

LUSI_Jul4-2018

Processing Report

LUSI Mud Volcano, Sidoarjo, East Java, Indonesia
July 4, 2018
sUAS Thermal Infrared Mapping Survey (DJI M210, XT)

07 August 2019



Survey Data

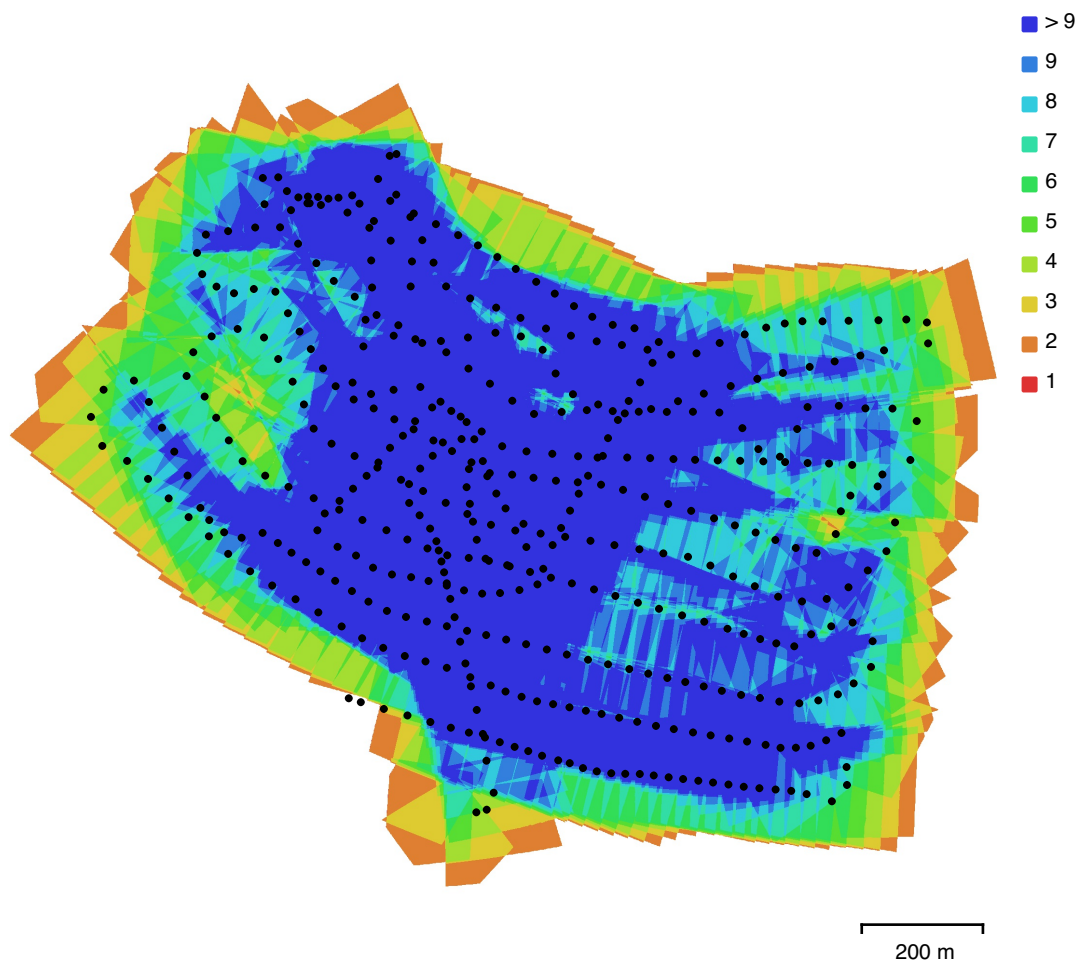


Fig. 1. Camera locations and image overlap.

Number of images:	445	Camera stations:	445
Flying altitude:	260 m	Tie points:	81,912
Ground resolution:	28.4 cm/pix	Projections:	324,293
Coverage area:	1.36 km ²	Reprojection error:	0.516 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
unknown	640 x 512	unknown	unknown	No

Table 1. Cameras.

Camera Calibration

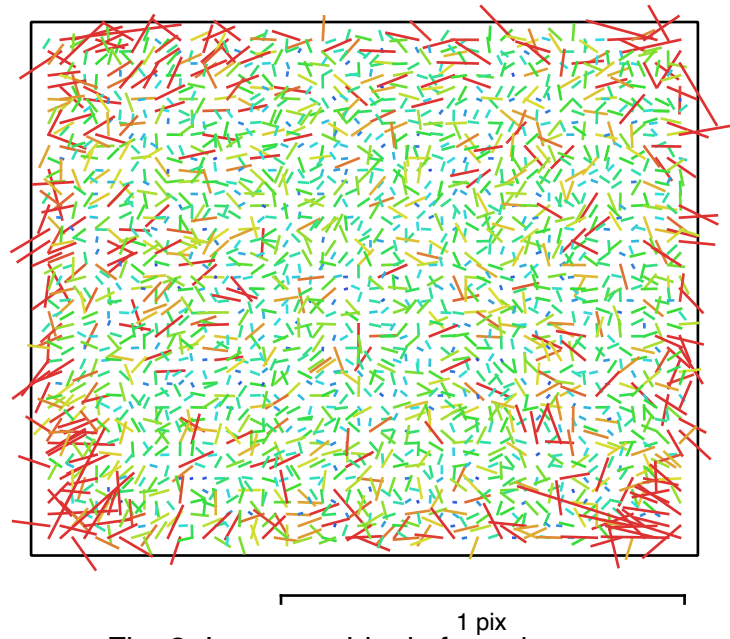


Fig. 2. Image residuals for unknown.

unknown
445 images

Type	Resolution	Focal Length	Pixel Size
Frame	640 x 512	unknown	unknown

	Value	Error	F	B1	B2	K1	K2	P1	P2
F	899.907	1.2	1.00	-0.82	0.38	-0.38	0.82	0.09	0.15
B1	-20.3982	0.25		1.00	-0.46	-0.08	-0.65	0.07	0.44
B2	1.62895	0.051			1.00	0.04	0.30	-0.75	-0.21
K1	-0.0952689	0.00075				1.00	-0.67	-0.22	-0.73
K2	0.739367	0.0044					1.00	0.07	0.15
P1	0.000653939	4e-05						1.00	0.28
P2	0.00177529	0.00022							1.00

Table 2. Calibration coefficients and correlation matrix.

Digital Elevation Model

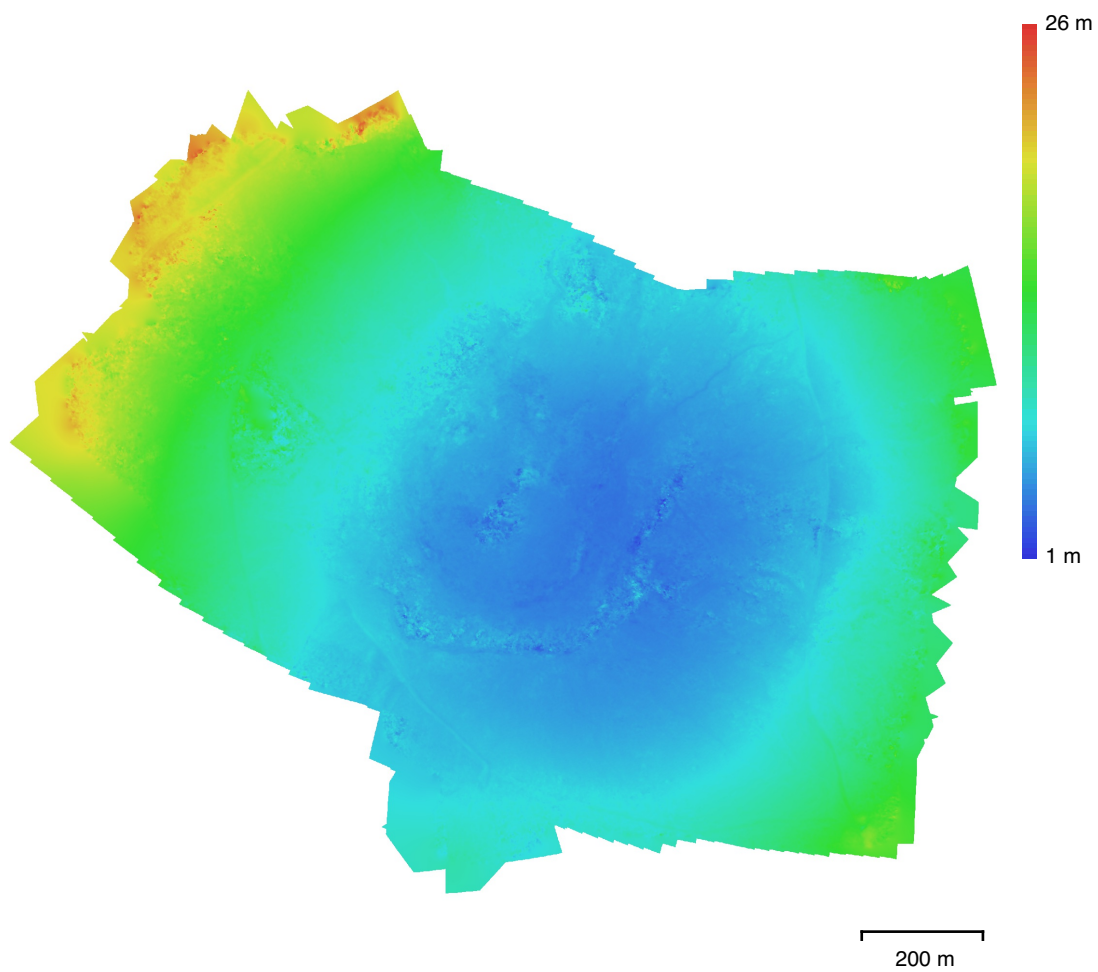


Fig. 3. Reconstructed digital elevation model.

Resolution: 56.7 cm/pix
Point density: 3.11 points/m²

Processing Parameters

General

Cameras	445
Aligned cameras	445
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	81,912 of 115,311
RMS reprojection error	0.156396 (0.515759 pix)
Max reprojection error	0.592324 (6.12045 pix)
Mean key point size	3.26814 pix
Point colors	1 bands, uint16
Key points	No
Average tie point multiplicity	4.5627
Alignment parameters	
Accuracy	High
Generic preselection	No
Key point limit	0
Tie point limit	0
Adaptive camera model fitting	Yes
Matching time	53 minutes 15 seconds
Alignment time	4 minutes 52 seconds
Optimization parameters	
Parameters	f, b1, b2, k1, k2, p1, p2
Adaptive camera model fitting	No
Optimization time	6 seconds

Dense Point Cloud

Points	3,938,226
Point colors	1 bands, uint16
Reconstruction parameters	
Quality	High
Depth filtering	Moderate
Depth maps generation time	14 minutes 55 seconds
Dense cloud generation time	2 minutes 4 seconds

Model

Faces	262,547
Vertices	132,314
Vertex colors	1 bands, uint16
Texture	8,192 x 8,192, 2 bands, uint16
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Moderate
Face count	262,548
Processing time	4 minutes 1 seconds
Texturing parameters	
Mapping mode	Orthophoto
Blending mode	Mosaic
Texture size	8,192 x 8,192
Enable hole filling	Yes

General	
Enable ghosting filter	No
UV mapping time	1 seconds
Blending time	30 seconds
DEM	
Size	4,153 x 3,733
Coordinate system	WGS 84 (EPSG::4326)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	11 seconds
Orthomosaic	
Size	5,744 x 4,680
Coordinate system	WGS 84 (EPSG::4326)
Colors	1 bands, uint16
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Processing time	28 seconds
Software	
Version	1.5.1 build 7618
Platform	Mac OS 64