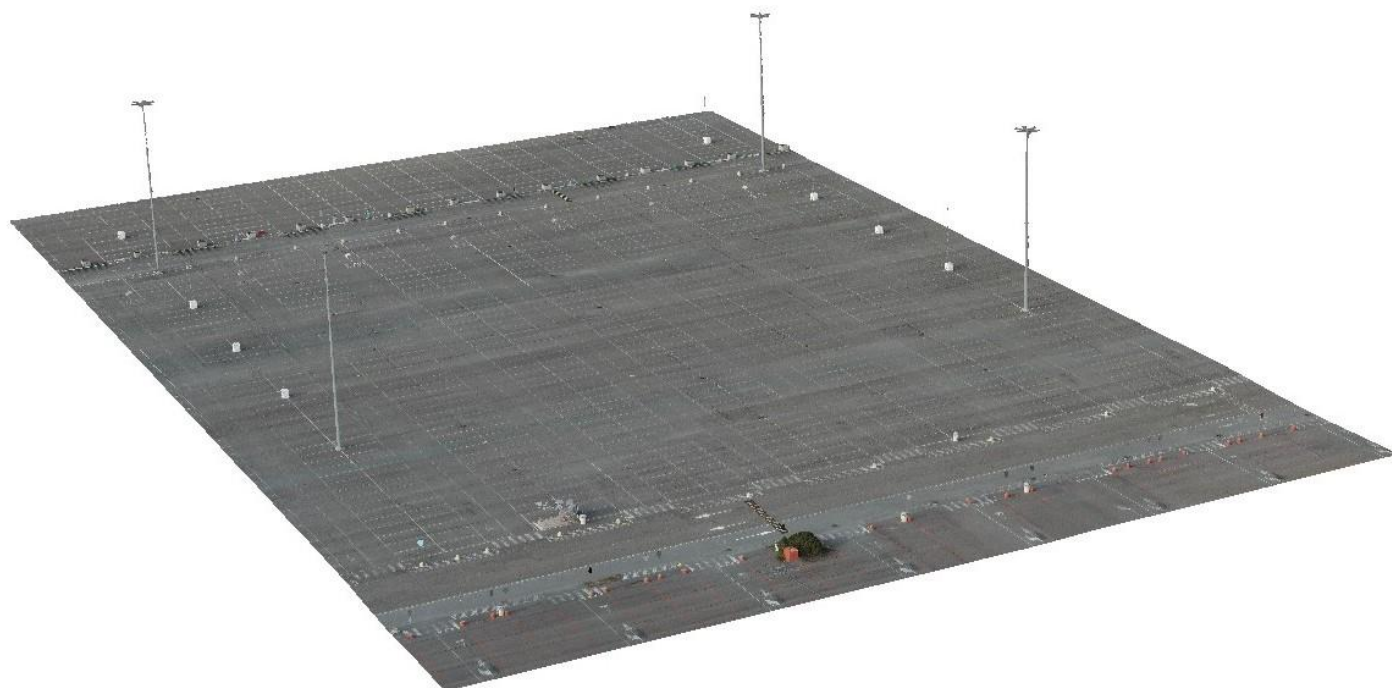




Report Processo di Elaborazione RTK

(Real Time Kinematic)

“DJI Zenmuse P1-35mm”





Dati Rilievo sul Campo:

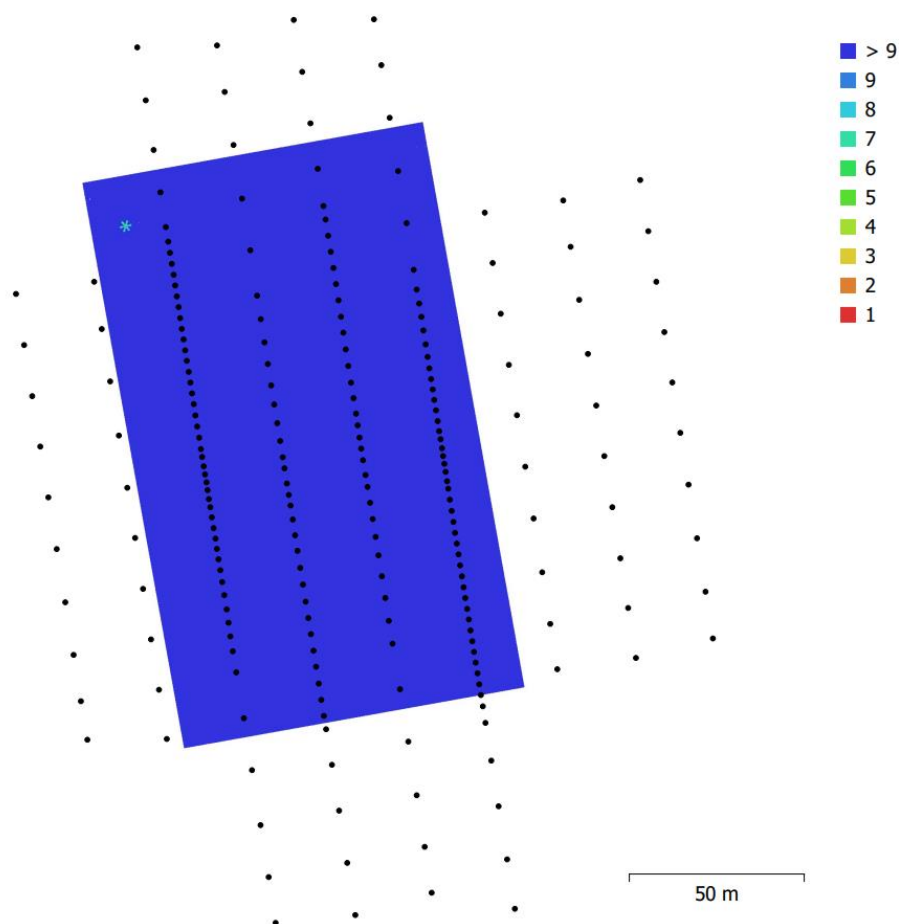


Fig. 1. Camera locations and image overlap.

Number of images:	224	Camera stations:	224
Flying altitude:	103 m	Tie points:	131,611
Ground resolution:	1.21 cm/pix	Projections:	1,130,756
Coverage area:	0.0162 km ²	Reprojection error:	1.07 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
ZenmuseP1 (35mm)	8192 x 5460	35 mm	4.39 x 4.39 μ m	No

Table 1. Cameras.



Dati di Calibrazione Camera:

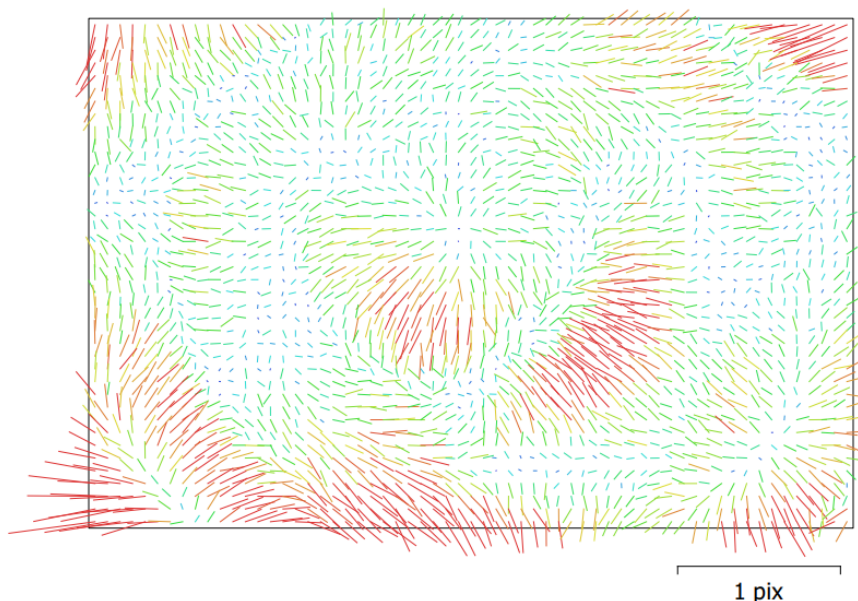


Fig. 2. Image residuals for ZenmuseP1 (35mm).

ZenmuseP1 (35mm)

224 images

Type	Resolution	Focal Length	Pixel Size
Frame	8192 x 5460	35 mm	4.39 x 4.39 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	8203.69	0.023	1.00	-0.07	0.04	-0.34	0.34	-0.31	-0.07	0.03
Cx	-46.6263	0.024		1.00	-0.01	-0.03	0.03	-0.03	0.91	-0.01
Cy	-1.26837	0.019			1.00	0.00	0.00	-0.00	-0.00	0.78
K1	-0.0486441	2.4e-05				1.00	-0.97	0.92	-0.04	-0.00
K2	0.0210429	0.00015					1.00	-0.98	0.04	0.00
K3	-0.102693	0.00027						1.00	-0.04	-0.00
P1	-0.00236218	9.3e-07							1.00	-0.00
P2	0.00077834	7.3e-07								1.00

Table 2. Calibration coefficients and correlation matrix.



Posizione Camere:

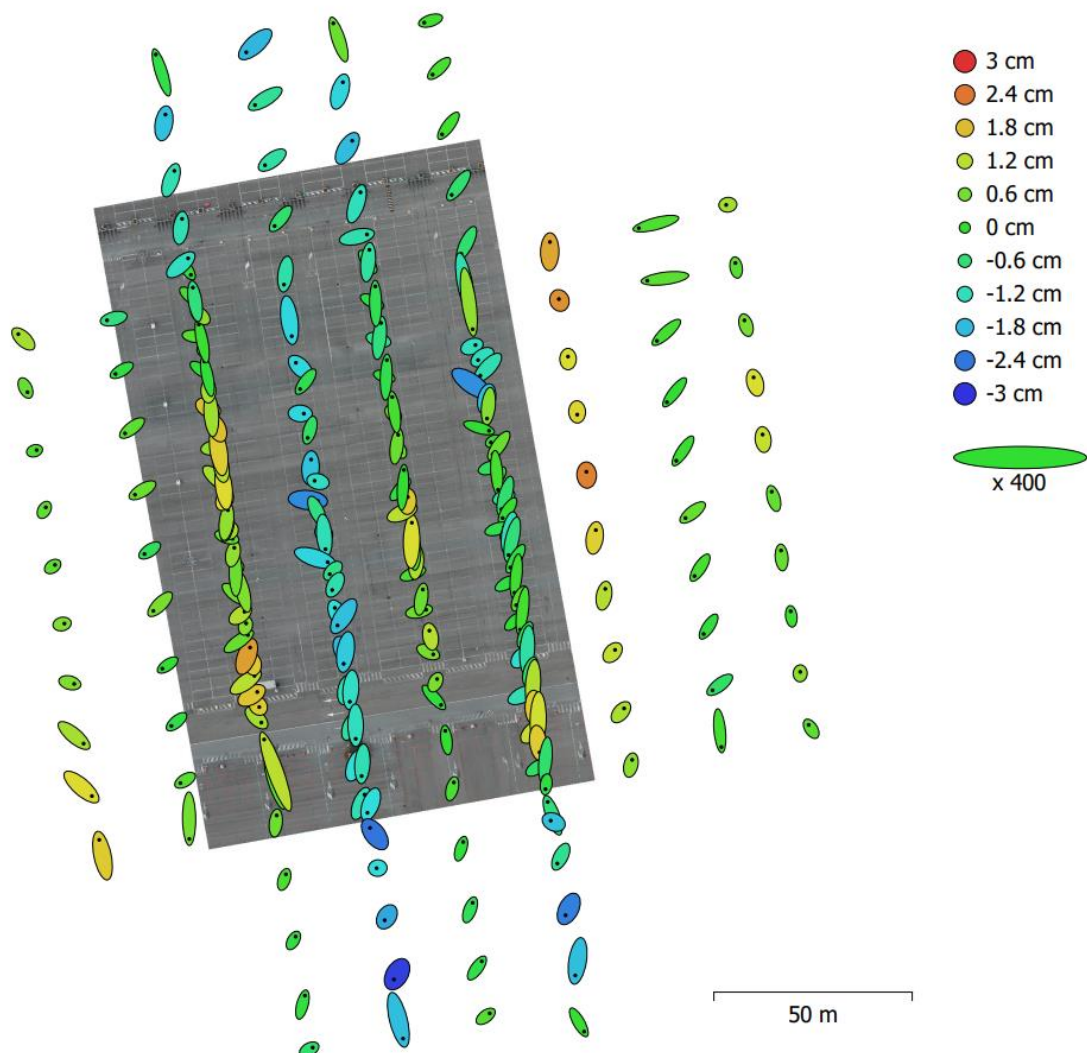


Fig. 3. Camera locations and error estimates.

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)
0.599216	1.16228	1.04104	1.30765	1.67144

Table 3. Average camera location error.

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



Orientazione Camere:

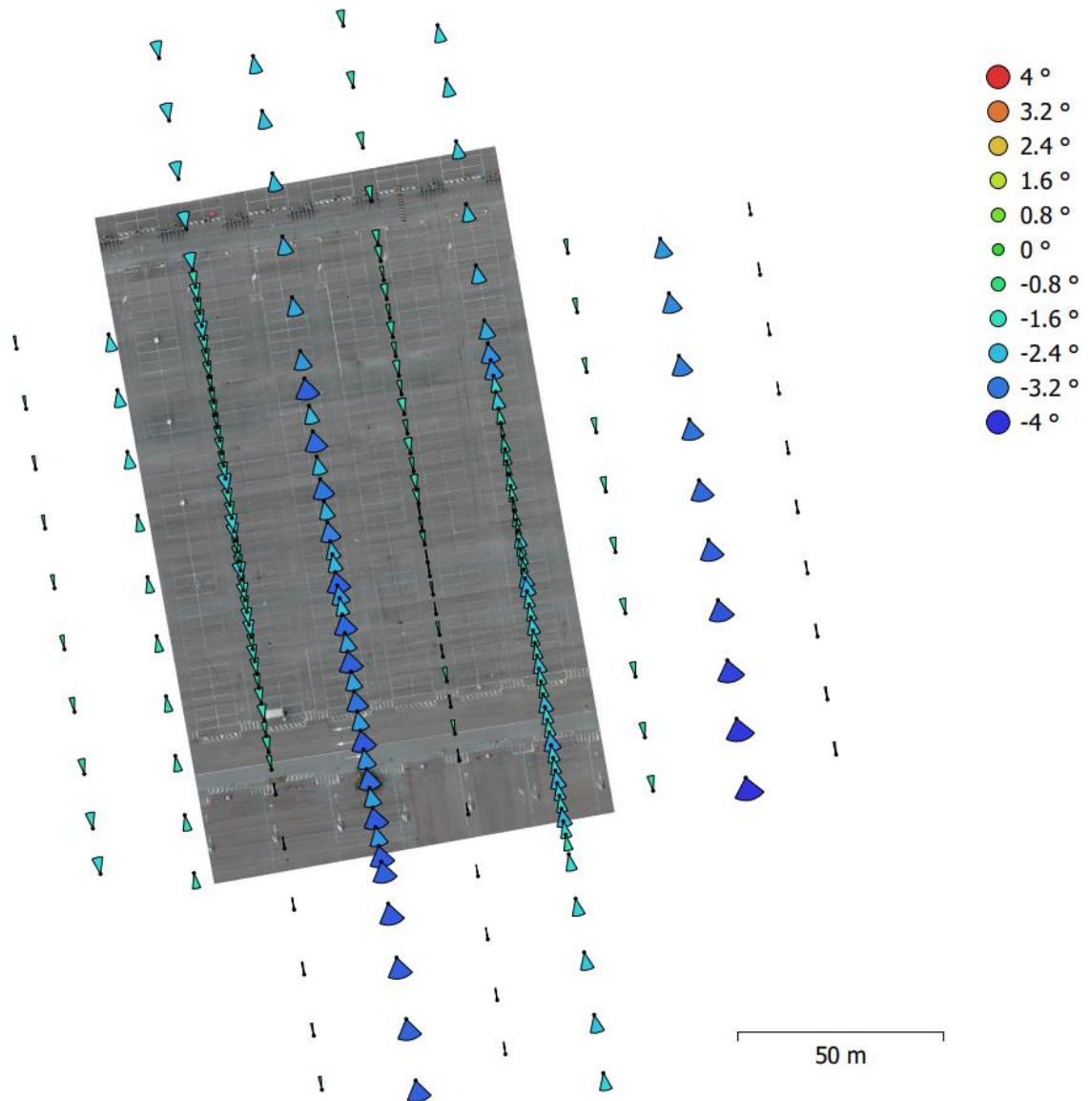


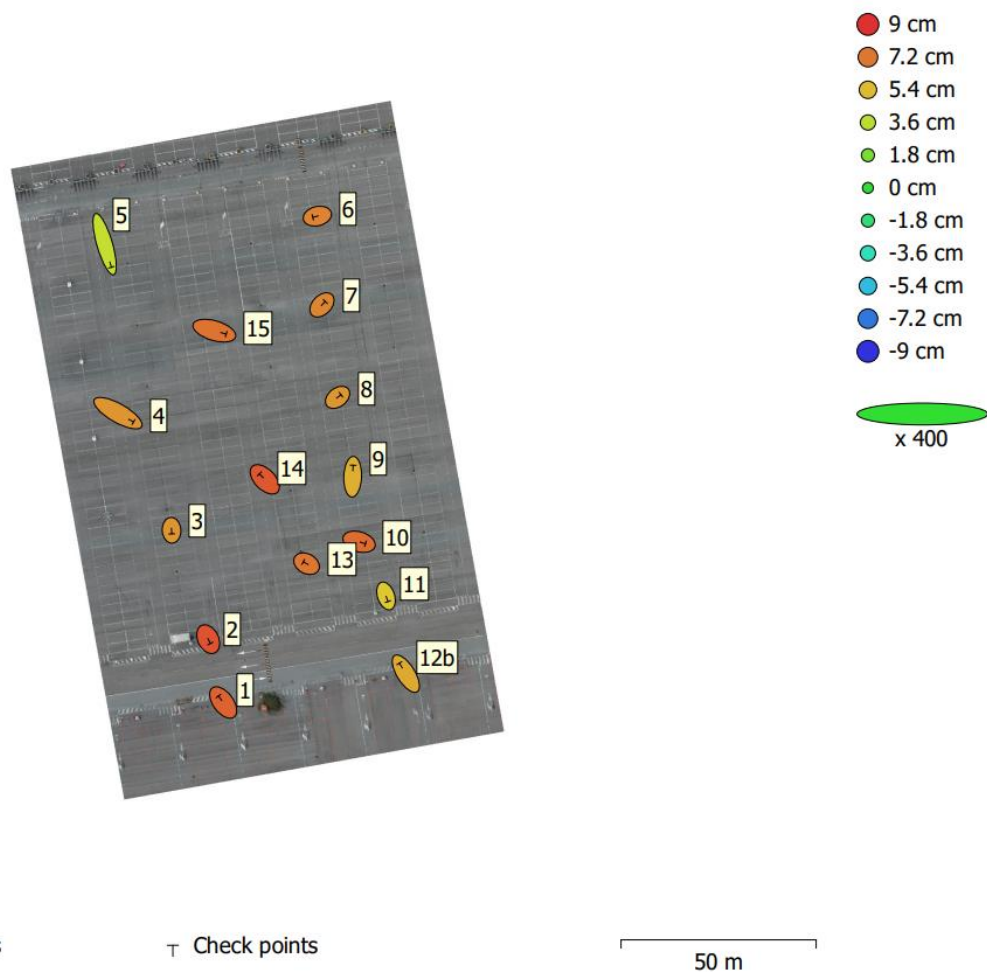
Fig. 4. Camera orientations and error estimates.
Arcs represent yaw error estimates.

Yaw error (°)	Pitch error (°)	Roll error (°)	Total error (°)
1.96113	0.58276	0.999698	2.27707

Table 4. Average camera rotation error.



Punti di Controllo a terra:



● Control points

⊕ Check points

50 m

Fig. 5. 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)
15	0.828426	1.0603	6.69933	1.34555	6.83312

Table 5. Check points RMSE.

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



Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
1	-0.61688	0.827787	7.7103	7.7791	0.287 (5)
2	0.278451	-0.555935	8.1507	8.17438	0.093 (5)
3	0.0274661	-0.454768	6.3912	6.40742	0.197 (7)
4	1.99201	-1.13432	6.39991	6.79806	0.265 (5)
5	0.86806	-2.96294	3.86651	4.94797	0.230 (7)
6	-0.588238	-0.144254	6.85982	6.88651	0.231 (5)
7	0.42685	0.434692	6.76491	6.79228	0.213 (7)
8	0.438427	0.336082	6.36987	6.39378	0.163 (6)
9	0.0557939	1.4646	5.71354	5.89854	0.330 (7)
10	0.815936	-0.249184	7.47345	7.52199	0.487 (5)
11	0.249458	-0.718381	5.04099	5.09803	0.292 (6)
13	-0.426732	0.233584	7.20532	7.22173	0.375 (5)
14	-0.696238	0.70316	7.99293	8.05395	0.302 (5)
15	1.51619	-0.4486	7.29859	7.46789	0.261 (5)
12b	-0.834673	1.3418	5.84801	6.05775	0.257 (6)
Total	0.828426	1.0603	6.69933	6.83312	0.276

Table 6. Check points.

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



Modello di Elevazione Digitale:

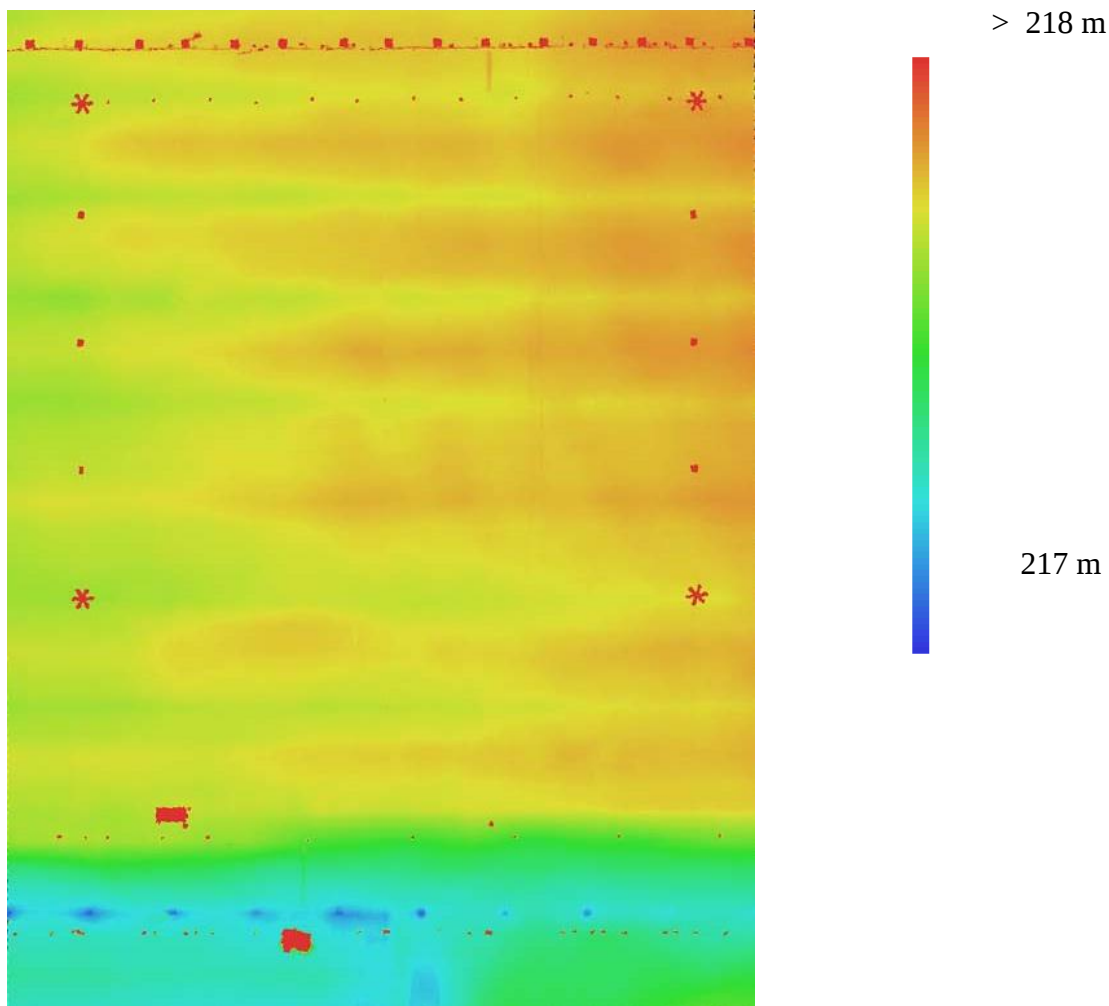


Fig. 4. Reconstructed digital elevation model.

Resolution: 4.89 cm/pix
Point density: 419 points/m²