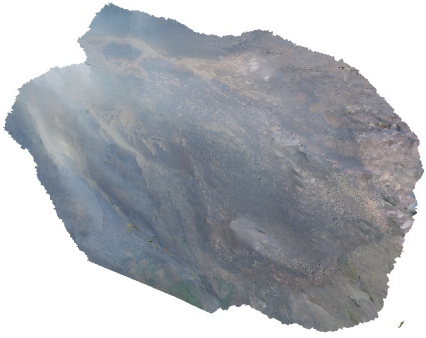


Sinabung_2014_Model_2_Report

Processing Report
21 February 2019



Survey Data

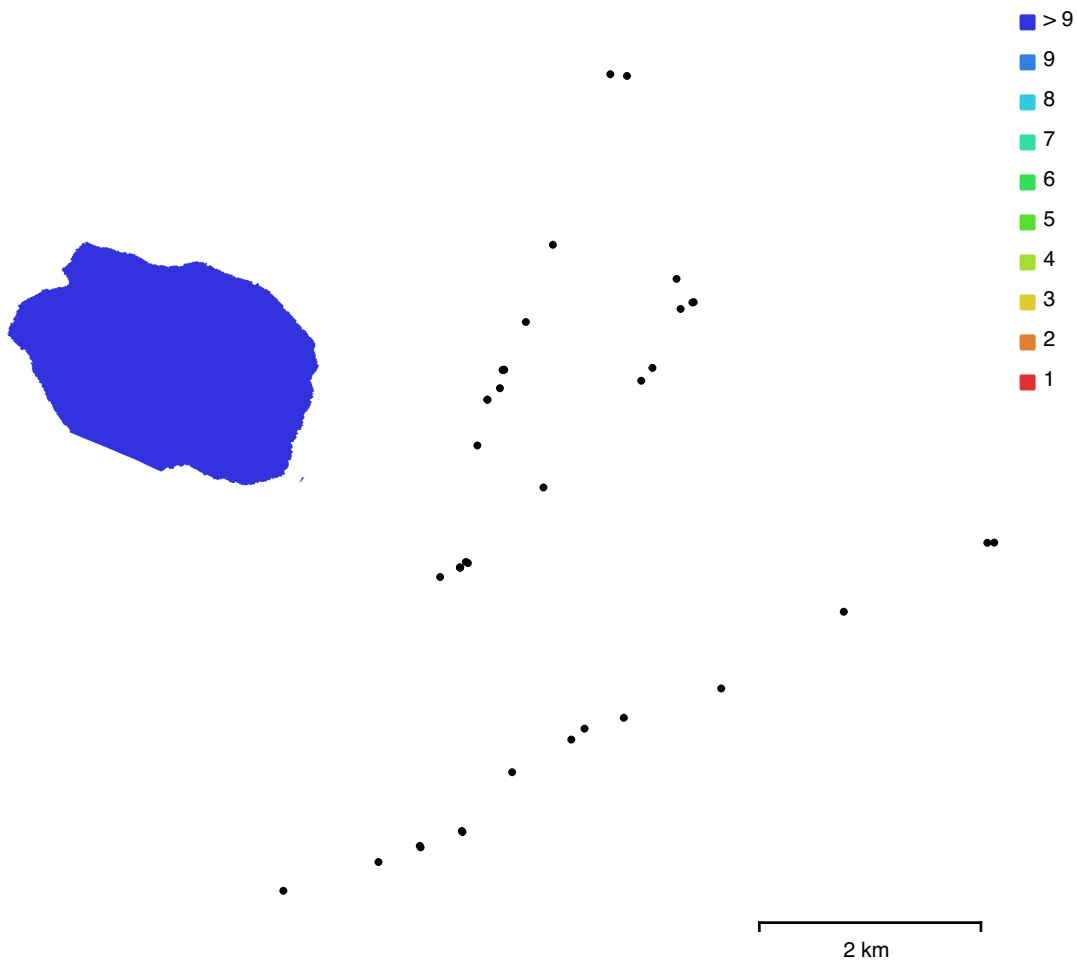


Fig. 1. Camera locations and image overlap.

Number of images:	39	Camera stations:	38
Flying altitude:	4.26 km	Tie points:	11,162
Ground resolution:	84.4 cm/pix	Projections:	30,124
Coverage area:	4.18 km ²	Reprojection error:	0.324 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D40X (55 mm)	1936 x 1296	55 mm	12.5 x 12.5 μ m	No
NIKON D40X (55 mm)	1936 x 1296	55 mm	12.5 x 12.5 μ m	No
NIKON D40X (55 mm)	1936 x 1296	55 mm	12.5 x 12.5 μ m	No

Table 1. Cameras.

Camera Calibration

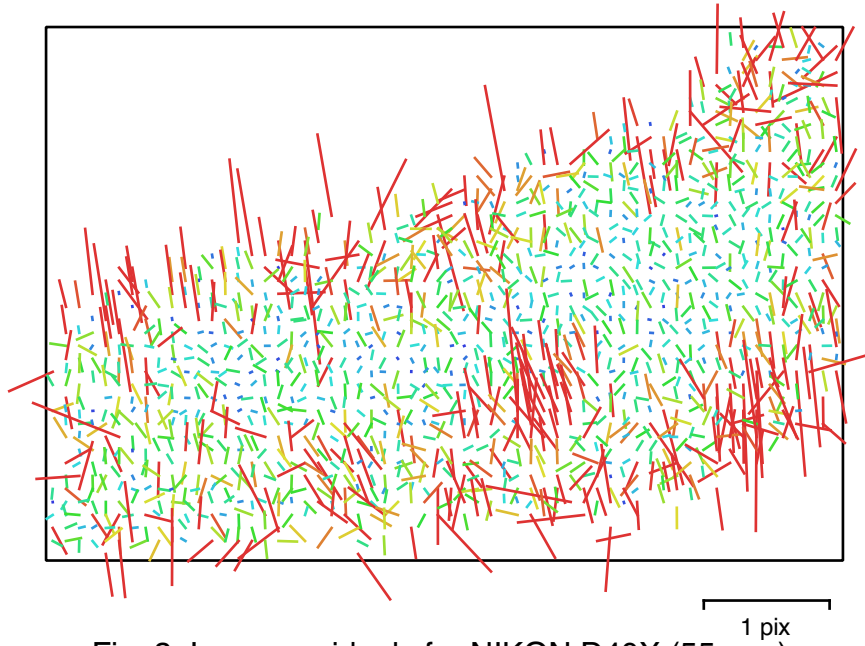


Fig. 2. Image residuals for NIKON D40X (55 mm).

NIKON D40X (55 mm)
20 images

Type	Resolution	Focal Length	Pixel Size
Frame	1936 x 1296	55 mm	12.5 x 12.5 μm
F:	4733.98		
Cx:	152.813	B1:	0
Cy:	72.5302	B2:	0
K1:	-0.216494	P1:	0
K2:	-0.3867	P2:	0
K3:	6.05442	P3:	0
K4:	0	P4:	0

Camera Calibration

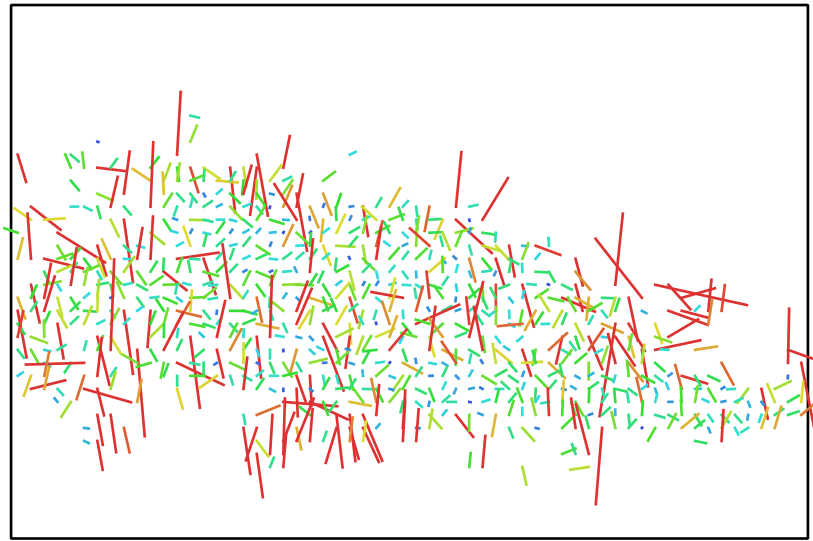


Fig. 3. Image residuals for NIKON D40X (55 mm).

NIKON D40X (55 mm)
6 images

Type	Resolution	Focal Length	Pixel Size
Frame	1936 x 1296	55 mm	12.5 x 12.5 μm
F:	4843.82		
Cx:	86.9311	B1:	0
Cy:	-15.4765	B2:	0
K1:	-0.218124	P1:	0
K2:	-0.023667	P2:	0
K3:	-1.06609	P3:	0
K4:	0	P4:	0

Camera Calibration

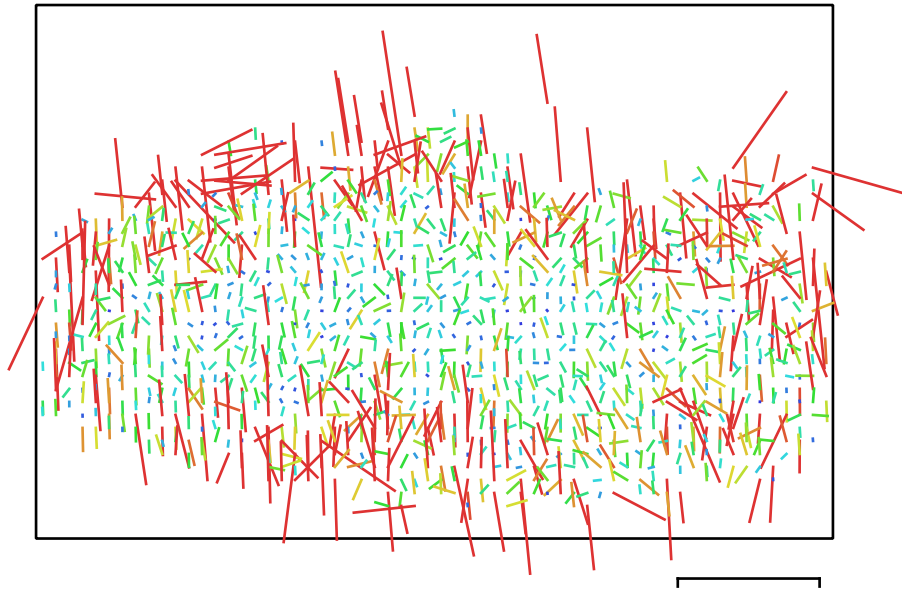


Fig. 4. Image residuals for NIKON D40X (55 mm).

NIKON D40X (55 mm)

13 images

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

F: 4571.97

Cx: -87.066

Cy: 137.865

K1: -0.217051

K2: -1.24135

K3: 17.9519

K4: 0

B1: 0

B2: 0

P1: 0

P2: 0

P3: 0

P4: 0

Ground Control Points

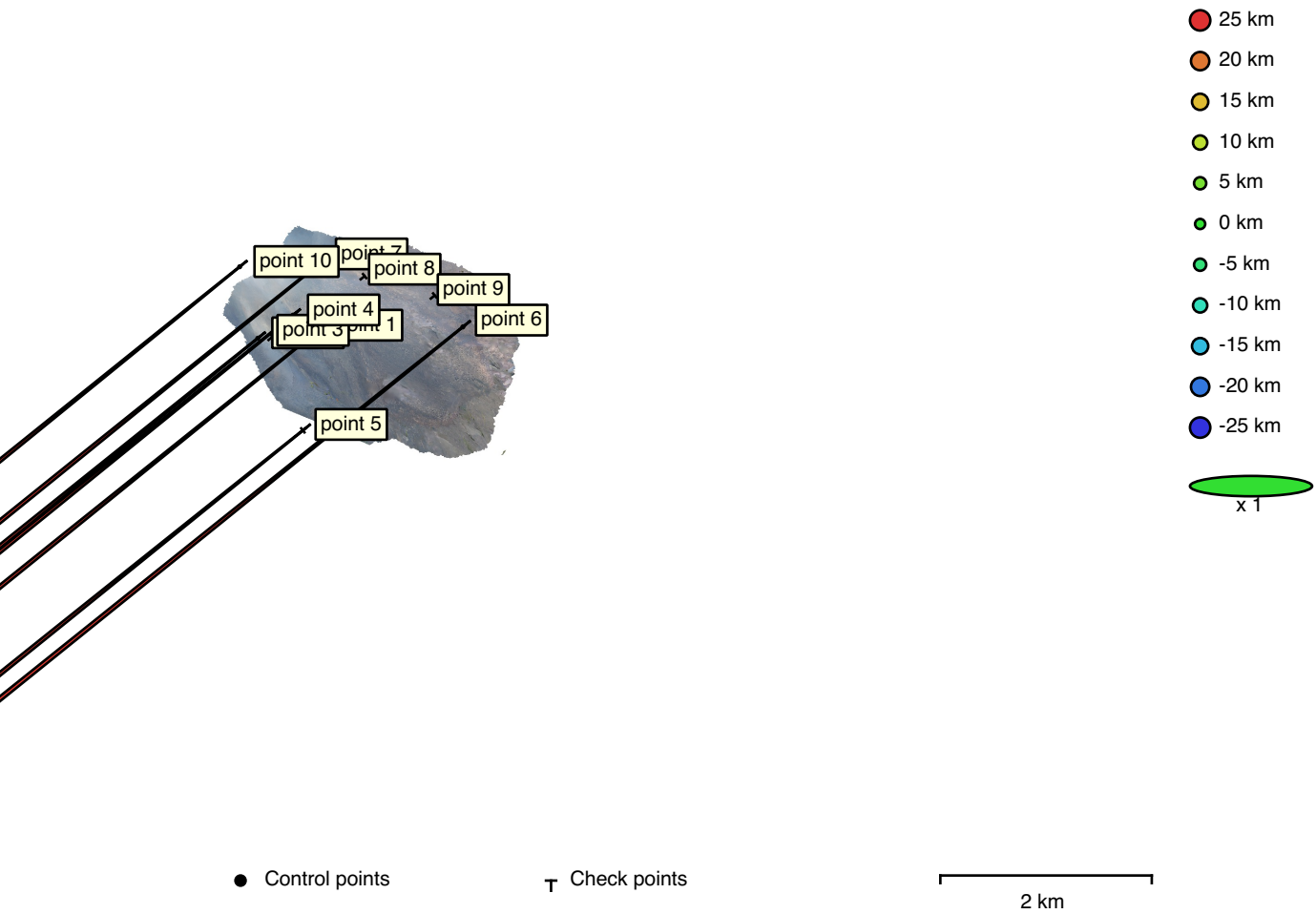


Fig. 5. GCP locations and error estimates.

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 (km)	Y error (km)	Z error (km)	XY error (km)	Total (km)
6	432.621	348.865	24.3184	555.759	556.291

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

Count	X error (km)	Y error (km)	Z error (km)	XY error (km)	Total (km)
1	432.471	347.675	24.1851	554.896	555.423

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

Label	X error (km)	Y error (km)	Z error (km)	Total (km)	Image (pix)
point 1	432.619	348.619	24.2806	556.133	6.399 (33)
point 2	432.082	348.571	24.2634	555.684	10.415 (24)
point 4	432.407	348.784	24.3282	556.074	5.824 (22)
point 6	433.979	348.649	24.3979	557.216	11.920 (28)
point 7	432.697	349.301	24.3684	556.625	12.784 (15)
point 10	431.94	349.267	24.2714	556.012	29.572 (9)
Total	432.621	348.865	24.3184	556.291	12.044

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

Label	X error (km)	Y error (km)	Z error (km)	Total (km)	Image (pix)
point 3					3.933 (16)
point 5	432.471	347.675	24.1851	555.423	48.144 (6)
point 8					19.725 (28)
point 9					11.418 (22)
Total	432.471	347.675	24.1851	555.423	48.144

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

Digital Elevation Model

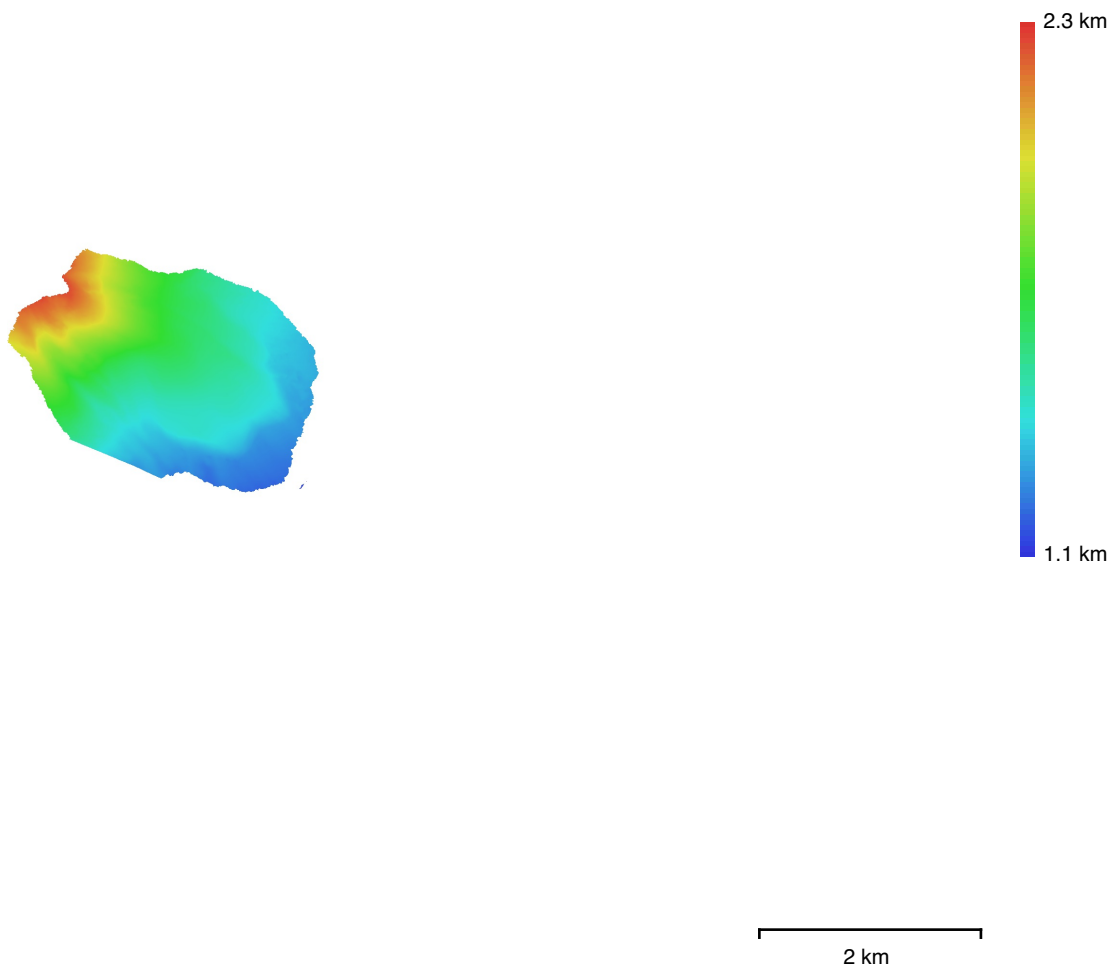


Fig. 6. Reconstructed digital elevation model.

Resolution: 3.38 m/pix
Point density: 0.0878 points/m²

Processing Parameters

General

Cameras	39
Aligned cameras	38
Markers	10
Coordinate system	WGS 84 / UTM zone 47N (EPSG::32647)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	11,162 of 20,067
Reprojection error	0.323567 (0.998717 max)
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.57707

Dense Point Cloud

Points	425,607
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Moderate

Model

Faces	53,042
Vertices	26,882
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 31 seconds

Texturing parameters

Mapping mode	Orthophoto
Blending mode	Mosaic
Texture size	8,192 x 8,192
Enable hole filling	Yes
Enable ghosting filter	No
UV mapping time	0 seconds
Blending time	56 seconds

Software

Version	1.5.1 build 7618
Platform	Mac OS 64