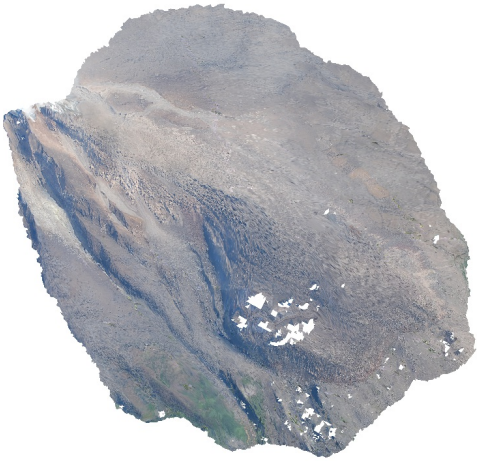


Sinabung_2014_Model_4_Report

Processing Report
21 February 2019



Survey Data

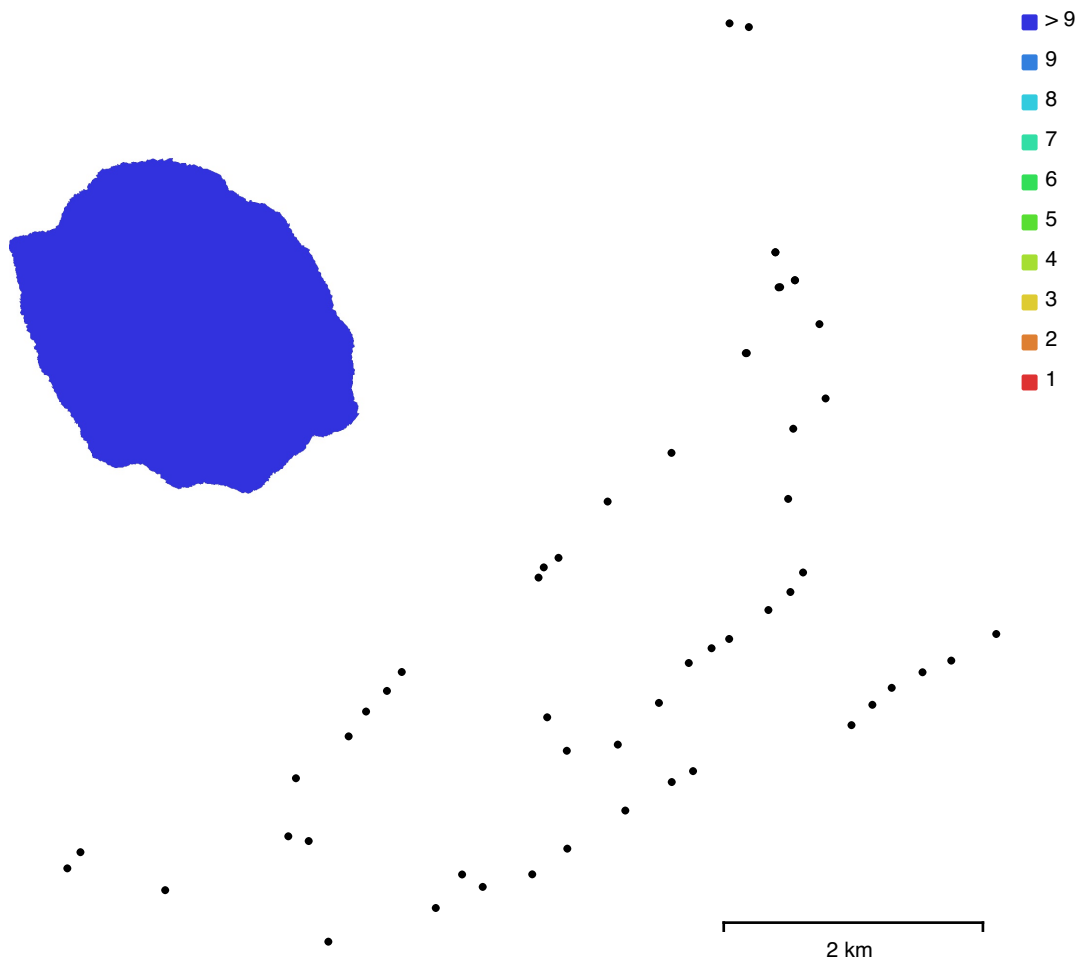


Fig. 1. Camera locations and image overlap.

Number of images:	54	Camera stations:	54
Flying altitude:	4.87 km	Tie points:	23,113
Ground resolution:	96 cm/pix	Projections:	63,835
Coverage area:	4.89 km ²	Reprojection error:	0.296 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D40X (55 mm)	1936 x 1296	55 mm	12.5 x 12.5 μm	No
NIKON D40X (72 mm)	1936 x 1296	72 mm	12.4 x 12.4 μm	No

Table 1. Cameras.

Camera Calibration

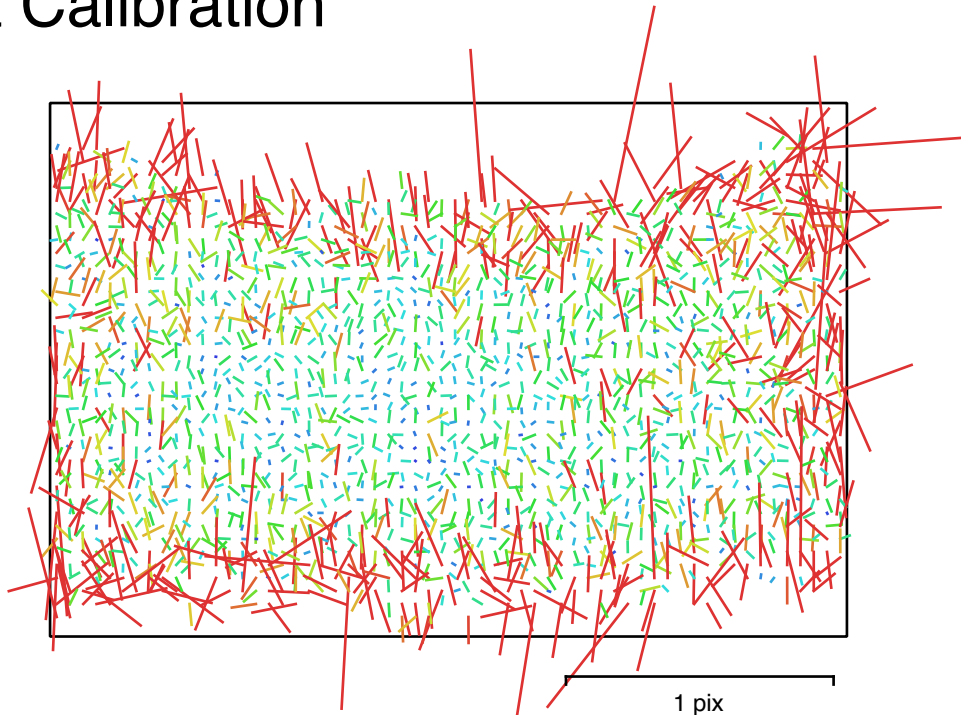


Fig. 2. Image residuals for NIKON D40X (55 mm).

NIKON D40X (55 mm)

53 images

Type	Resolution	Focal Length	Pixel Size
Frame	1936 x 1296	55 mm	12.5 x 12.5 μm

F: 4713.37

Cx: 38.623

Cy: 37.355

K1: -0.227178

K2: -0.340428

K3: 7.83058

K4: 0

B1: 0

B2: 0

P1: 0

P2: 0

P3: 0

P4: 0

Camera Calibration

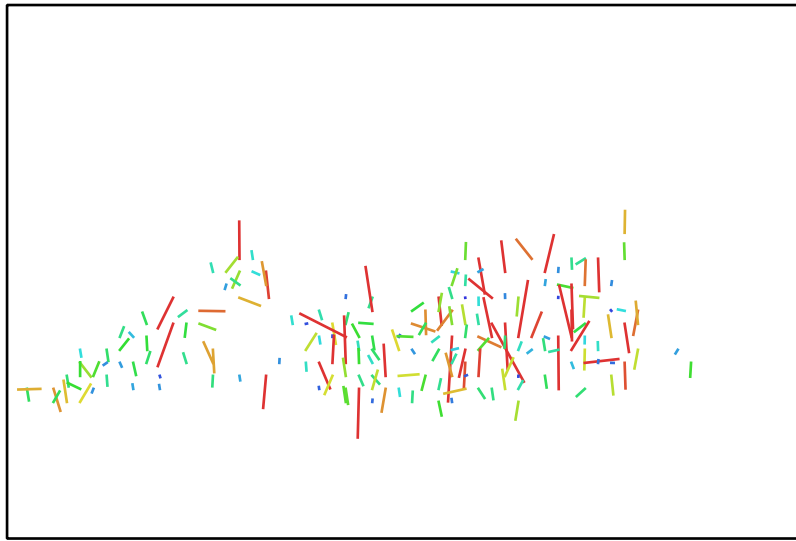


Fig. 3. Image residuals for NIKON D40X (72 mm). 1 pix

NIKON D40X (72 mm)
1 images

Type	Resolution	Focal Length	Pixel Size
Frame	1936 x 1296	72 mm	12.4 x 12.4 μm
F:	6167.17		
Cx:	36.6772	B1:	0
Cy:	-27.6759	B2:	0
K1:	0.100719	P1:	0
K2:	5.76699	P2:	0
K3:	-90.5251	P3:	0
K4:	0	P4:	0

Ground Control Points



● Control points † Check points 2 km

Fig. 4. 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 (m)	Y error (m)	Z error (m)	XY error (m)	Total (m)
4	48.6801	58.2017	14.1199	75.8762	77.1788

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

Count	X error (m)	Y error (m)	Z error (m)	XY error (m)	Total (m)
3	67.2077	49.2761	33.3014	83.3367	89.744

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

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
point 1	-50.1222	-40.7436	-11.0211	65.5266	2.552 (52)
point 2	18.0663	91.8912	23.1405	96.4669	6.030 (47)
point 6	80.6793	-19.7524	-2.28964	83.0936	6.255 (37)
point 10	11.4561	-55.2771	-11.6316	57.6376	2.492 (47)
Total	48.6801	58.2017	14.1199	77.1788	4.549

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

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
point 4	-40.6128	74.2457	42.2862	94.6041	7.514 (50)
point 5	50.4787	37.5787	-19.2024	65.7951	18.843 (17)
point 7	-96.7115	18.9694	34.2066	104.322	3.156 (38)
Total	67.2077	49.2761	33.3014	89.744	9.380

Table 5. Check points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

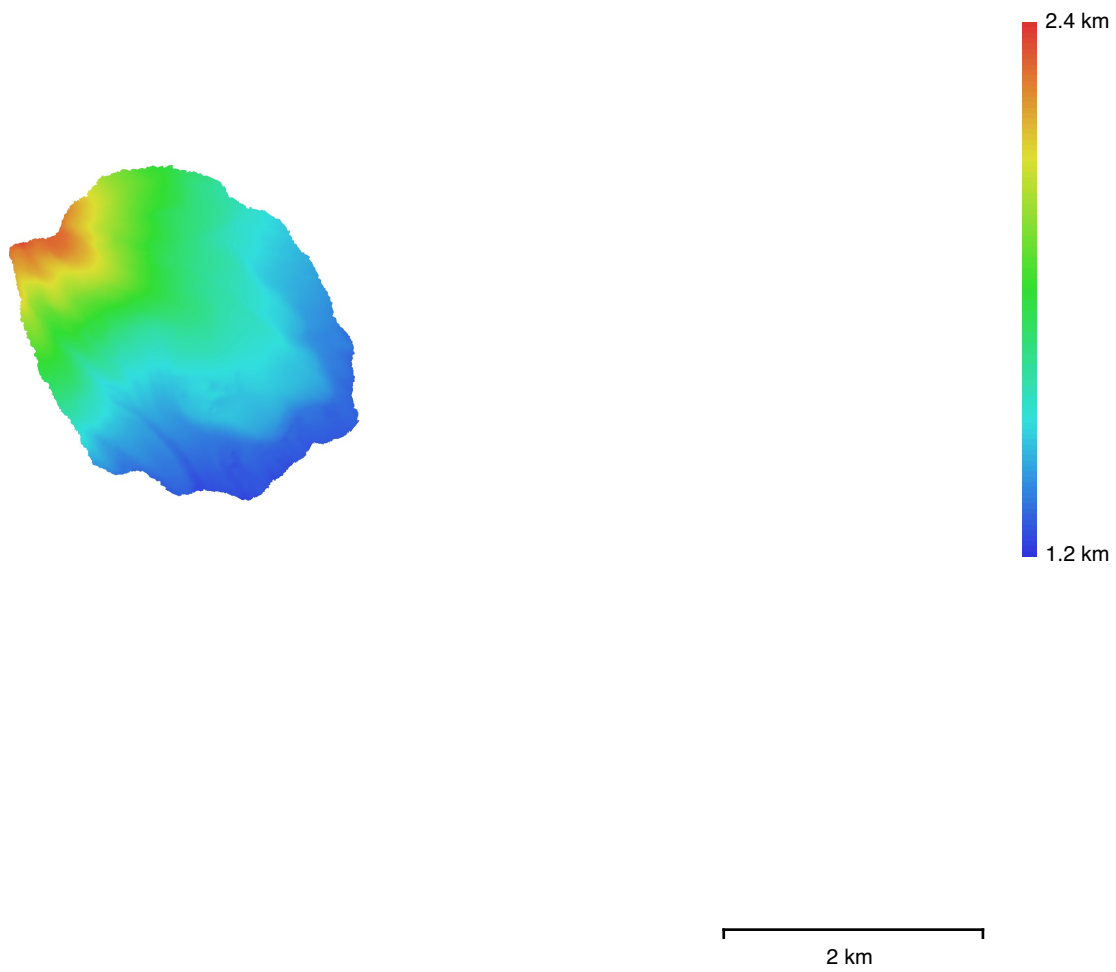


Fig. 5. Reconstructed digital elevation model.

Resolution: 3.84 m/pix
Point density: 0.0678 points/m²

Processing Parameters

General

Cameras	54
Aligned cameras	54
Markers	7
Coordinate system	WGS 84 / UTM zone 47N (EPSG::32647)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	23,113 of 33,364
Reprojection error	0.296043 (0.913897 max)
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.12858
Alignment parameters	
Accuracy	Medium
Generic preselection	No
Reference preselection	No
Key point limit	40,000
Filter points by mask	Yes
Matching time	2 minutes 18 seconds
Alignment time	25 seconds

Dense Point Cloud

Points	386,883
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Moderate
Dense cloud generation time	8 minutes 39 seconds

Model

Faces	52,891
Vertices	26,792
Vertex colors	3 bands, uint8
Texture	8,192 x 8,192, 4 bands, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	Medium
Depth filtering	Moderate
Face count	60,000
Processing time	1 minutes 9 seconds
Texturing parameters	
Mapping mode	Orthophoto
Blending mode	Mosaic
Texture size	8,192 x 8,192
Processing time	4 minutes 40 seconds

Software

Version	1.5.1 build 7618
Platform	Mac OS 64