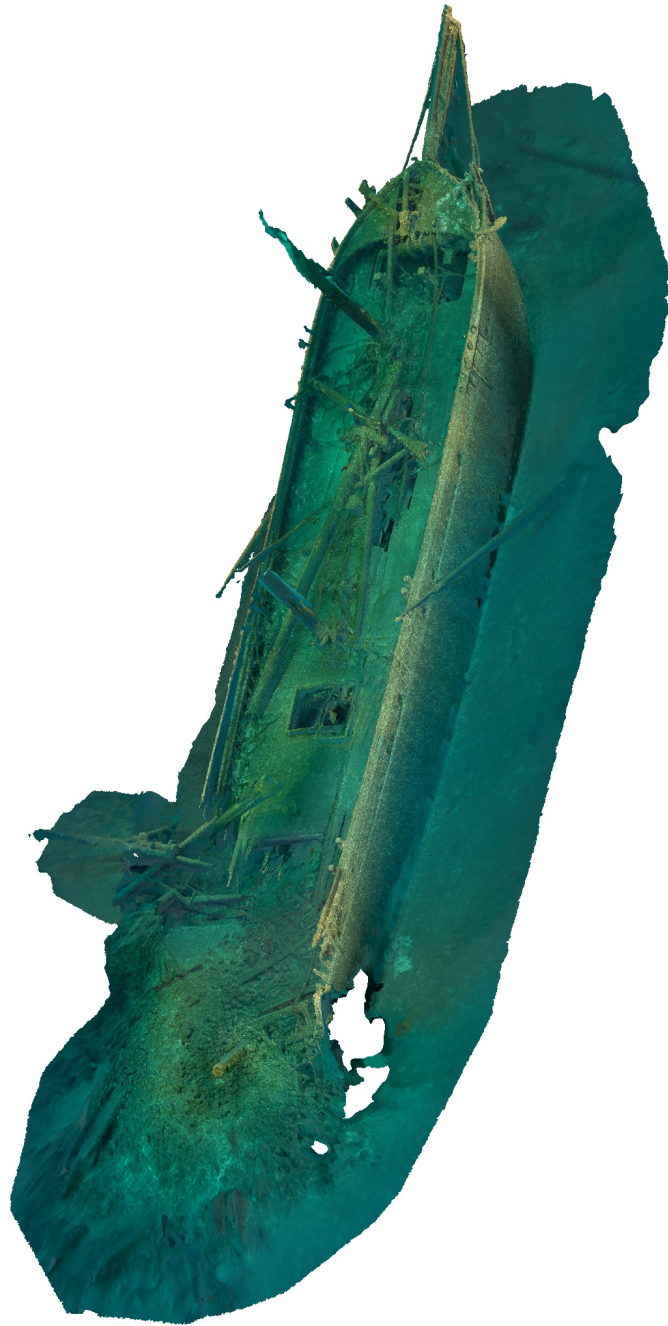


Agisoft Metashape

Processing Report

15 April 2021



Survey Data

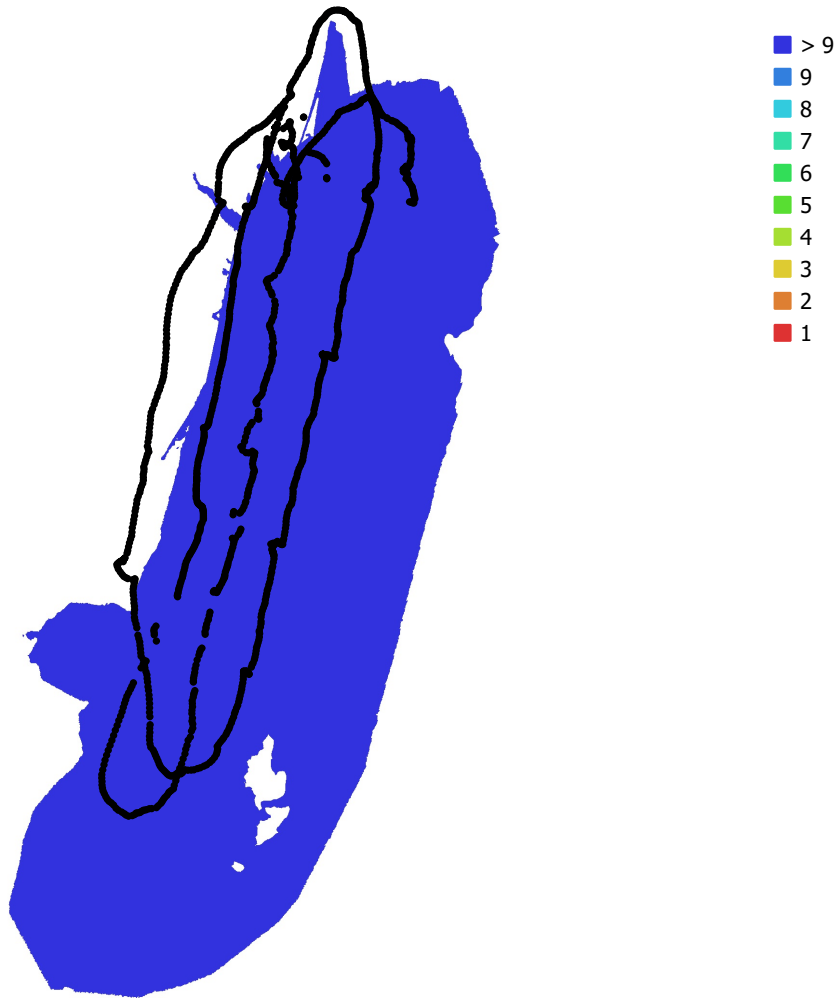


Fig. 1. Camera locations and image overlap.

Number of images: 1,564

Camera stations: 1,493

Tie points: 1,142,211

Projections: 3,757,845

Reprojection error: 1.02 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibration
EOS 5D Mark IV, EF16-35mm f/2.8L II USM (16mm)	6720 x 4480	16 mm	5.36 x 5.36 μm	No
EOS 500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm)	6000 x 4000	10.6 mm	3.92 x 3.92 μm	No
EOS 500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm)	4000 x 6000	10.6 mm	3.92 x 3.92 μm	No

Table 1. Cameras.

Camera Calibration

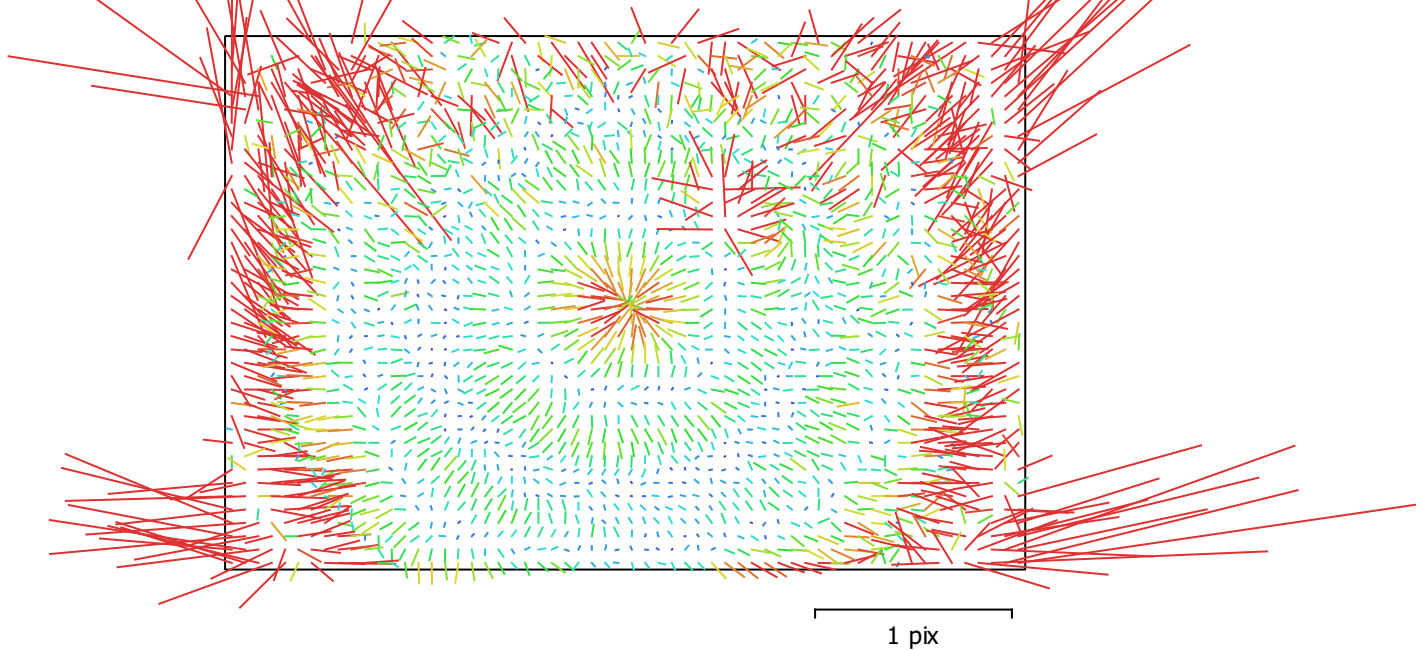


Fig. 2. Image residuals for Canon EOS 5D Mark IV, EF16-35mm f/2.8L II USM (16mm).

Canon EOS 5D Mark IV, EF16-35mm f/2.8L II USM (16mm)

954 images

Type	Resolution	Focal Length	Pixel Size
Frame	6720 x 4480	16 mm	5.36 x 5.36 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	3126.61	0.057	1.00	-0.09	-0.19	-0.40	-0.00	0.08	0.17	-0.17	0.16	-0.07	-0.30
Cx	26.7647	0.07		1.00	0.03	0.04	-0.01	0.01	-0.05	0.06	-0.06	0.89	0.02
Cy	-15.918	0.085			1.00	-0.03	-0.04	-0.13	0.10	-0.10	0.10	0.04	0.90
B1	0.92987	0.028				1.00	0.00	-0.03	-0.00	0.01	-0.01	0.07	0.16
B2	0.740282	0.028					1.00	0.00	-0.01	0.01	-0.01	-0.20	-0.00
K1	-0.082538	2.8e-05						1.00	-0.91	0.83	-0.76	0.01	-0.16
K2	0.0998754	7.5e-05							1.00	-0.98	0.93	-0.04	0.09
K3	-0.0689474	8.4e-05								1.00	-0.99	0.05	-0.08
K4	0.0185923	3.1e-05									1.00	-0.06	0.08
P1	0.000792116	5.1e-06										1.00	0.02
P2	-3.64918e-05	5.6e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

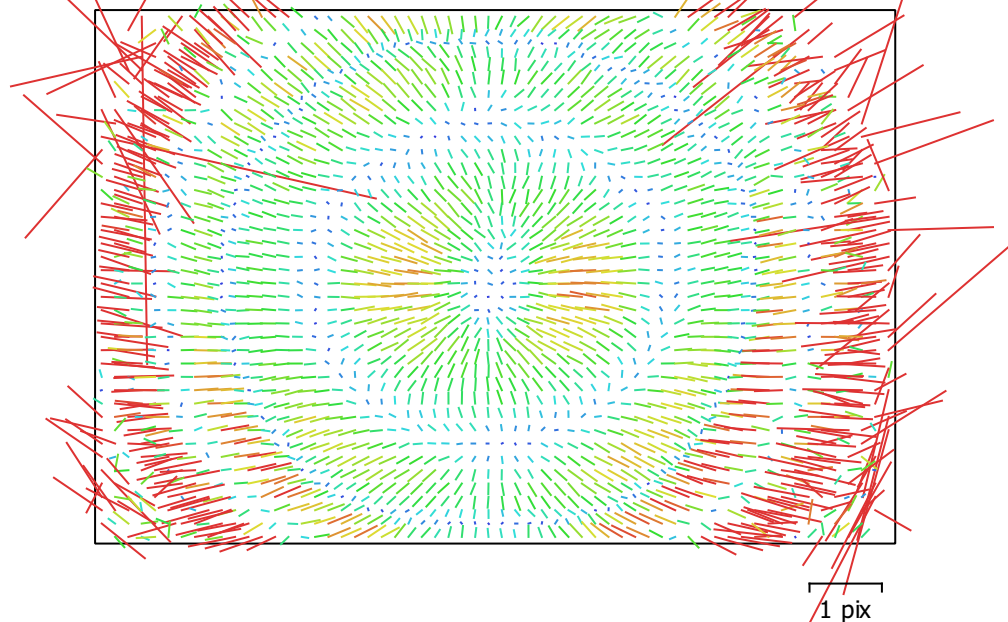


Fig. 3. Image residuals for ILCE-6500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm).

ILCE-6500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm)

581 images

Type	Resolution	Focal Length	Pixel Size
Frame	6000 x 4000	10.6 mm	3.92 x 3.92 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	2919.38	0.058	1.00	0.01	-0.02	-0.14	0.02	-0.53	0.47	-0.44	0.43	-0.03	-0.02
Cx	-50.5445	0.06		1.00	-0.08	0.01	0.03	0.02	-0.02	0.02	-0.02	-0.62	0.06
Cy	54.4934	0.076			1.00	0.07	0.06	-0.07	0.08	-0.08	0.08	0.07	-0.64
B1	2.07814	0.023				1.00	0.02	-0.05	0.04	-0.05	0.05	0.04	0.10
B2	-0.0885395	0.023					1.00	-0.04	0.04	-0.03	0.03	-0.19	-0.00
K1	-0.339522	1.5e-05						1.00	-0.95	0.89	-0.82	0.02	0.03
K2	0.141662	1.9e-05							1.00	-0.98	0.94	-0.03	-0.05
K3	-0.0368254	9.4e-06								1.00	-0.99	0.05	0.05
K4	0.00395402	1.6e-06									1.00	-0.05	-0.04
P1	2.19101e-05	1.2e-06										1.00	-0.11
P2	-6.44902e-05	1.7e-06											1.00

Table 3. Calibration coefficients and correlation matrix.

Camera Calibration

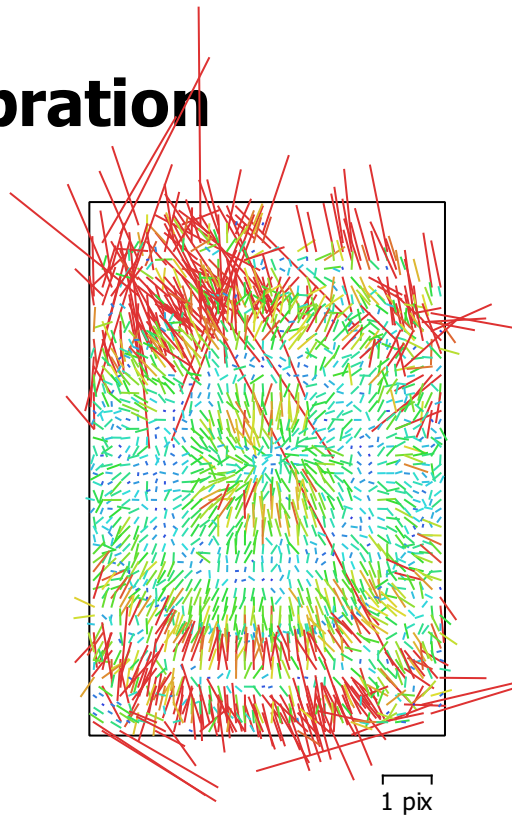


Fig. 4. Image residuals for ILCE-6500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm).

ILCE-6500, .7x EF8-15mm f/4L FISHEYE USM (10.6mm)

29 images

Type **Frame** Resolution **4000 x 6000** Focal Length **10.6 mm** Pixel Size **3.92 x 3.92 μm**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	2923.85	0.11	1.00	-0.13	-0.03	-0.13	0.12	-0.50	0.44	-0.41	0.39	-0.05	-0.05
Cx	-58.2895	0.17		1.00	0.01	-0.05	-0.14	0.05	-0.06	0.06	-0.06	-0.48	0.13
Cy	-39.3257	0.16			1.00	0.10	-0.07	-0.18	0.22	-0.24	0.25	0.01	-0.46
B1	-2.00557	0.048				1.00	0.12	-0.07	0.07	-0.07	0.07	-0.16	0.06
B2	2.47277	0.052					1.00	-0.02	0.02	-0.01	0.01	-0.22	-0.12
K1	-0.33999	4.8e-05						1.00	-0.96	0.90	-0.84	-0.04	0.02
K2	0.140606	6.3e-05							1.00	-0.98	0.94	0.02	-0.11
K3	-0.0357617	3e-05								1.00	-0.99	-0.01	0.11
K4	0.00370953	4.7e-06									1.00	0.00	-0.11
P1	0.000158231	4.6e-06										1.00	-0.05
P2	7.71919e-05	4e-06											1.00

Table 4. Calibration coefficients and correlation matrix.

Digital Elevation Model

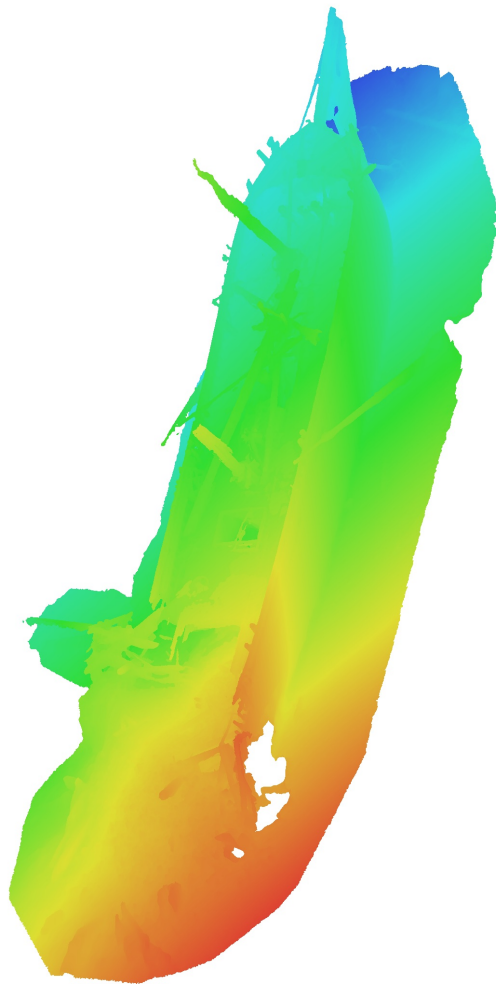


Fig. 5. Reconstructed digital elevation model.

Processing Parameters

General

Cameras	1564
Aligned cameras	1493

Point Cloud

Points	1,142,211 of 1,331,950
RMS reprojection error	0.153346 (1.02408 pix)
Max reprojection error	9.23191 (104.412 pix)
Mean key point size	5.07914 pix
Point colors	3 bands, uint8
Key points	3.73 GB
Average tie point multiplicity	3.60933

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	No
Key point limit	30,000
Tie point limit	4,000
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	50 seconds
Matching memory usage	75.02 MB
Alignment time	34 minutes 4 seconds
Alignment memory usage	670.41 MB
Software version	1.6.3.10732
File size	121.89 MB

Depth Maps

Count	1421
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Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Processing time	1 hours 32 minutes
Memory usage	1.15 GB
Software version	1.6.3.10732
File size	2.48 GB

Dense Point Cloud

Points	89,343,356
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Processing time	1 hours 32 minutes
Memory usage	1.15 GB

Dense cloud generation parameters

Processing time	2 hours 20 minutes
Memory usage	18.73 GB
Software version	1.6.3.10732
File size	2.23 GB

Model

Faces	7,953,938
Vertices	3,980,733

Vertex colors	3 bands, uint8
Texture	4,096 x 4,096, 4 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	1 hours 32 minutes
Memory usage	1.15 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Depth maps
Interpolation	Extrapolated
Strict volumetric masks	No
Processing time	44 minutes 44 seconds
Memory usage	5.39 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	No
UV mapping time	4 minutes 32 seconds
Blending time	6 minutes 9 seconds
Software version	1.6.3.10732
File size	365.18 MB
System	
Software name	Agisoft Metashape Standard
Software version	1.7.1 build 11797
OS	Windows 64 bit
RAM	63.92 GB
CPU	Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2060 SUPER