

2021_08_20_Report_Vent

Processing Report

August 20, 2021
Fagradalsfjall Vent Merged Model
03 June 2022



Survey Data

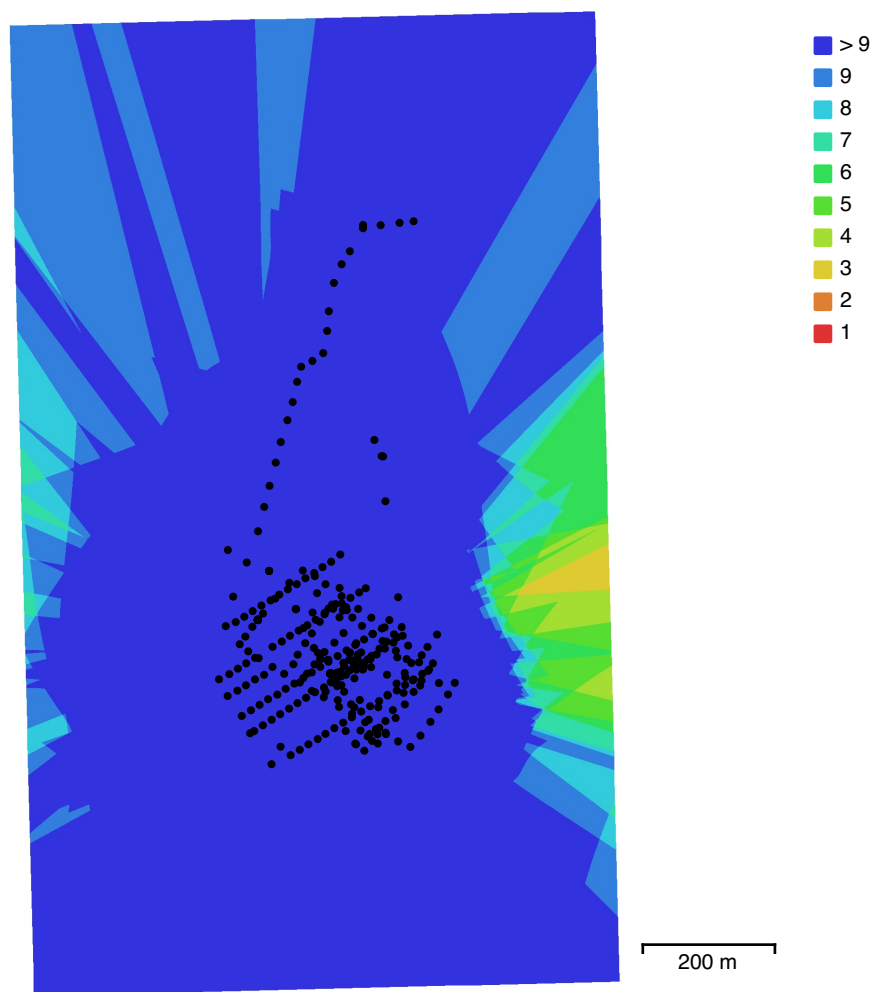


Fig. 1. Camera locations and image overlap.

Number of images:	340	Camera stations:	340
Flying altitude:	108 m	Tie points:	623,735
Ground resolution:	4.24 cm/pix	Projections:	2,252,455
Coverage area:	1.3 km ²	Reprojection error:	0.45 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC330 (3.61mm)	4000 x 3000	3.61 mm	1.56 x 1.56 μ m	No
FC330 (3.61mm)	4000 x 3000	3.61 mm	1.56 x 1.56 μ m	No
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 μ m	No

Table 1. Cameras.

Camera Calibration

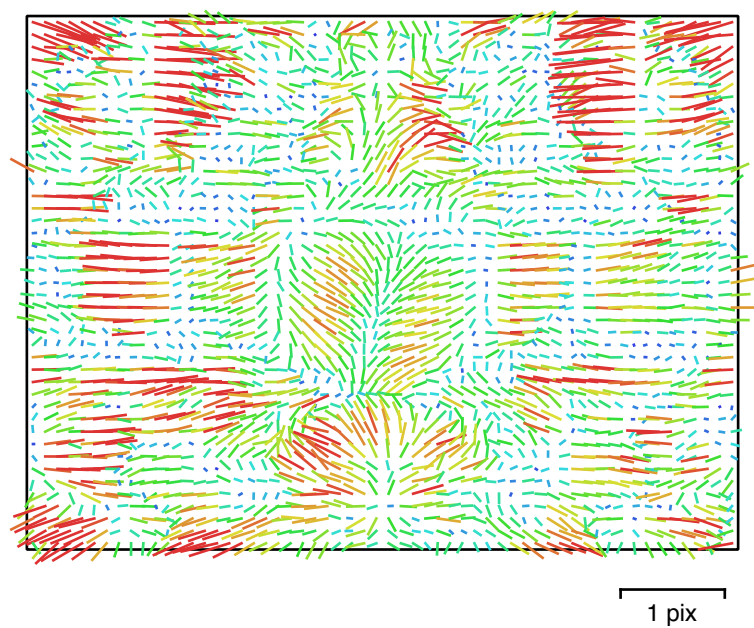


Fig. 2. Image residuals for FC330 (3.61mm).

FC330 (3.61mm)

175 images

Type	Resolution	Focal Length	Pixel Size
Frame	4000 x 3000	3.61 mm	1.56 x 1.56 μm
F:	2340.48		
Cx:	-8.15032	B1:	-2.0559
Cy:	24.6261	B2:	-0.610173
K1:	0.00789443	P1:	-0.000183737
K2:	-0.0326988	P2:	3.9716e-05
K3:	0.0398835	P3:	0
K4:	-0.0176332	P4:	0

Camera Calibration

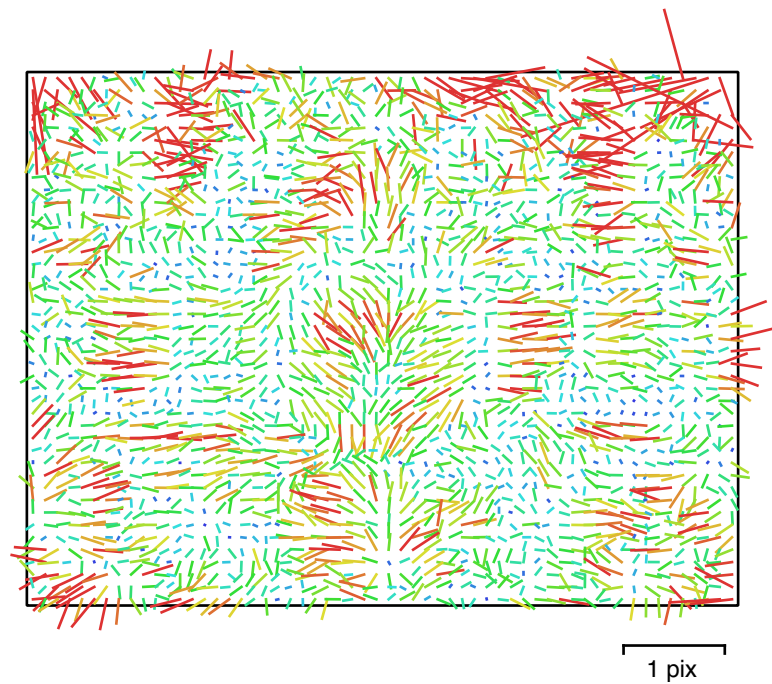


Fig. 3. Image residuals for FC330 (3.61mm).

FC330 (3.61mm)

55 images

Type	Resolution	Focal Length	Pixel Size
Frame	4000 x 3000	3.61 mm	1.56 x 1.56 μm
F:	2340.22		
Cx:	-7.19767	B1:	-1.35607
Cy:	25.4905	B2:	-0.210459
K1:	0.00970377	P1:	-0.000137617
K2:	-0.0389204	P2:	-1.72896e-05
K3:	0.0484948	P3:	0
K4:	-0.0217202	P4:	0

Camera Calibration

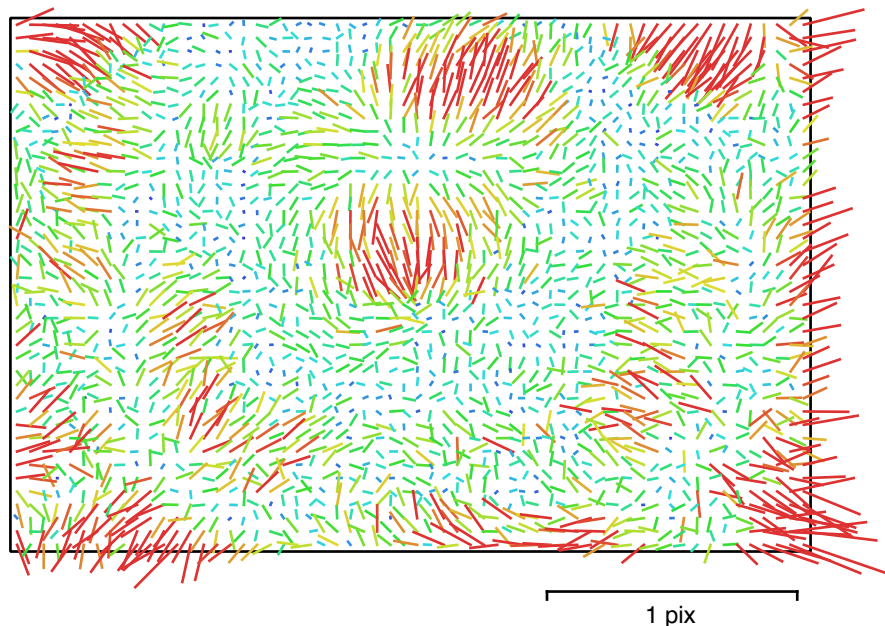


Fig. 4. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

110 images

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	10.26 mm	2.41 x 2.41 μm
F:	4325.84		
Cx:	23.7431	B1:	-0.986225
Cy:	-26.2089	B2:	-2.95934
K1:	-0.0104805	P1:	0.00118132
K2:	0.050565	P2:	-0.00161074
K3:	-0.0694339	P3:	0
K4:	0.0244975	P4:	0

Ground Control Points

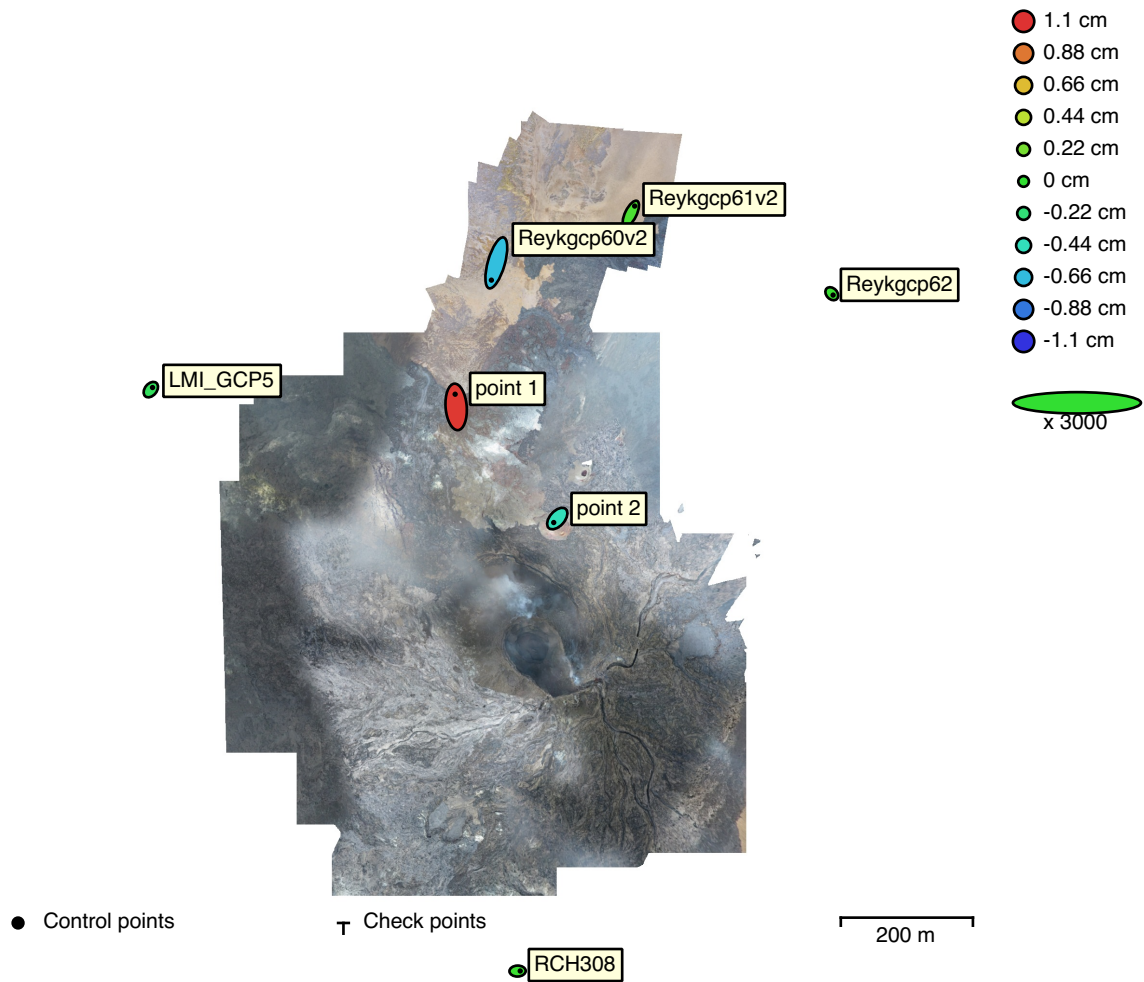


Fig. 5. GCP locations and error estimates.

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)
7	0.305688	0.887385	0.507051	0.938561	1.06677

Table 2. Control points RMSE.
X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
LMI_GCP5	0.17326	0.21083	-0.132946	0.303551	1.321 (6)
Reykgcp60v2	-0.499076	-1.74222	-0.649804	1.92527	1.834 (14)
Reykgcp61v2	0.38622	0.781214	0.079125	0.875055	1.673 (9)
RCH308	0.266176	0.00734773	0.0315763	0.268143	0.737 (14)
Reykgcp62	0.131693	-0.137555	0.025169	0.192088	1.838 (3)
point 1	-0.101359	1.2815	1.07931	1.67851	3.539 (12)
point 2	-0.356915	-0.401109	-0.432423	0.689395	1.062 (21)
Total	0.305688	0.887385	0.507051	1.06677	1.864

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

Digital Elevation Model

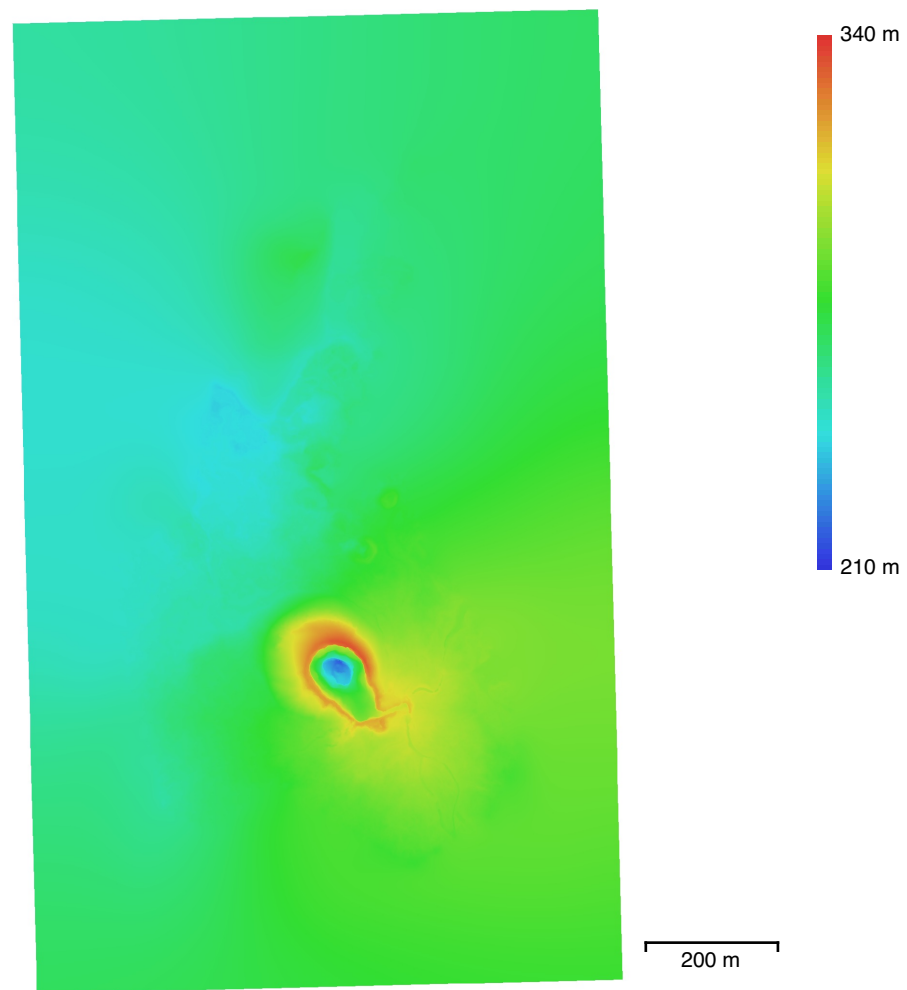


Fig. 6. Reconstructed digital elevation model.

Resolution: 8.48 cm/pix
Point density: 139 points/m²

Processing Parameters

General

Cameras	340
Aligned cameras	340
Markers	7
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	623,735 of 1,915,189
RMS reprojection error	0.17928 (0.449814 pix)
Max reprojection error	0.591668 (3.18991 pix)
Mean key point size	2.48888 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.86986

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
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	18 minutes 33 seconds
Matching memory usage	496.60 MB
Alignment time	16 minutes 33 seconds
Alignment memory usage	224.20 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	No
Optimization time	18 seconds
Date created	2022:05:09 18:46:26
Software version	1.8.1.13915
File size	132.89 MB

Depth Maps

Count	332
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Depth maps generation parameters

Quality	High
Filtering mode	Moderate
Max neighbors	16
Processing time	19 hours 25 minutes
Memory usage	3.19 GB
Date created	2022:05:12 14:54:10
Software version	1.8.1.13915
File size	1.69 GB

Dense Point Cloud

Points	47,949,802
Point colors	3 bands, uint8

Depth maps generation parameters	
Quality	High
Filtering mode	Moderate
Max neighbors	16
Processing time	19 hours 25 minutes
Memory usage	3.19 GB
Dense cloud generation parameters	
Processing time	1 hours 40 minutes
Memory usage	17.42 GB
Date created	2022:05:12 16:34:48
Software version	1.8.1.13915
File size	1.07 GB
DEM	
Size	10,958 x 17,626
Coordinate system	WGS 84 / UTM zone 27N (EPSG::32627)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	1 minutes 49 seconds
Memory usage	8.00 KB
Date created	2022:05:18 23:49:00
Software version	1.8.1.13915
File size	660.21 MB
Orthomosaic	
Size	21,754 x 35,152
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	14 minutes 26 seconds
Memory usage	1.44 GB
Date created	2022:05:19 00:08:02
Software version	1.8.1.13915
File size	6.21 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