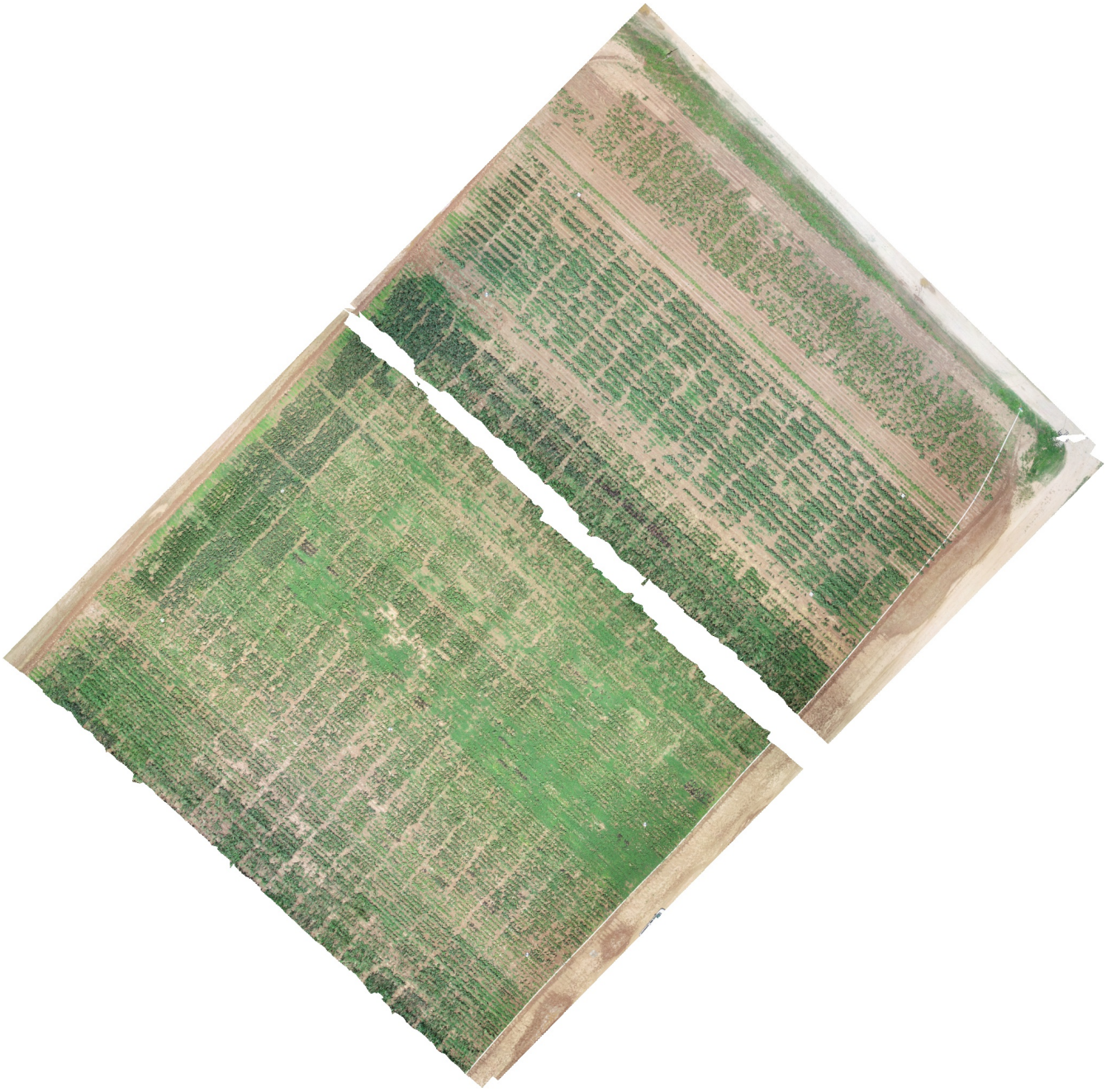
# Agisoft Metashape

**Processing Report**

**07 September 2019**



# Survey Data

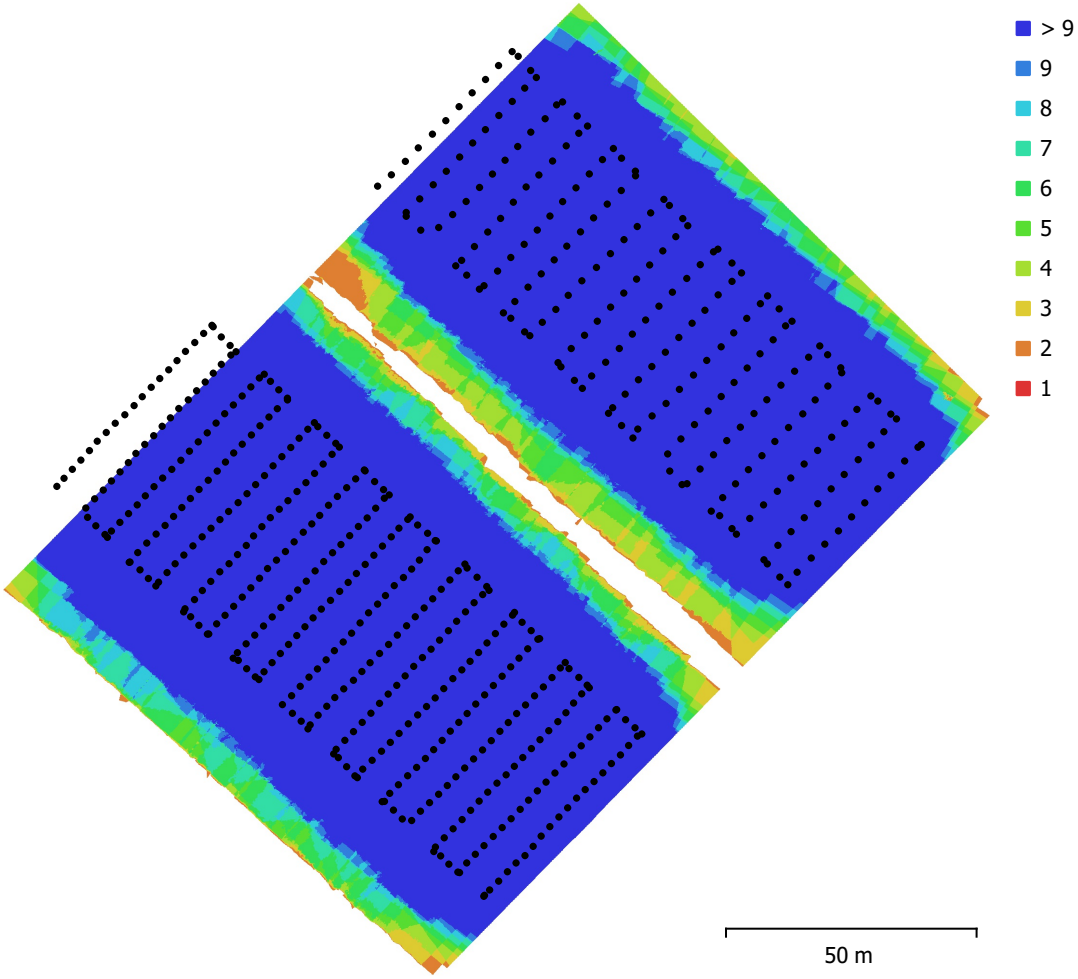



Fig. 1. Camera locations and image overlap.

| | | | |
|---|---|---|---|
| Number of images: | 623 | Camera stations: | 623 |
| Flying altitude: | 29 m | Tie points: | 551,427 |
| Ground resolution: | 6.92 mm/pix | Projections: | 1,714,517 |
| Coverage area: | 0.0182 km² | Reprojection error: | 0.598 pix |

| Camera Model | Resolution | Focal Length | Pixel Size | Precalibrated |
|---|---|---|---|---|
| FC6310S (8.8mm) | 5472 x 3648 | 8.8 mm | 2.41 x 2.41 µm | No |

Table 1. Cameras.

# Camera Calibration

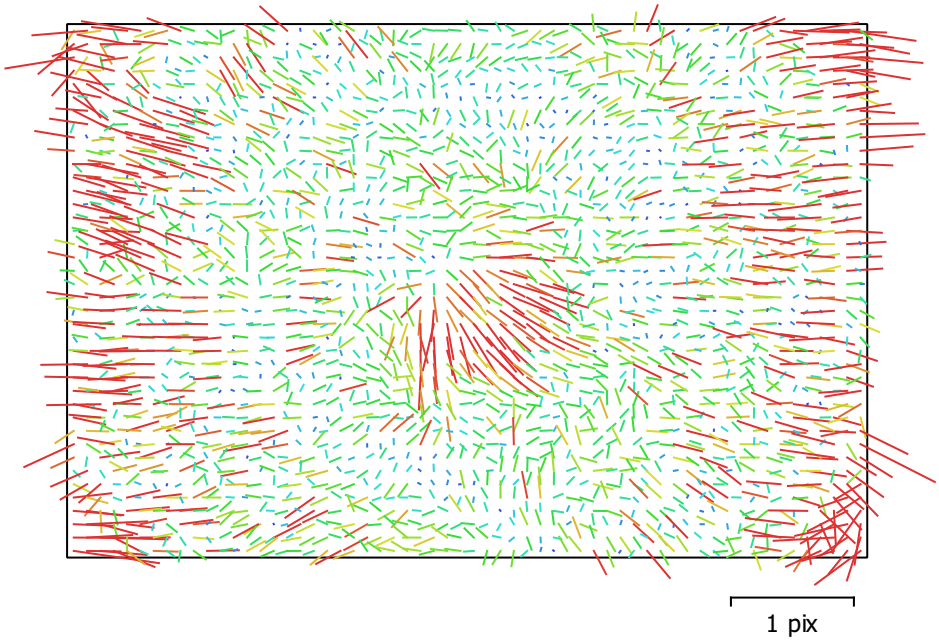



Fig. 2. Image residuals for FC6310S (8.8mm).

**FC6310S (8.8mm)**

623 images

| Type | Resolution | Focal Length | Pixel Size |
|---|---|---|---|
| **Frame** | **5472 x 3648** | **8.8 mm** | **2.41 x 2.41 µm** |

| | | | |
|---|---|---|---|
| F: | 3727.21 | | |
| Cx: | 15.0593 | B1: | 0.266816 |
| Cy: | 5.61265 | B2: | 0.0365933 |
| K1: | 0.0195671 | P1: | 0.000247594 |
| K2: | -0.0530915 | P2: | 0.00231635 |
| K3: | 0.0961762 | P3: | 1.62402 |
| K4: | -0.0578141 | P4: | -0.765713 |

# Ground Control Points

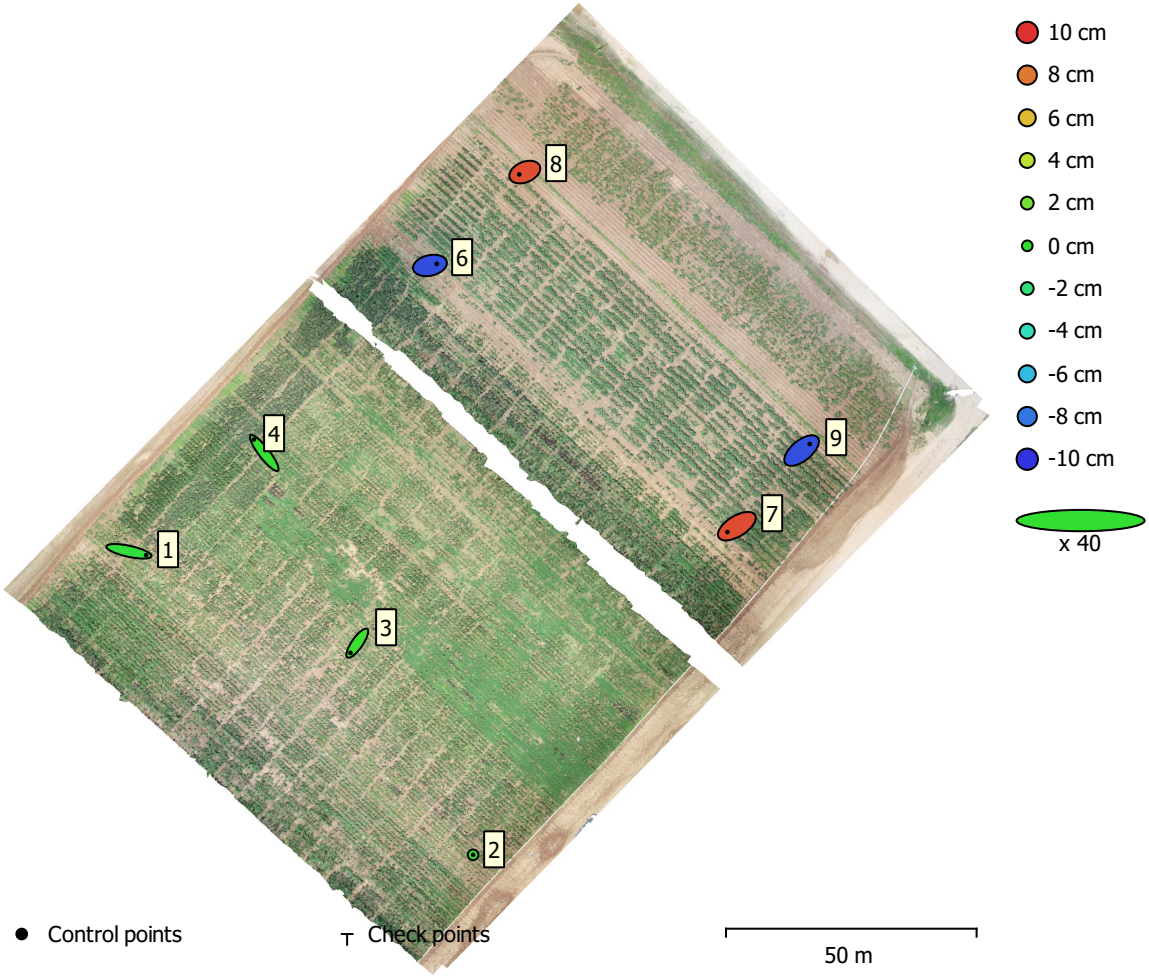



Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

| Count | X error (cm) | Y error (cm) | Z error (cm) | XY error (cm) | Total (cm) |
|---|---|---|---|---|---|
| 8 | 9.22033 | 6.84817 | 6.50153 | 11.4853 | 13.1978 |

Table 2. Control points RMSE.
X - Longitude, Y - Latitude, Z - Altitude.

| Label | X error (cm) | Y error (cm) | Z error (cm) | Total (cm) | Image (pix) |
|---|---|---|---|---|---|
| 1 | 17.1837 | -3.73764 | -0.352764 | 17.589 | 0.480 (41) |
| 2 | 1.15682e-008 | 6.63056e-010 | -1.12345e-009 | 1.16415e-008 | 0.149 (33) |
| 3 | -6.78144 | -9.72244 | 0.291812 | 11.8574 | 0.442 (56) |
| 4 | -10.3994 | 13.4604 | 0.0651881 | 17.0098 | 0.220 (55) |
| 6 | 6.80385 | 1.54605 | -9.20845 | 11.5533 | 0.276 (23) |
| 7 | -9.40936 | -5.84764 | 9.21189 | 14.408 | 0.351 (19) |
| 8 | -5.49765 | -2.30523 | 9.17196 | 10.9391 | 0.108 (46) |
| 9 | 8.10243 | 6.60317 | -9.17418 | 13.9074 | 0.073 (37) |
| **Total** | **9.22033** | **6.84817** | **6.50153** | **13.1978** | **0.304** |

Table 3. Control points.

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

# Digital Elevation Model

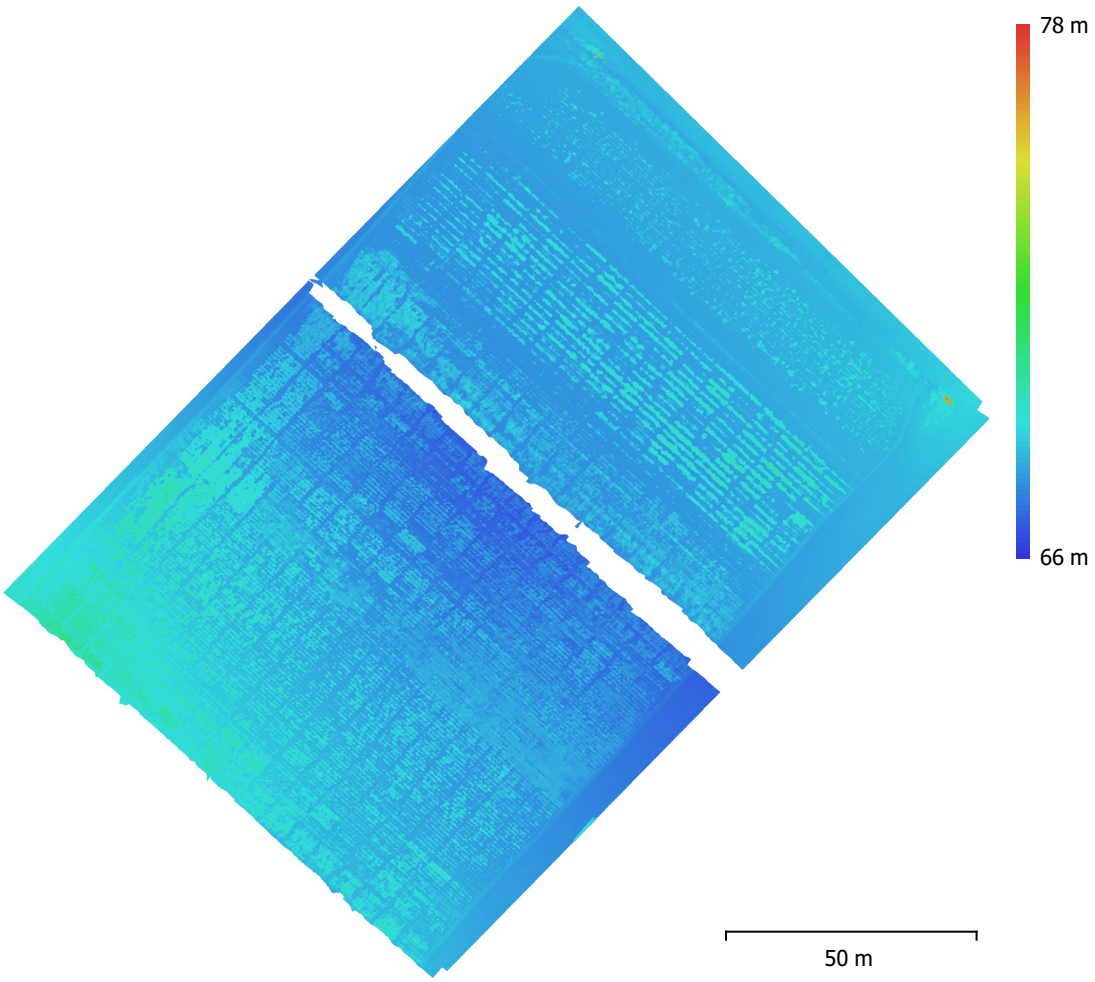



Fig. 4. Reconstructed digital elevation model.

| | |
|---|---|
| Resolution: | 1.38 cm/pix |
| Point density: | 0.521 points/cm² |

# Processing Parameters

| | |
|---|---|
| **General** | |
| Cameras | 623 |
| Aligned cameras | 623 |
| Markers | 8 |
| Coordinate system | WGS 84 (EPSG::4326) |
| Rotation angles | Yaw, Pitch, Roll |
| **Point Cloud** | |
| Points | 551,427 of 586,431 |
| RMS reprojection error | 0.181246 (0.597727 pix) |
| Max reprojection error | 2.48313 (21.1881 pix) |
| Mean key point size | 3.20834 pix |
| Point colors | 3 bands, uint8 |
| Key points | No |
| Average tie point multiplicity | 3.37255 |
| **Alignment parameters** | |
| Accuracy | High |
| Generic preselection | Yes |
| Reference preselection | Yes |
| Key point limit | 40,000 |
| Tie point limit | 4,000 |
| Adaptive camera model fitting | No |
| Matching time | 19 minutes 41 seconds |
| Alignment time | 11 minutes 57 seconds |
| **Optimization parameters** | |
| Parameters | f, b1, b2, cx, cy, k1-k4, p1-p4 |
| Adaptive camera model fitting | No |
| Optimization time | 27 seconds |
| Software version | 1.5.3.8469 |
| **Dense Point Cloud** | |
| Points | 266,538,659 |
| Point colors | 3 bands, uint8 |
| **Depth maps generation parameters** | |
| Quality | High |
| Filtering mode | Mild |
| Processing time | 4 hours 41 minutes |
| **Dense cloud generation parameters** | |
| Processing time | 4 hours 54 minutes |
| Software version | 1.5.3.8469 |
| **DEM** | |
| Size | 14,721 x 14,720 |
| Coordinate system | WGS 84 (EPSG::4326) |
| **Reconstruction parameters** | |
| Source data | Dense cloud |
| Interpolation | Enabled |
| Processing time | 2 minutes 23 seconds |
| Software version | 1.5.3.8469 |
| **Orthomosaic** | |
| Size | 28,676 x 28,228 |
| Coordinate system | WGS 84 (EPSG::4326) |
| Colors | 3 bands, uint8 |

**General**

**Reconstruction parameters**

| | |
|---|---|
| Blending mode | Mosaic |
| Surface | DEM |
| Enable hole filling | Yes |
| Processing time | 27 minutes 23 seconds |
| Software version | 1.5.3.8469 |

**Software**

| | |
|---|---|
| Version | 1.5.3 build 8469 |
| Platform | Windows 64 |