

Piz Laviner - Err Detachment System

Processing Report

Reconstruction uncertainty: 15

Projection Accuracy: 3

Reprojection Error: 0.3

Dense Cloud Confidence: 5-255

Mesh connected component size: 99%

23 December 2022



Survey Data

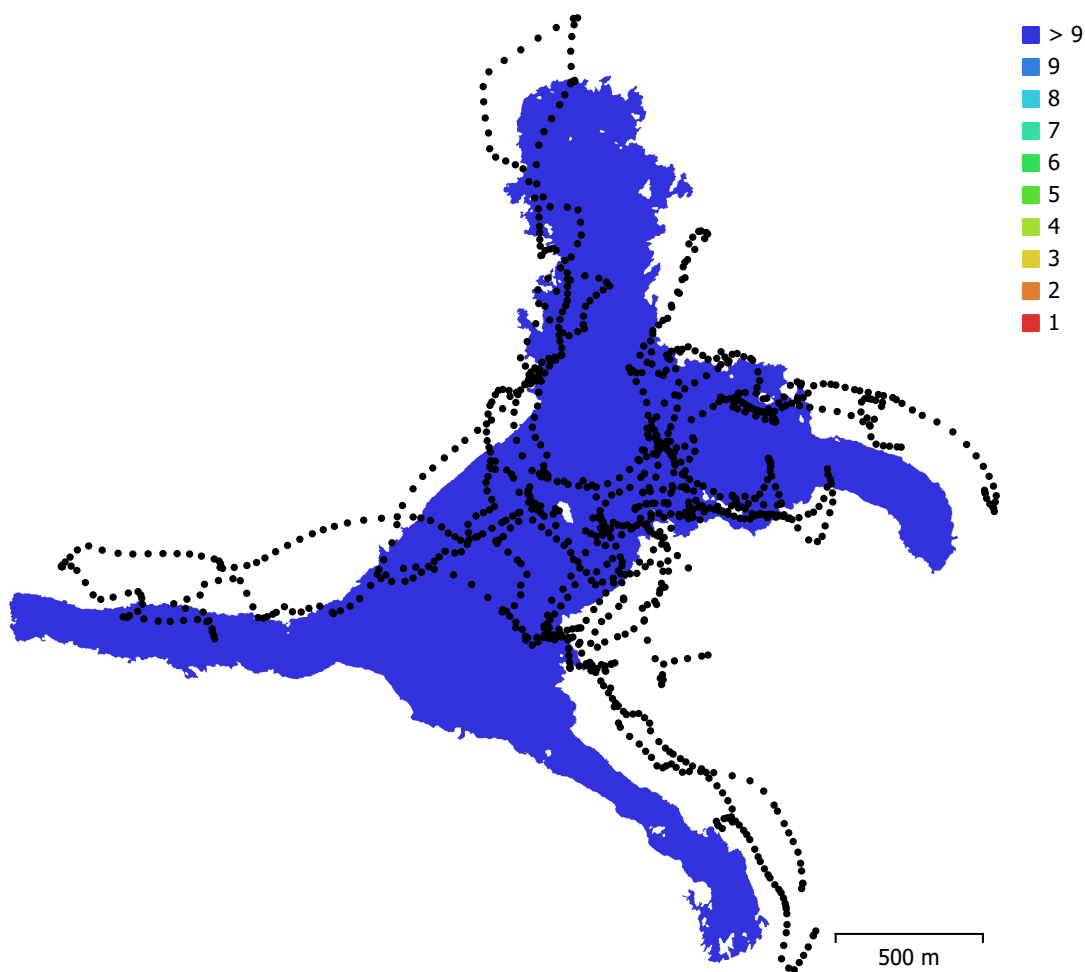


Fig. 1. Camera locations and image overlap.

Number of images:	1,082	Camera stations:	1,082
Flying altitude:	213 m	Tie points:	927,732
Ground resolution:	6.82 cm/pix	Projections:	2,244,042
Coverage area:	1.96 km ²	Reprojection error:	0.308 pix

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

Table 1. Cameras.

Camera Calibration

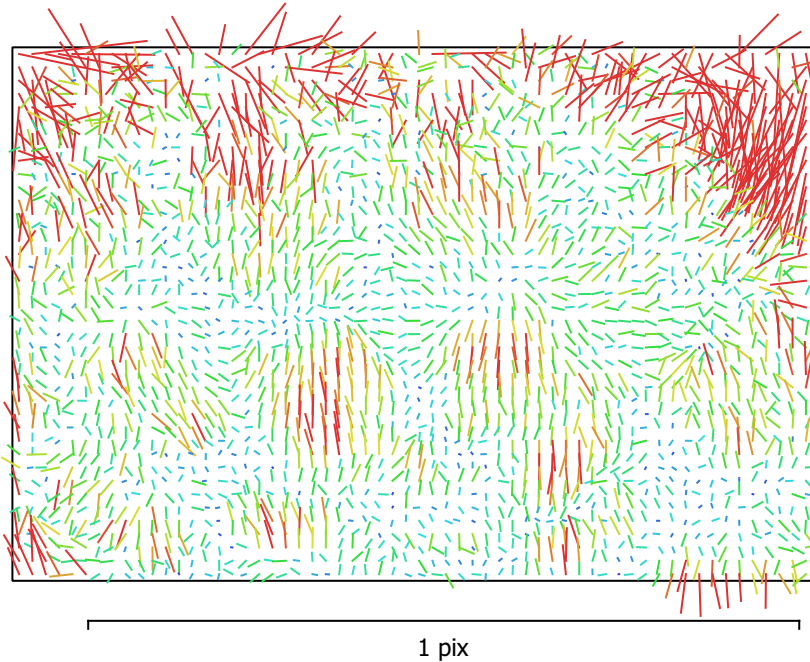


Fig. 2. Image residuals for L1D-20c (10.26mm).

L1D-20c (10.26mm)

1082 images

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	10.26 mm	2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	4326.07	0.022	1.00	0.03	-0.30	-0.31	0.30	-0.26	0.04	-0.15
Cx	-17.2039	0.049		1.00	-0.01	-0.01	0.01	-0.01	0.95	-0.02
Cy	-28.4554	0.037			1.00	0.00	-0.01	0.01	-0.02	0.65
K1	-0.00957282	2.9e-05				1.00	-0.96	0.89	-0.01	-0.06
K2	0.0469915	0.00012					1.00	-0.98	0.01	0.02
K3	-0.0534011	0.00015						1.00	-0.01	-0.02
P1	0.000455691	3.9e-06							1.00	-0.03
P2	-0.00256516	2e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

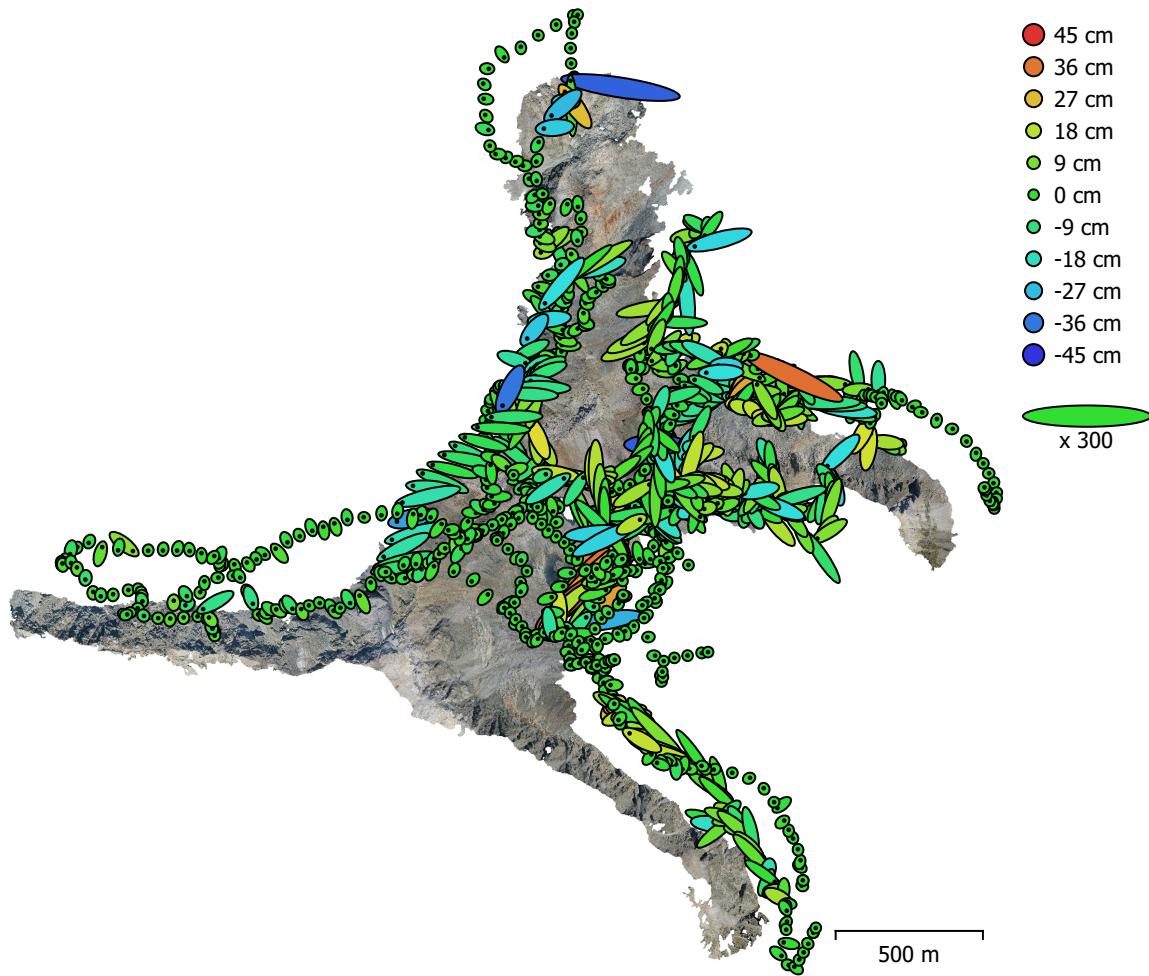


Fig. 3. Camera locations and error estimates.

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
17.7225	14.4288	8.77425	22.8534	24.4799

Table 3. Average camera location error.

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

Digital Elevation Model

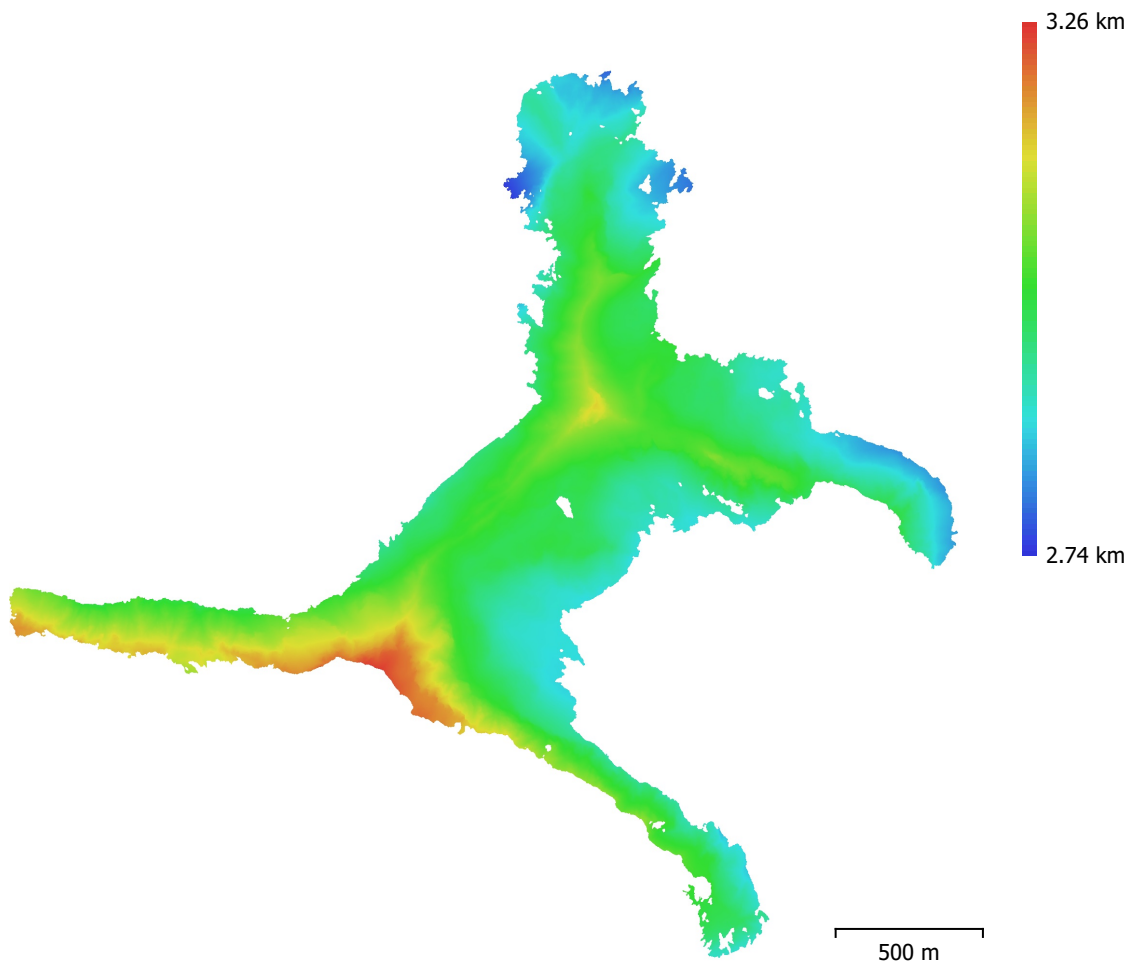


Fig. 4. Reconstructed digital elevation model.

Resolution: 13.6 cm/pix
Point density: 53.7 points/m²

Processing Parameters

General

Cameras	1082
Aligned cameras	1082
Coordinate system	CH1903+ / LV95 (EPSG::2056)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	927,732 of 7,529,570
RMS reprojection error	0.188805 (0.307594 pix)
Max reprojection error	5.69039 (7.19352 pix)
Mean key point size	1.56737 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.65418

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	Source
Key point limit	60,000
Key point limit per Mpx	1,000
Tie point limit	0
Filter points by mask	Yes
Mask tie points	No
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	1 hours 15 minutes
Matching memory usage	2.58 GB
Alignment time	44 minutes 36 seconds
Alignment memory usage	2.68 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	1 minutes 30 seconds
Date created	2022:09:24 10:51:13
Software version	1.8.4.14856
File size	462.75 MB

Depth Maps

Count	1070
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Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 46 minutes
Memory usage	4.07 GB
Date created	2022:09:24 12:48:34
Software version	1.8.4.14856
File size	7.23 GB

Dense Point Cloud

Points	168,743,451
Point colors	3 bands, uint8

Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 46 minutes
Memory usage	4.07 GB
Dense cloud generation parameters	
Processing time	21 hours 38 minutes
Memory usage	26.41 GB
Date created	2022:09:24 18:17:54
Software version	1.8.4.14856
File size	8.67 GB
Model	
Faces	35,201,783
Vertices	17,618,347
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 40, 4 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 46 minutes
Memory usage	4.07 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Disabled
Strict volumetric masks	No
Processing time	1 hours 37 minutes
Memory usage	13.30 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	2 minutes 24 seconds
UV mapping memory usage	6.50 GB
Blending time	1 hours 37 minutes
Blending memory usage	54.74 GB
Date created	2022:09:25 10:21:11
Software version	1.8.4.14856
File size	2.36 GB
Tiled Model	
Texture	3 bands, uint8
Reconstruction parameters	
Source data	Mesh
Tile size	256
Face count	High
Enable ghosting filter	No
Processing time	5 hours 4 minutes
Memory usage	14.72 GB
Date created	2022:09:30 22:20:40
Software version	1.8.4.14856
File size	1.81 GB
Orthomosaic	

Size 40,860 x 7,444
Coordinate system WGS 84 (EPSG::4978)
Colors 3 bands, uint8

Reconstruction parameters

Blending mode Mosaic
Surface Mesh
Enable hole filling Yes
Enable ghosting filter No
Processing time 2 hours 20 minutes
Memory usage 3.95 GB
Date created 2022:11:16 19:27:41
Software version 1.8.4.14856
File size 8.11 GB

System

Software name Agisoft Metashape Professional
Software version 1.8.4 build 14856
OS Windows 64 bit
RAM 127.71 GB
CPU Intel(R) Xeon(R) Gold 5122 CPU @ 3.60GHz
GPU(s) Quadro P5000