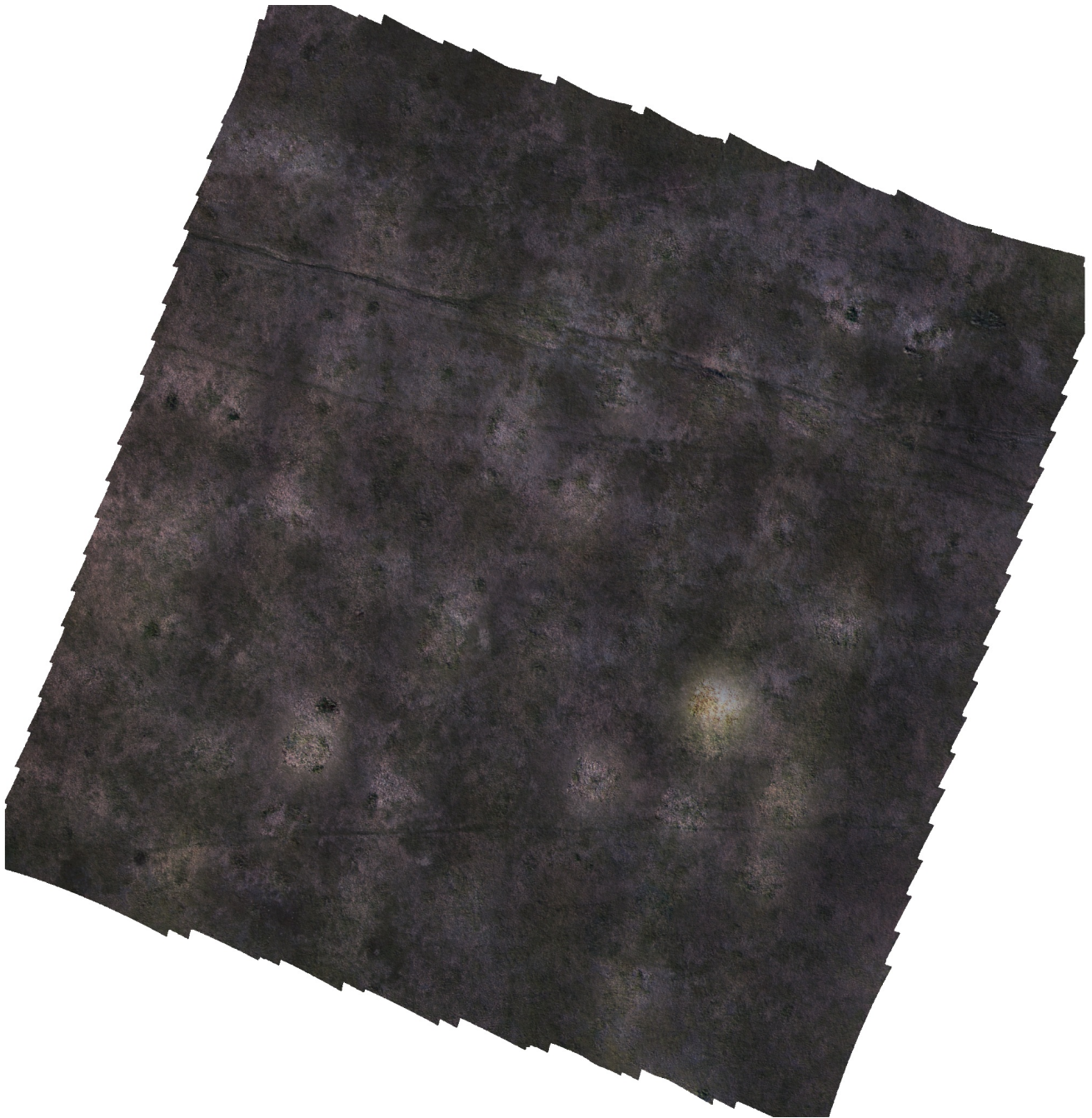


# Agisoft Metashape-Best

Processing Report

31 October 2024



# Survey Data

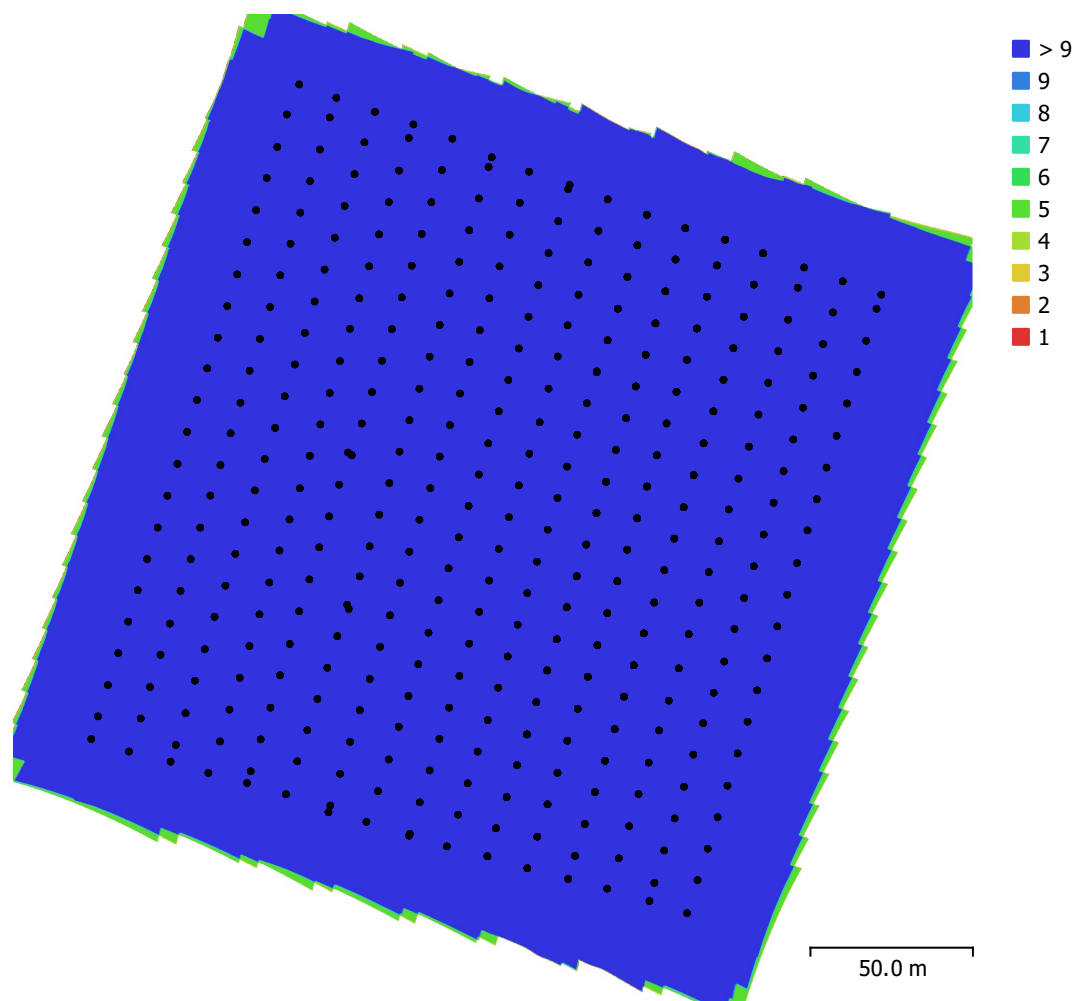


Fig. 1. Camera locations and image overlap.

Number of images:	2,085	Camera stations:	2,085
Flying altitude:	63.2 m	Tie points:	243,145
Ground resolution:	3.12 cm/pix	Projections:	12,981,477
Coverage area:	0.0608 km <sup>2</sup>	Reprojection error:	0.444 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6360, Blue (5.74mm)	1600 x 1300	5.74 mm	3.01 x 3.01 μm	Yes
FC6360, Green (5.74mm)	1600 x 1300	5.74 mm	3.01 x 3.01 μm	Yes
FC6360, Red (5.74mm)	1600 x 1300	5.74 mm	3.01 x 3.01 μm	Yes
FC6360, RedEdge (5.74mm)	1600 x 1300	5.74 mm	3.01 x 3.01 μm	Yes
FC6360, NIR (5.74mm)	1600 x 1300	5.74 mm	3.01 x 3.01 μm	Yes

Table 1. Cameras.

# Camera Calibration

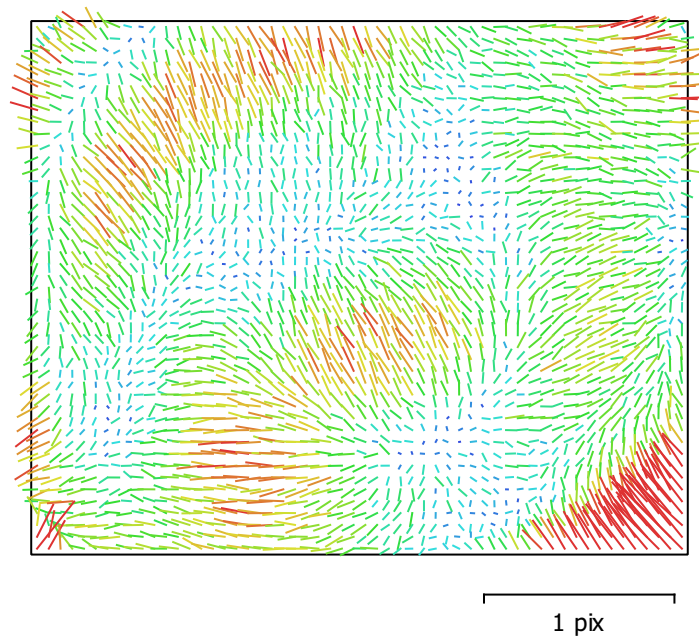


Fig. 2. Image residuals for FC6360, Blue (5.74mm).

## FC6360, Blue (5.74mm)

417 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>1600 x 1300</b>	<b>5.74 mm</b>	<b>3.01 x 3.01 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>1959.71</b>	0.4	1.00	-0.78	0.05	-0.89	0.65	-0.49	0.73	-0.08
<b>Cx</b>	<b>25.3908</b>	0.025		1.00	-0.05	0.65	-0.48	0.37	-0.81	0.08
<b>Cy</b>	<b>1.20469</b>	0.014			1.00	-0.04	0.03	-0.02	0.04	-0.84
<b>K1</b>	<b>-0.418959</b>	0.00017				1.00	-0.82	0.65	-0.79	0.08
<b>K2</b>	<b>0.328482</b>	0.00038					1.00	-0.96	0.52	-0.05
<b>K3</b>	<b>-0.270503</b>	0.00064						1.00	-0.34	0.04
<b>P1</b>	<b>-0.000209112</b>	3.4e-06							1.00	-0.08
<b>P2</b>	<b>-0.00033546</b>	2e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Calibration

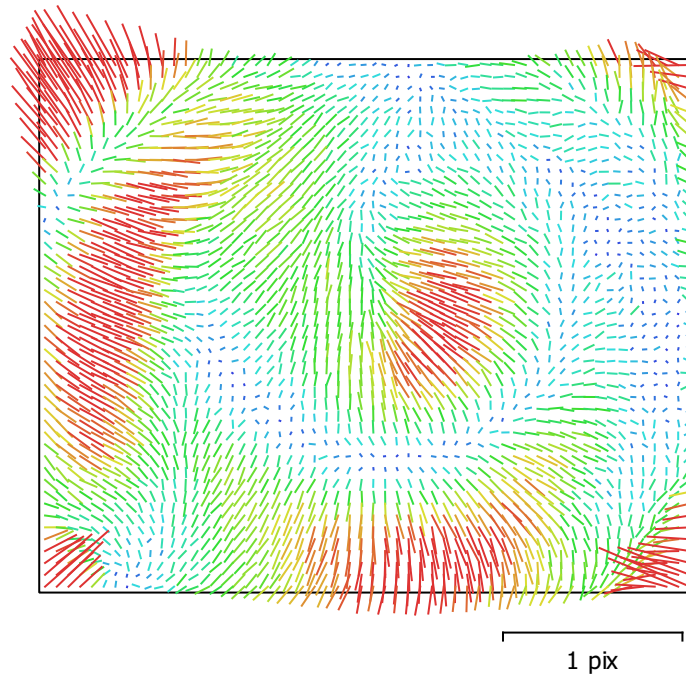


Fig. 3. Image residuals for FC6360, Green (5.74mm).

## FC6360, Green (5.74mm)

417 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>1600 x 1300</b>	<b>5.74 mm</b>	<b>3.01 x 3.01 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>1960.11</b>	0.4	1.00	-0.82	0.02	-0.89	0.65	-0.51	0.76	-0.07
<b>Cx</b>	<b>10.9387</b>	0.027		1.00	-0.03	0.69	-0.52	0.41	-0.82	0.07
<b>Cy</b>	<b>-1.59749</b>	0.014			1.00	-0.01	0.01	-0.01	0.02	-0.85
<b>K1</b>	<b>-0.416842</b>	0.00017				1.00	-0.82	0.66	-0.82	0.05
<b>K2</b>	<b>0.327096</b>	0.00038					1.00	-0.96	0.55	-0.04
<b>K3</b>	<b>-0.27786</b>	0.00065						1.00	-0.38	0.03
<b>P1</b>	<b>-0.000362906</b>	3.8e-06							1.00	-0.06
<b>P2</b>	<b>-0.000445187</b>	2e-06								1.00

Table 3. Calibration coefficients and correlation matrix.



# Camera Calibration

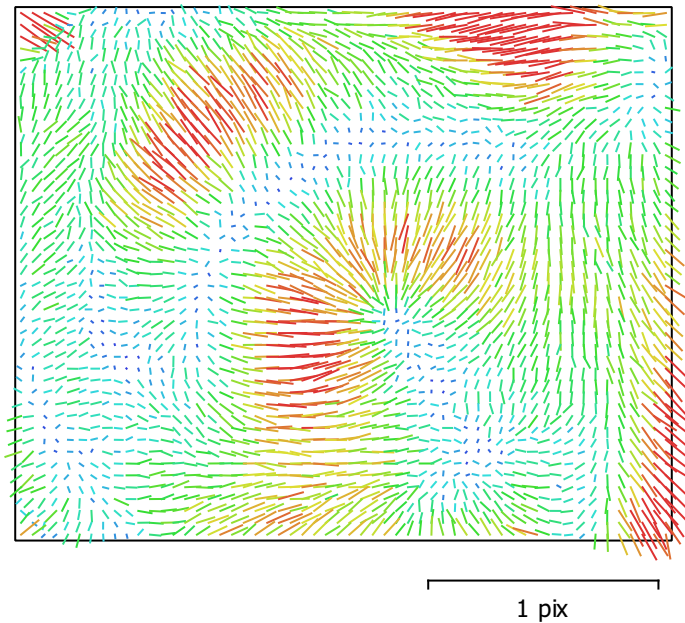


Fig. 4. Image residuals for FC6360, Red (5.74mm).

## FC6360, Red (5.74mm)

417 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>1600 x 1300</b>	<b>5.74 mm</b>	<b>3.01 x 3.01 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>1960.9</b>	0.4	1.00	-0.81	-0.01	-0.89	0.63	-0.44	0.75	0.03
<b>Cx</b>	<b>19.4819</b>	0.025		1.00	-0.01	0.68	-0.48	0.34	-0.82	-0.01
<b>Cy</b>	<b>-2.30063</b>	0.014			1.00	0.01	-0.01	0.01	-0.00	-0.85
<b>K1</b>	<b>-0.414059</b>	0.00017				1.00	-0.80	0.61	-0.82	-0.03
<b>K2</b>	<b>0.305754</b>	0.00036					1.00	-0.95	0.52	0.03
<b>K3</b>	<b>-0.233764</b>	0.0006						1.00	-0.32	-0.02
<b>P1</b>	<b>0.000114164</b>	3.6e-06							1.00	0.01
<b>P2</b>	<b>0.000173793</b>	2e-06								1.00

Table 4. Calibration coefficients and correlation matrix.

# Camera Calibration

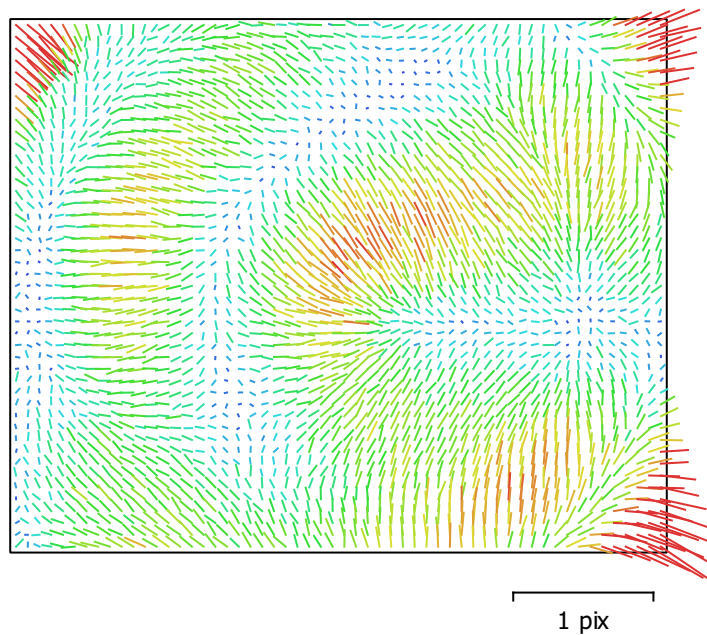


Fig. 5. Image residuals for FC6360, RedEdge (5.74mm).

## FC6360, RedEdge (5.74mm)

417 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>1600 x 1300</b>	<b>5.74 mm</b>	<b>3.01 x 3.01 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>1964.75</b>	0.4	1.00	-0.82	0.01	-0.88	0.59	-0.40	0.79	0.08
<b>Cx</b>	<b>18.3726</b>	0.027		1.00	-0.02	0.68	-0.45	0.31	-0.83	-0.06
<b>Cy</b>	<b>4.78017</b>	0.014			1.00	0.00	-0.00	0.00	0.01	-0.83
<b>K1</b>	<b>-0.412188</b>	0.00017				1.00	-0.79	0.59	-0.84	-0.07
<b>K2</b>	<b>0.306249</b>	0.00038					1.00	-0.95	0.51	0.05
<b>K3</b>	<b>-0.233845</b>	0.00066						1.00	-0.30	-0.04
<b>P1</b>	<b>0.0012233</b>	4e-06							1.00	0.06
<b>P2</b>	<b>0.000820368</b>	2e-06								1.00

Table 5. Calibration coefficients and correlation matrix.

# Camera Calibration

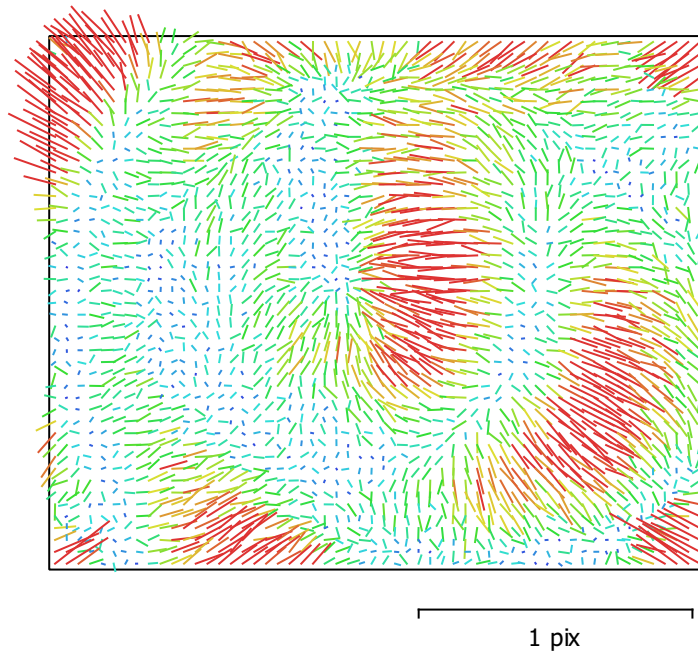


Fig. 6. Image residuals for FC6360, NIR (5.74mm).

## FC6360, NIR (5.74mm)

417 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>1600 x 1300</b>	<b>5.74 mm</b>	<b>3.01 x 3.01 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>1967.3</b>	0.4	1.00	-0.78	-0.00	-0.88	0.57	-0.40	0.73	0.07
<b>Cx</b>	<b>25.7901</b>	0.026		1.00	-0.01	0.65	-0.42	0.30	-0.80	-0.04
<b>Cy</b>	<b>1.33437</b>	0.015			1.00	0.01	-0.01	0.00	-0.00	-0.82
<b>K1</b>	<b>-0.411308</b>	0.00017				1.00	-0.78	0.60	-0.79	-0.06
<b>K2</b>	<b>0.302865</b>	0.00039					1.00	-0.96	0.46	0.04
<b>K3</b>	<b>-0.239667</b>	0.00068						1.00	-0.28	-0.03
<b>P1</b>	<b>-0.000355762</b>	3.5e-06							1.00	0.04
<b>P2</b>	<b>0.000521833</b>	2.1e-06								1.00

Table 6. Calibration coefficients and correlation matrix.



# Camera Locations

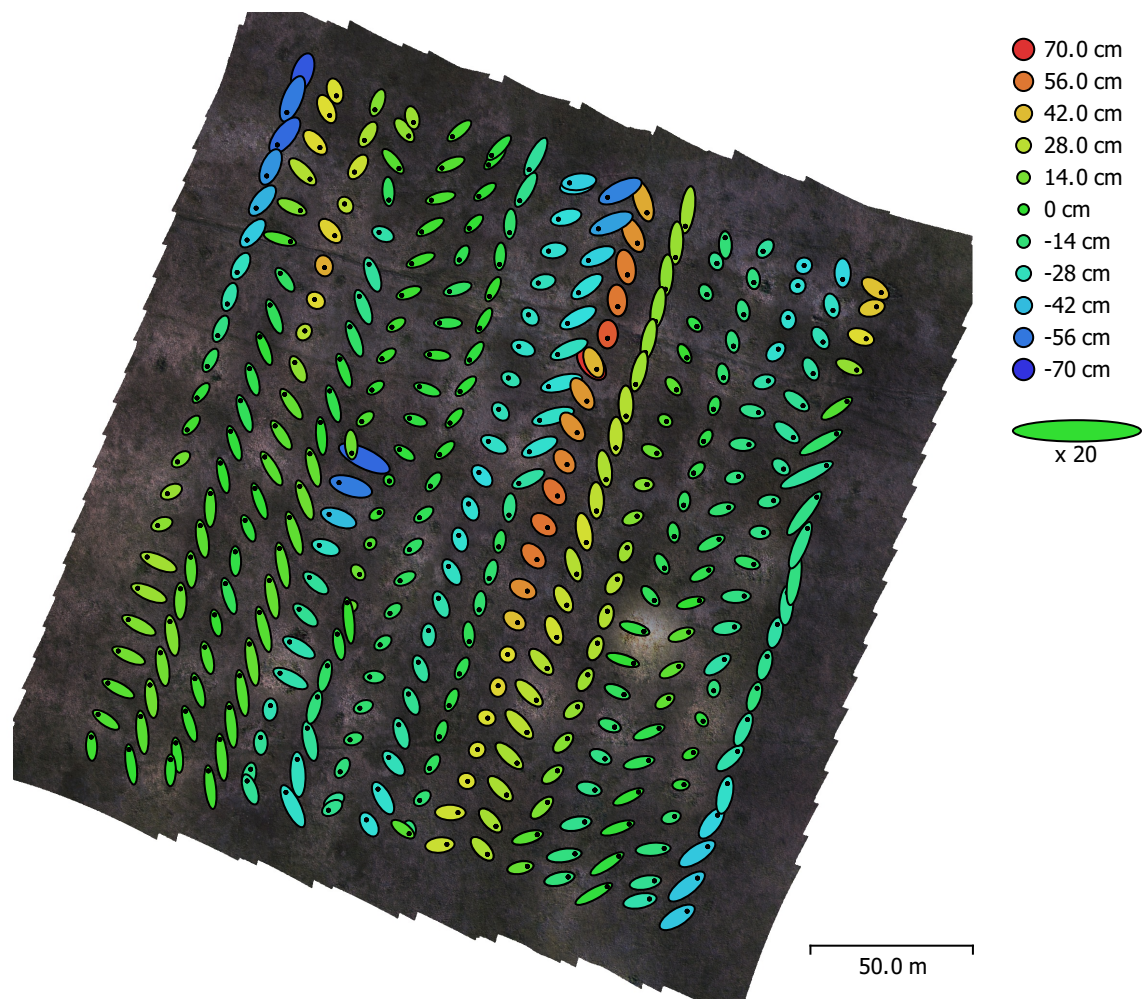


Fig. 7. Camera locations and error estimates.

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)
16.7597	22.5408	23.9496	28.0886	36.9128

Table 7. Average camera location error.

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

# Digital Elevation Model

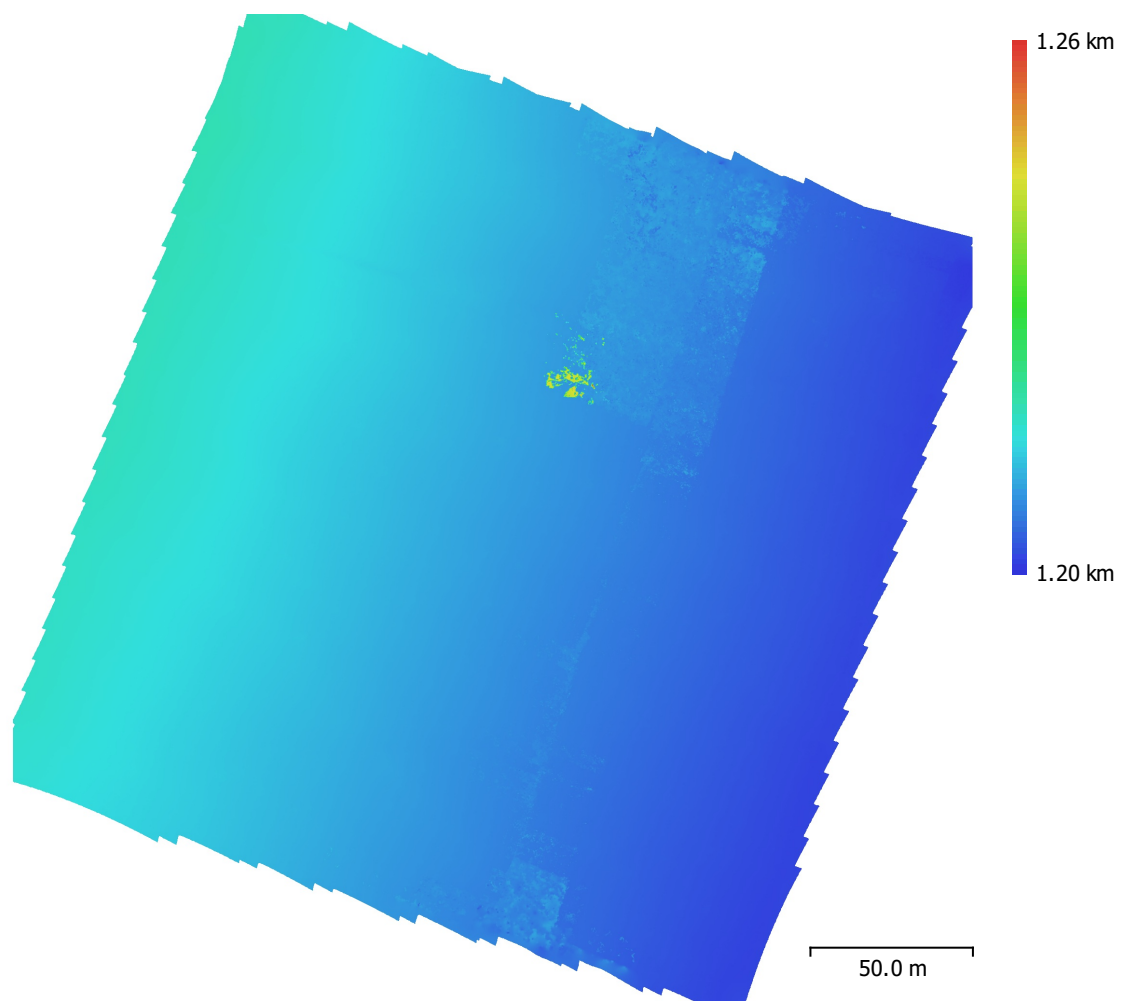


Fig. 8. Reconstructed digital elevation model.

Resolution: 3.12 cm/pix  
Point density: 0.103 points/cm<sup>2</sup>

# Processing Parameters

## General

Images	2085
Aligned images	2085
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Tie Points

Points	243,145 of 393,045
RMS reprojection error	0.284709 (0.443617 pix)
Max reprojection error	1.03649 (5.16838 pix)
Mean key point size	1.5695 pix
Point colors	1 bands, uint16
Key points	No
Average tie point multiplicity	59.8925

## Alignment parameters

Accuracy	Highest
Generic preselection	No
Reference preselection	Source
Key point limit	40,000
Key point limit per Mpx	1,000
Tie point limit	10,000
Exclude stationary tie points	No
Guided image matching	No
Adaptive camera model fitting	No
Matching time	1 hours 21 minutes
Matching memory usage	10.10 GB
Alignment time	28 minutes 7 seconds
Alignment memory usage	6.89 GB

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Exclude corners	No
Optimization time	58 seconds
Date created	2024:10:28 21:50:33
Software version	2.1.3.18946
File size	365.79 MB

## Depth Maps

Count	417
-------	-----

## Depth maps generation parameters

Quality	Ultra High
Filtering mode	Mild
Max neighbors	16
Processing time	8 minutes 28 seconds
Memory usage	2.35 GB
Date created	2024:10:29 09:48:22
Software version	2.1.3.18946
File size	999.11 MB

## Point Cloud

Points	65,259,393
--------	------------

## Point attributes

Color	5 bands, uint16
-------	-----------------

Normal	
Confidence	1 - 19
<b>Point classes</b>	
Created (never classified)	65,259,393
<b>Depth maps generation parameters</b>	
Quality	Ultra High
Filtering mode	Mild
Max neighbors	16
Processing time	8 minutes 28 seconds
Memory usage	2.35 GB
<b>Point cloud generation parameters</b>	
Source data	Depth maps
Processing time	17 minutes 24 seconds
Memory usage	9.66 GB
Date created	2024:10:29 10:05:47
Software version	2.1.3.18946
File size	1.52 GB
<b>DEM</b>	
Size	9,455 x 9,738
Resolution	3.12 cm/pix
Coordinate system	WGS 84 (EPSG::4326)
<b>Reconstruction parameters</b>	
Source data	Point cloud
Interpolation	Enabled
Processing time	42 seconds
Memory usage	321.49 MB
Date created	2024:10:29 17:07:39
Software version	2.1.3.18946
File size	187.93 MB
<b>Orthomosaic</b>	
Size	9,455 x 9,738
Resolution	3.12 cm/pix
Coordinate system	WGS 84 (EPSG::4326)
Colors	5 bands, uint16
Orthophotos	16.92 GB
<b>Reconstruction parameters</b>	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	9 minutes 51 seconds
Memory usage	2.09 GB
Date created	2024:10:29 17:15:33
Software version	2.1.3.18946
File size	17.95 GB
<b>System</b>	
Software name	Agisoft Metashape Professional
Software version	2.1.3 build 18946
OS	Windows 64 bit
RAM	15.72 GB
CPU	Intel(R) Core(TM) i9-10900K CPU @ 3.70GHz
GPU(s)	NVIDIA GeForce RTX 2070 SUPER