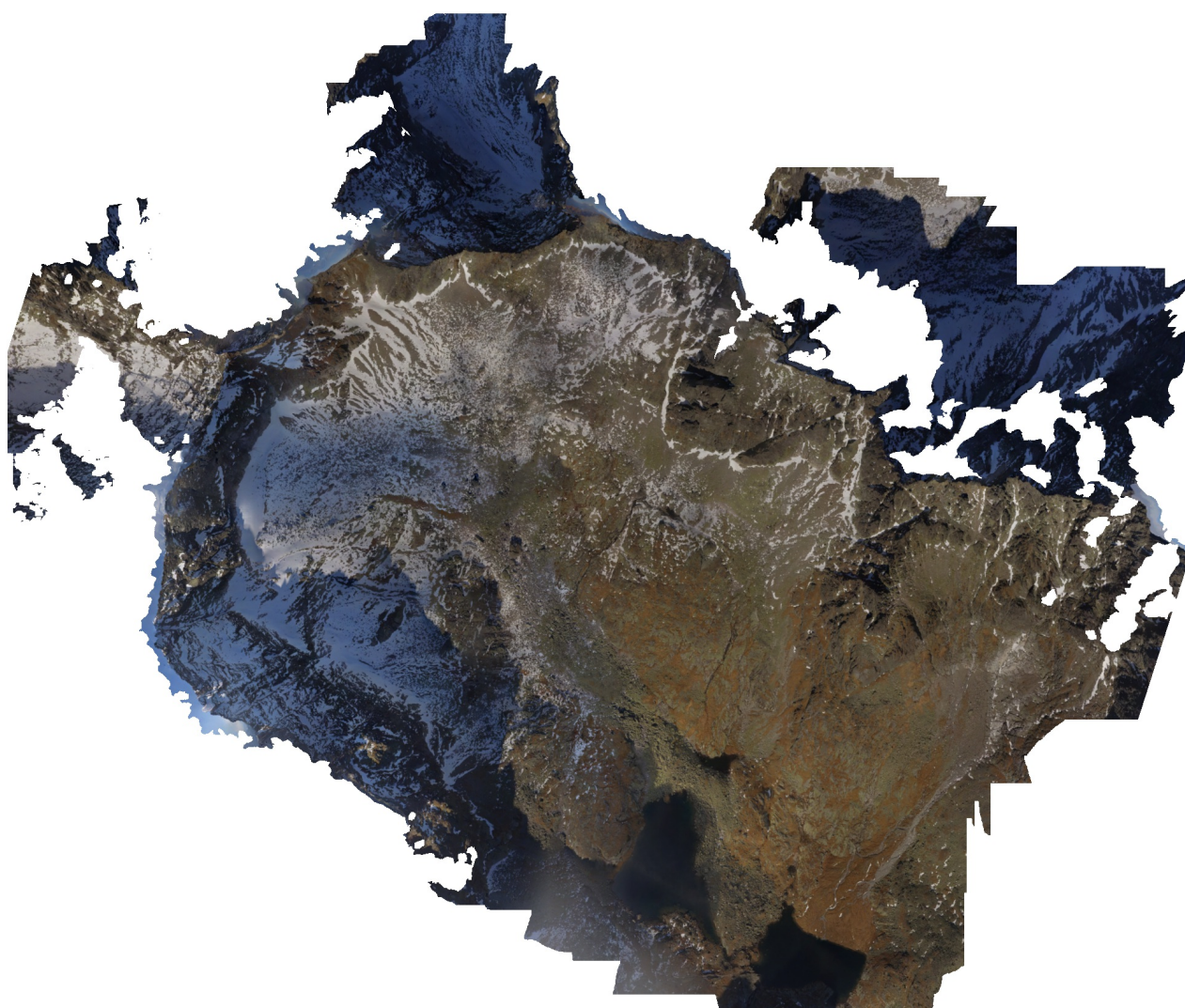


# Malá studená dolina - október 2017

Processing Report

08 January 2018



# Survey Data

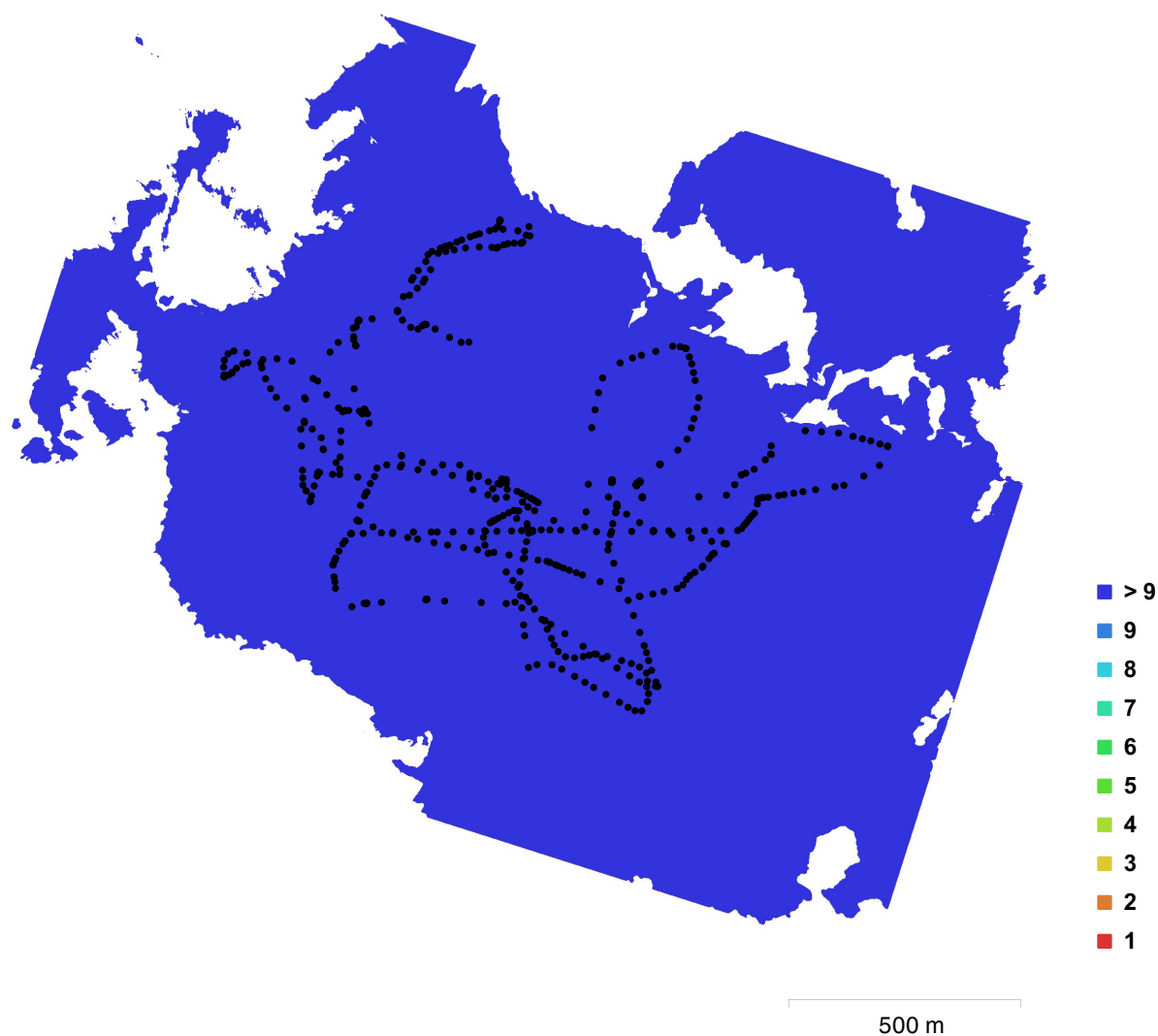


Fig. 1. Camera locations and image overlap.

Number of images:	618	Camera stations:	610
Flying altitude:	258 m	Tie points:	376,981
Ground resolution:	9.63 cm/pix	Projections:	2,200,646
Coverage area:	2.4 km <sup>2</sup>	Reprojection error:	0.78 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

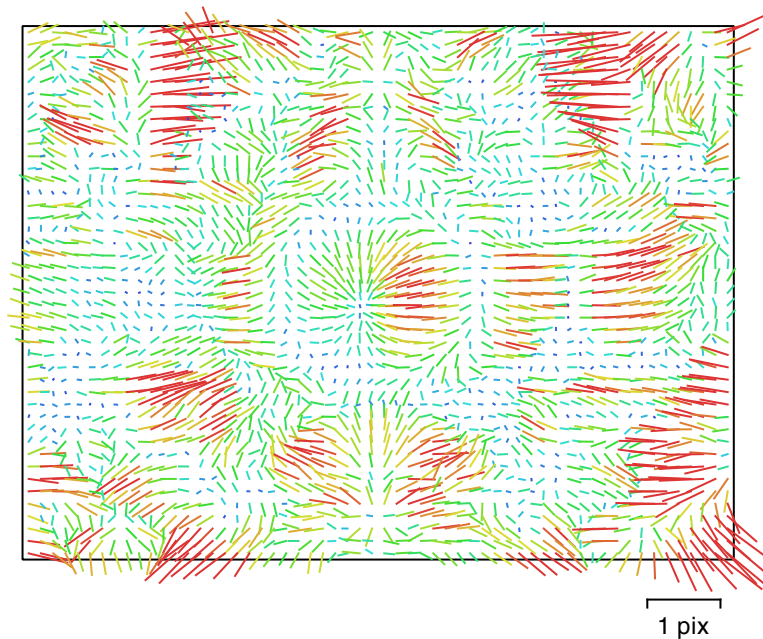


Fig. 2. Image residuals for FC330 (3.61 mm).

**FC330 (3.61 mm)**

618 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	K1	K2	K3	P1	P2
B1	-3.30296									
B2	0.29506									
K4	-0.00453163									
F	2331.55	0.0089	1.00	-0.01	-0.35	-0.41	0.41	-0.37	0.00	-0.17
Cx	60.4148	0.011		1.00	-0.02	0.00	-0.01	0.02	0.89	-0.02
Cy	-13.5526	0.01			1.00	-0.05	0.01	-0.01	-0.01	0.79
K1	0.000582541	1.4e-05				1.00	-0.96	0.91	0.00	-0.06
K2	-0.0130506	2.9e-05					1.00	-0.98	-0.01	0.01
K3	0.0133672	1.8e-05						1.00	0.02	-0.01
P1	0.000608727	1.4e-06							1.00	-0.02
P2	-0.000147544	1.3e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

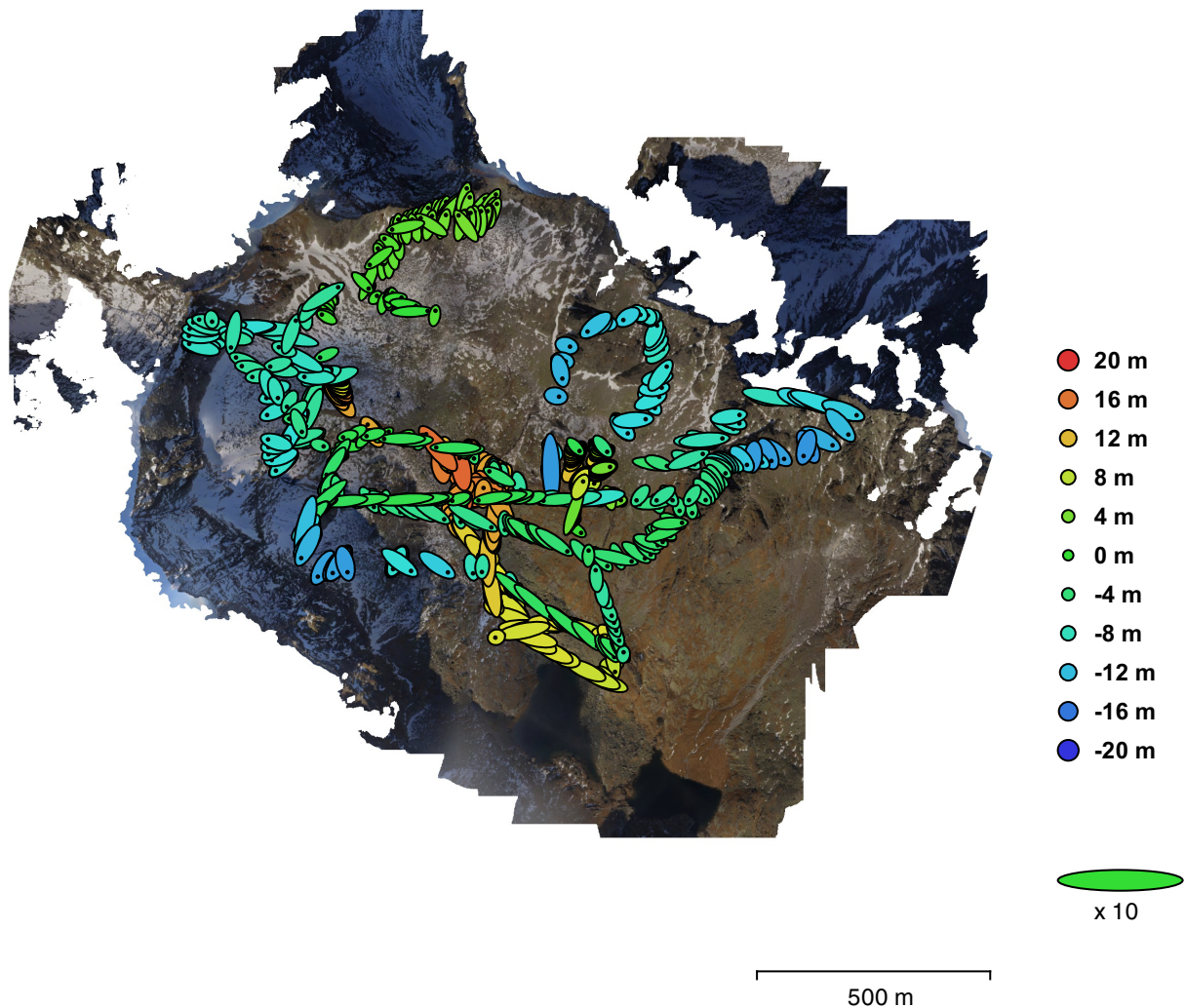


Fig. 3. Camera locations and error estimates.

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)
3.19478	2.80443	8.19609	4.25106	9.23295

Table 3. Average camera location error.

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



# Digital Elevation Model

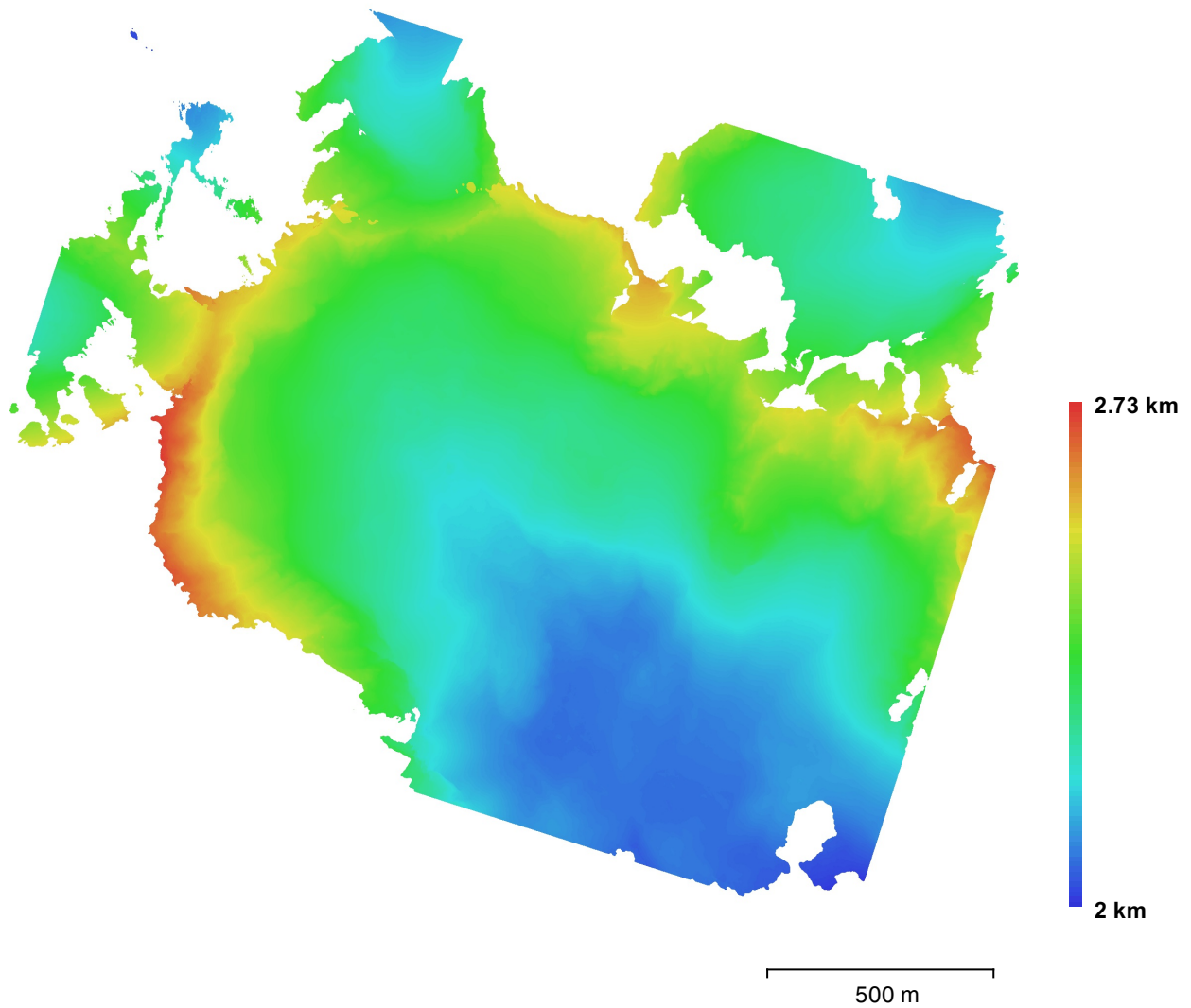


Fig. 4. Reconstructed digital elevation model.

Resolution:	19.3 cm/pix
Point density:	26.9 points/m <sup>2</sup>

# Processing Parameters

## General

Cameras	618
Aligned cameras	610
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	376,981 of 465,129
RMS reprojection error	0.21669 (0.780435 pix)
Max reprojection error	0.809068 (34.1172 pix)
Mean key point size	3.39515 pix
Effective overlap	6.29173

## Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	35 minutes 1 seconds
Alignment time	14 minutes 59 seconds

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Fit rolling shutter	No
Optimization time	1 minutes 18 seconds

## Dense Point Cloud

Points	101,005,039
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## Reconstruction parameters

Quality	High
Depth filtering	Aggressive
Depth maps generation time	1 days 2 hours
Dense cloud generation time	11 hours 33 minutes

## Model

Faces	20,200,960
Vertices	10,121,611
Texture	4,096 x 4,096, uint8

## Reconstruction parameters

Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Aggressive
Face count	20,200,960
Processing time	2 hours 3 minutes

## Texturing parameters

Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096 x 4,096
Enable color correction	No
Enable hole filling	Yes
UV mapping time	5 minutes 18 seconds
Blending time	8 minutes 33 seconds

## Orthomosaic

Size	23,155 x 20,347
Coordinate system	WGS 84 (EPSG::4326)
Channels	3, uint8

## Reconstruction parameters

Blending mode  
Surface  
Enable color correction  
Enable hole filling  
Processing time

Mosaic  
Mesh  
No  
Yes  
37 minutes 43 seconds

**Software**

Version  
Platform

1.3.3 build 4827  
Windows 64