

Sarsoyra 2

Processing Report

17 May 2020



Survey Data

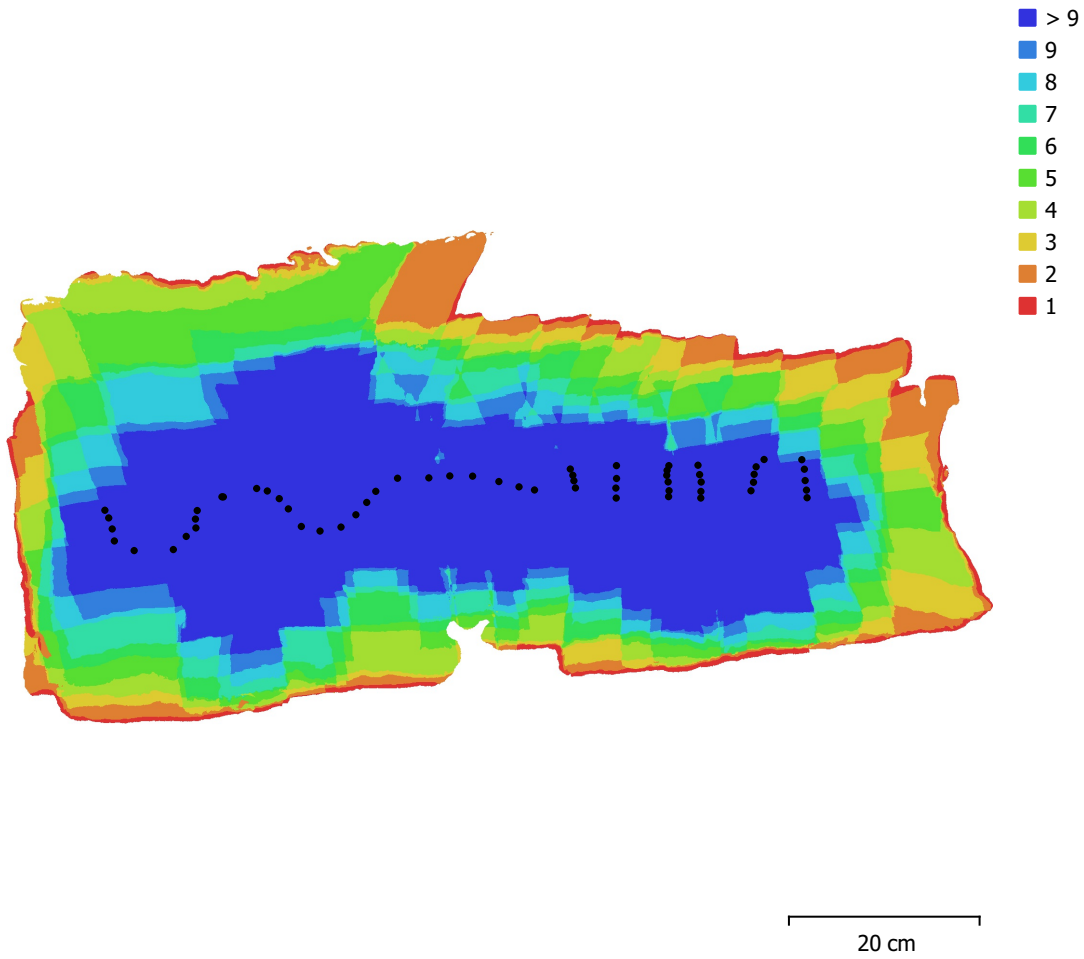


Fig. 1. Camera locations and image overlap.

Number of images:	58	Camera stations:	58
Flying altitude:	24.4 cm	Tie points:	33,962
Ground resolution:	0.0824 mm/pix	Projections:	203,739
Coverage area:	3.86e+03 cm ²	Reprojection error:	1.35 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibration
iPhone 6, iPhone 6 back camera 4.15mm f/2.2 (4.15mm)	3264 x 2448	4.15 mm	1.52 x 1.52 μm	No

Table 1. Cameras.

Camera Calibration

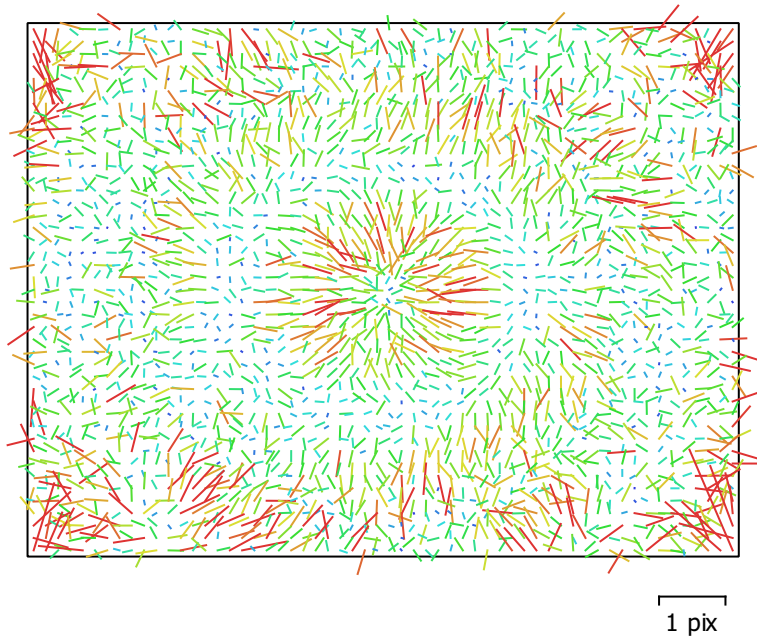


Fig. 2. Image residuals for iPhone 6, iPhone 6 back camera 4.15mm f/2.2 (4.15mm).

iPhone 6, iPhone 6 back camera 4.15mm f/2.2 (4.15mm)

58 images

Type	Resolution	Focal Length	Pixel Size
Frame	3264 x 2448	4.15 mm	1.52 x 1.52 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	2770	0.39	1.00	-0.05	0.08	0.16	0.00	-0.05	-0.05	0.03
Cx	-7.97712	0.38		1.00	0.03	0.02	-0.00	-0.01	0.90	0.03
Cy	4.27814	0.48			1.00	0.03	-0.02	0.02	0.02	0.95
K1	0.0778769	0.00025				1.00	-0.93	0.87	0.02	0.03
K2	-0.0914581	0.0011					1.00	-0.98	-0.00	-0.02
K3	-0.0324707	0.0015						1.00	-0.01	0.02
P1	-0.000527547	3.6e-05							1.00	0.03
P2	0.000181351	5e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

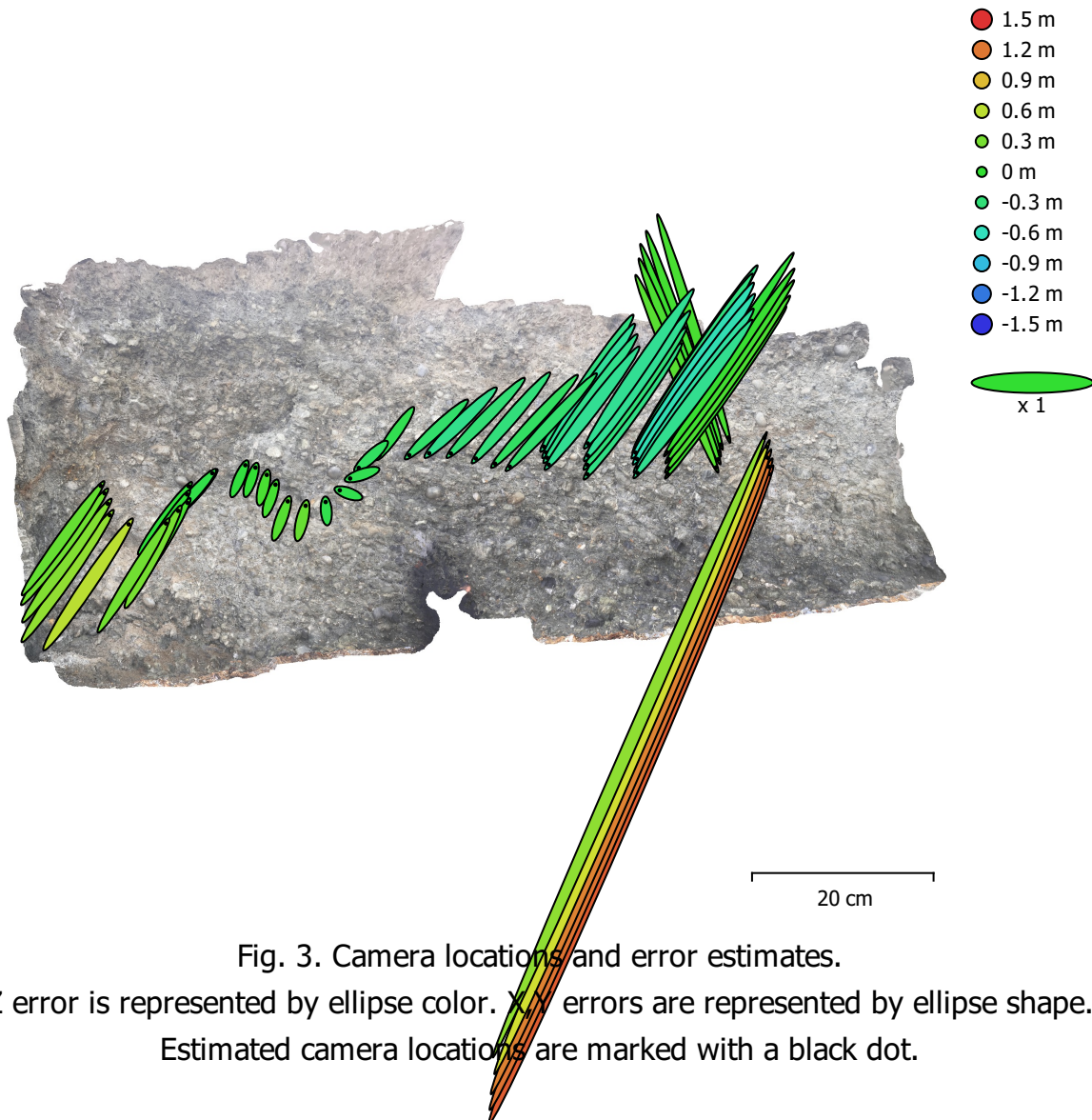


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. XY errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
12.0932	24.0319	40.33	26.9031	48.4798

Table 3. Average camera location error.

X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

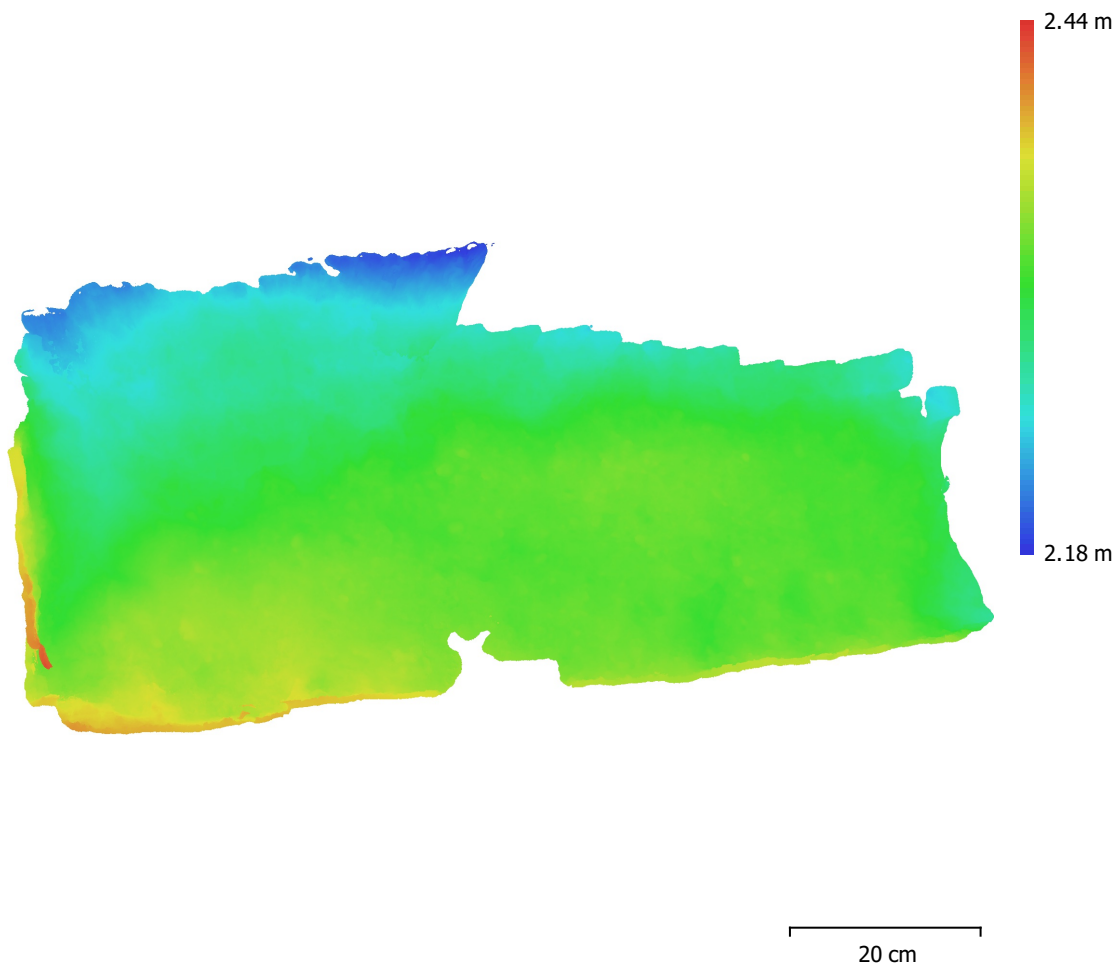


Fig. 4. Reconstructed digital elevation model.

Resolution: 0.165 mm/pix
Point density: 36.8 points/mm²

Processing Parameters

General

Cameras	58
Aligned cameras	58
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	33,962 of 39,673
RMS reprojection error	0.441851 (1.34716 pix)
Max reprojection error	1.77833 (12.8556 pix)
Mean key point size	3.04034 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	6.38228

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Guided image matching	No
Adaptive camera model fitting	No
Matching time	5 minutes 39 seconds
Matching memory usage	327.98 MB
Alignment time	42 seconds
Alignment memory usage	35.36 MB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	9 seconds
Software version	1.6.1.10009

Depth Maps

Count	58
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	15 minutes 33 seconds
Software version	1.6.1.10009

Dense Point Cloud

Points	26,392,099
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Mild
Processing time	15 minutes 33 seconds

Dense cloud generation parameters

Processing time	12 minutes 0 seconds
Software version	1.6.1.10009

Model

Faces	1,999,999
Vertices	1,004,757

General

Vertex colors 3 bands, uint8
Texture 4,096 x 4,096 x 10, 4 bands, uint8

Depth maps generation parameters

Quality High
Filtering mode Mild
Processing time 15 minutes 33 seconds

Reconstruction parameters

Surface type Arbitrary
Source data Dense cloud
Interpolation Enabled
Strict volumetric masks No
Processing time 13 minutes 0 seconds

Texturing parameters

Mapping mode Generic
Blending mode Mosaic
Texture size 4,096
Enable hole filling Yes
Enable ghosting filter Yes
UV mapping time 9 minutes 45 seconds
Blending time 2 minutes 27 seconds
Software version 1.6.1.10009

Tiled Model

Texture 3 bands, uint8

Depth maps generation parameters

Quality High
Filtering mode Mild
Processing time 15 minutes 33 seconds

Reconstruction parameters

Source data Dense cloud
Tile size 256
Face count High
Enable ghosting filter Yes
Processing time 52 minutes 6 seconds
Software version 1.6.1.10009

System

Software name Agisoft Metashape Professional
Software version 1.6.1 build 10009
OS Windows 64 bit
RAM 127.78 GB
CPU Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s) GeForce RTX 2080