

2021_04_27_s1_Report

Processing Report

April 27, 2021
Fagradalsfjall Flow Toe
03 June 2022



Survey Data

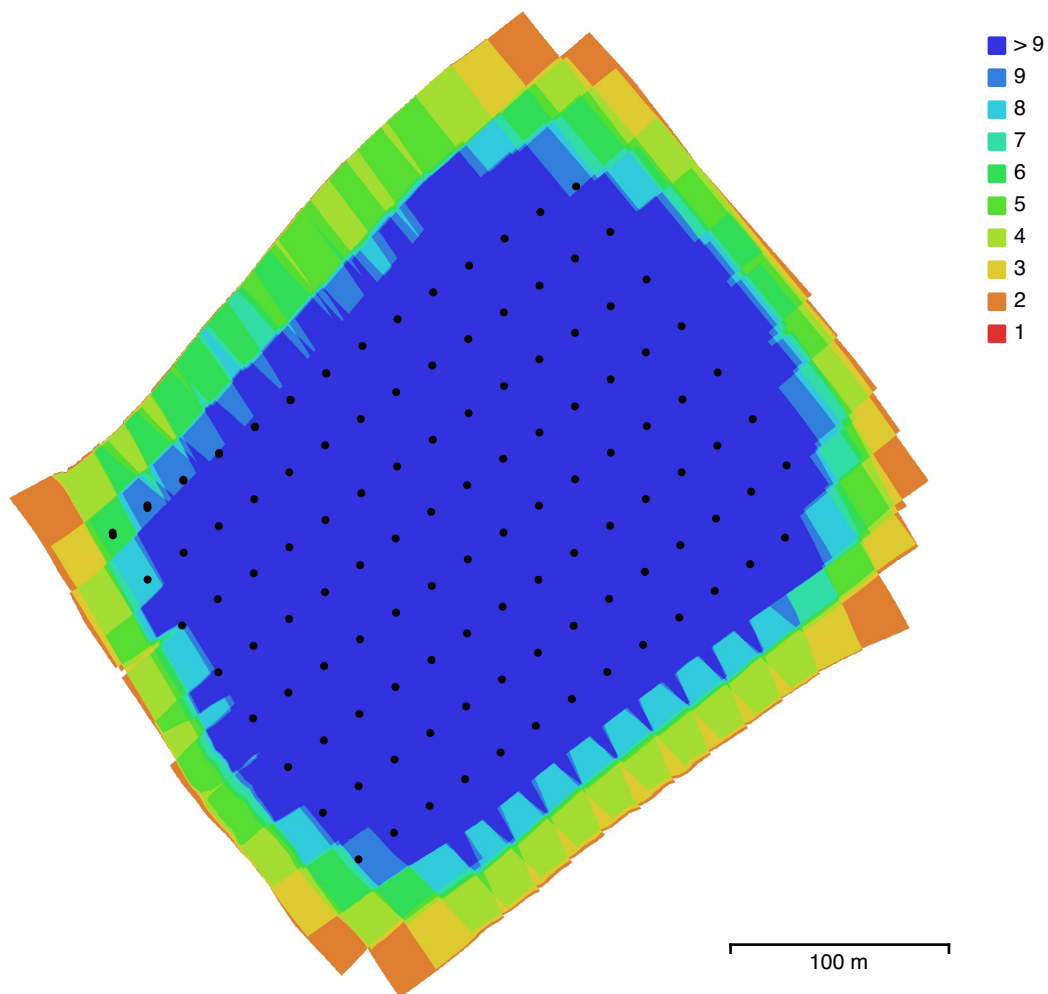


Fig. 1. Camera locations and image overlap.

Number of images:	118	Camera stations:	118
Flying altitude:	114 m	Tie points:	272,243
Ground resolution:	2.51 cm/pix	Projections:	1,076,472
Coverage area:	0.106 km ²	Reprojection error:	0.348 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 μ m	No

Table 1. Cameras.

Camera Calibration

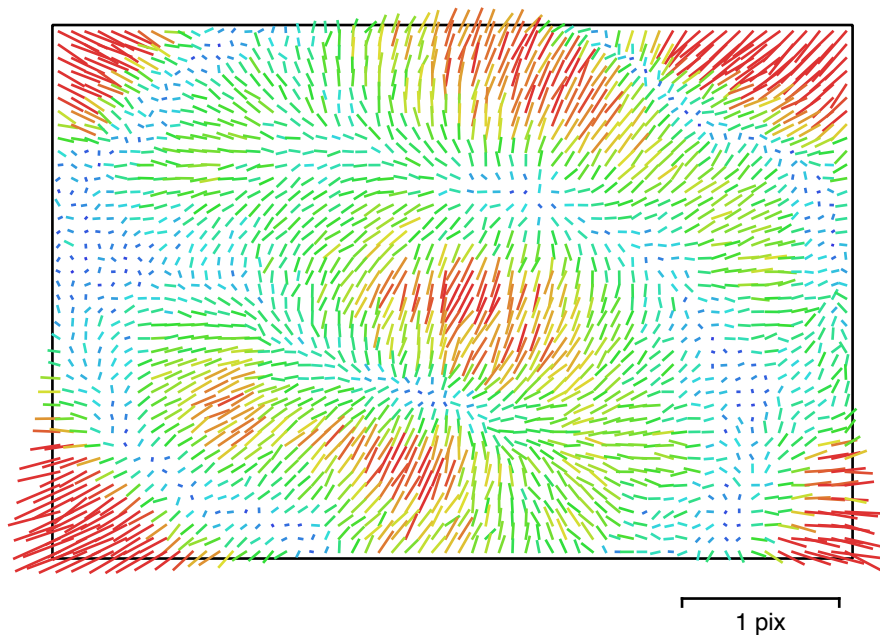


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

118 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	B1	B2	K1	K2	K3	K4	P1	P2
F	4345.18	0.69	1.00	-0.77	0.85	-0.20	-0.07	0.05	0.07	-0.05	0.00	0.03	-0.16
Cx	2.02843	0.029		1.00	-0.64	0.06	0.04	-0.04	-0.04	0.03	0.00	0.47	0.13
Cy	-6.99822	0.03			1.00	-0.16	-0.15	0.05	0.05	-0.03	-0.00	0.03	0.23
B1	1.96173	0.038				1.00	-0.02	-0.02	-0.02	0.01	-0.01	-0.00	0.02
B2	0.00486686	0.038					1.00	0.01	-0.00	0.00	0.00	-0.05	-0.02
K1	-0.00742887	4.6e-05						1.00	-0.92	0.88	-0.84	-0.05	0.04
K2	0.0251363	0.0003							1.00	-0.99	0.96	0.01	0.01
K3	-0.0279684	0.00082								1.00	-0.99	-0.00	-0.01
K4	-0.0041922	0.00075									1.00	-0.00	0.02
P1	0.000652187	1.3e-06										1.00	-0.07
P2	-0.00185386	1e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

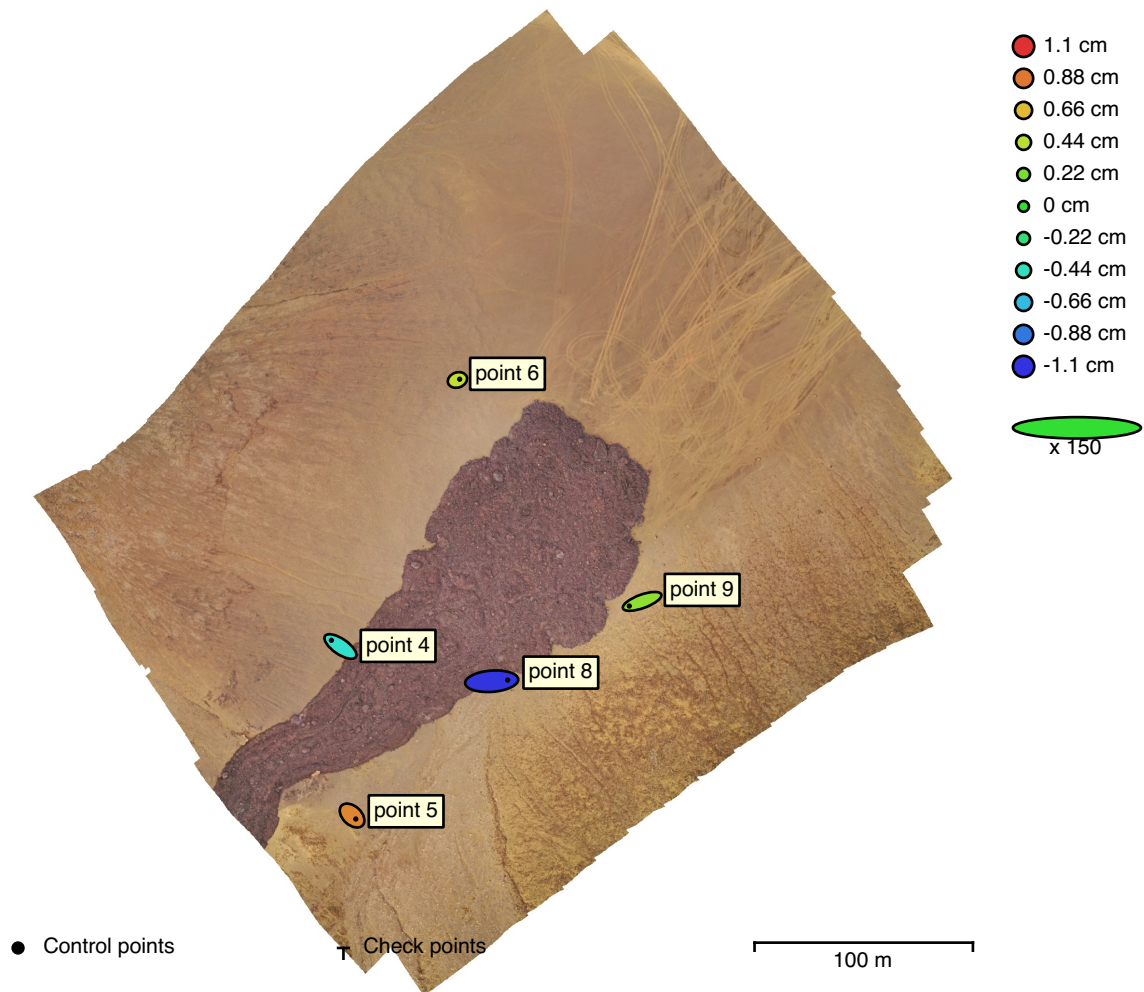


Fig. 3. GCP locations and error estimates.

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)
5	6.22044	2.34327	0.6968	6.64717	6.68359

Table 3. Control points RMSE.
X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
point 4	-5.51839	3.76494	-0.49258	6.69851	2.271 (29)
point 5	2.26618	-2.1042	0.830471	3.20202	1.897 (12)
point 6	1.32906	0.465548	0.462326	1.48219	1.495 (24)
point 8	9.7441	0.722192	-1.09344	9.83182	1.929 (23)
point 9	-7.82095	-2.84849	0.293221	8.3287	2.141 (20)
Total	6.22044	2.34327	0.6968	6.68359	1.981

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

Digital Elevation Model

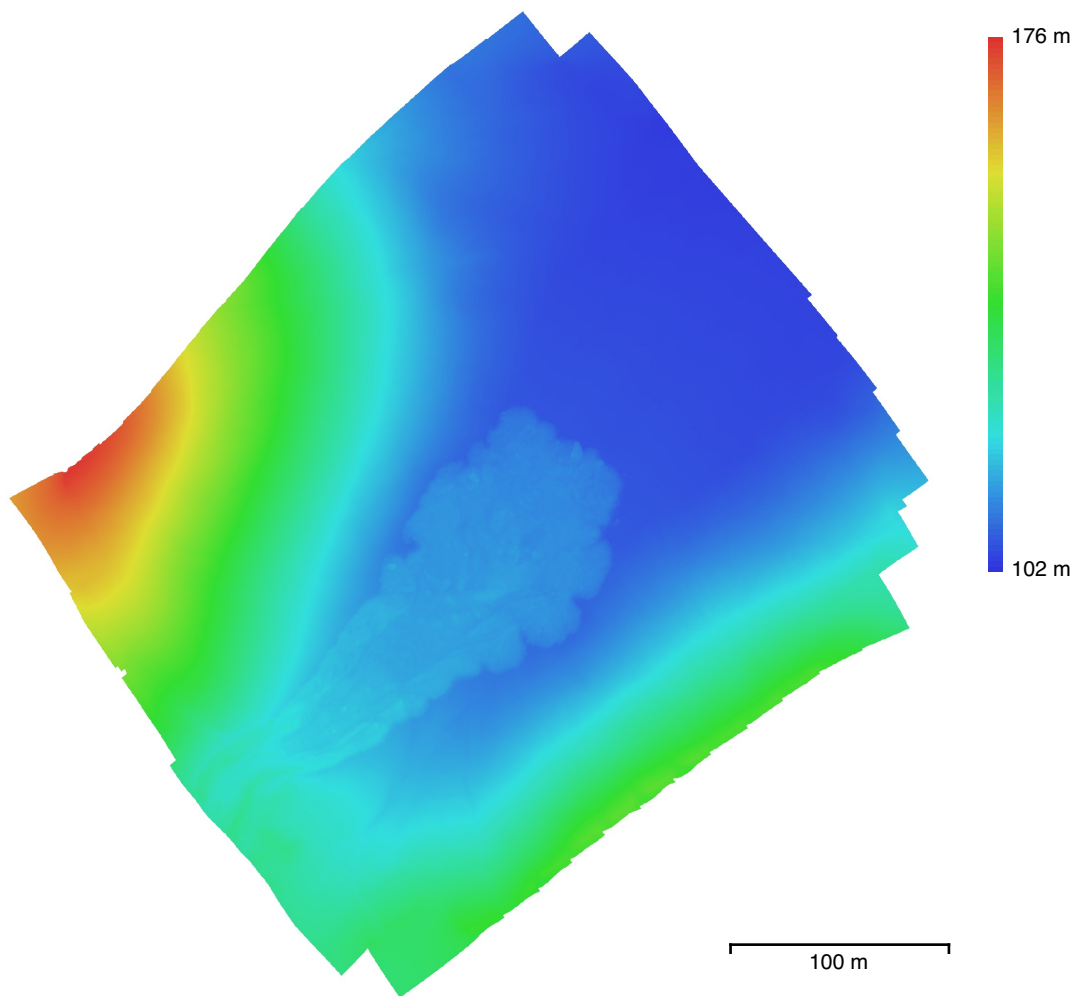


Fig. 4. Reconstructed digital elevation model.

Resolution: 5.03 cm/pix
Point density: 395 points/m²

Processing Parameters

General

Cameras	118
Aligned cameras	118
Markers	5
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	272,243 of 803,518
RMS reprojection error	0.151423 (0.347806 pix)
Max reprojection error	0.424172 (1.60322 pix)
Mean key point size	2.28299 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.94964

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	60,000
Key point limit per Mpx	1,000
Tie point limit	0
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	7 minutes 31 seconds
Matching memory usage	747.74 MB
Alignment time	3 minutes 34 seconds
Alignment memory usage	266.36 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	No
Optimization time	7 seconds
Date created	2022:03:14 21:04:24
Software version	1.8.1.13915
File size	56.97 MB

Depth Maps

Count	118
Depth maps generation parameters	
Quality	High
Filtering mode	Moderate
Max neighbors	16
Processing time	23 minutes 48 seconds
Memory usage	4.81 GB
Date created	2022:05:30 23:23:24
Software version	1.8.2.0
File size	879.98 MB

Dense Point Cloud

Points	40,790,296
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
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Filtering mode	Moderate
Max neighbors	16
Processing time	23 minutes 48 seconds
Memory usage	4.81 GB
Dense cloud generation parameters	
Processing time	24 minutes 33 seconds
Memory usage	7.51 GB
Date created	2022:05:30 23:47:58
Software version	1.8.2.0
File size	713.64 MB
DEM	
Size	14,388 x 14,276
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	1 minutes 32 seconds
Memory usage	313.18 MB
Date created	2022:05:31 16:15:34
Software version	1.8.2.0
File size	177.52 MB
Orthomosaic	
Size	16,747 x 17,975
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	6 minutes 20 seconds
Memory usage	1.44 GB
Date created	2022:05:31 16:22:42
Software version	1.8.2.0
File size	2.90 GB
System	
Software name	Agisoft Metashape Professional
Software version	1.8.1 build 13915
OS	Mac OS 64 bit
RAM	64.00 GB
CPU	
GPU(s)	None