

# FortetBlockEast

Processing Report  
23 February 2021



# Survey Data

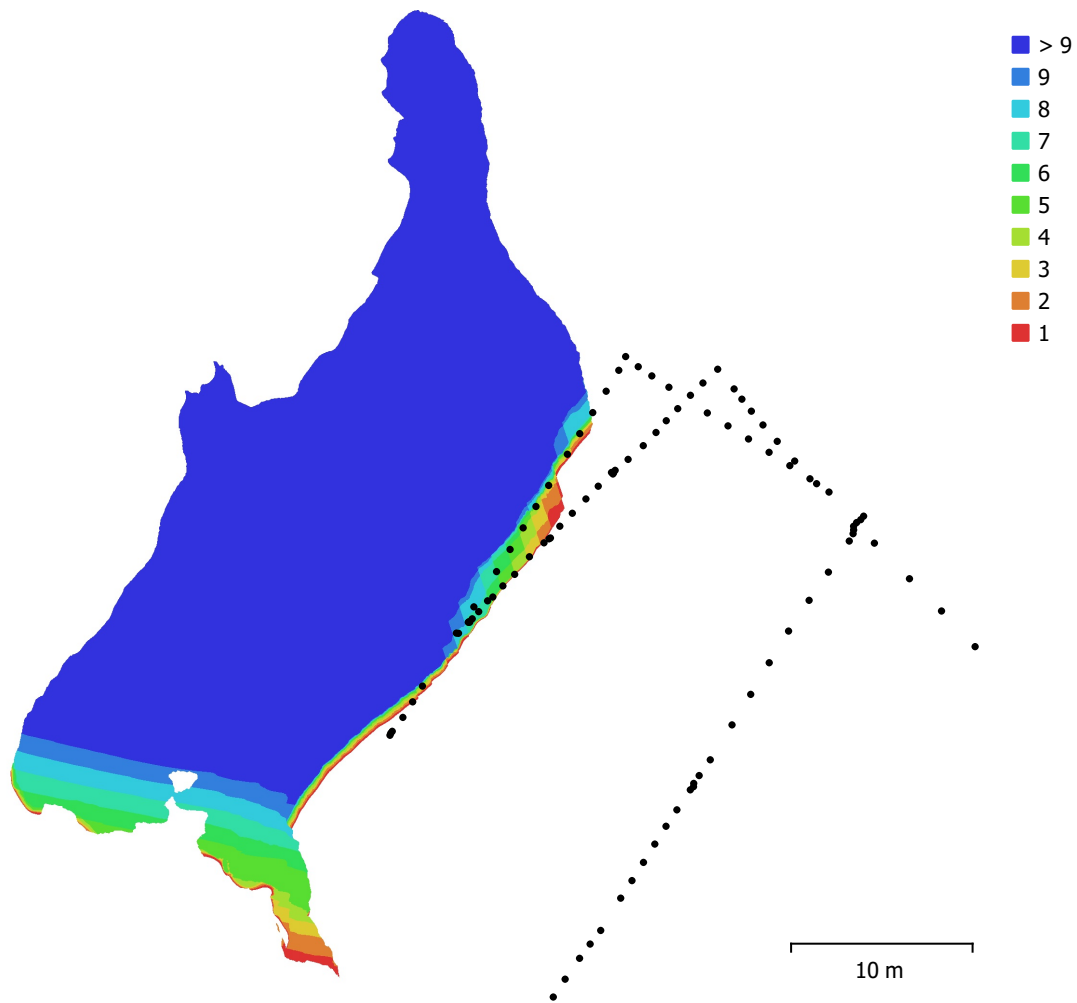


Fig. 1. Camera locations and image overlap.

Number of images:	99	Camera stations:	99
Flying altitude:	20 m	Tie points:	37,659
Ground resolution:	9.12 mm/pix	Projections:	290,047
Coverage area:	656 m <sup>2</sup>	Reprojection error:	0.619 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
unknown	2688 x 1512	unknown	unknown	No

Table 1. Cameras.

# Camera Calibration

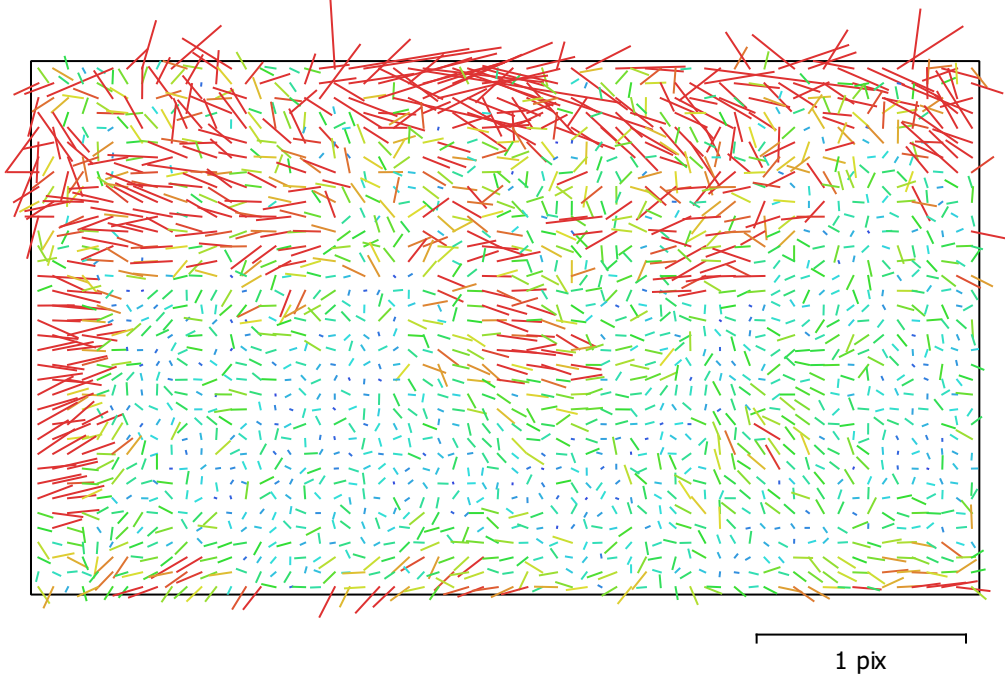


Fig. 2. Image residuals for unknown.

**unknown**

99 images

Type  
**Frame**

Resolution  
**2688 x 1512**

Focal Length  
**unknown**

Pixel Size  
**unknown**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>2206.4</b>	0.12	1.00	-0.13	-0.40	0.08	0.10	-0.09	-0.18	-0.23
<b>Cx</b>	<b>-13.3148</b>	0.3		1.00	-0.08	-0.05	-0.00	0.00	0.95	0.03
<b>Cy</b>	<b>0.490417</b>	0.21			1.00	-0.10	0.03	-0.03	0.00	0.75
<b>K1</b>	<b>0.00335599</b>	0.00012				1.00	-0.94	0.89	-0.06	-0.16
<b>K2</b>	<b>0.0353116</b>	0.00056					1.00	-0.98	-0.00	0.07
<b>K3</b>	<b>-0.0403463</b>	0.00081						1.00	0.00	-0.06
<b>P1</b>	<b>-0.000183056</b>	3.8e-05							1.00	0.05
<b>P2</b>	<b>-0.0027726</b>	1.8e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

# Ground Control Points

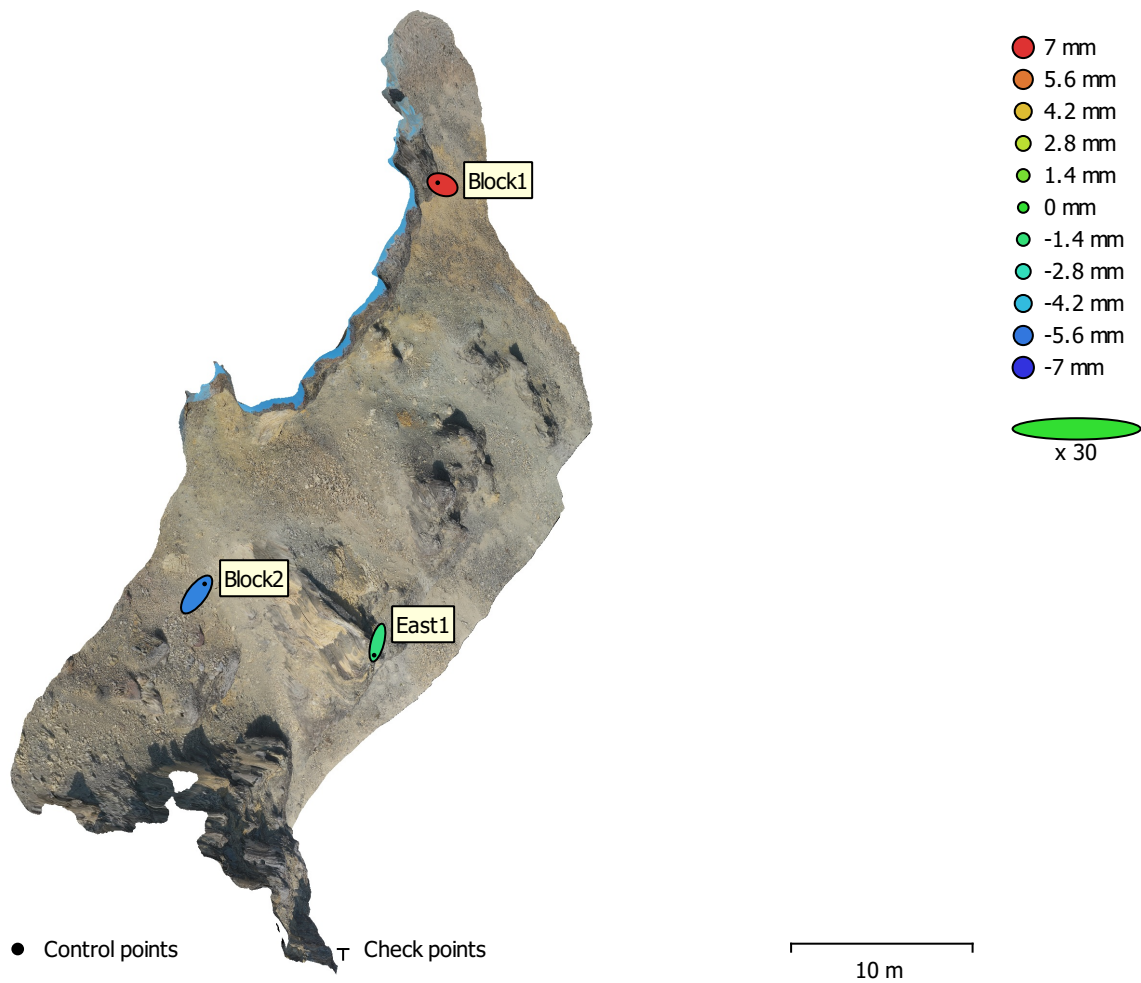


Fig. 3. GCP locations and error estimates.

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
3	2.08847	3.50598	0.513288	4.08089	4.11304

Table 3. Control points RMSE.

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

<b>Label</b>	<b>X error (cm)</b>	<b>Y error (cm)</b>	<b>Z error (cm)</b>	<b>Total (cm)</b>	<b>Image (pix)</b>
Block1	-1.73991	0.724788	0.692245	2.00793	0.084 (66)
Block2	2.93686	3.88541	-0.535317	4.89981	0.444 (16)
East1	-1.19696	-4.6102	-0.156928	4.76564	0.312 (18)
<b>Total</b>	<b>2.08847</b>	<b>3.50598</b>	<b>0.513288</b>	<b>4.11304</b>	<b>0.232</b>

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

# Digital Elevation Model

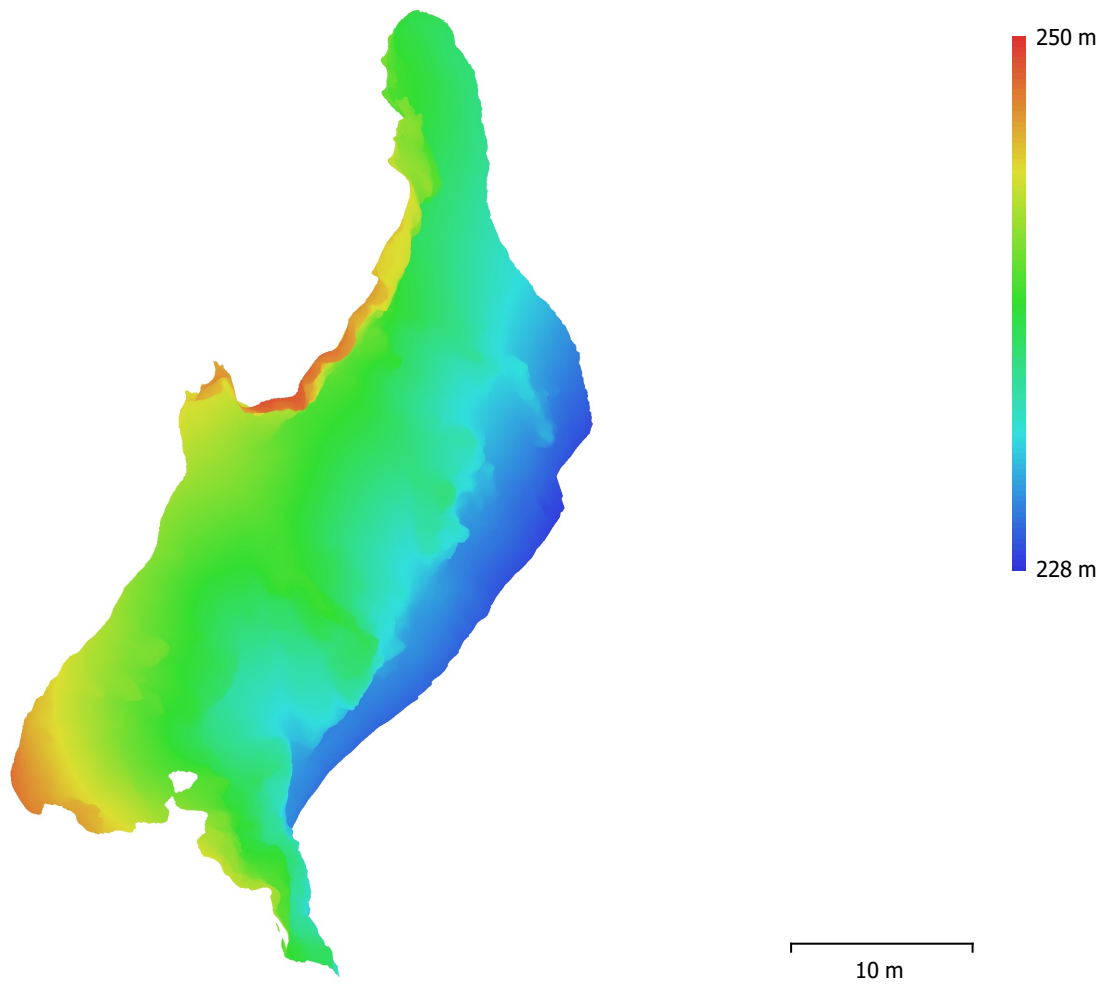


Fig. 4. Reconstructed digital elevation model.

Resolution: 1.82 cm/pix  
Point density: 0.301 points/cm<sup>2</sup>

# Processing Parameters

## General

Cameras	99
Aligned cameras	99
Markers	3
Coordinate system	WGS 84 / UTM zone 33N (EPSG::32633)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	37,659 of 45,599
RMS reprojection error	0.169973 (0.61937 pix)
Max reprojection error	0.52538 (21.1749 pix)
Mean key point size	3.28379 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	9.52718

## 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	24 seconds
Matching memory usage	276.48 MB
Alignment time	51 seconds
Alignment memory usage	54.80 MB
Software version	1.6.1.10009
File size	7.63 MB

## Depth Maps

Count	99
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Aggressive
Processing time	11 minutes 5 seconds
Memory usage	1.11 GB
Software version	1.6.1.10009
File size	105.32 MB

## Dense Point Cloud

Points	3,742,821
Point colors	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Aggressive
Processing time	11 minutes 5 seconds
Memory usage	1.11 GB
<b>Dense cloud generation parameters</b>	
Processing time	6 minutes 31 seconds
Memory usage	3.83 GB
Software version	1.6.1.10009
File size	112.20 MB

**Model**

Faces	748,563
Vertices	375,776
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 25, 4 bands, uint8

**Depth maps generation parameters**

Quality	High
Filtering mode	Aggressive
Processing time	11 minutes 5 seconds
Memory usage	1.11 GB

**Reconstruction parameters**

Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	3 minutes 35 seconds
Memory usage	2.03 GB

**Texturing parameters**

Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	10 minutes 29 seconds
Blending time	7 minutes 10 seconds
Software version	1.6.1.10009
File size	297.46 MB

**Tiled Model**

Texture	3 bands, uint8
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**Depth maps generation parameters**

Quality	High
Filtering mode	Aggressive
Processing time	11 minutes 5 seconds
Memory usage	1.11 GB

**Reconstruction parameters**

Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	2 minutes 19 seconds
Memory usage	1.71 GB
Software version	1.7.1.11797
File size	24.79 MB

**Orthomosaic**

Size	4,773 x 3,059
Coordinate system	WGS 84 (EPSG::4978)
Colors	3 bands, uint8

**Reconstruction parameters**

Blending mode	Mosaic
Surface	Mesh
Enable hole filling	Yes
Processing time	26 seconds
Memory usage	1.30 GB
Software version	1.6.1.10009
File size	317.25 MB

**System**



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