

# KonusdalenWest\_processing\_report

Processing Report  
20 February 2021



# Survey Data

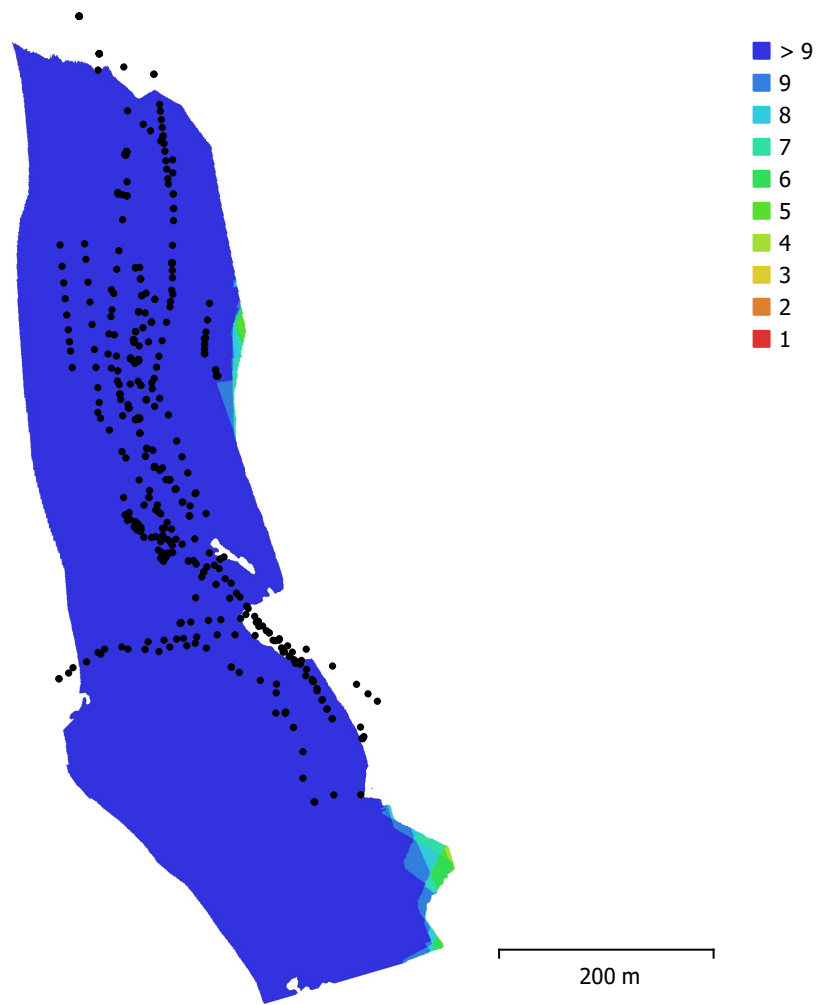


Fig. 1. Camera locations and image overlap.

Number of images:	479	Camera stations:	478
Flying altitude:	76.2 m	Tie points:	334,290
Ground resolution:	1.63 cm/pix	Projections:	1,745,376
Coverage area:	0.175 km <sup>2</sup>	Reprojection error:	1.02 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
L1D-20c (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 $\mu$ m	No

Table 1. Cameras.

# Camera Calibration

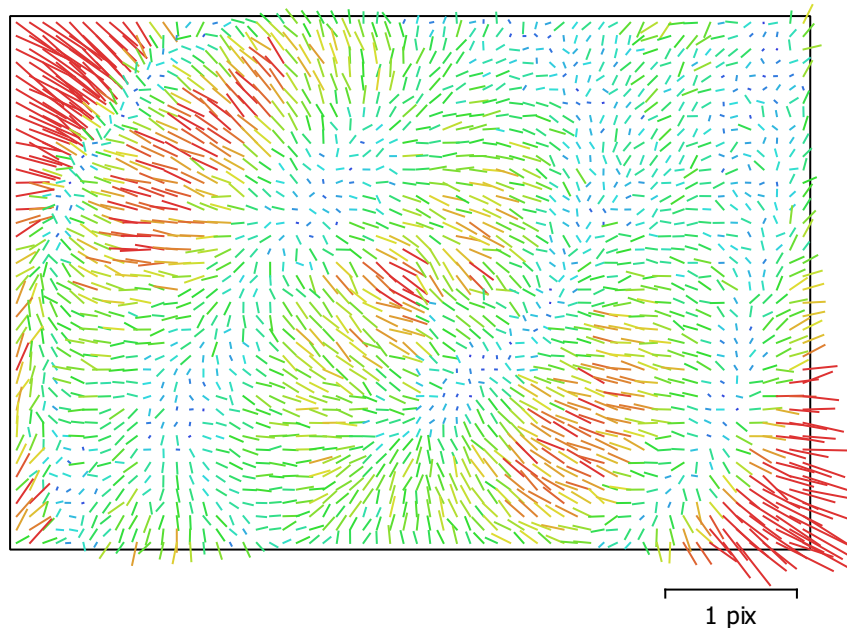


Fig. 2. Image residuals for L1D-20c (10.26mm).

## L1D-20c (10.26mm)

479 images

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>5472 x 3648</b>	<b>10.26 mm</b>	<b>2.41 x 2.41 <math>\mu\text{m}</math></b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>B1</b>	<b>0.730759</b>									
<b>B2</b>	<b>-0.206359</b>									
<b>F</b>	<b>4347.58</b>	0.036	1.00	0.07	-0.61	-0.12	0.18	-0.16	0.02	-0.37
<b>Cx</b>	<b>2.71614</b>	0.046		1.00	-0.04	0.01	-0.00	0.00	0.94	0.01
<b>Cy</b>	<b>-50.4773</b>	0.048			1.00	-0.08	0.01	-0.01	0.00	0.83
<b>K1</b>	<b>0.00518286</b>	3e-05				1.00	-0.97	0.91	0.01	-0.10
<b>K2</b>	<b>0.0323125</b>	0.00013					1.00	-0.98	-0.00	0.02
<b>K3</b>	<b>-0.0336523</b>	0.00016						1.00	0.00	-0.03
<b>P1</b>	<b>-0.000368325</b>	3.3e-06							1.00	0.02
<b>P2</b>	<b>-0.00341851</b>	2.8e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

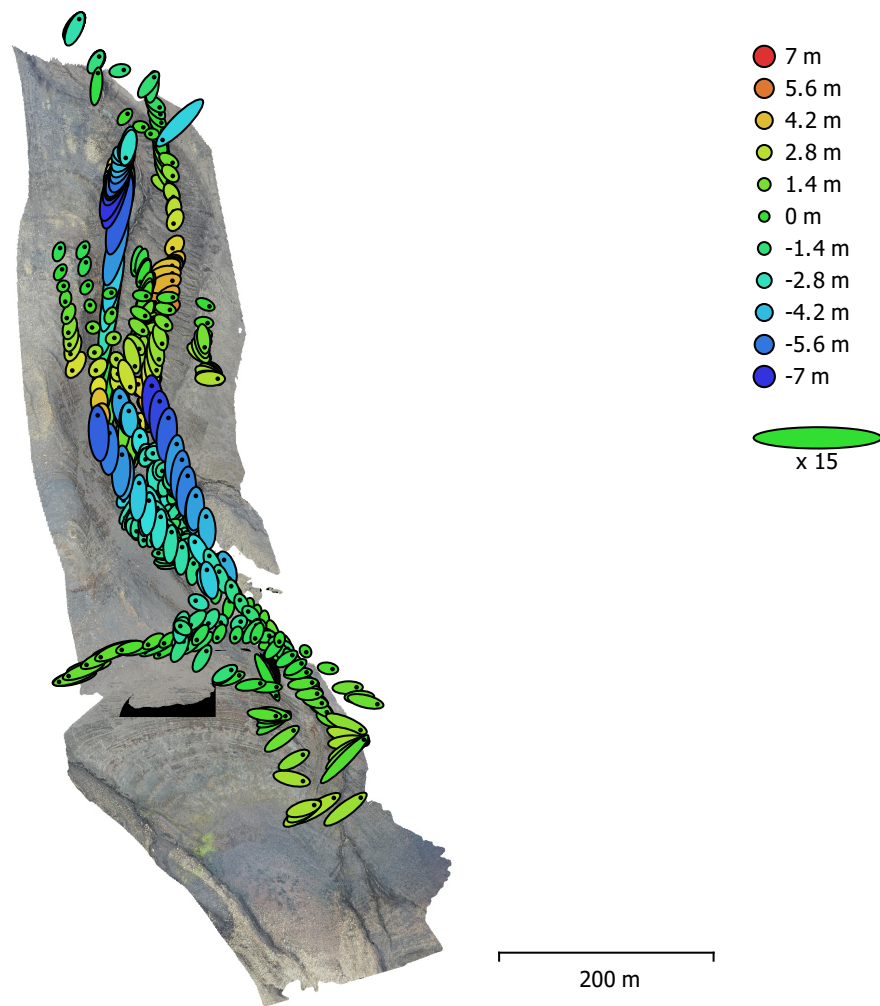


Fig. 3. Camera locations and error estimates.

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)
0.710116	1.04812	2.73245	1.26603	3.01149

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

# Digital Elevation Model

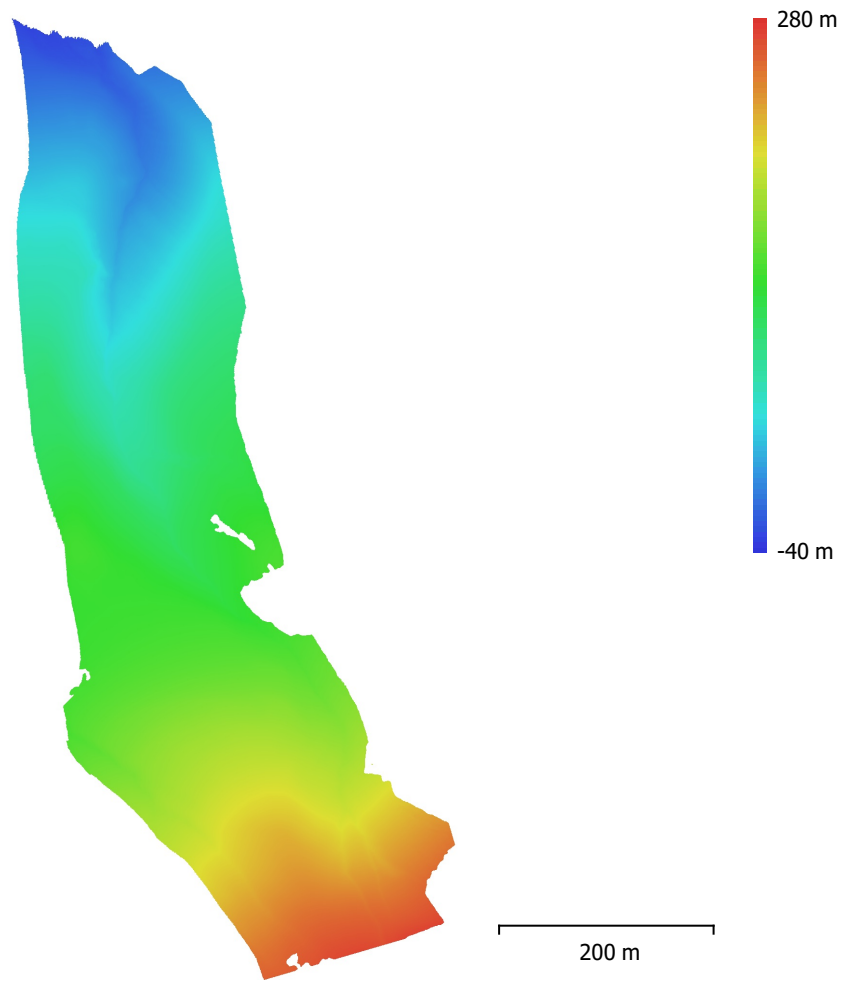


Fig. 4. Reconstructed digital elevation model.

Resolution: 6.61 cm/pix  
Point density: 229 points/m<sup>2</sup>

# Processing Parameters

## General

Cameras	479
Aligned cameras	478
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	334,290 of 388,368
RMS reprojection error	0.125892 (1.01963 pix)
Max reprojection error	0.449284 (27.2159 pix)
Mean key point size	7.01901 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	5.71029

## Alignment parameters

Accuracy	Medium
Generic preselection	Yes
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	27 minutes 11 seconds
Alignment time	3 minutes 22 seconds

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	9 seconds
File size	42.66 MB

## Depth Maps

Count	478
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## Depth maps generation parameters

Quality	Medium
Filtering mode	Mild
Processing time	10 minutes 24 seconds
Memory usage	2.99 GB
Software version	1.7.1.11797
File size	796.17 MB

## Dense Point Cloud

Points	62,948,818
Point colors	3 bands, uint8

## Depth maps generation parameters

Quality	Medium
Filtering mode	Mild
Processing time	10 minutes 24 seconds
Memory usage	2.99 GB

## Dense cloud generation parameters

Processing time	26 minutes 13 seconds
Memory usage	6.83 GB
Software version	1.7.1.11797
File size	921.76 MB

## Model

Faces	8,284,735
Vertices	4,148,911
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096, 4 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	Medium
Filtering mode	Mild
<b>Reconstruction parameters</b>	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Processing time	48 minutes 51 seconds
<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	2 minutes 9 seconds
Blending time	24 minutes 46 seconds
File size	378.47 MB
<b>Tiled Model</b>	
Texture	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	Medium
Filtering mode	Mild
Processing time	10 minutes 24 seconds
Memory usage	2.99 GB
<b>Reconstruction parameters</b>	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	1 hours 12 minutes
Memory usage	4.83 GB
Software version	1.7.1.11797
File size	1.54 GB
<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