

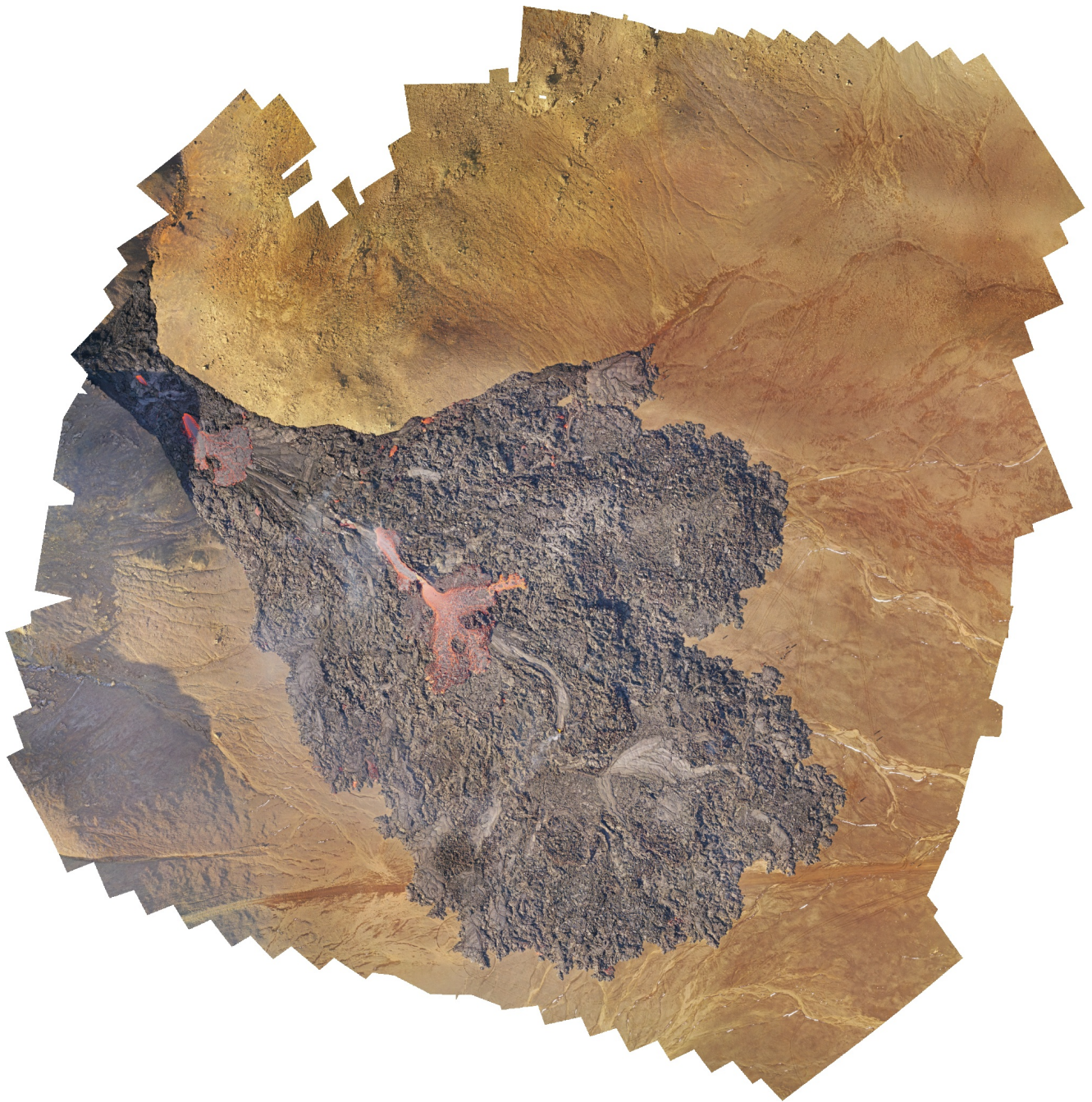
2021_04_06_Meradalir_Report

Processing Report

April 6, 2021

Fagradalsfjall Flow in Meradalir Valley

03 June 2022



Survey Data

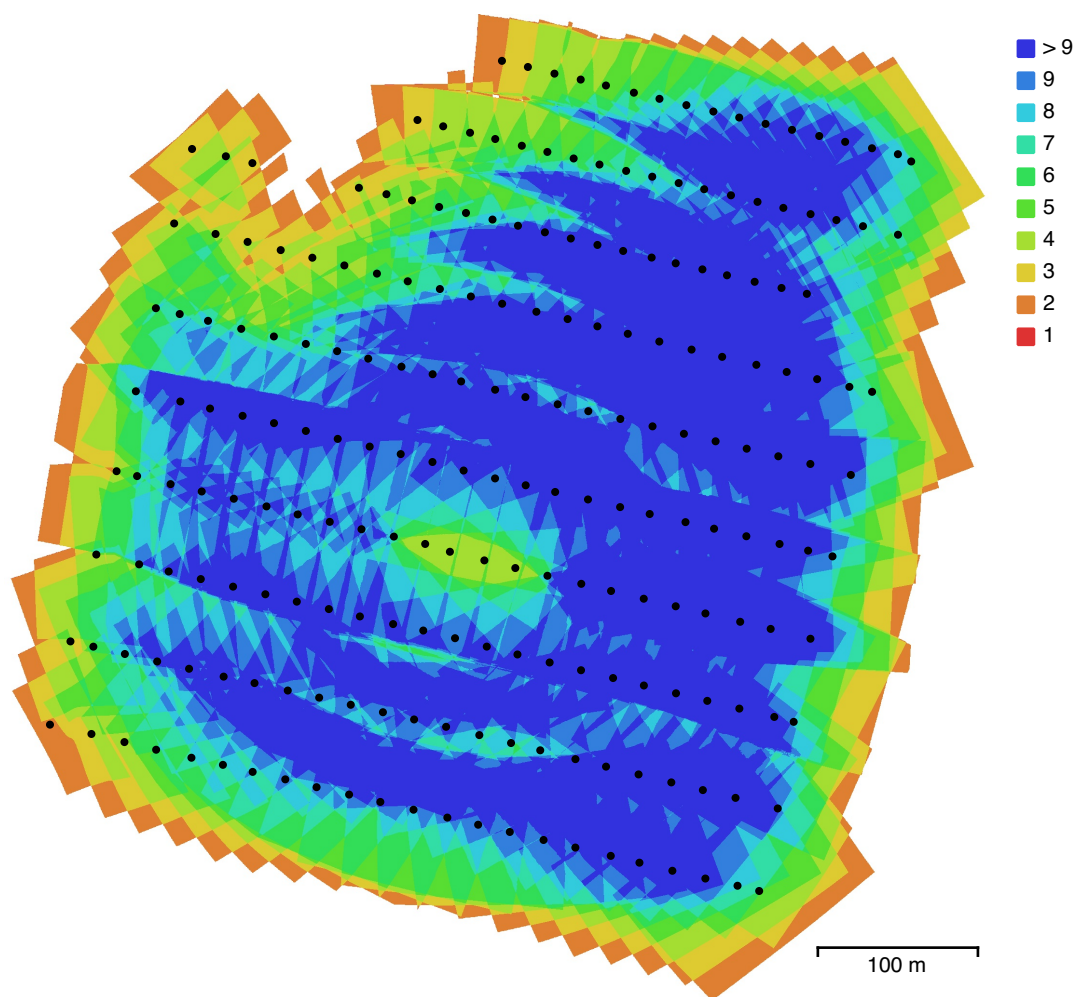


Fig. 1. Camera locations and image overlap.

Number of images:	239	Camera stations:	218
Flying altitude:	104 m	Tie points:	679,983
Ground resolution:	2.23 cm/pix	Projections:	1,875,631
Coverage area:	0.273 km ²	Reprojection error:	0.314 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 μ m	No

Table 1. Cameras.

Camera Calibration

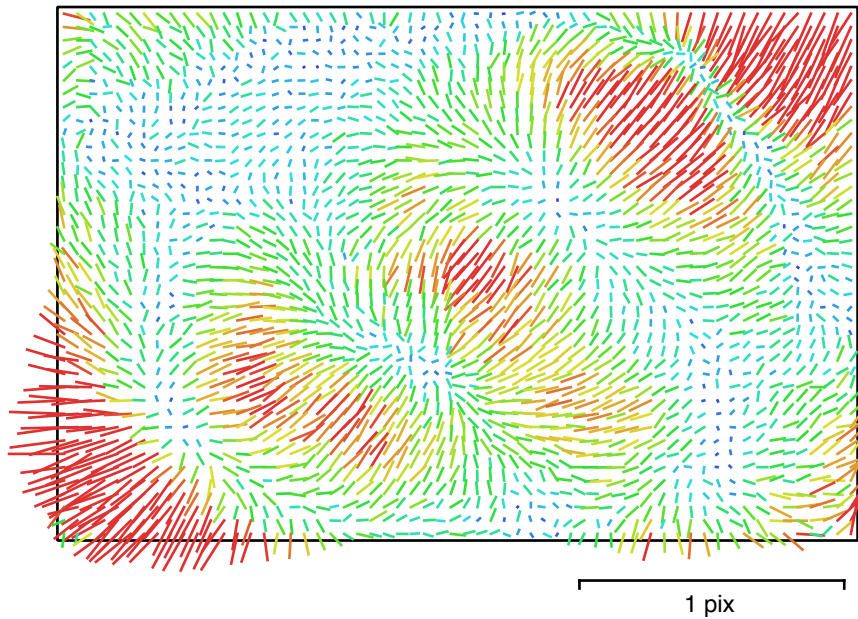


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

239 images

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	10.26 mm	2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	4312.76	1.1	1.00	-0.15	-0.14	-0.08	0.02	0.01	0.02	0.05	-0.14	0.10	-0.17
Cx	-6.60896	0.14		1.00	-0.08	0.16	0.10	-0.04	-0.00	-0.01	0.02	0.08	0.04
Cy	-98.1717	0.2			1.00	-0.08	0.21	-0.05	-0.03	0.01	0.00	-0.03	0.19
B1	-1.76787	0.021				1.00	-0.02	-0.01	0.00	-0.01	0.01	0.04	-0.49
B2	-2.37188	0.02					1.00	-0.04	0.00	0.00	-0.00	0.73	0.06
K1	-0.000174579	4.6e-05						1.00	-0.84	0.80	-0.75	-0.05	0.02
K2	0.00209859	0.00027							1.00	-0.98	0.94	0.00	-0.02
K3	0.0297341	0.00076								1.00	-0.99	0.00	0.01
K4	-0.0521821	0.00072									1.00	-0.01	0.01
P1	0.00122721	3.4e-06										1.00	-0.02
P2	-0.00179861	2.1e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

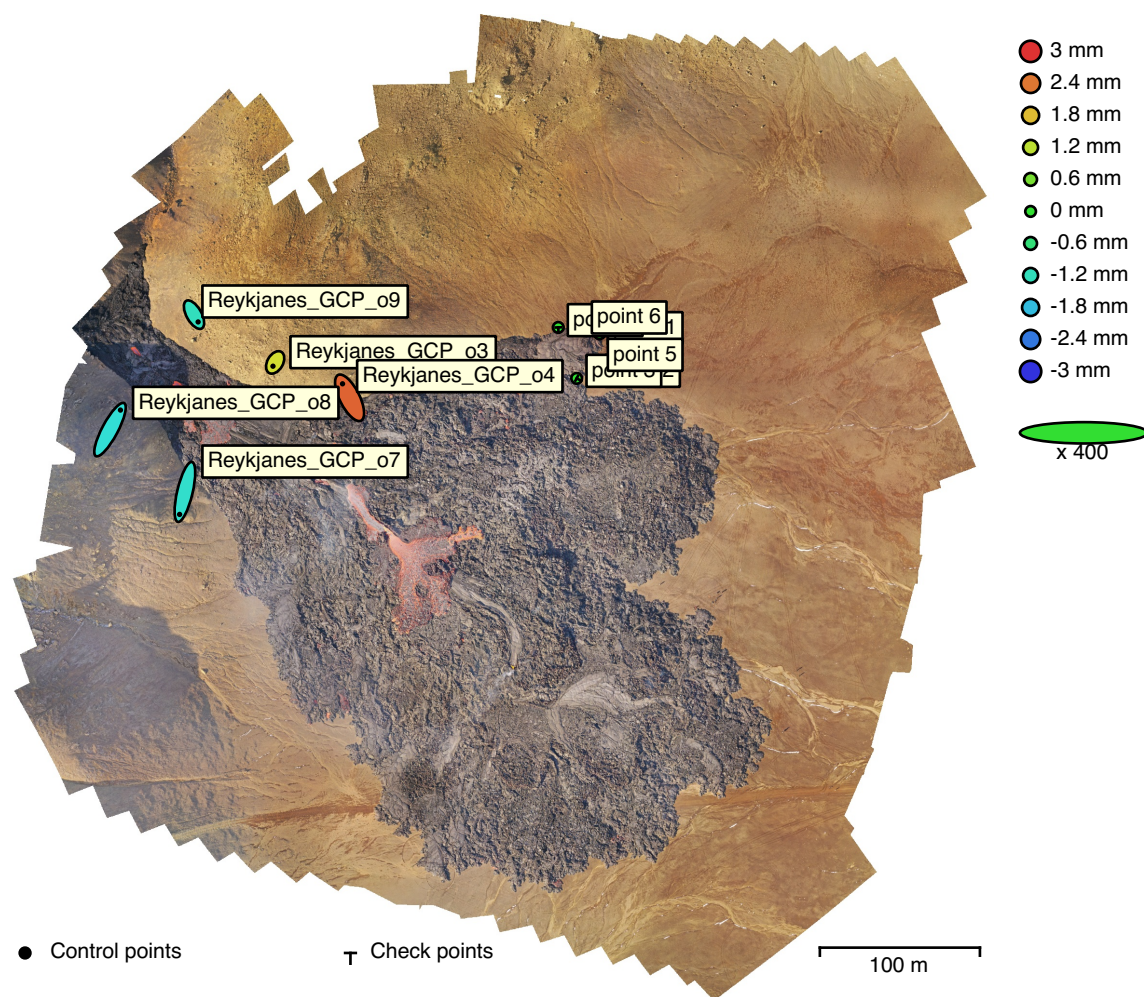


Fig. 3. GCP locations and error estimates.

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)
5	2.01652	4.73768	0.166546	5.14898	5.15167

Table 3. Control points RMSE.

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

Count	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
6	6.39293e-05	4.67964e-05	0.000148691	7.92266e-05	0.000168481

Table 4. Check points RMSE.

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

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
Reykjanes_GCP_o3	-0.684447	-1.17996	0.139991	1.37127	1.616 (7)
Reykjanes_GCP_o4	-2.20028	4.36911	0.257348	4.89863	1.771 (9)
Reykjanes_GCP_o7	-1.65859	-7.02028	-0.133464	7.21478	2.320 (8)
Reykjanes_GCP_o8	3.25917	6.10623	-0.142789	6.92305	5.153 (5)
Reykjanes_GCP_o9	1.28414	-2.2751	-0.121086	2.6153	3.072 (7)
Total	2.01652	4.73768	0.166546	5.15167	2.830

Table 5. Control points.
X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
point 1	-4.66736e-05	4.31876e-05	0.000180386	0.000191266	0.000 (11)
point 2	2.93505e-05	-4.69893e-05	-4.50876e-05	7.14307e-05	0.000 (12)
point 3	-0.000128536	6.95571e-05	0.000213158	0.000258449	0.000 (11)
point 4	-6.14732e-07	1.83234e-05	6.78797e-05	7.0312e-05	0.000 (14)
point 5	6.17885e-05	-6.23116e-05	-0.000183918	0.00020378	0.000 (13)
point 6	-3.37955e-05	3.09621e-06	0.000119216	0.000123953	0.000 (11)
Total	6.39293e-05	4.67964e-05	0.000148691	0.000168481	0.000

Table 6. Check points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

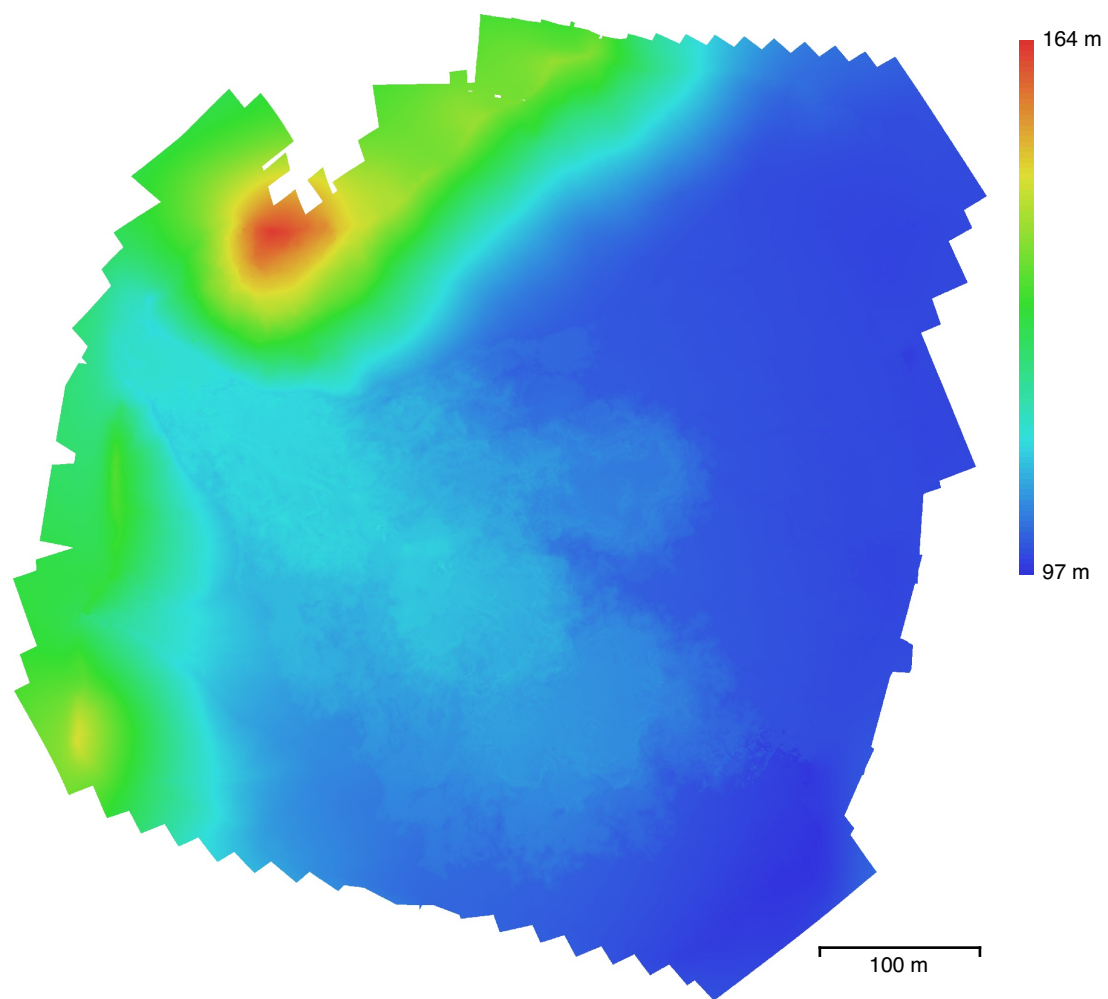


Fig. 4. Reconstructed digital elevation model.

Resolution: 4.47 cm/pix
Point density: 501 points/m²

Processing Parameters

General

Cameras	239
Aligned cameras	218
Markers	11
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	679,983 of 1,905,711
RMS reprojection error	0.131615 (0.314184 pix)
Max reprojection error	2.4167 (8.13976 pix)
Mean key point size	2.35226 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.34082

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	60,000
Key point limit per Mpx	1,000
Tie point limit	0
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	14 minutes 33 seconds
Matching memory usage	758.64 MB
Alignment time	23 minutes 15 seconds
Alignment memory usage	658.24 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	No
Optimization time	14 seconds
Date created	2022:03:06 19:42:13
Software version	1.8.1.13915
File size	118.19 MB

Depth Maps

Count	217
Depth maps generation parameters	
Quality	High
Filtering mode	Moderate
Max neighbors	16
Processing time	11 hours 3 minutes
Memory usage	1.03 GB
Date created	2022:05:18 07:15:22
Software version	1.8.1.13915
File size	1.53 GB

Dense Point Cloud

Points	115,080,456
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
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Filtering mode	Moderate
Max neighbors	16
Processing time	11 hours 3 minutes
Memory usage	1.03 GB
Dense cloud generation parameters	
Processing time	24 minutes 15 seconds
Memory usage	6.71 GB
Date created	2022:05:18 07:39:37
Software version	1.8.1.13915
File size	2.41 GB
DEM	
Size	23,584 x 24,192
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	2 minutes 27 seconds
Memory usage	8.00 KB
Date created	2022:05:19 01:42:47
Software version	1.8.1.13915
File size	540.29 MB
Orthomosaic	
Size	27,225 x 27,603
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	9 minutes 38 seconds
Memory usage	151.14 MB
Date created	2022:05:18 19:04:01
Software version	1.8.1.13915
File size	6.22 GB
System	
Software name	Agisoft Metashape Professional
Software version	1.8.1 build 13915
OS	Mac OS 64 bit
RAM	64.00 GB
CPU	
GPU(s)	None