

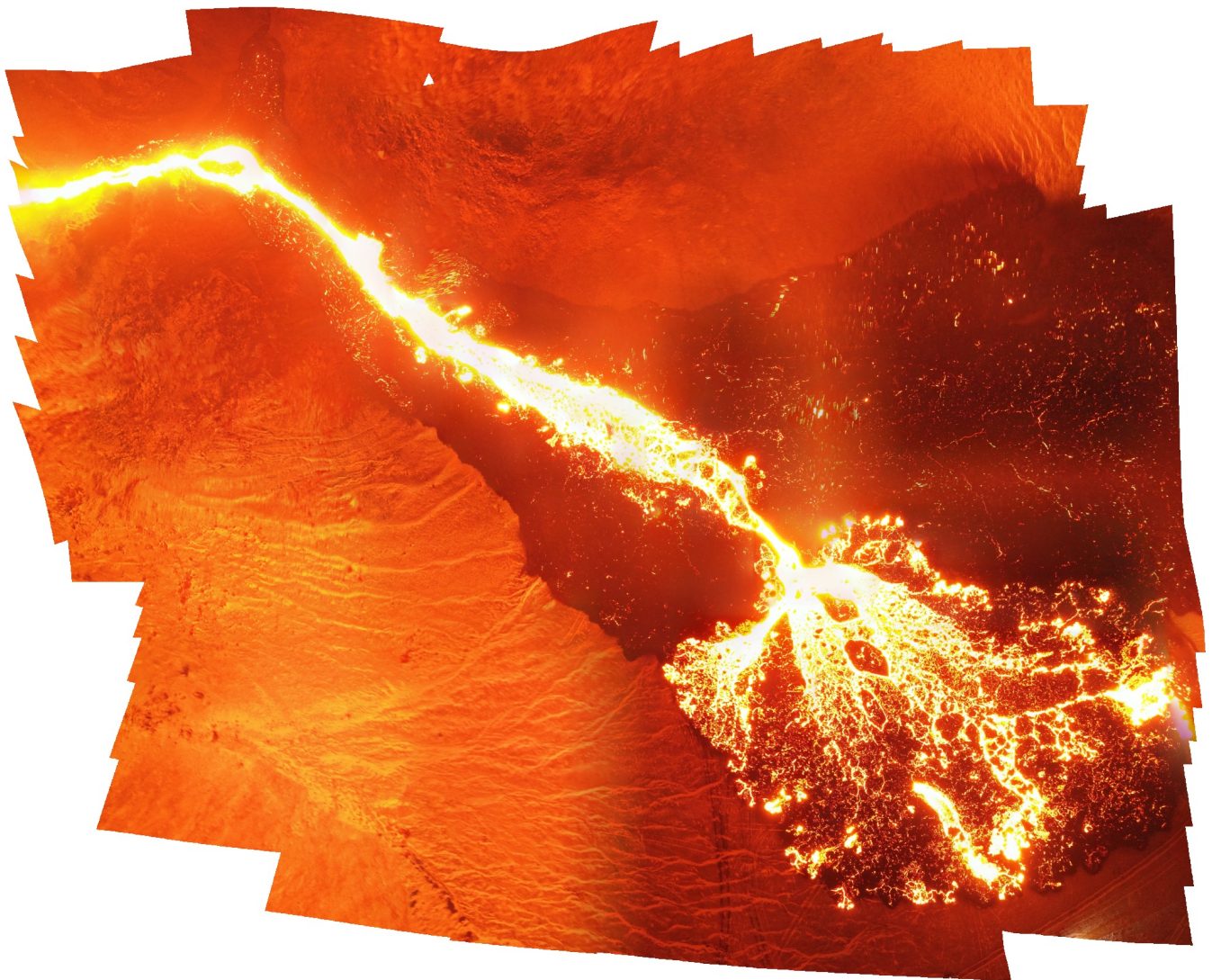
2021_04_05_Meradalir_Night_Report

Processing Report

April 5, 2021

Fagradalsfjall Flow in Meradalir Valley at Night

03 June 2022



Survey Data

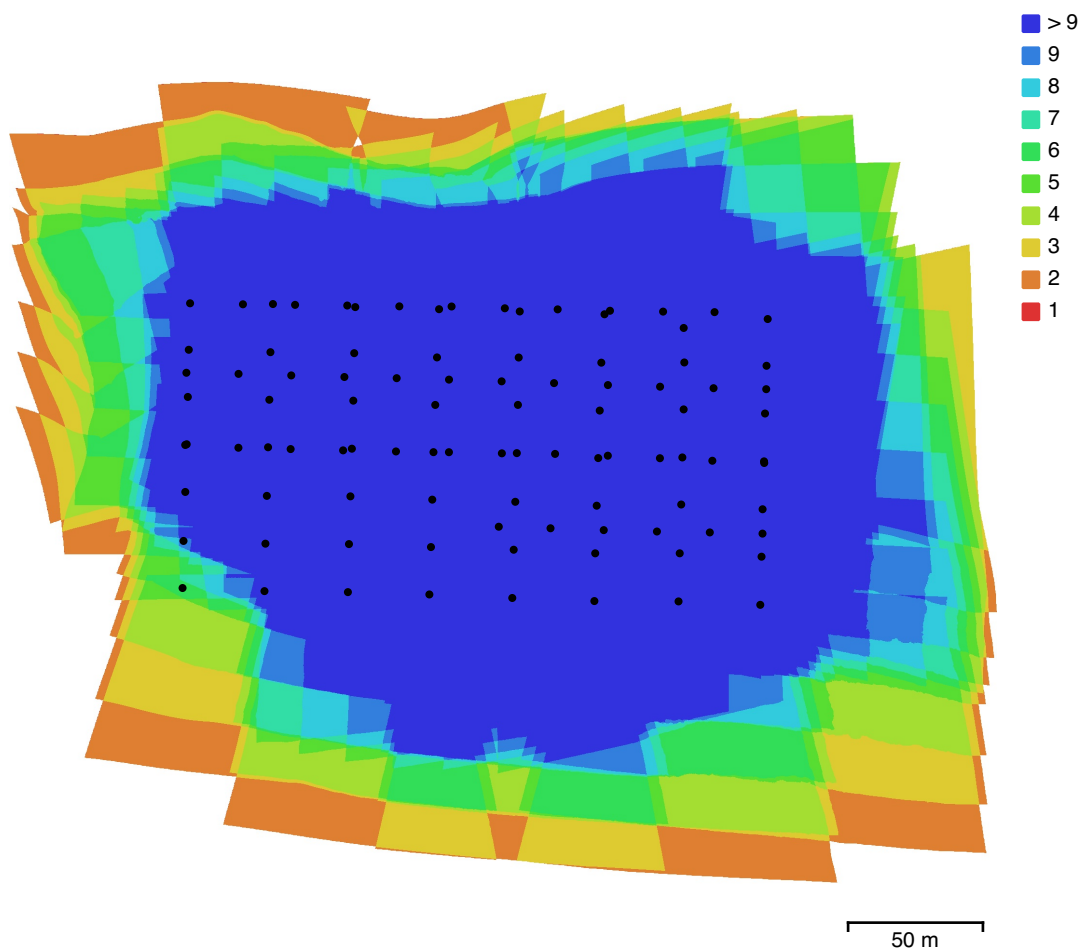


Fig. 1. Camera locations and image overlap.

| | | | |
|--------------------|------------------------|---------------------|-----------|
| Number of images: | 97 | Camera stations: | 96 |
| Flying altitude: | 109 m | Tie points: | 89,557 |
| Ground resolution: | 2.55 cm/pix | Projections: | 241,671 |
| Coverage area: | 0.0912 km ² | Reprojection error: | 0.848 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

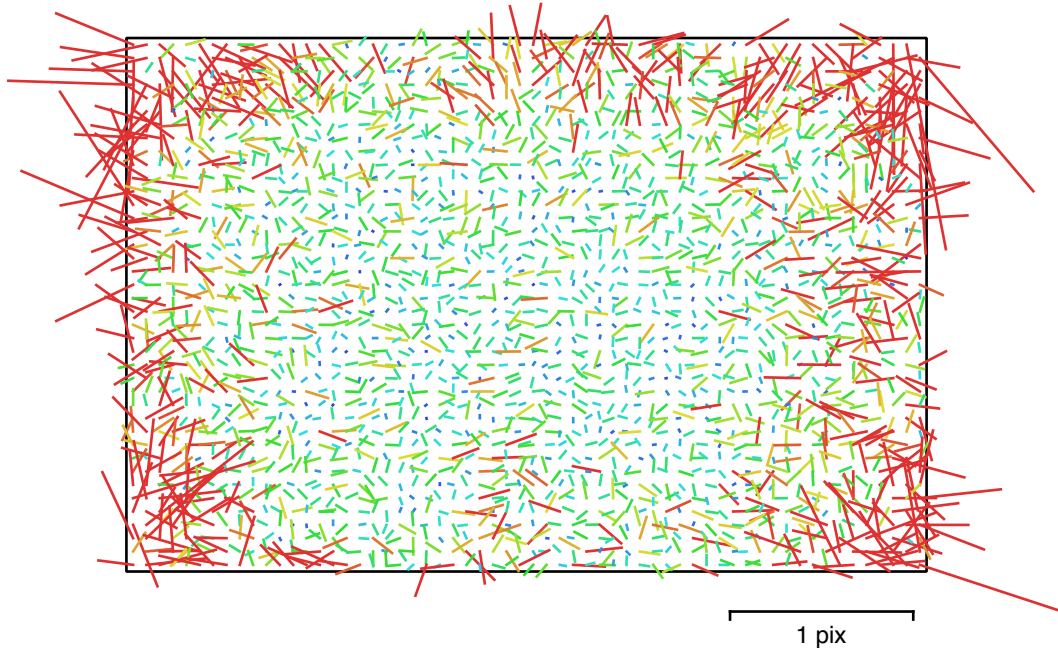


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

97 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 | 4364.65 | 2 | 1.00 | -0.14 | -0.99 | 0.93 | -0.42 | -0.11 | 0.01 | 0.01 | -0.02 | 0.06 | 0.27 |
| Cx | 5.08515 | 0.21 | | 1.00 | 0.14 | -0.14 | 0.59 | 0.02 | 0.02 | -0.03 | 0.03 | 0.77 | -0.08 |
| Cy | -37.2661 | 1.6 | | | 1.00 | -0.95 | 0.43 | 0.11 | 0.02 | -0.03 | 0.04 | -0.07 | -0.28 |
| B1 | 5.08503 | 0.32 | | | | 1.00 | -0.42 | -0.19 | -0.01 | 0.03 | -0.04 | 0.07 | 0.53 |
| B2 | -0.723607 | 0.052 | | | | | 1.00 | 0.06 | 0.02 | -0.03 | 0.03 | 0.10 | -0.17 |
| K1 | -0.000697872 | 0.0003 | | | | | | 1.00 | -0.92 | 0.86 | -0.81 | -0.02 | -0.32 |
| K2 | -0.00619478 | 0.002 | | | | | | | 1.00 | -0.98 | 0.95 | 0.02 | 0.02 |
| K3 | 0.0190996 | 0.0058 | | | | | | | | 1.00 | -0.99 | -0.02 | -0.00 |
| K4 | -0.0274505 | 0.0055 | | | | | | | | | 1.00 | 0.02 | 0.00 |
| P1 | 0.000977535 | 1.2e-05 | | | | | | | | | | 1.00 | 0.00 |
| P2 | -0.00198802 | 3.2e-05 | | | | | | | | | | | 1.00 |

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

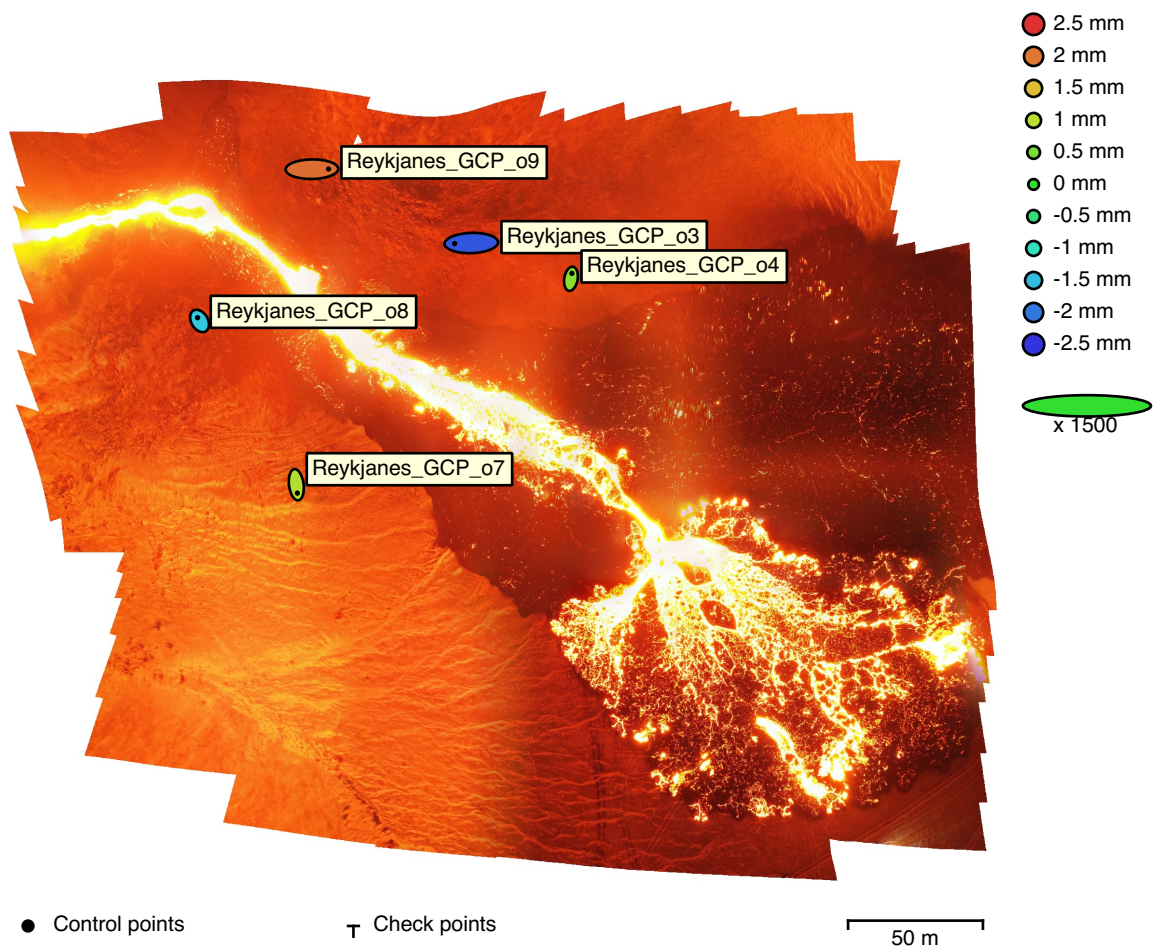


Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

| Count | X error (mm) | Y error (mm) | Z error (mm) | XY error (mm) | Total (mm) |
|-------|--------------|--------------|--------------|---------------|------------|
| 5 | 5.22774 | 2.32519 | 1.58595 | 5.72152 | 5.93725 |

Table 3. Control points RMSE.
X - Easting, Y - Northing, Z - Altitude.

| Label | X error (mm) | Y error (mm) | Z error (mm) | Total (mm) | Image (pix) |
|------------------|---------------------|---------------------|---------------------|-------------------|--------------------|
| Reykjanes_GCP... | -8.23374 | -0.269488 | -2.2472 | 8.53915 | 0.711 (15) |
| Reykjanes_GCP... | 0.454313 | 2.68636 | 0.647616 | 2.80042 | 0.528 (15) |
| Reykjanes_GCP... | 0.531976 | -4.13949 | 0.928648 | 4.2756 | 0.782 (18) |
| Reykjanes_GCP... | -0.964282 | 1.61109 | -1.39937 | 2.34172 | 0.688 (8) |
| Reykjanes_GCP... | 8.21173 | 0.111533 | 2.07031 | 8.46943 | 0.727 (6) |
| Total | 5.22774 | 2.32519 | 1.58595 | 5.93725 | 0.693 |

Table 4. Control points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

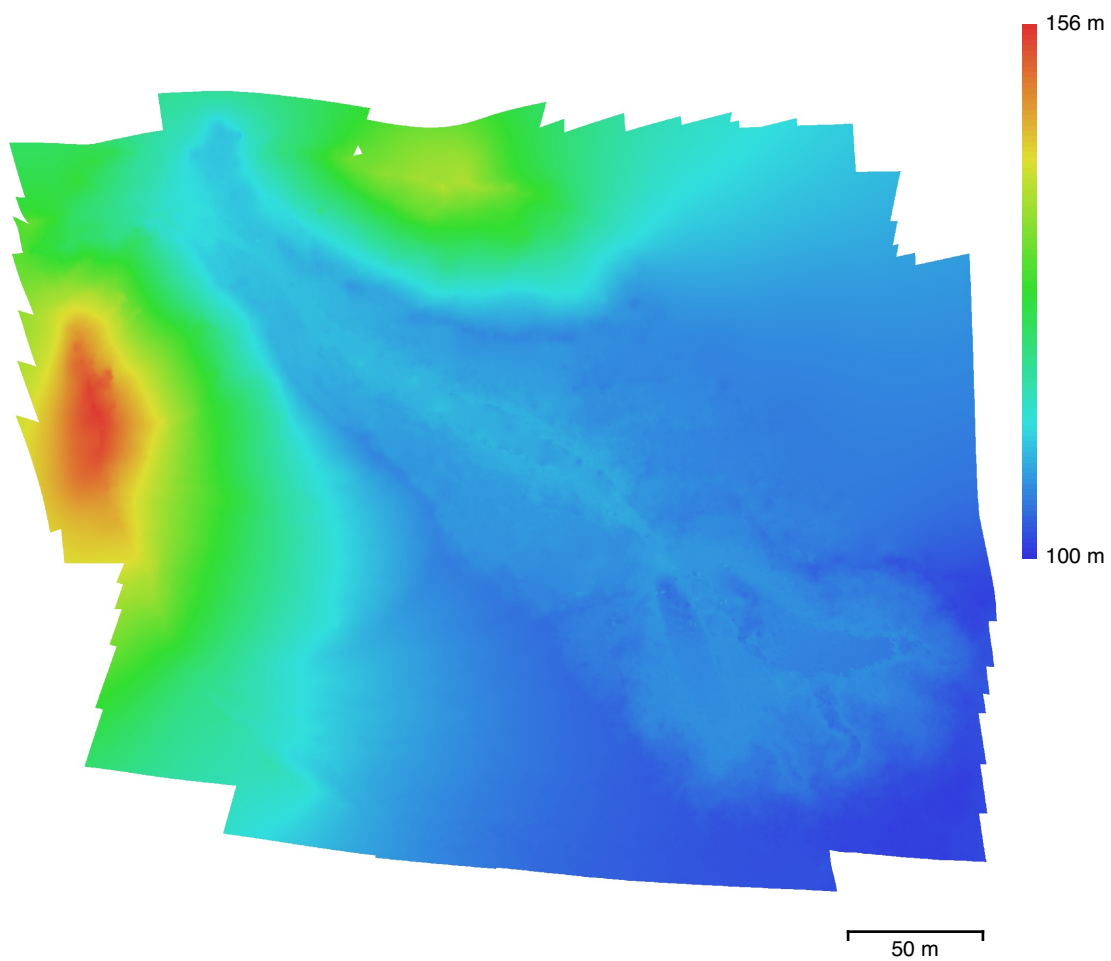


Fig. 4. Reconstructed digital elevation model.

Resolution: 5.11 cm/pix
Point density: 384 points/m²

Processing Parameters

General

| | |
|-------------------|-------------------------------------|
| Cameras | 97 |
| Aligned cameras | 96 |
| Markers | 5 |
| Coordinate system | WGS 84 / UTM zone 27N (EPSG::32627) |
| Rotation angles | Yaw, Pitch, Roll |

Point Cloud

| | |
|--------------------------------|-------------------------|
| Points | 89,557 of 261,958 |
| RMS reprojection error | 0.198973 (0.847693 pix) |
| Max reprojection error | 0.573916 (4.68743 pix) |
| Mean key point size | 4.0537 pix |
| Point colors | 3 bands, uint8 |
| Key points | No |
| Average tie point multiplicity | 2.92459 |

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 | 7 minutes 27 seconds |
| Matching memory usage | 767.43 MB |
| Alignment time | 2 minutes 1 seconds |
| Alignment memory usage | 443.31 MB |

Optimization parameters

| | |
|-------------------------------|----------------------------------|
| Parameters | f, b1, b2, cx, cy, k1-k4, p1, p2 |
| Adaptive camera model fitting | No |
| Optimization time | 1 seconds |
| Date created | 2022:03:04 21:16:32 |
| Software version | 1.8.1.13915 |
| File size | 14.50 MB |

Depth Maps

| | |
|---|---------------------|
| Count | 92 |
| Depth maps generation parameters | |
| Quality | High |
| Filtering mode | Moderate |
| Max neighbors | 16 |
| Processing time | 5 hours 12 minutes |
| Memory usage | 1.44 GB |
| Date created | 2022:05:17 01:26:32 |
| Software version | 1.8.1.13915 |
| File size | 226.70 MB |

Dense Point Cloud

| | |
|--------------|----------------|
| Points | 15,374,860 |
| Point colors | 3 bands, uint8 |

Depth maps generation parameters

| | |
|---------|------|
| Quality | High |
|---------|------|

| | |
|--|-------------------------------------|
| Filtering mode | Moderate |
| Max neighbors | 16 |
| Processing time | 5 hours 12 minutes |
| Memory usage | 1.44 GB |
| Dense cloud generation parameters | |
| Processing time | 8 minutes 59 seconds |
| Memory usage | 5.07 GB |
| Date created | 2022:05:17 01:35:32 |
| Software version | 1.8.1.13915 |
| File size | 346.10 MB |
| DEM | |
| Size | 12,062 x 11,048 |
| Coordinate system | WGS 84 / UTM zone 27N (EPSG::32627) |
| Reconstruction parameters | |
| Source data | Dense cloud |
| Interpolation | Enabled |
| Processing time | 50 seconds |
| Memory usage | 274.50 MB |
| Date created | 2022:05:18 17:55:49 |
| Software version | 1.8.1.13915 |
| File size | 149.82 MB |
| Orthomosaic | |
| Size | 14,337 x 11,635 |
| 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 | 3 minutes 7 seconds |
| Memory usage | 1.64 GB |
| Date created | 2022:05:18 17:58:38 |
| Software version | 1.8.1.13915 |
| File size | 1.62 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 |