

Report Vidoc Cappella 16

Processing Report
28 September 2024



Survey Data

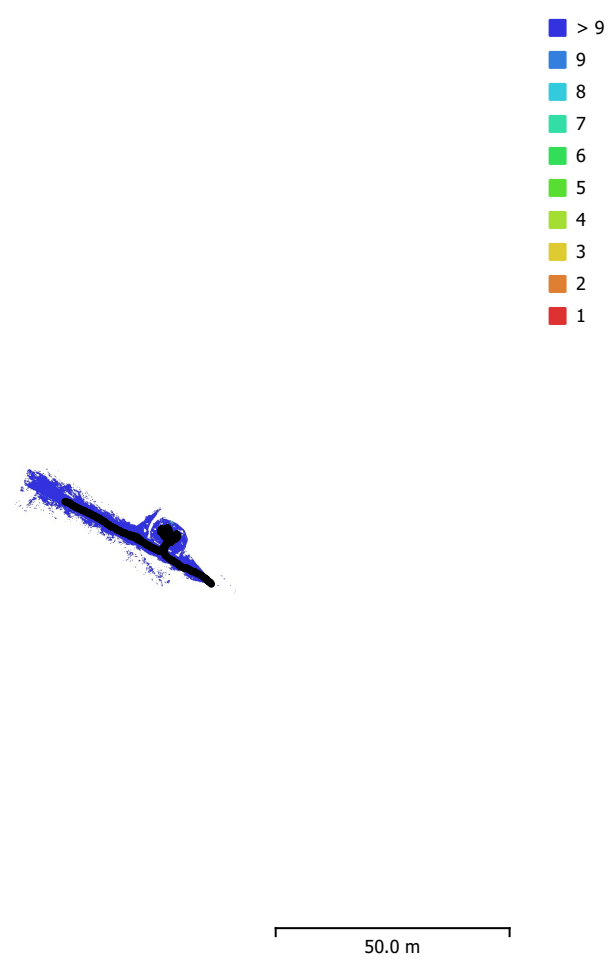


Fig. 1. Camera locations and image overlap.

Number of images:	572	Camera stations:	572
Flying altitude:	1.82 m	Tie points:	346,192
Ground resolution:	0.851 mm/pix	Projections:	1,512,771
Coverage area:	228 m ²	Reprojection error:	1.6 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
PIX4Dcatch.iPhone16.1.viDoc, i...	4224 x 2376	3.31822 mm	1.18 x 1.18 μm	Yes

Table 1. Cameras.

Camera Calibration

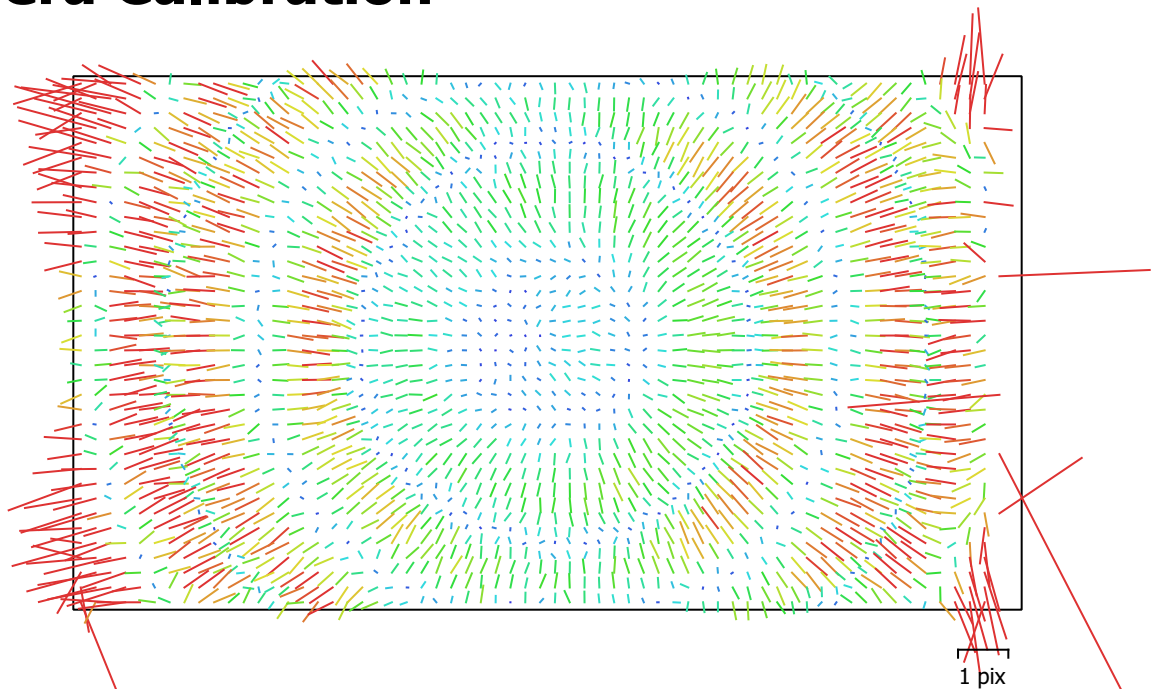


Fig. 2. Image residuals for PIX4Dcatch.iPhone16.1.viDoc, iOS (3.31822mm).

PIX4Dcatch.iPhone16.1.viDoc, iOS (3.31822mm)

572 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
Frame	4224 x 2376	3.31822 mm	1.18 x 1.18 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	2815.65	0.11	1.00	-0.12	0.00	0.18	-0.12	0.17	-0.00	-0.00
Cx	4.28404	0.13		1.00	-0.04	-0.04	0.03	-0.04	0.83	-0.02
Cy	3.24548	0.13			1.00	0.01	-0.01	0.01	-0.05	0.87
K1	0.192154	0.00012				1.00	-0.96	0.90	0.00	-0.00
K2	-0.566856	0.00043					1.00	-0.98	-0.00	0.00
K3	0.517846	0.0005						1.00	-0.01	-0.00
P1	-0.00119592	1.3e-05							1.00	-0.01
P2	-2.29074e-05	1.3e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

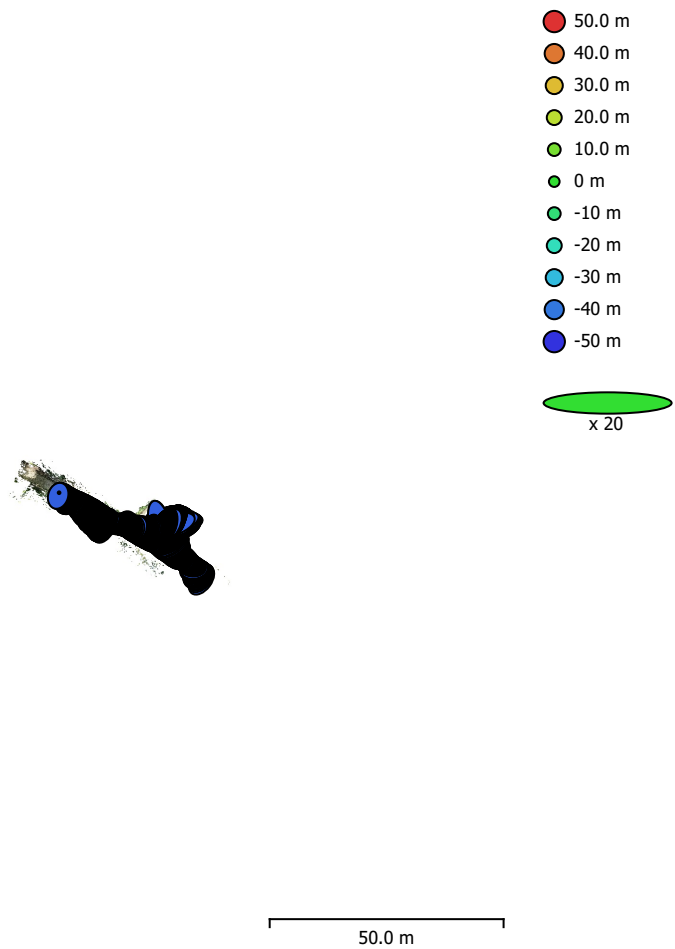


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
0.156441	0.0939671	43.4124	0.182493	43.4128

Table 3. Average camera location error.

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

Ground Control Points

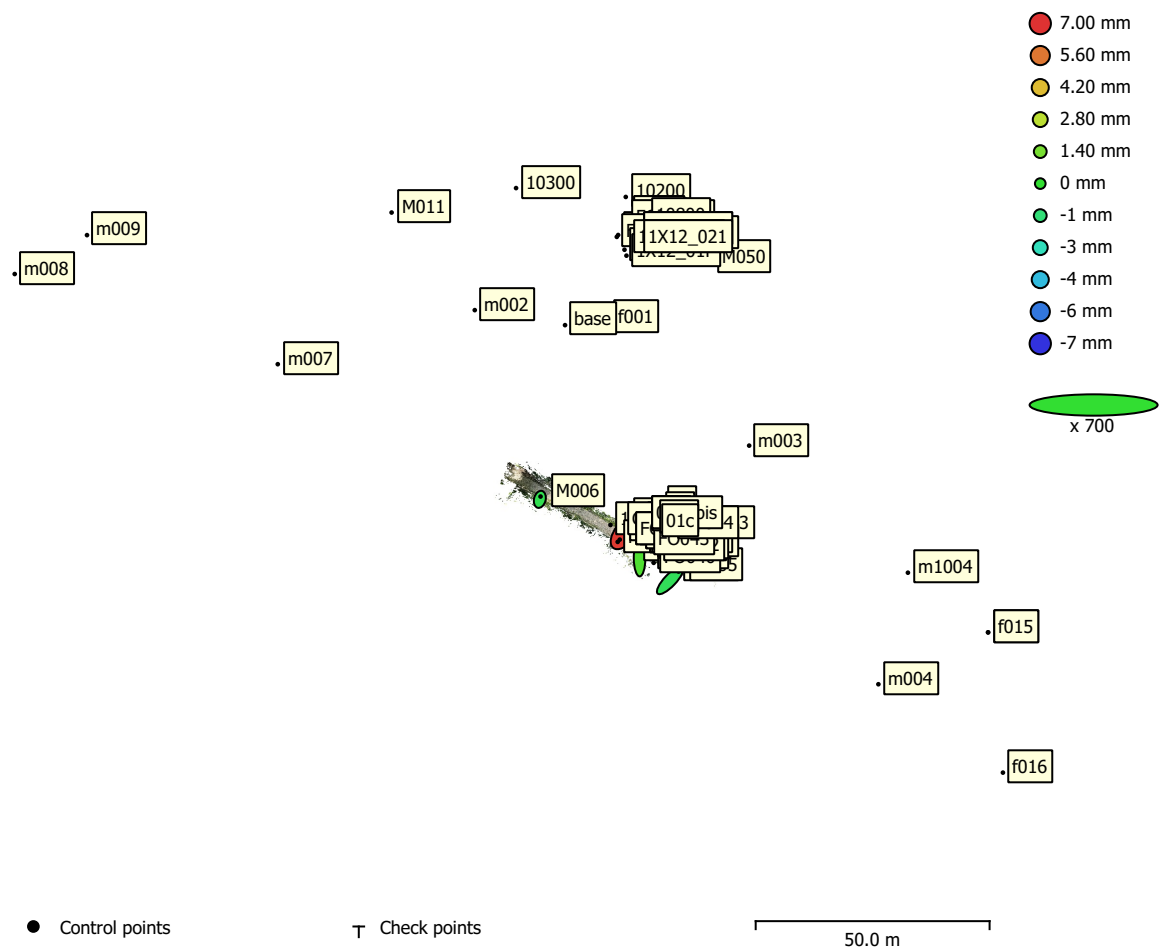


Fig. 4. GCP locations and error estimates.

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 (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
9	4.22405	4.40431	2.42754	6.10251	6.56761

Table 4. Control points RMSE.

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

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
M010					
M011					
m009					
m008					
m007					
M006	0.433064	1.71069	-0.63351	1.87493	0.475 (8)
m013					
M005	5.14145	5.42777	-0.792097	7.51815	0.526 (8)
m004					
f014					
f015					
m1004					
m003					
f001					
base					
m002					
f016					
M050					
1601					
1602	-0.0579636	7.41092	0.580675	7.43386	0.688 (16)
CB1610					
CB1611	-3.48803	-4.30958	6.82652	8.79432	0.643 (6)
CB1612					
CB1613	-8.36997	-3.9913	-1.31063	9.36507	0.592 (13)
CB1614					
FO1615					
FO1616					
FO1617					
FO1618					
FO1619					
FO1620					
FO1621					

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
FO1622					
FO1623					
CG1640					
CB030					
CG031					
CB032					
CB033					
FO034					
FO035					
FO036					
FO037					
FO038					
FO039					
FO040					
FO041					
FO042					
FO043					
FO044					
15	-1.6527	-5.63535	1.39095	6.03518	0.312 (7)
16	-1.03623	-3.93235	0.883361	4.16142	0.459 (7)
11					
12	6.39691	1.55453	0.058253	6.58334	0.587 (8)
13	2.64764	1.76989	-0.795566	3.2826	0.608 (5)
14					
01b					
01a					
01a_bis					
01e					
01c					
10100					
10200					
CB60					
CB61					

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
CB62					
FO64					
FO65					
FO66					
FO67					
FO68					
CB69					
FO70					
FO71					
FO72					
FO73					
FO74					
FO75					
10300					
CB80					
CB81					
CB82					
FO83					
FO84					
FO85					
FO86					
FO87					
FO88					
10800					
1X12_017					
1X12_018					
1X12_019					
1X12_01F					
1X12_01D					
1X12_021					
Total	4.22405	4.40431	2.42754	6.56761	0.570

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

Digital Elevation Model

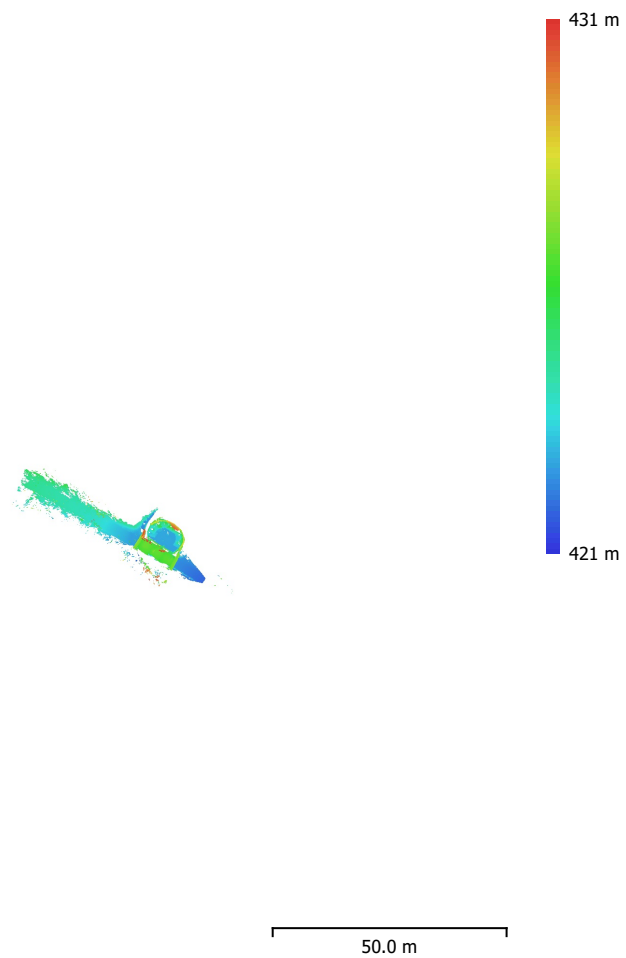


Fig. 5. Reconstructed digital elevation model.

Resolution: unknown

Point density: unknown

Processing Parameters

General

Images	572
Aligned images	572
Markers	101
Coordinate system	WGS 84 / UTM zone 32N (EPSG::32632)
Camera coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	346,192 of 497,176
RMS reprojection error	0.209634 (1.60007 pix)
Max reprojection error	2.22844 (63.1864 pix)
Mean key point size	7.30072 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	4.43215

Alignment parameters

Accuracy	Medium
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Key point limit per Mpx	1,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	1 minutes 29 seconds
Matching memory usage	446.18 MB
Alignment time	12 minutes 9 seconds
Alignment memory usage	418.61 MB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Exclude corners	No
Optimization time	13 seconds
Date created	2024:09:28 11:18:53
Software version	2.1.3.18817
File size	43.04 MB

Depth Maps

Count	571
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	29 minutes 24 seconds
Memory usage	3.43 GB
Date created	2024:09:28 13:09:05
Software version	2.1.3.18817
File size	1.13 GB

Point Cloud

Points	118,257,482
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Point attributes

Color	3 bands, uint8
Normal	

Point classes

Created (never classified)	118,257,482
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	29 minutes 24 seconds
Memory usage	3.43 GB
Point cloud generation parameters	
Source data	Depth maps
Processing time	1 hours 1 minutes
Memory usage	7.82 GB
Date created	2024:09:28 14:10:37
Software version	2.1.3.18817
File size	1.54 GB
System	
Software name	Agisoft Metashape Professional
Software version	2.1.3 build 18817
OS	Windows 64 bit
RAM	31.77 GB
CPU	11th Gen Intel(R) Core(TM) i7-11800H @ 2.30GHz
GPU(s)	Intel(R) UHD Graphics NVIDIA GeForce RTX 3060 Laptop GPU