

# Svenskehuset Valley

Processing Report  
26 February 2021



# Survey Data

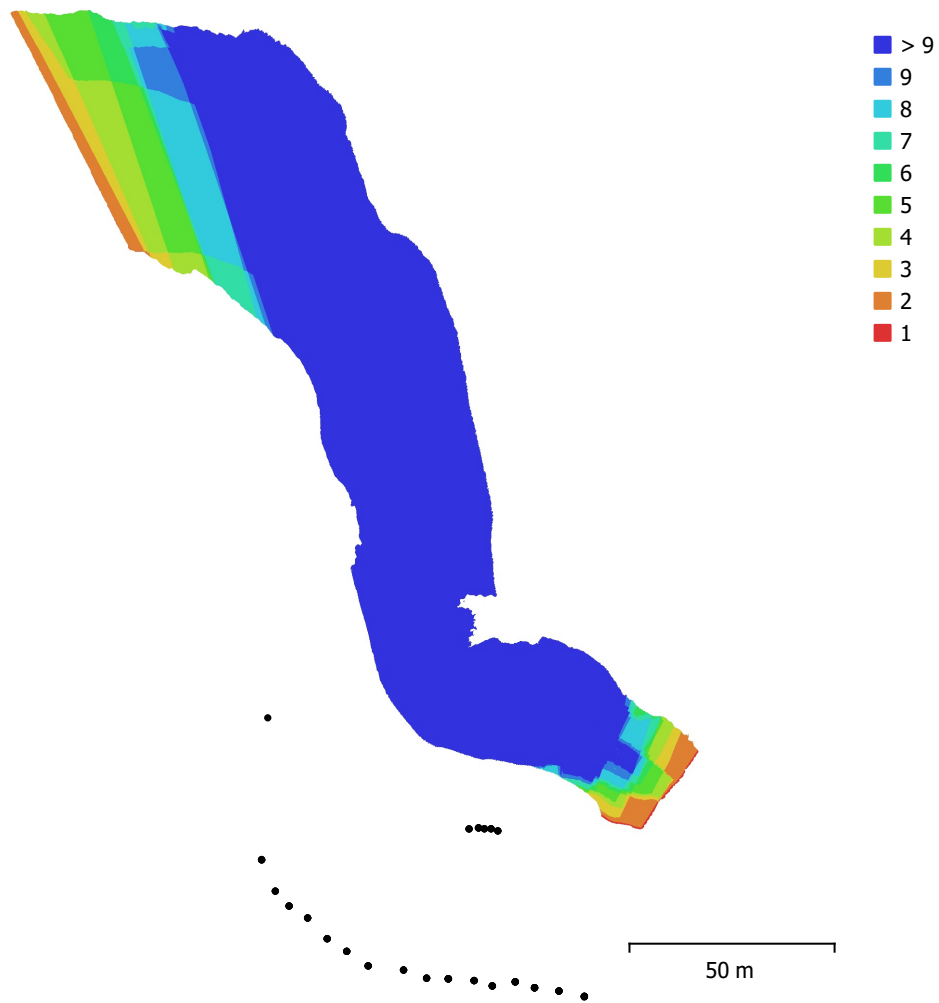


Fig. 1. Camera locations and image overlap.

Number of images:	94	Camera stations:	94
Flying altitude:	76.2 m	Tie points:	34,415
Ground resolution:	8.55 mm/pix	Projections:	353,966
Coverage area:	9.41e+03 m <sup>2</sup>	Reprojection error:	0.305 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D90 (50mm)	4288 x 2848	50 mm	5.6 x 5.6 μm	No

Table 1. Cameras.

# Camera Calibration

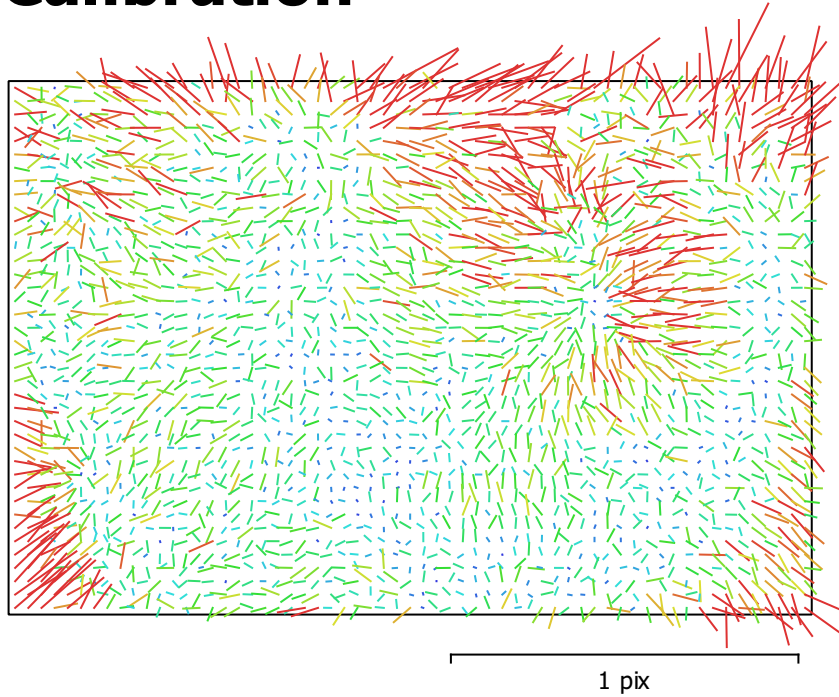


Fig. 2. Image residuals for NIKON D90 (50mm).

## NIKON D90 (50mm)

94 images

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>4288 x 2848</b>	<b>50 mm</b>	<b>5.6 x 5.6 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>9023.83</b>	0.23	1.00	-0.19	-0.36	0.06	0.02	-0.02	-0.19	-0.33
<b>Cx</b>	<b>-26.3738</b>	0.49		1.00	0.23	-0.01	-0.00	-0.00	0.98	0.24
<b>Cy</b>	<b>-19.7103</b>	0.32			1.00	-0.09	0.05	-0.05	0.22	0.89
<b>K1</b>	<b>-0.00479442</b>	0.00018				1.00	-0.97	0.92	-0.01	-0.08
<b>K2</b>	<b>0.0946546</b>	0.0053					1.00	-0.98	0.00	0.04
<b>K3</b>	<b>-0.260652</b>	0.046						1.00	-0.00	-0.04
<b>P1</b>	<b>-0.000362416</b>	1.6e-05							1.00	0.25
<b>P2</b>	<b>-0.000231782</b>	8.5e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

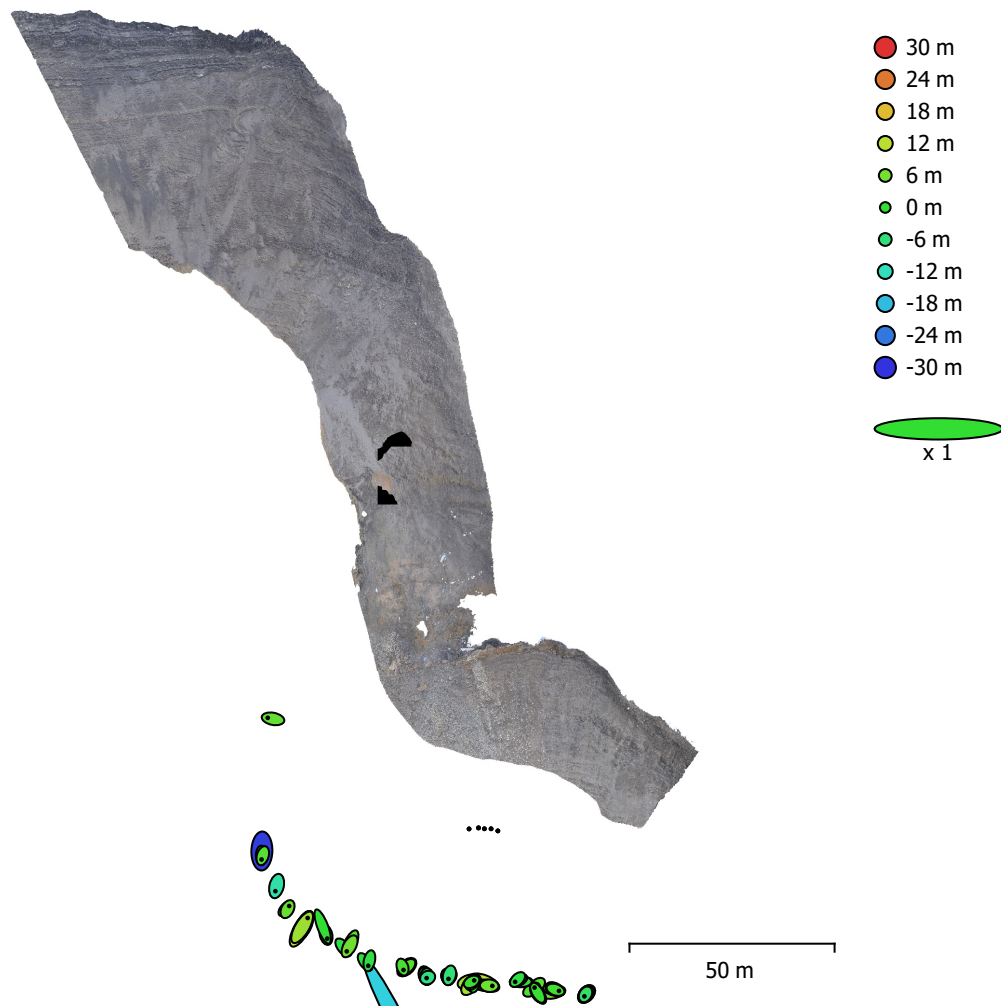


Fig. 3. Camera locations and error estimates.  
 Z error is represented by ellipse color. X, Y errors are represented by ellipse shape.  
 Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
2.2849	3.72744	6.75577	4.37202	8.04705

Table 3. Average camera location error.  
 X - Longitude, Y - Latitude, Z - Altitude.

# Digital Elevation Model

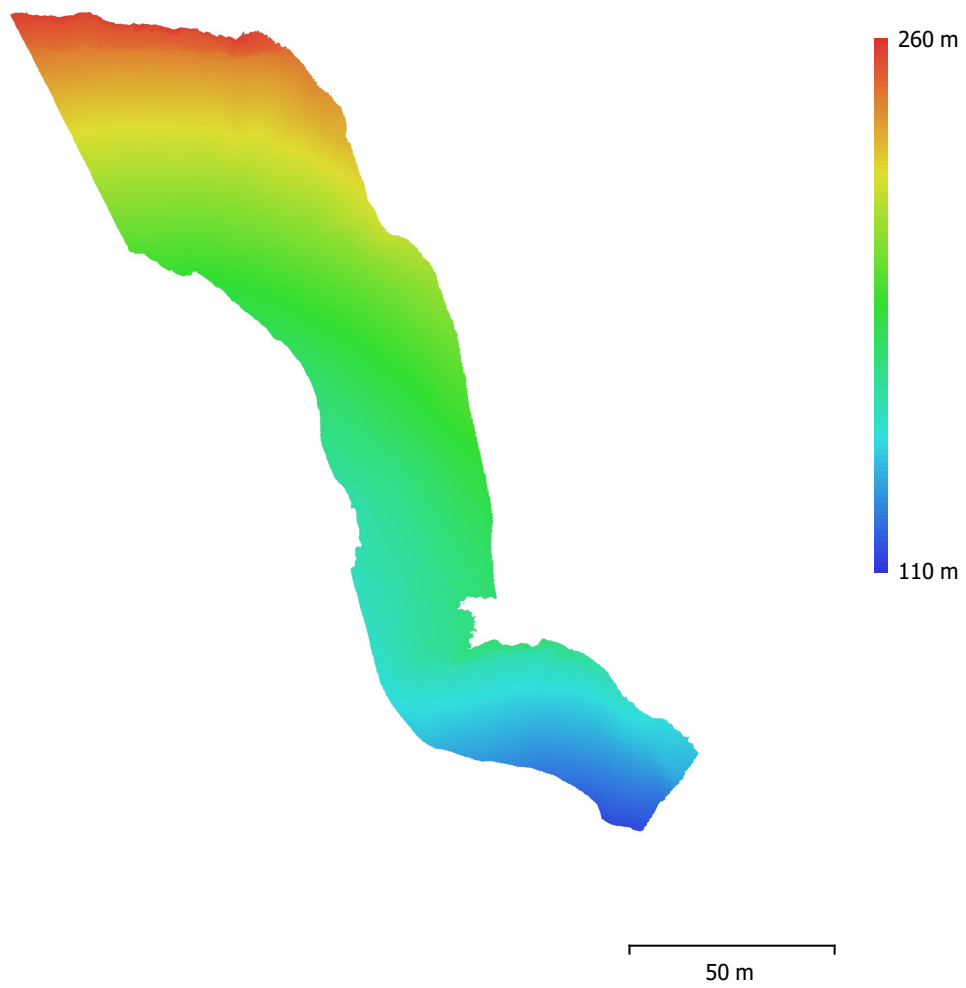


Fig. 4. Reconstructed digital elevation model.

Resolution: 1.71 cm/pix  
Point density: 0.342 points/cm<sup>2</sup>

# Processing Parameters

## General

Cameras	94
Aligned cameras	94
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	34,415 of 45,375
RMS reprojection error	0.114998 (0.30478 pix)
Max reprojection error	0.347235 (6.26772 pix)
Mean key point size	2.55871 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	10.92

## Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Guided image matching	No
Adaptive camera model fitting	No
Matching time	8 minutes 34 seconds
Matching memory usage	360.64 MB
Alignment time	41 seconds
Alignment memory usage	49.60 MB
Software version	1.6.1.10009
File size	8.49 MB

## Depth Maps

Count	94
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Processing time	32 minutes 47 seconds
Memory usage	1.83 GB
Software version	1.6.1.10009
File size	267.96 MB

## Dense Point Cloud

Points	62,395,099
Point colors	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Processing time	32 minutes 47 seconds
Memory usage	1.83 GB
<b>Dense cloud generation parameters</b>	
Processing time	31 minutes 30 seconds
Memory usage	7.28 GB
Software version	1.6.1.10009
File size	776.25 MB

## Model

Faces	1,722,240
Vertices	866,709
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Processing time	32 minutes 47 seconds
Memory usage	1.83 GB
<b>Reconstruction parameters</b>	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	1 hours 2 minutes
Memory usage	33.19 GB
<b>Texturing parameters</b>	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	5 minutes 12 seconds
Blending time	10 minutes 10 seconds
Software version	1.6.1.10009
File size	252.10 MB
<b>Tiled Model</b>	
Texture	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Processing time	32 minutes 47 seconds
Memory usage	1.83 GB
<b>Reconstruction parameters</b>	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	40 minutes 10 seconds
Memory usage	3.01 GB
Software version	1.7.1.11797
File size	320.07 MB
<b>System</b>	
Software name	Agisoft Metashape Professional
Software version	1.7.1 build 11797
OS	Windows 64 bit
RAM	127.78 GB
CPU	Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2080