

# Sander\_2022-01-13\_H20T\_Thermal

Processing Report

28 June 2024



# Survey Data

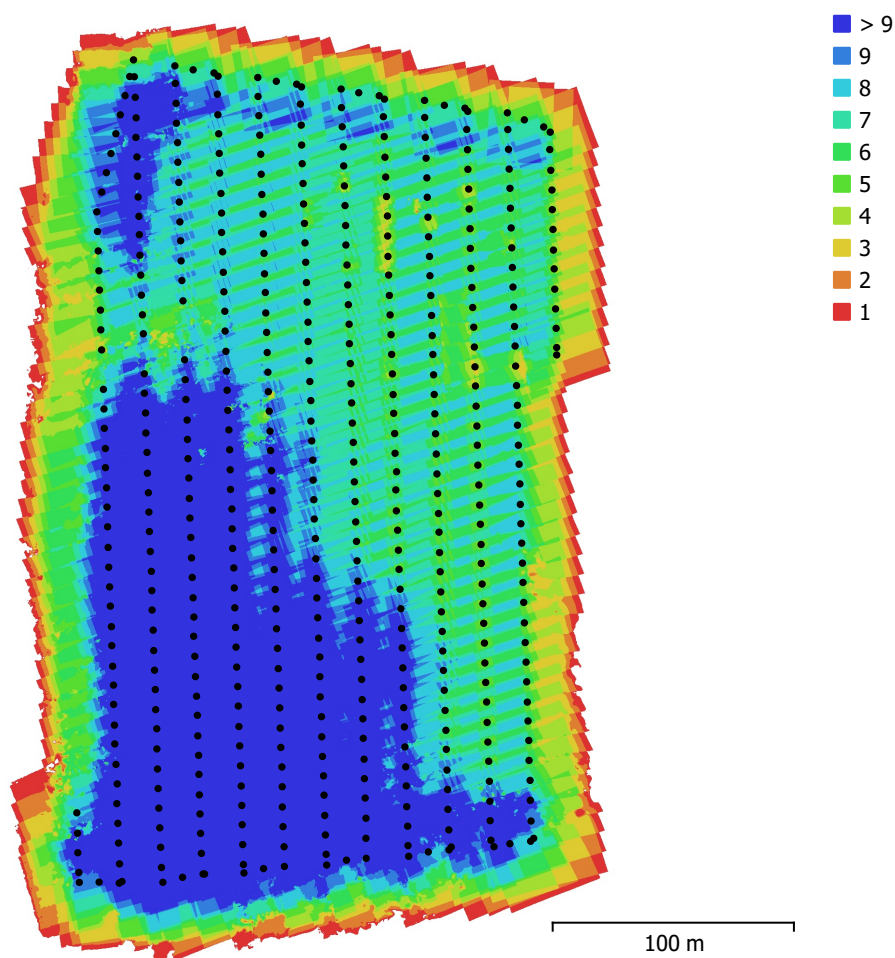


Fig. 1. Camera locations and image overlap.

Number of images:	490	Camera stations:	481
Flying altitude:	61.4 m	Tie points:	91,244
Ground resolution:	5.59 cm/pix	Projections:	280,438
Coverage area:	0.0838 km <sup>2</sup>	Reprojection error:	0.593 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
ZH20T (13.5mm)	640 x 512	13.5 mm	12.3 x 12.3 μm	No

Table 1. Cameras.

# Camera Calibration

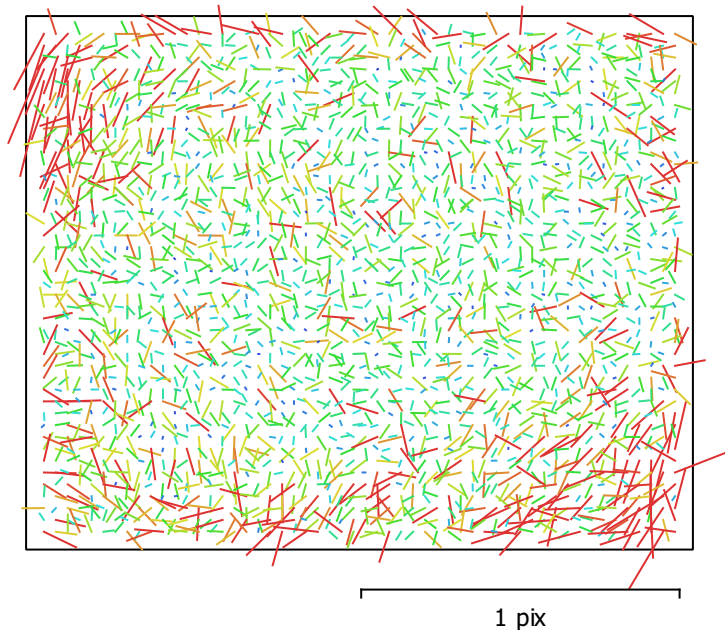


Fig. 2. Image residuals for ZH20T (13.5mm).

## ZH20T (13.5mm)

490 images

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>640 x 512</b>	<b>13.5 mm</b>	<b>12.3 x 12.3 μm</b>

	Value	Error	K1	P1	P2
<b>F</b>	<b>1098.69</b>				
<b>K1</b>	<b>-0.160814</b>	0.00028	1.00	0.06	0.02
<b>P1</b>	<b>-0.00126445</b>	3.4e-05		1.00	0.20
<b>P2</b>	<b>0.00156982</b>	3e-05			1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

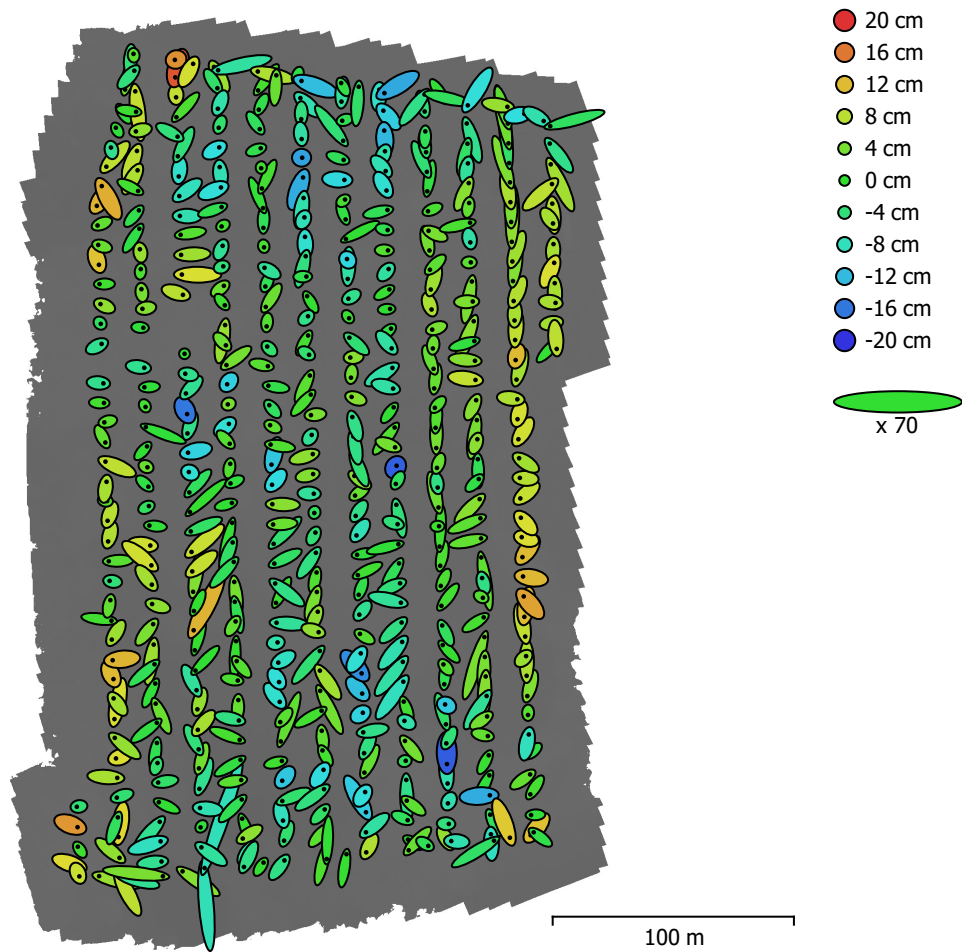


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

<b>X error (cm)</b>	<b>Y error (cm)</b>	<b>Z error (cm)</b>	<b>XY error (cm)</b>	<b>Total error (cm)</b>
7.66919	10.3906	5.962	12.9143	14.2241

Table 3. Average camera location error.

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

# Digital Elevation Model

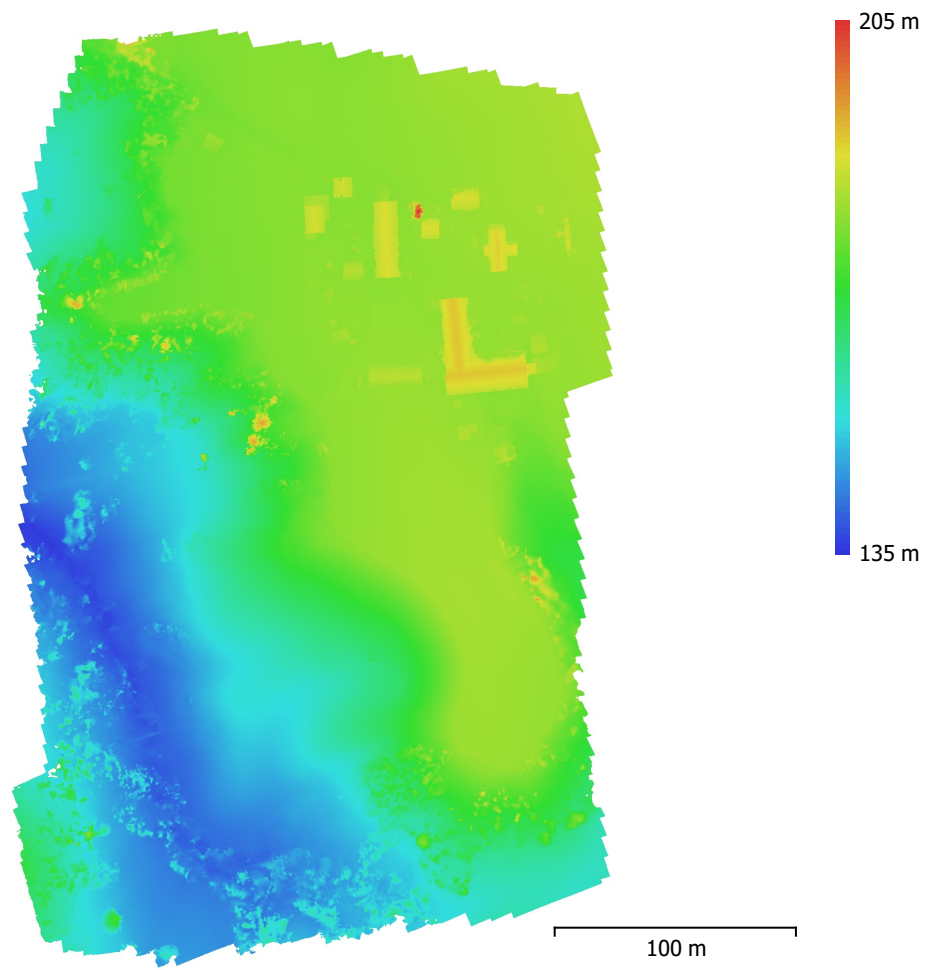


Fig. 4. Reconstructed digital elevation model.

Resolution: 5 cm/pix  
Point density: 400 points/m<sup>2</sup>

# Processing Parameters

## General

Cameras	490
Aligned cameras	481
Coordinate system	ETRS89 / UTM zone 32N + NN2000 height (EPSG::5972)
Rotation angles	Yaw, Pitch, Roll

## Tie Points

Points	91,244 of 105,549
RMS reprojection error	0.165657 (0.592682 pix)
Max reprojection error	0.500463 (11.2527 pix)
Mean key point size	3.36689 pix
Point colors	1 bands, uint16
Key points	No
Average tie point multiplicity	3.21135

## Alignment parameters

Accuracy	High
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	No
Adaptive camera model fitting	Yes
Matching time	24 seconds
Matching memory usage	204.53 MB
Alignment time	57 seconds
Alignment memory usage	231.79 MB
Date created	2024:06:28 11:27:11
Software version	2.1.0.17532
File size	17.81 MB

## Depth Maps

Count	472
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 minutes 44 seconds
Memory usage	221.50 MB
Date created	2024:06:28 11:38:24
Software version	2.1.0.17532
File size	32.72 MB

## DEM

Size	8,120 x 9,060
Coordinate system	ETRS89 / UTM zone 32N + NN2000 height (EPSG::5972)
File size	210.89 MB

## Orthomosaic

Size	5,360 x 8,180
Coordinate system	ETRS89 / UTM zone 32N + NN2000 height (EPSG::5972)
Colors	1 bands, uint16

## Reconstruction parameters

Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	25 seconds
Memory usage	886.27 MB
Date created	2024:06:28 11:49:55
Software version	2.1.0.17532
File size	640.05 MB

**System**

Software name	Agisoft Metashape Professional
Software version	2.1.0 build 17532
OS	Windows 64 bit
RAM	127.15 GB
CPU	AMD Ryzen 9 7950X 16-Core Processor
GPU(s)	NVIDIA GeForce RTX 4080 SUPER