

PBSF_08122020

Processing Report

14 June 2021



Survey Data

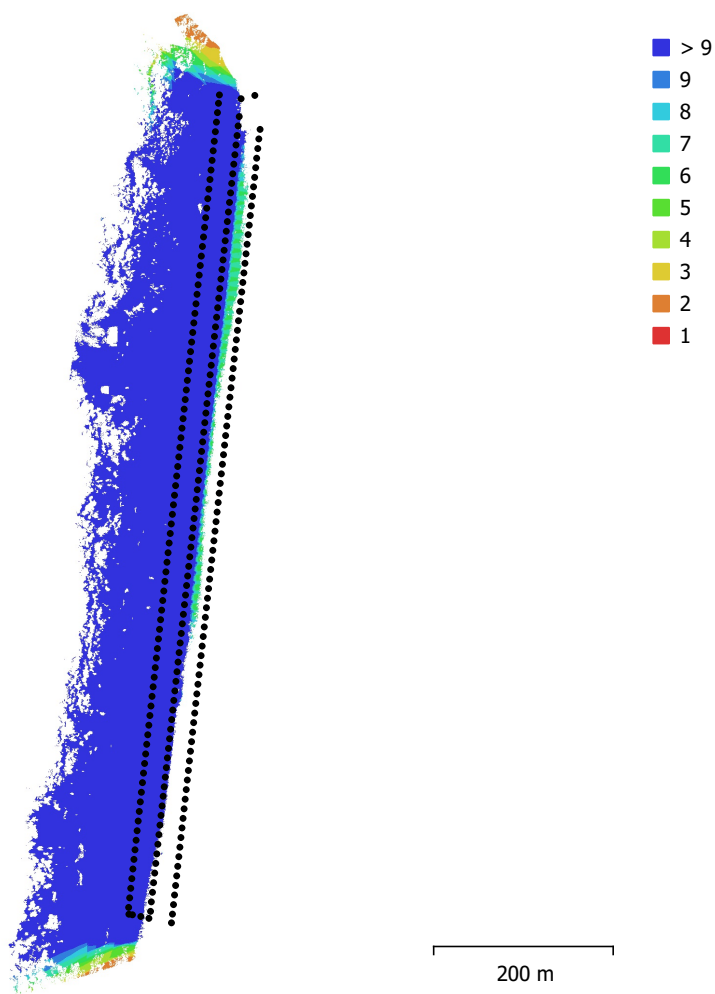


Fig. 1. Camera locations and image overlap.

Number of images:	260	Camera stations:	260
Flying altitude:	83.9 m	Tie points:	519,994
Ground resolution:	2.06 cm/pix	Projections:	1,671,293
Coverage area:	0.123 km²	Reprojection error:	0.505 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6310R (8.8mm)	5472 x 3648	8.8 mm	2.41 x 2.41 μm	Yes

Table 1. Cameras.

Camera Calibration

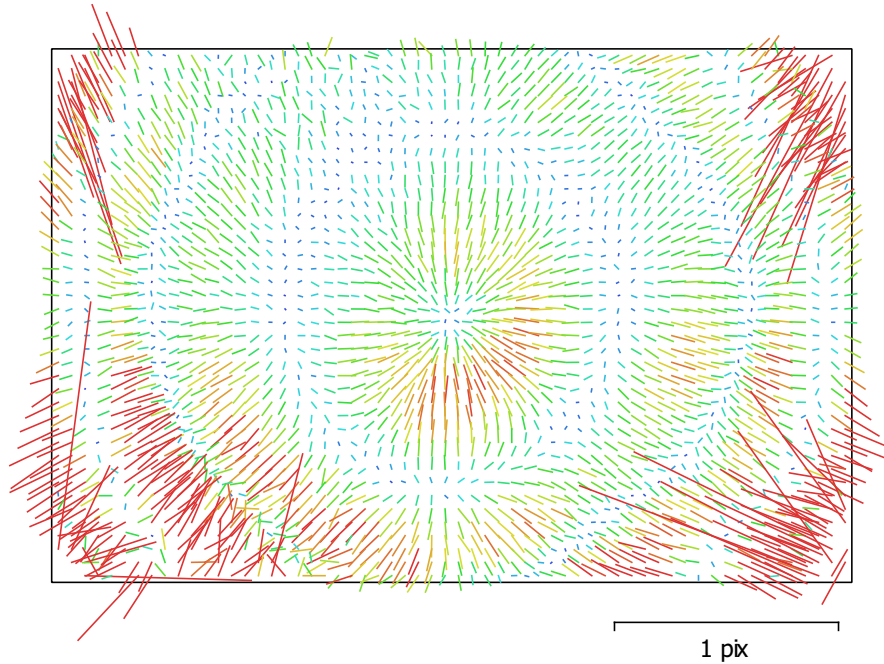


Fig. 2. Image residuals for FC6310R (8.8mm).

FC6310R (8.8mm)

260 images, precalibrated

Type
Frame

Resolution
5472 x 3648

Focal Length
8.8 mm

Pixel Size
2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	3685.68	0.055	1.00	-0.49	-0.33	-0.68	0.40	-0.27	-0.21	0.49
Cx	-42.807	0.035		1.00	0.06	0.06	-0.02	0.00	-0.16	0.04
Cy	-6.13277	0.033			1.00	0.15	-0.06	0.02	-0.18	-0.57
K1	-0.283115	1e-05				1.00	-0.89	0.77	0.22	-0.48
K2	0.124376	1.7e-05					1.00	-0.97	-0.15	0.26
K3	-0.0346993	1e-05						1.00	0.09	-0.15
P1	-0.000185274	7.5e-07							1.00	-0.21
P2	0.000192063	1.5e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

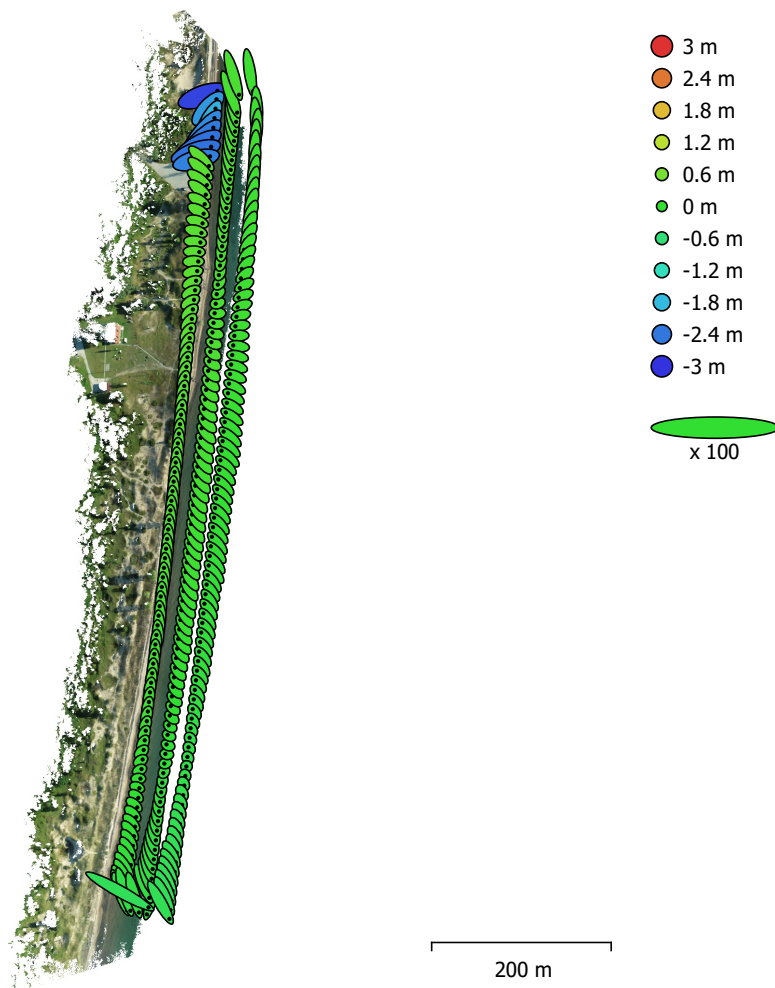


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y 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)
10.2737	16.7887	44.8866	19.6827	49.0125

Table 3. Average camera location error.

X - Easting, Y - Northing, Z - Altitude.

Ground Control Points



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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
4	24.1667	13.7542	71.9944	27.8066	77.1777

Table 4. Control points RMSE.

X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
1	-24.062	12.2225	73.0985	77.9215	9.173 (29)
2	-24.5133	14.8282	77.558	82.6802	9.072 (30)
3	-23.4906	15.0183	68.5567	74.0093	8.576 (29)
4	-24.585	12.7239	68.3677	73.7595	8.161 (30)
Total	24.1667	13.7542	71.9944	77.1777	8.753

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

Digital Elevation Model

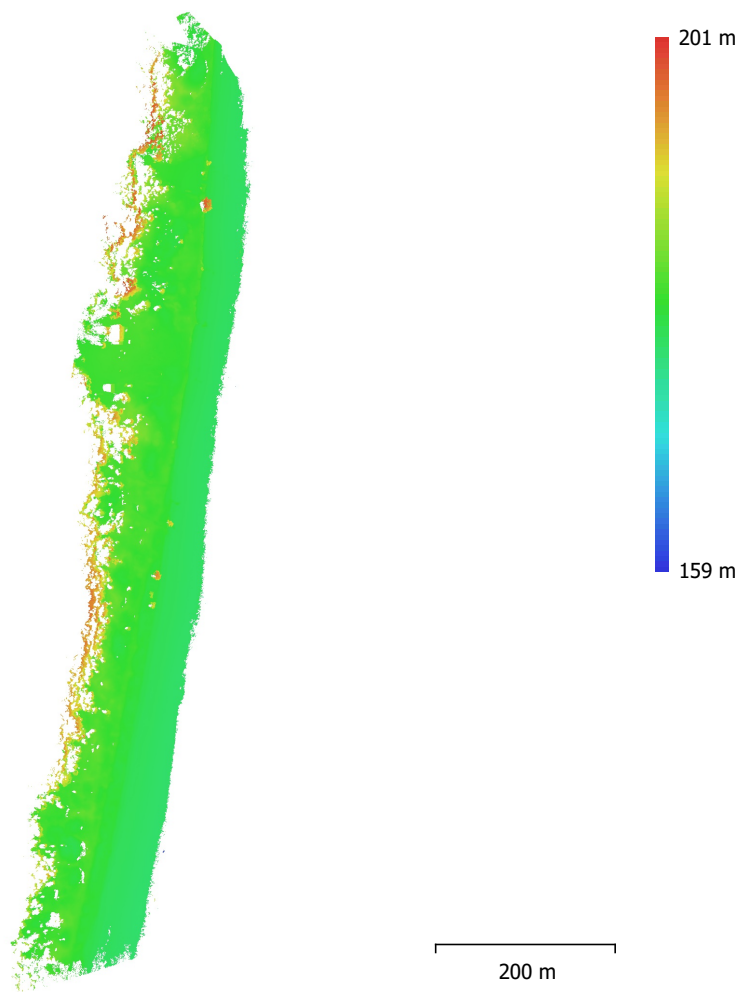


Fig. 5. Reconstructed digital elevation model.

Resolution: 4.11 cm/pix
Point density: 591 points/m²

Processing Parameters

General

Cameras	260
Aligned cameras	260
Markers	4
Coordinate system	WGS 84 / UTM zone 16N (EPSG::32616)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	519,994 of 557,794
RMS reprojection error	0.105784 (0.504592 pix)
Max reprojection error	0.32225 (30.7557 pix)
Mean key point size	3.19988 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.49309

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	No
Key point limit	40,000
Tie point limit	10,000
Guided image matching	No
Adaptive camera model fitting	No
Matching time	24 minutes 9 seconds
Matching memory usage	263.45 MB
Alignment time	5 minutes 54 seconds
Alignment memory usage	165.13 MB
Software version	1.6.2.10247

Depth Maps

Count	258
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	3 hours 31 minutes
Software version	1.6.2.10247

Dense Point Cloud

Points	117,319,427
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	3 hours 31 minutes
Dense cloud generation parameters	
Processing time	1 hours 36 minutes
Software version	1.6.2.10247

Model

Faces	17,196,993
Vertices	9,561,050
Vertex colors	3 bands, uint8
Depth maps generation parameters	
Quality	High

Filtering mode	Mild
Processing time	3 hours 31 minutes
Reconstruction parameters	
Surface type	Height field
Source data	Dense cloud
Interpolation	Disabled
Strict volumetric masks	No
Processing time	6 minutes 46 seconds
Software version	1.6.2.10247
Orthomosaic	
Size	13,081 x 53,307
Coordinate system	WGS 84 (EPSG::4326)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	Mesh
Enable hole filling	Yes
Processing time	17 minutes 37 seconds
Software version	1.6.2.10247
System	
Software name	Agisoft Metashape Professional
Software version	1.6.2 build 10247
OS	Windows 64 bit
RAM	63.87 GB
CPU	Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz
GPU(s)	AMD RadeonT R7 450 (Capeverde)