Agisoft Metashape - Multiespectral

Processing Report - Multiespectral
14 May 2024

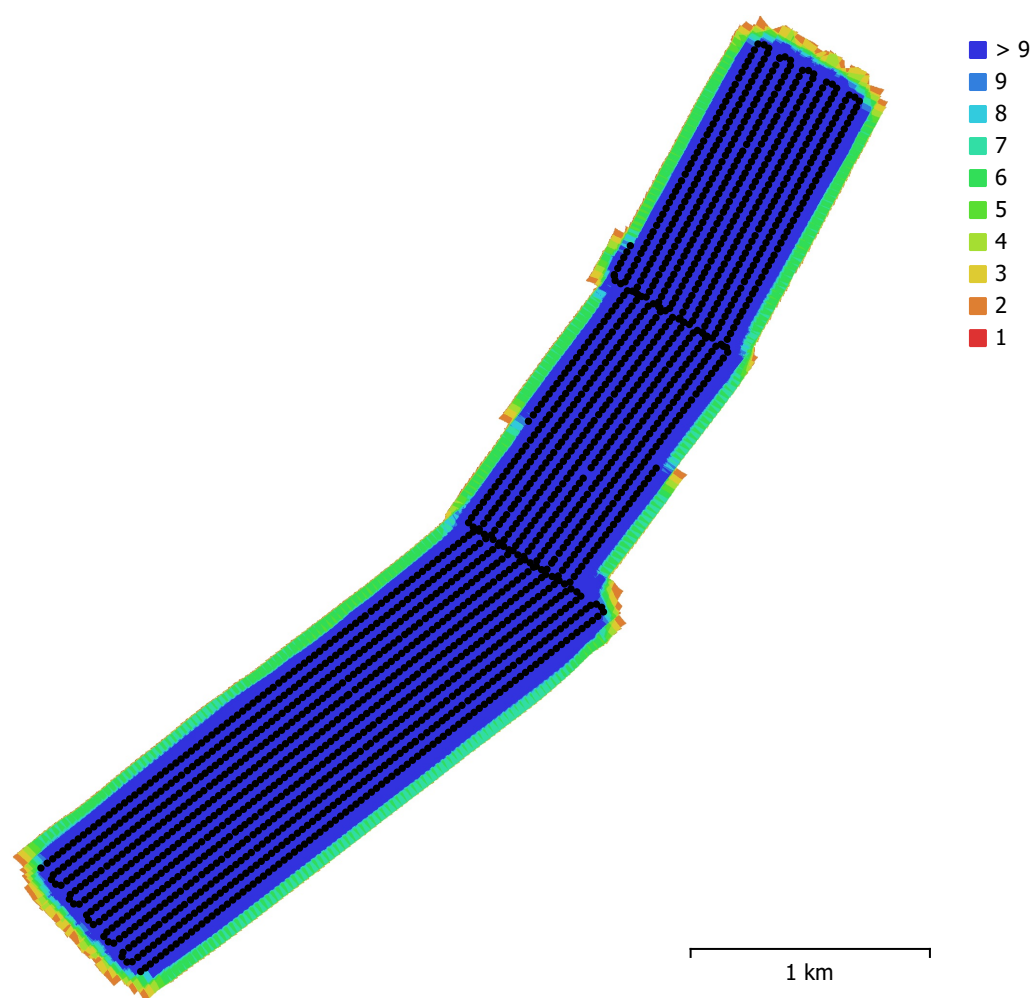# Survey Data

Fig. 1. Camera locations and image overlap.

Number of images:	1,995	Camera stations:	1,995
Flying altitude:	154 m	Tie points:	953,724
Ground resolution:	3.92 cm/pix	Projections:	6,692,069
Coverage area:	3.84 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.
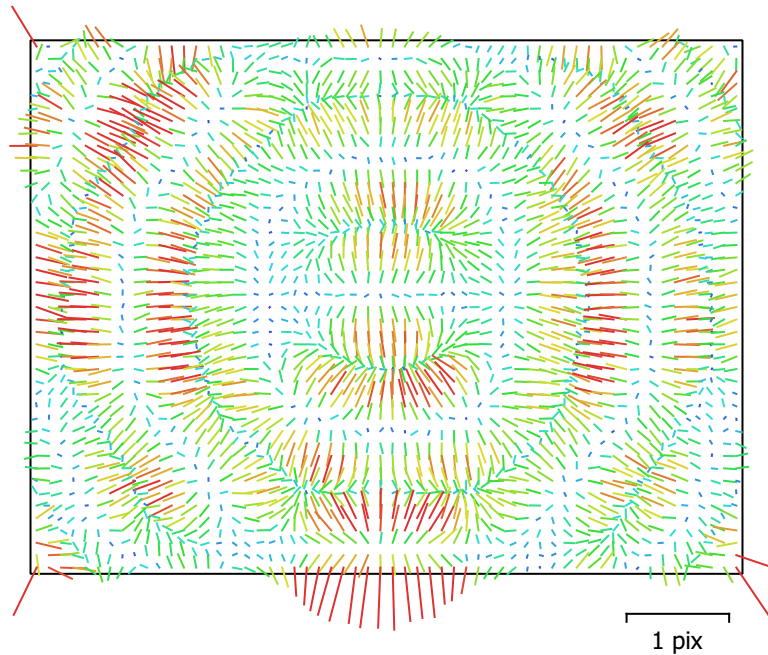
Camera Calibration

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

M3M (12.29mm)

1995 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	**3771.49**	0.2	1.00	0.02	0.06	-0.07	-0.03	-0.86	0.86	-0.86	0.85	-0.01	-0.07
Cx	**-6.22363**	0.026		1.00	0.01	-0.03	0.00	-0.00	0.00	-0.00	0.00	0.91	0.01
Cy	**-12.6398**	0.029			1.00	0.03	-0.05	0.00	-0.00	0.00	-0.00	0.01	0.92
B1	**0.813405**	0.0066				1.00	-0.01	0.19	-0.21	0.22	-0.21	-0.03	0.01
B2	**-0.801989**	0.0045					1.00	0.01	-0.01	0.01	-0.01	0.01	-0.04
K1	**-0.268302**	0.00031						1.00	-1.00	0.99	-0.97	-0.00	0.03
K2	**0.421309**	0.0008							1.00	-1.00	0.99	0.00	-0.03
K3	**-0.468114**	0.00089								1.00	-1.00	0.00	0.04
K4	**0.173472**	0.00037									1.00	-0.00	-0.04
P1	**-0.000263361**	1.7e-06										1.00	0.02
P2	**0.000400882**	2e-06											1.00

Table 2. Calibration coefficients and correlation matrix.
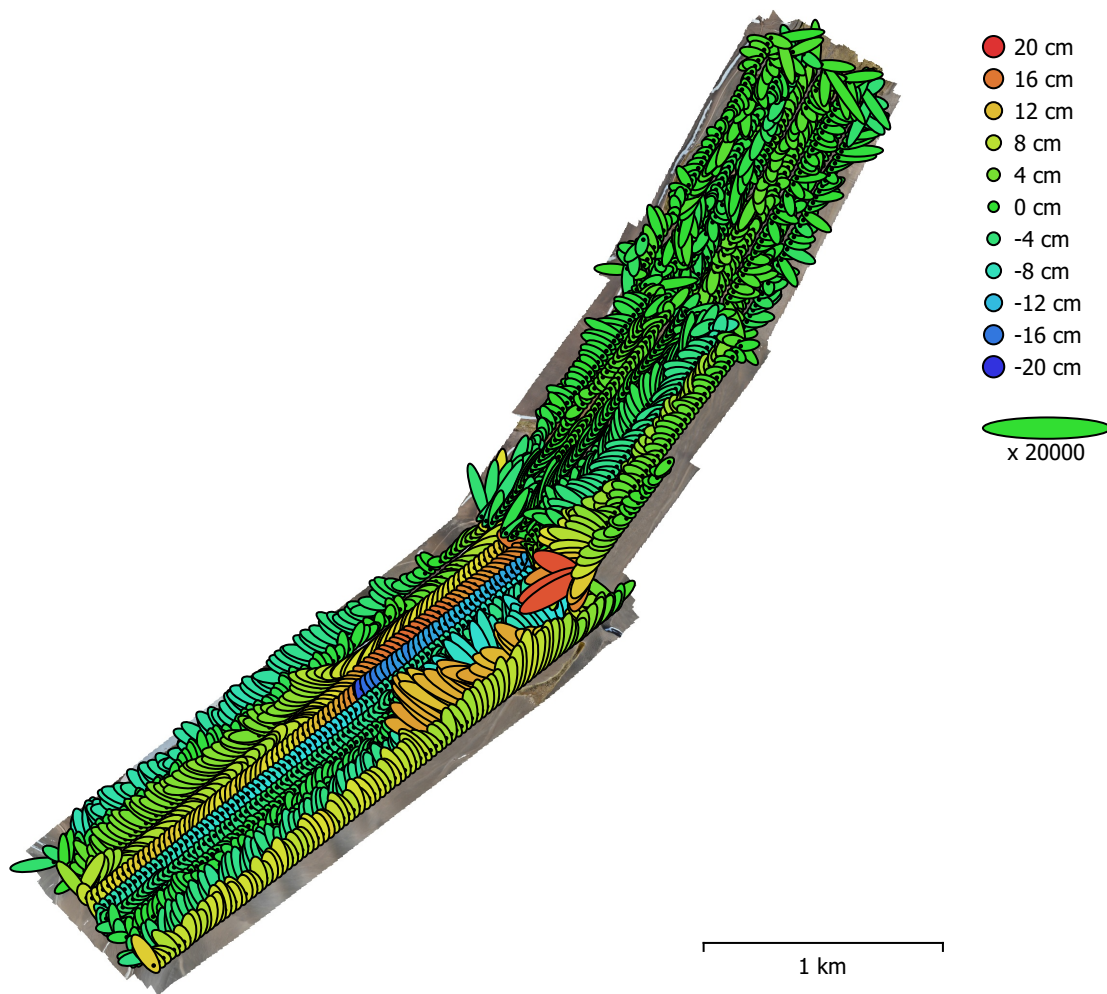
Camera Locations

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
0.322128	0.370932	5.80951	0.491281	5.83025

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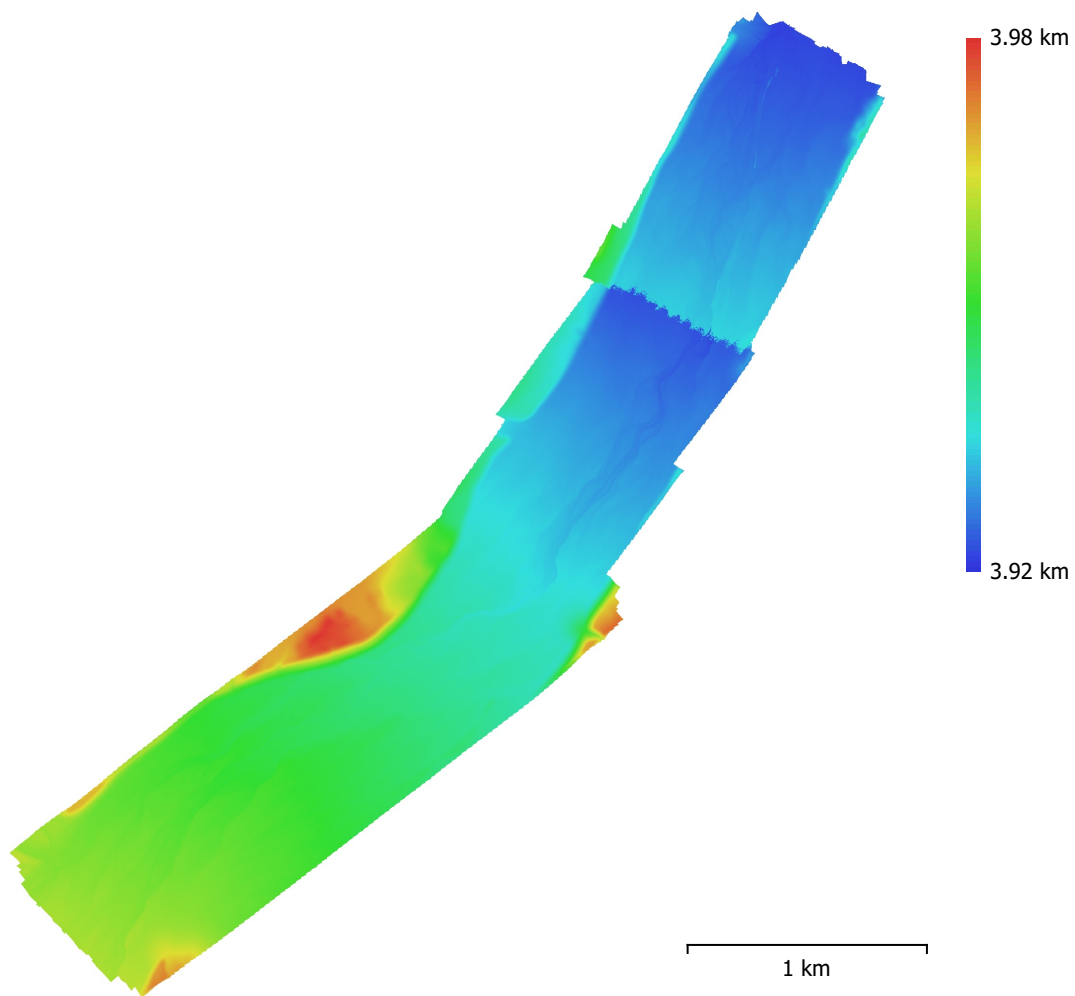X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

Fig. 4. Reconstructed digital elevation model.

Resolution:	7.83 cm/pix
Point density:	163 points/m²

Processing Parameters

General

Cameras	1995
Aligned cameras	1995
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	953,724 of 1,086,724
RMS reprojection error	0.158004 (1.33137 pix)
Max reprojection error	0.832721 (112.73 pix)
Mean key point size	7.02001 pix
Point colors	3 bands, uint8
Key points	2.77 GB
Average tie point multiplicity	7.68162

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	5 minutes 58 seconds
Matching memory usage	6.82 GB
Alignment time	13 minutes 59 seconds
Alignment memory usage	646.67 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Fit additional corrections	Yes
Adaptive camera model fitting	No
Optimization time	3 minutes 44 seconds
Date created	2024:05:13 21:08:50
Software version	1.8.4.14654
File size	184.46 MB

Depth Maps

Count	1995

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	2 hours 1 minutes
File size	15.13 GB

Dense Point Cloud

Points	619,489,352
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Max neighbors	16

Processing time	2 hours 1 minutes

Dense cloud generation parameters

Processing time	5 hours 40 minutes
Date created	2024:05:14 07:54:27
Software version	1.8.4.14654
File size	8.74 GB

DEM

Size	79,259 x 85,159
Coordinate system	WGS 84 (EPSG::4326)

Reconstruction parameters

Source data	Dense cloud
Interpolation	Enabled
Processing time	29 minutes 51 seconds
Memory usage	323.43 MB
Date created	2024:05:14 13:28:21
Software version	1.8.4.14654
File size	1.65 GB

Orthomosaic

Size	93,398 x 105,302
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	51 minutes 42 seconds
Memory usage	1.88 GB
Date created	2024:05:14 15:02:49
Software version	1.8.4.14654
File size	61.55 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