

# Malá studená dolina - september 2017

Processing Report

08 January 2018



# Survey Data

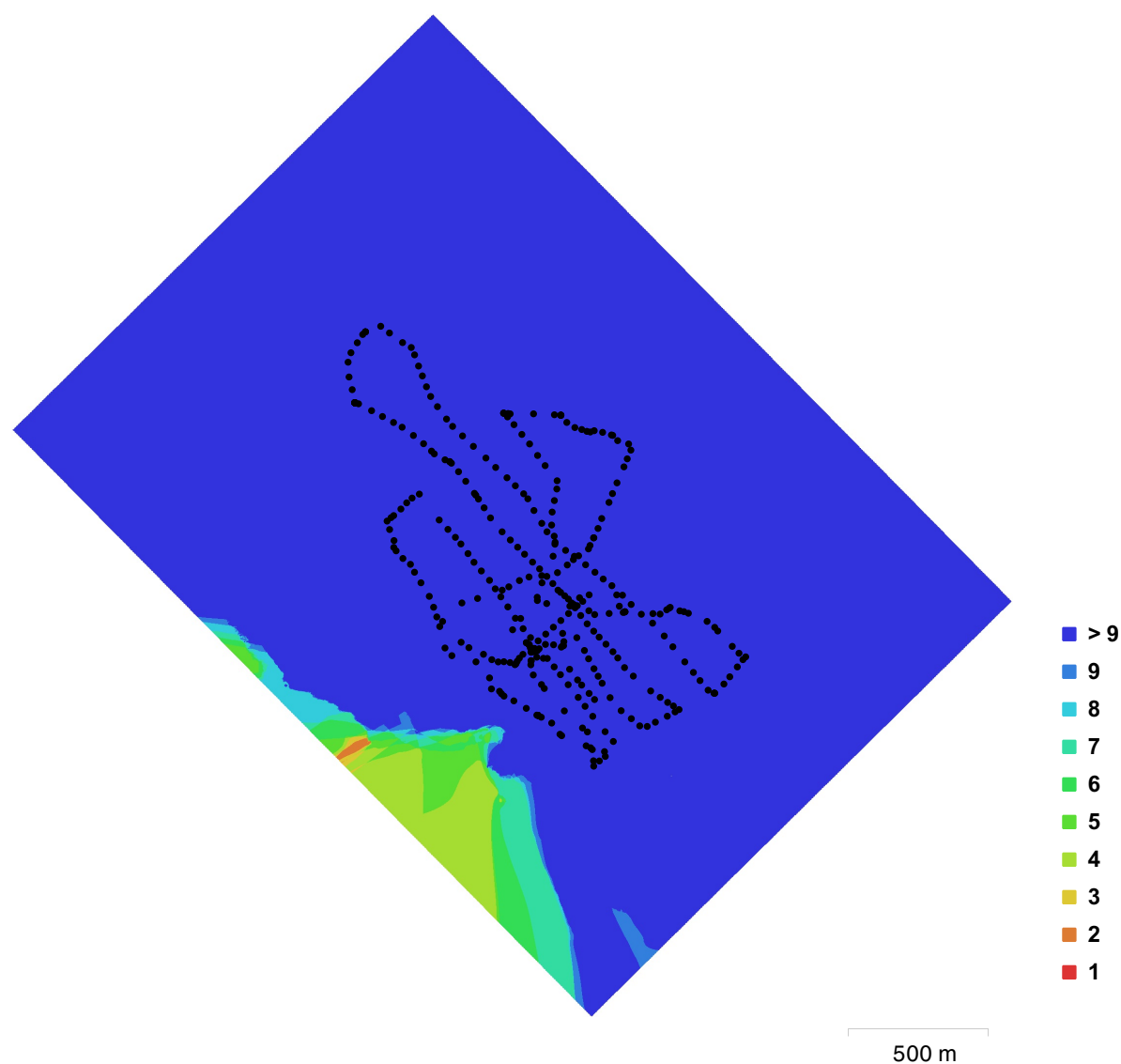


Fig. 1. Camera locations and image overlap.

Number of images:	352	Camera stations:	352
Flying altitude:	464 m	Tie points:	44,796
Ground resolution:	17.1 cm/pix	Projections:	390,526
Coverage area:	6.26 km <sup>2</sup>	Reprojection error:	0.721 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC330 (3.61 mm)	4000 x 3000	3.61 mm	1.56 x 1.56 μm	No

Table 1. Cameras.

# Camera Calibration

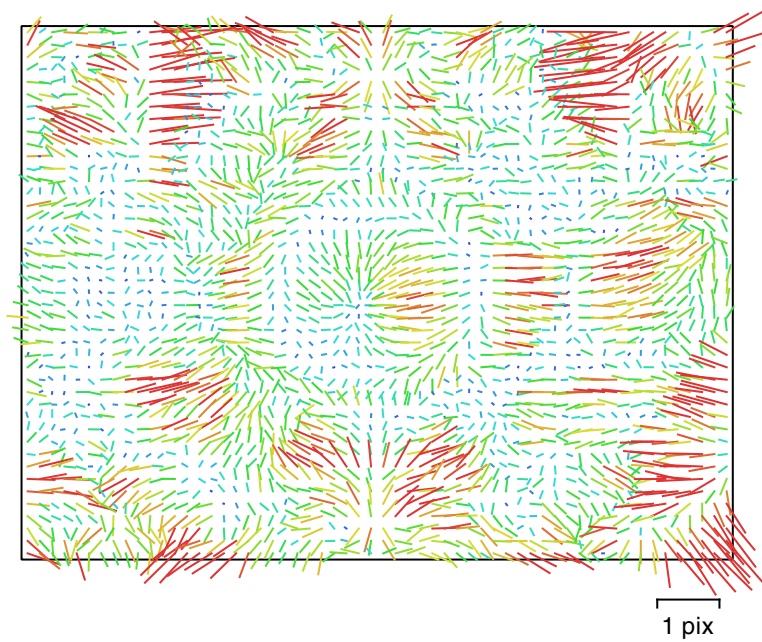


Fig. 2. Image residuals for FC330 (3.61 mm).

**FC330 (3.61 mm)**

352 images

Type  
Frame

Resolution  
**4000 x 3000**

Focal Length  
**3.61 mm**

Pixel Size  
**1.56 x 1.56  $\mu\text{m}$**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	P1	P2
<b>F</b>	<b>2331.23</b>	0.024	1.00	-0.02	-0.28	-0.20	0.02	-0.28	0.32	-0.29	-0.02	-0.11
<b>Cx</b>	<b>60.6893</b>	0.02		1.00	0.03	0.04	0.18	0.01	-0.01	0.01	0.84	0.07
<b>Cy</b>	<b>-13.5572</b>	0.021			1.00	-0.22	-0.00	-0.06	0.01	-0.01	0.02	0.72
<b>B1</b>	<b>-2.57437</b>	0.006				1.00	-0.01	0.03	-0.05	0.06	0.05	-0.03
<b>B2</b>	<b>0.211549</b>	0.006					1.00	0.00	-0.00	0.00	-0.00	0.06
<b>K1</b>	<b>-0.00205224</b>	3e-05						1.00	-0.96	0.90	0.01	-0.04
<b>K2</b>	<b>-0.004572</b>	6.1e-05							1.00	-0.98	-0.02	-0.00
<b>K3</b>	<b>0.00272172</b>	3.8e-05								1.00	0.03	0.00
<b>P1</b>	<b>0.000606179</b>	2.7e-06									1.00	0.05
<b>P2</b>	<b>-0.000115097</b>	2.5e-06										1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

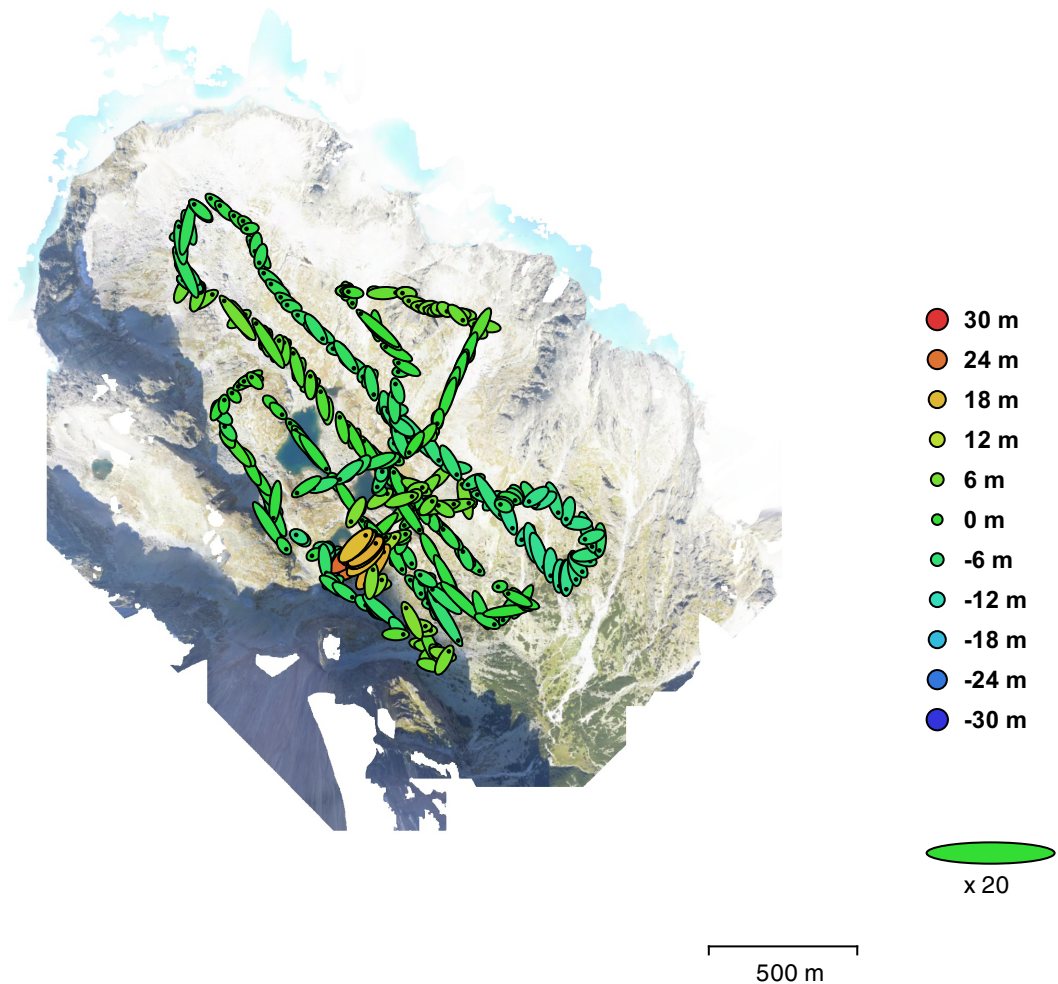


Fig. 3. Camera locations and error estimates.

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)
2.14922	2.57934	6.08209	3.3574	6.94723

Table 3. Average camera location error.

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

# Digital Elevation Model

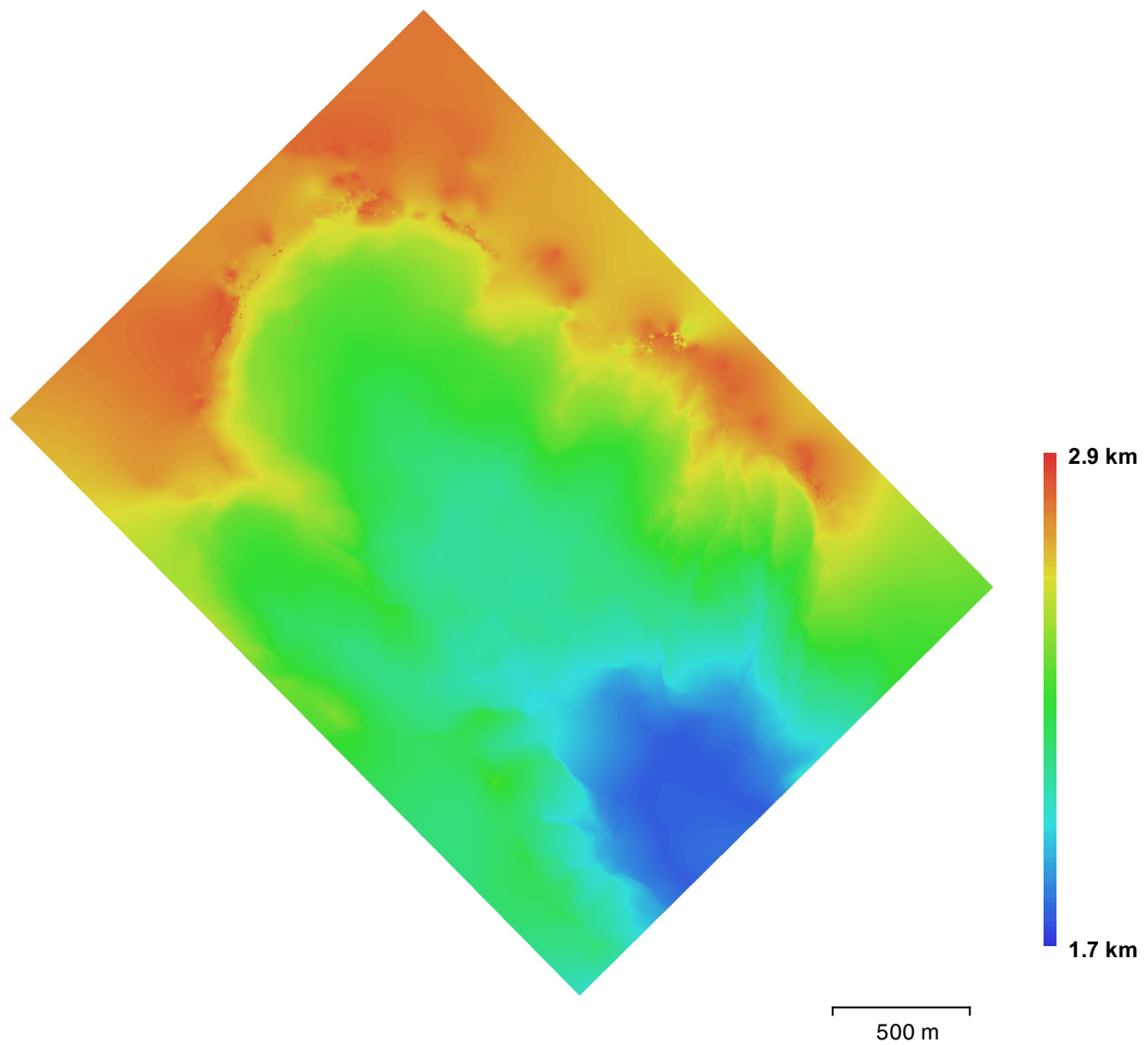


Fig. 4. Reconstructed digital elevation model.

Resolution:	68.2 cm/pix
Point density:	2.15 points/m <sup>2</sup>

# Processing Parameters

## General

Cameras	352
Aligned cameras	352
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	44,796 of 54,085
RMS reprojection error	0.230754 (0.721028 pix)
Max reprojection error	0.695375 (23.8223 pix)
Mean key point size	3.03123 pix
Effective overlap	11.549

## Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Yes
Key point limit	50,000
Tie point limit	1,000
Adaptive camera model fitting	Yes
Matching time	39 minutes 6 seconds
Alignment time	3 minutes 17 seconds

## Dense Point Cloud

Points	13,186,586
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## Reconstruction parameters

Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	6 hours 7 minutes
Dense cloud generation time	43 minutes 8 seconds

## DEM

Size	5,259 x 5,270
Coordinate system	WGS 84 (EPSG::4326)

## Reconstruction parameters

Source data	Dense cloud
Interpolation	Enabled
Processing time	20 seconds

## Orthomosaic

Size	35,869 x 35,948
Coordinate system	WGS 84 (EPSG::4326)
Channels	3, uint8

## Reconstruction parameters

Blending mode	Mosaic
Surface	DEM
Enable color correction	No
Enable hole filling	Yes
Processing time	9 minutes 57 seconds

## Software

Version	1.3.3 build 4827
Platform	Windows 64