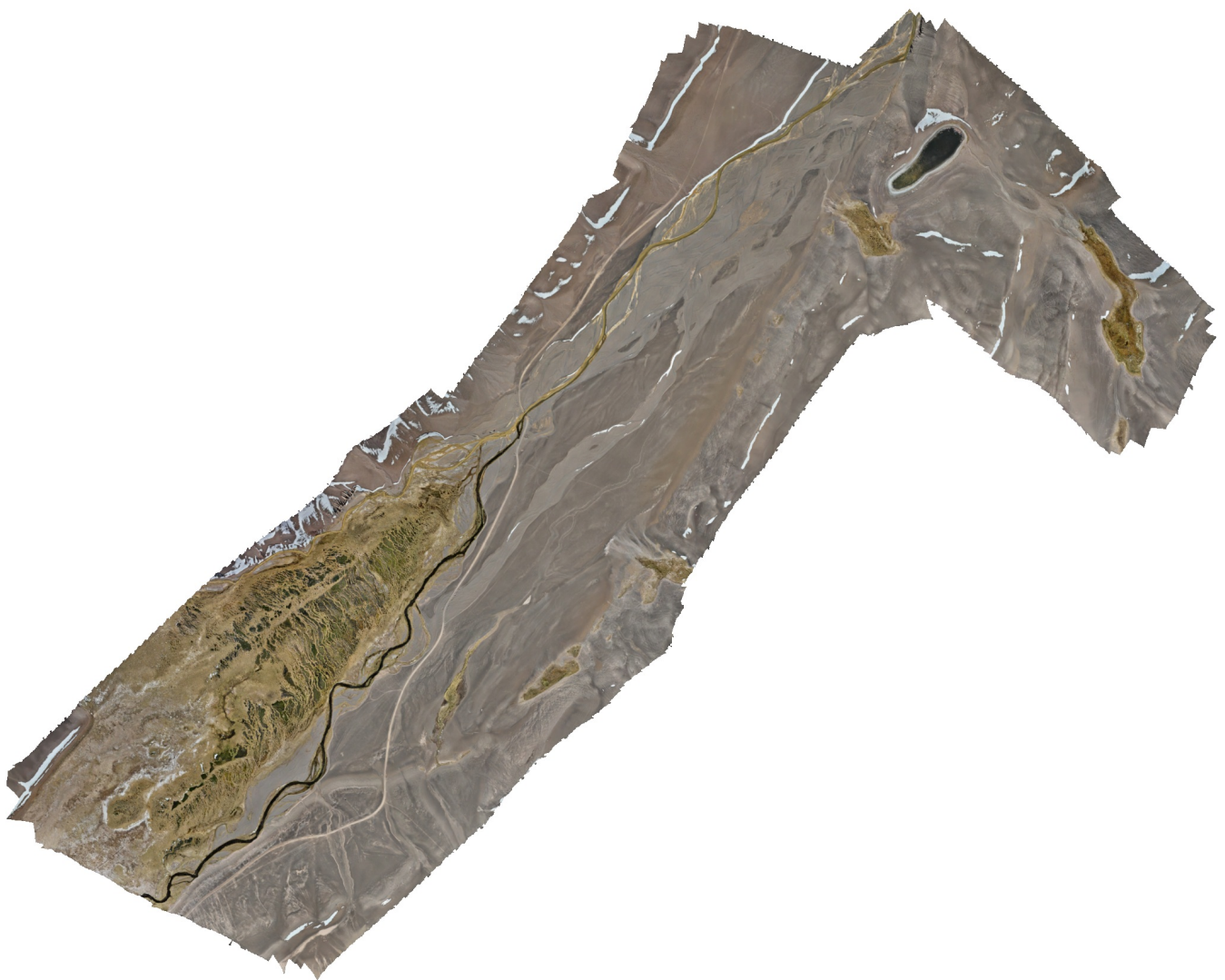# Agisoft Metashape - Multiespectral

Processing Report - Multiespectral
15 May 2024

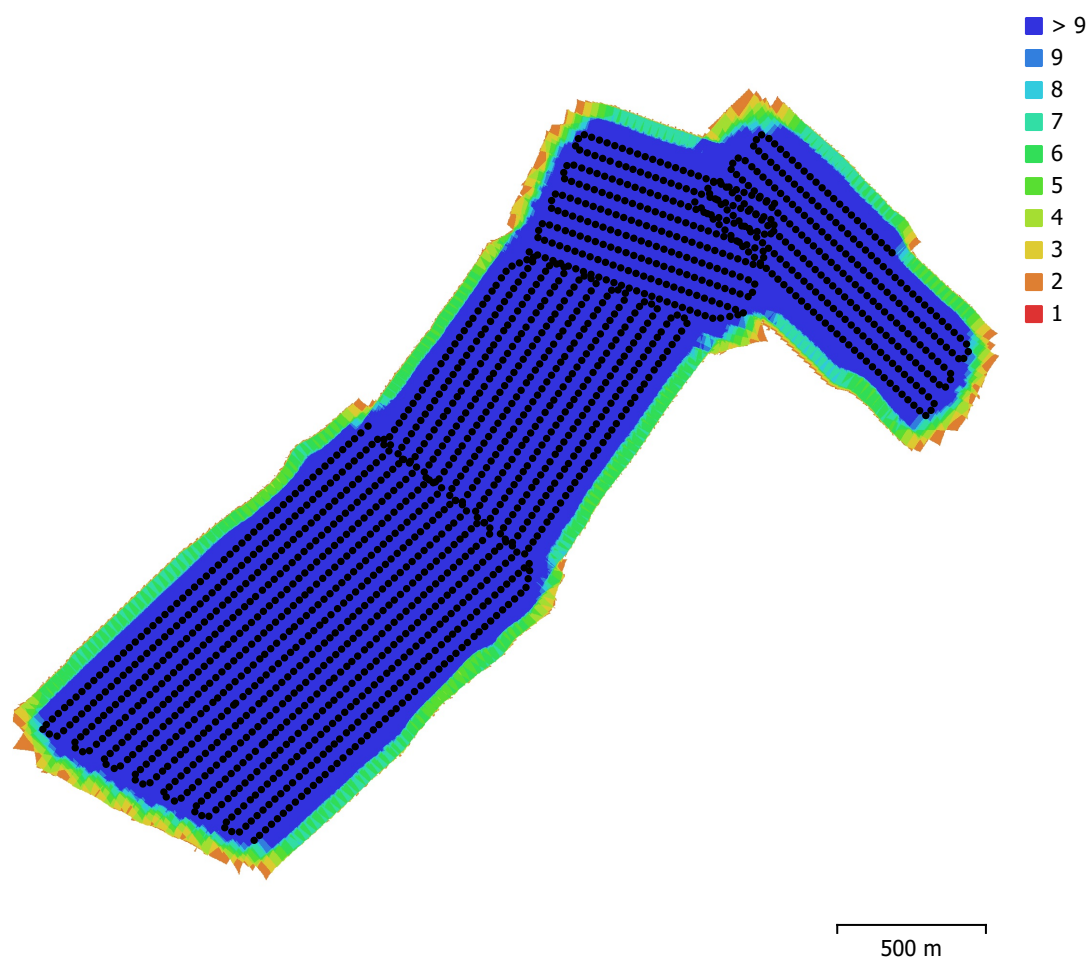# Survey Data

Fig. 1. Camera locations and image overlap.

Number of images:	1,733	Camera stations:	1,733
Flying altitude:	164 m	Tie points:	619,799
Ground resolution:	4.21 cm/pix	Projections:	5,443,822
Coverage area:	3.23 km²	Reprojection error:	1.33 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
M3M (12.29mm)	5280 x 3956	12.29 mm	3.36 x 3.36 µm	Yes

Table 1. Cameras.
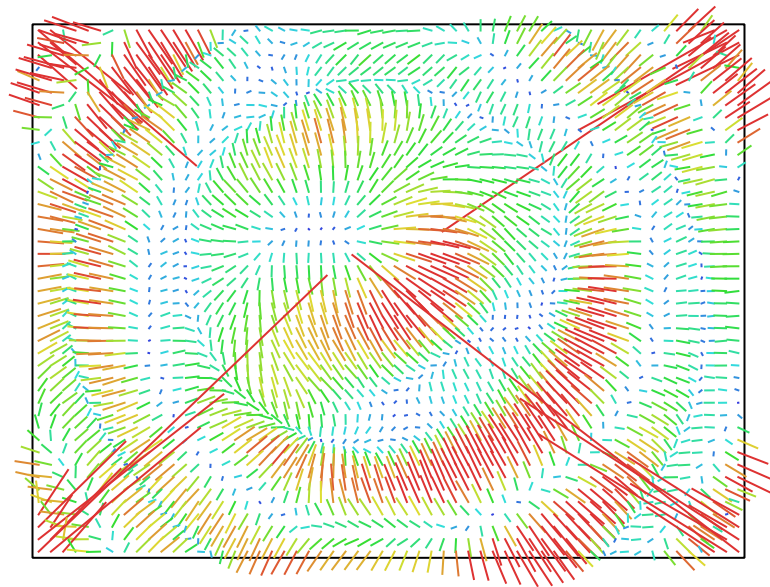
Camera Calibration

1 pix

Fig. 2. Image residuals for M3M (12.29mm).

M3M (12.29mm)

1733 images, precalibrated, additional corrections

Type	Resolution	Focal Length	Pixel Size
Frame	**5280 x 3956**	**12.29 mm**	**3.36 x 3.36 µm**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	**3711.84**	0.11	1.00	0.13	0.49	0.10	-0.09	-0.27	-0.08	0.14	-0.22	-0.09	-0.29
Cx	**-7.44282**	0.0068		1.00	0.06	0.02	-0.02	-0.03	-0.02	0.02	-0.03	0.74	-0.04
Cy	**-15.9055**	0.0067			1.00	0.06	-0.04	-0.10	-0.07	0.10	-0.14	-0.05	0.43
B1	**0.617631**	0.0035				1.00	-0.02	0.00	-0.04	0.05	-0.05	-0.01	-0.02
B2	**-0.439539**	0.0031					1.00	0.02	0.01	-0.02	0.03	-0.01	0.02
K1	**-0.084765**	2.2e-05						1.00	-0.92	0.85	-0.78	0.02	0.07
K2	**-0.104556**	9.3e-05							1.00	-0.99	0.95	0.01	0.03
K3	**0.160634**	0.00016								1.00	-0.99	-0.02	-0.04
K4	**-0.100456**	9.1e-05									1.00	0.03	0.06
P1	**-0.000266453**	3.7e-07										1.00	0.03
P2	**7.52792e-05**	3.7e-07											1.00

Table 2. Calibration coefficients and correlation matrix.
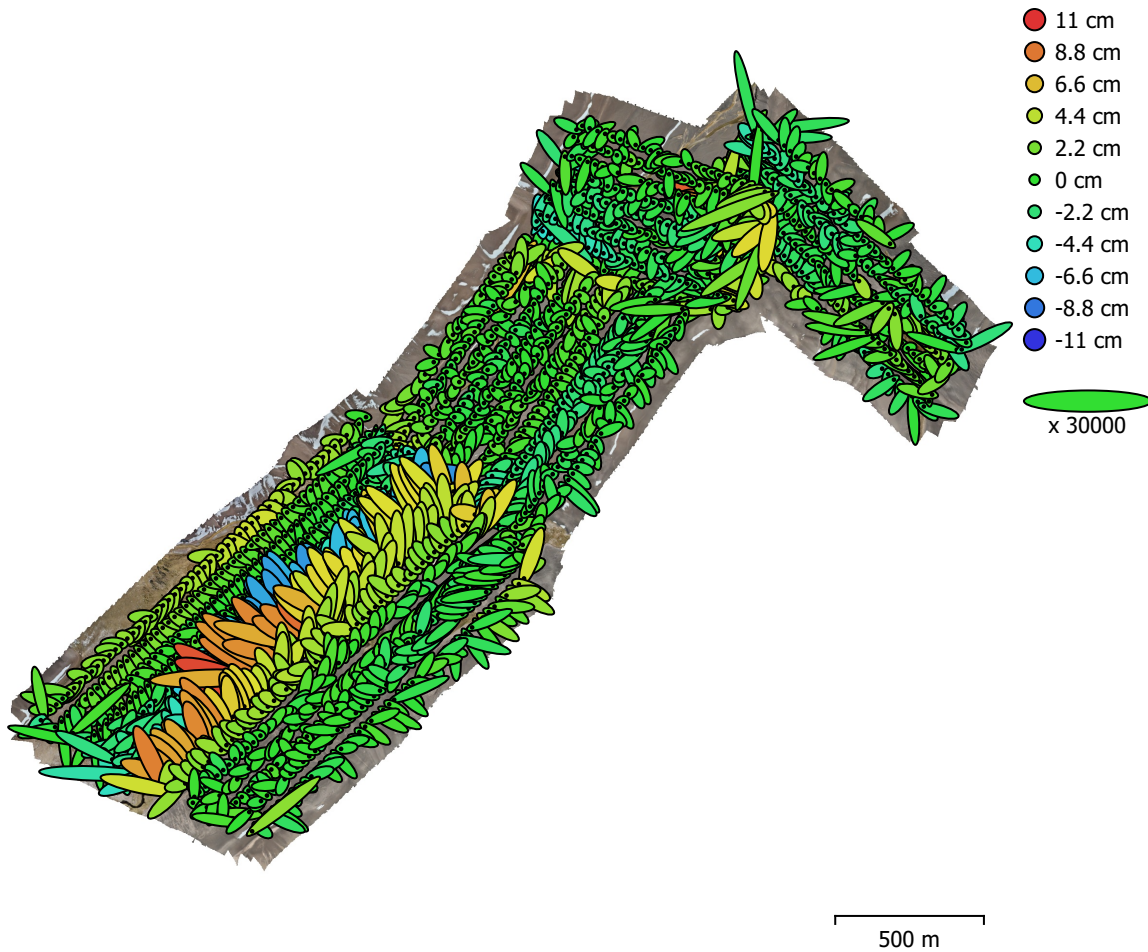
Camera Locations

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
0.191505	0.191229	2.60707	0.270634	2.62108

Table 3. Average camera location error.
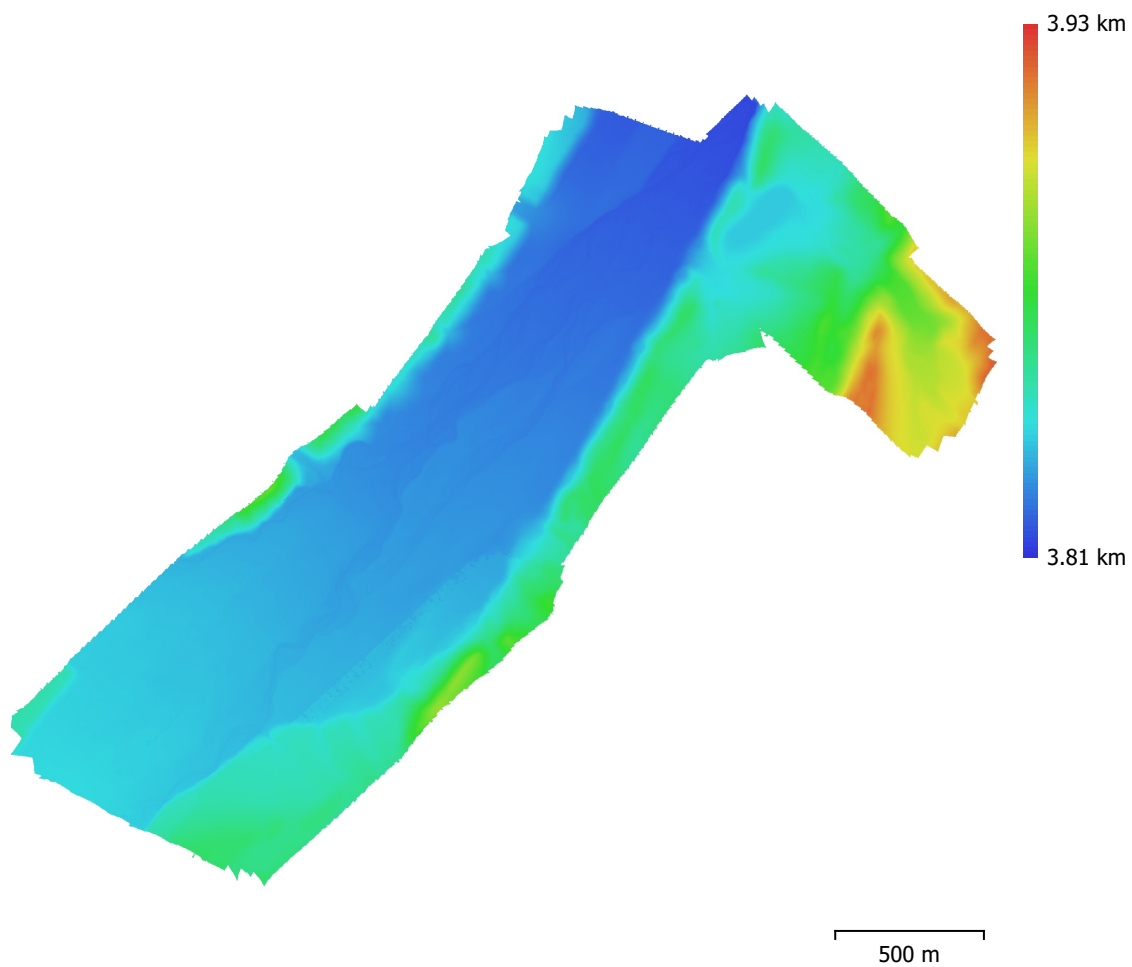X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

Fig. 4. Reconstructed digital elevation model.

Resolution:	16.8 cm/pix
Point density:	35.3 points/m²

Processing Parameters

General

Cameras	1733
Aligned cameras	1733
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	619,799 of 776,431
RMS reprojection error	0.174481 (1.32886 pix)
Max reprojection error	4.12192 (65.3386 pix)
Mean key point size	6.8344 pix
Point colors	3 bands, uint8
Key points	2.63 GB
Average tie point multiplicity	9.75111

Alignment parameters

Accuracy	Medium
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Key point limit per Mpx	1,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	Yes
Adaptive camera model fitting	Yes
Matching time	6 minutes 29 seconds
Matching memory usage	1.52 GB
Alignment time	10 minutes 53 seconds
Alignment memory usage	860.78 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Fit additional corrections	Yes
Adaptive camera model fitting	Yes
Optimization time	1 minutes 10 seconds
Date created	2024:05:14 21:31:02
Software version	1.8.4.14654
File size	161.08 MB

Depth Maps

Count	1733

Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Max neighbors	16
Processing time	29 minutes 39 seconds
Memory usage	1.68 GB
Date created	2024:05:14 22:19:16
Software version	1.8.4.14654
File size	3.33 GB

Dense Point Cloud

Points	114,470,199
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Max neighbors	16
Processing time	29 minutes 39 seconds
Memory usage	1.68 GB

Dense cloud generation parameters

Processing time	47 minutes 58 seconds
Memory usage	7.74 GB
Date created	2024:05:14 23:07:15
Software version	1.8.4.14654
File size	1.61 GB

DEM

Size	32,035 x 30,359
Coordinate system	WGS 84 (EPSG::4326)

Reconstruction parameters

Source data	Dense cloud
Interpolation	Enabled
Processing time	17 minutes 4 seconds
Memory usage	312.94 MB
Date created	2024:05:15 02:12:59
Software version	1.8.4.14654
File size	355.57 MB

Orthomosaic

Size	78,870 x 63,345
Coordinate system	WGS 84 (EPSG::4326)
Colors	3 bands, uint8

Reconstruction parameters

Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	38 minutes 31 seconds
Memory usage	2.01 GB
Date created	2024:05:15 02:44:37
Software version	1.8.4.14654
File size	44.81 GB

System

Software name	Agisoft Metashape Professional
Software version	1.8.4 build 14654
OS	Windows 64 bit
RAM	63.42 GB
CPU	AMD Ryzen 9 5900HX with Radeon Graphics
GPU(s)	NVIDIA GeForce RTX 3080 Laptop GPU