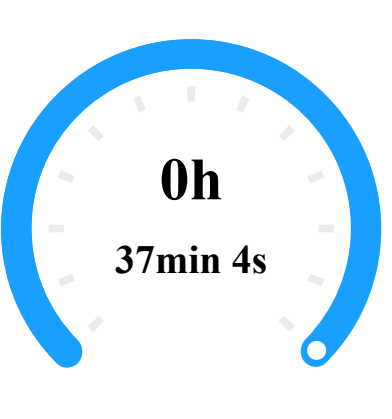


# DJI Terra Quality Report

V4.3.0 | 2024-12-09 18:33 | Mission: 2024-12-09 - Standard 20

## Quality Report for LiDAR Point Cloud Processing

### Aircraft Data Collection Time



POS Data Collection Time: 37min 4s  
Point Cloud Data Collection Time: 26min 4s

### Software Processing Time



- Point Cloud Optimization Time: 35min 52s
- Point Cloud Accuracy Optimization Time: 7min 36s
- Point Cloud Colorization Time: 5min 44s
- Merging Output Time: 1min 40s
- Output Saving Time: 1min 14s
- Others: 16min 38s
- Ground Point Classification Time: 12min 31s
- DEM Generation Time: 7min 41s

## Reconstruction Parameters

### Point Cloud Optimization Parameters

|                                      |                        |
|--------------------------------------|------------------------|
| Use custom base station data         | Yes                    |
| Scenario                             | Point Cloud Processing |
| Point Cloud Density (By Percentage)  | High(100%)             |
| Point Cloud Effective Distance Range | 3-300 m                |
| Accuracy Control and Check           | Yes                    |
| Optimize Point Cloud Accuracy        | Yes                    |
| Smooth Point Cloud                   | No                     |

### Point Cloud Output Parameters

|  |   |
|--|---|
| Point Cloud Format                     | PNTS   LAS  |
| Merged Output                          | Yes   |
| LiDAR Point Cloud Block Count          | 2   |
| Ground Point Classification            | Yes   |
| Ground Point Classification Parameters | Gentle Slope   Building Max Diagonal 20m   Iteration Angle 6°   Iteration Distance 0.5m |
| DEM                                    | Yes   |
| DEM Parameters                         | By GSD   0.1m   |
| Contour                                | No  |
| Output Coordinate System               | WGS 84 / UTM zone 32N   NN2000 height   |

## Mission Parameters

### Aircraft Parameters (Aircraft 1)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (1 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 5.11m/s                                     |         |           |                |               |               |
| Flight Height                        | 77.61m                                      |         |           |                |               |               |
| Ground Beam Diameter                 | 93mm*31mm                                   |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

### Aircraft Parameters (Aircraft 2)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (2 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 5.03m/s                                     |         |           |                |               |               |
| Flight Height                        | 99.8m                                       |         |           |                |               |               |
| Ground Beam Diameter                 | 119mm*39mm                                  |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

### Aircraft Parameters (Aircraft 3)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (3 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 4.8m/s                                      |         |           |                |               |               |
| Flight Height                        | 75.6m                                       |         |           |                |               |               |
| Ground Beam Diameter                 | 90mm*30mm                                   |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

### Aircraft Parameters (Aircraft 4)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (4 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 4.74m/s                                     |         |           |                |               |               |
| Flight Height                        | 97.85m                                      |         |           |                |               |               |
| Ground Beam Diameter                 | 117mm*39mm                                  |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

### Aircraft Parameters (Aircraft 5)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (5 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 5.27m/s                                     |         |           |                |               |               |
| Flight Height                        | 76.87m                                      |         |           |                |               |               |
| Ground Beam Diameter                 | 92mm*30mm                                   |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

### Aircraft Parameters (Aircraft 6)

|                                      |   |         |           |                |               |               |
|--------------------------------------|---|---------|-----------|----------------|---------------|---------------|
| Hardware Parameters                  |   |         |           |                |               |               |
| Payload                              | DJI Zenmuse L2                              |         |           |                |               |               |
| Payload SN                           | 613DLBR004155Y                              |         |           |                |               |               |
| LiDAR Parameters                     | https://enterprise.dji.com/zenmuse-l2/specs |         |           |                |               |               |
| LiDAR and IMU Calibration Parameters |   |         |           |                |               |               |
| Parameters                           | X   | Y       | Z         | roll           | pitch         | yaw           |
| Default                              | 0.02667m                                    | 0.0145m | -0.04615m | -3.1377091 rad | 0.0028995 rad | 0.0048439 rad |
| Flight Parameters (6 Flights)        |   |         |           |                |               |               |
| Average Flight Speed                 | 4.56m/s                                     |         |           |                |               |               |
| Flight Height                        | 99.09m                                      |         |           |                |               |               |
| Ground Beam Diameter                 | 118mm*39mm                                  |         |           |                |               |               |
| FOV                                  | 70°*75°                                     |         |           |                |               |               |
| Pulse Rate                           | 240k/Hz                                     |         |           |                |               |               |
| Scan Rate                            | 1200k/Hz                                    |         |           |                |               |               |
| Scan Mode                            | Non-repetitive                              |         |           |                |               |               |

## System Parameters

|           |  |
|-----------|--|
| CPU       | AMD Ryzen 9 7900X 16-Core Processor 32 cores |
| GPU Count | 1  |
| GPU 0     | NVIDIA GeForce RTX 4080 SUPER                |
| RAM       | 130198 M                                     |

## Accuracy Parameters

### POS Status

|       |         |
|-------|---------|
| Fix   | 100.00% |
| Other | 0.00%   |

### IMU Trajectory Error

| Parameters | X(E) RMSE     | Average X(E)  | Y(N) RMSE     | Average Y(N)  | Z(U) RMSE     | Average Z(U) |
|------------|---------------|---------------|---------------|---------------|---------------|--------------|
| Location   | 0.00012 m     | 0.0063 m      | 0.00009 m     | 0.00515 m     | 0.00011 m     | 0.00666 m    |
| Altitude   | 0.0000032 rad | 0.0000714 rad | 0.0000042 rad | 0.0000798 rad | 0.0000286 rad | 0.000202 rad |

### Point Cloud Check Point Error

| Parameters | No. of Check Points | Average Altitude | Average Altitude Difference | Min Altitude Difference | Max Altitude Difference | Average Absolute Value of Altitude Difference | Root Mean Square | Standard Deviation |
|------------|---------------------|------------------|-----------------------------|-------------------------|-------------------------|---|------------------|--------------------|
| Value      | 13                  | 177.255231 m     | -0.015982 m                 | -0.045707 m             | 0.007518 m              | 0.017139 m                                    | 0.021452 m       | 0.022328 m         |

### Point Cloud Check Point List

| ID   | Check Point Latitude(Y/N) | Check Point Longitude(X/E) | Check Point Altitude(Z/U) | Reconstruction Altitude | Altitude Difference | Max Altitude Difference | Average Altitude Difference | Reconstruction Altitude Standard Deviation | Altitude-Difference RMS E | Reflectivity |
|------|---------------------------|----------------------------|---------------------------|-------------------------|---------------------|-------------------------|-----------------------------|--|---------------------------|--------------|
| GCP1 | 6694186.476 m             | 625112.9 m                 | 179.5 m                   | 179.472871 m            | -0.025129 m         | 0.118851 m              | -0.025129 m                 | 0.029368 m                                 | 0.038639 m                | 94.02        |
| GCP2 | 6694136.425 m             | 625112.438 m               | 179.2 m                   | 179.195089 m            | -0.000911 m         | 0.109042 m              | -0.000911 m                 | 0.028199 m                                 | 0.0282 m                  | 89.2         |
| GCP3 | 6694044.142 m             | 625090.714 m               | 150.69 m                  | 150.682015 m            | -0.004985 m         | 0.124298 m              | -0.004985 m                 | 0.041888 m                                 | 0.042163 m                | 107.17       |
| GCP4 | 6694111.685 m             | 625100.523 m               | 181.57 m                  | 181.556564 m            | -0.015436 m         | 0.106677 m              | -0.015436 m                 | 0.031445 m                                 | 0.035013 m                | 105.61       |
| GCP5 | 6694056.934 m             | 625189.852 m               | 180.32 m                  | 180.299801 m            | -0.018199 m         | 0.088204 m              | -0.018199 m                 | 0.031443 m                                 | 0.036317 m                | 101.78       |
| GCP6 | 6694045.905 m             | 625168.006 m               | 180.66 m                  | 180.623442 m            | -0.011558 m         | 0.105855 m              | -0.011558 m                 | 0.032529 m                                 | 0.045311 m                | 90.72        |
| GCP7 | 6694208.456 m             | 625141.916 m               | 179.95 m                  | 179.921675 m            | -0.024325 m         | 0.17923 m               | -0.024325 m                 | 0.03627 m                                  | 0.043653 m                | 97.02        |
| GCP8 | 6694233.792 m             | 625153.495 m               | 179.75 m                  | 179.723512 m            | -0.025488 m         | 0.089228 m              | -0.025488 m                 | 0.036096 m                                 | 0.044574 m                | 94.19        |
| GCP9 | 6694243.718 m             | 625214.336 m               | 180.77 m                  | 180.727293 m            | -0.045707 m         | 0.074404 m              | -0.045707 m                 | 0.0301 m                                   | 0.054716 m                | 83.05        |
| GCP0 | 6694289.236 m             | 625125.852 m               | 178.88 m                  | 178.86396 m             | -0.01904 m          | 0.096349 m              | -0.01904 m                  | 0.031704 m                                 | 0.036967 m                | 90.96        |
| GCP1 | 6694302.783 m             | 625064.538 m               | 177.18 m                  | 177.173568 m            | -0.002432 m         | 0.086543 m              | -0.002432 m                 | 0.024444 m                                 | 0.024554 m                | 87.81        |
| GCP2 | 6694241.112 m             | 625062.939 m               | 177.07 m                  | 177.076518 m            | 0.007518 m          | 0.07976 m               | 0.007518 m                  | 0.025919 m                                 | 0.026973 m                | 96.04        |
| GCP3 | 6694253.345 m             | 625112.746 m               | 178.79 m                  | 178.79292 m             | -0.00208 m          | 0.106097 m              | -0.00208 m                  | 0.026398 m                                 | 0.026463 m                | 90.96        |

### DEM Error

| Parameters | No. of Check Points | Average Altitude | Average Altitude Difference | Min Altitude Difference | Max Altitude Difference | Average Absolute Value of Altitude Difference | Root Mean Square | Standard Deviation |
|------------|---------------------|------------------|-----------------------------|-------------------------|-------------------------|---|------------------|--------------------|
| Value      | 13                  | 177.255231 m     | -0.017965 m                 | -0.050156 m             | 0.005829 m              | 0.018862 m                                    | 0.023302 m       | 0.024254 m         |

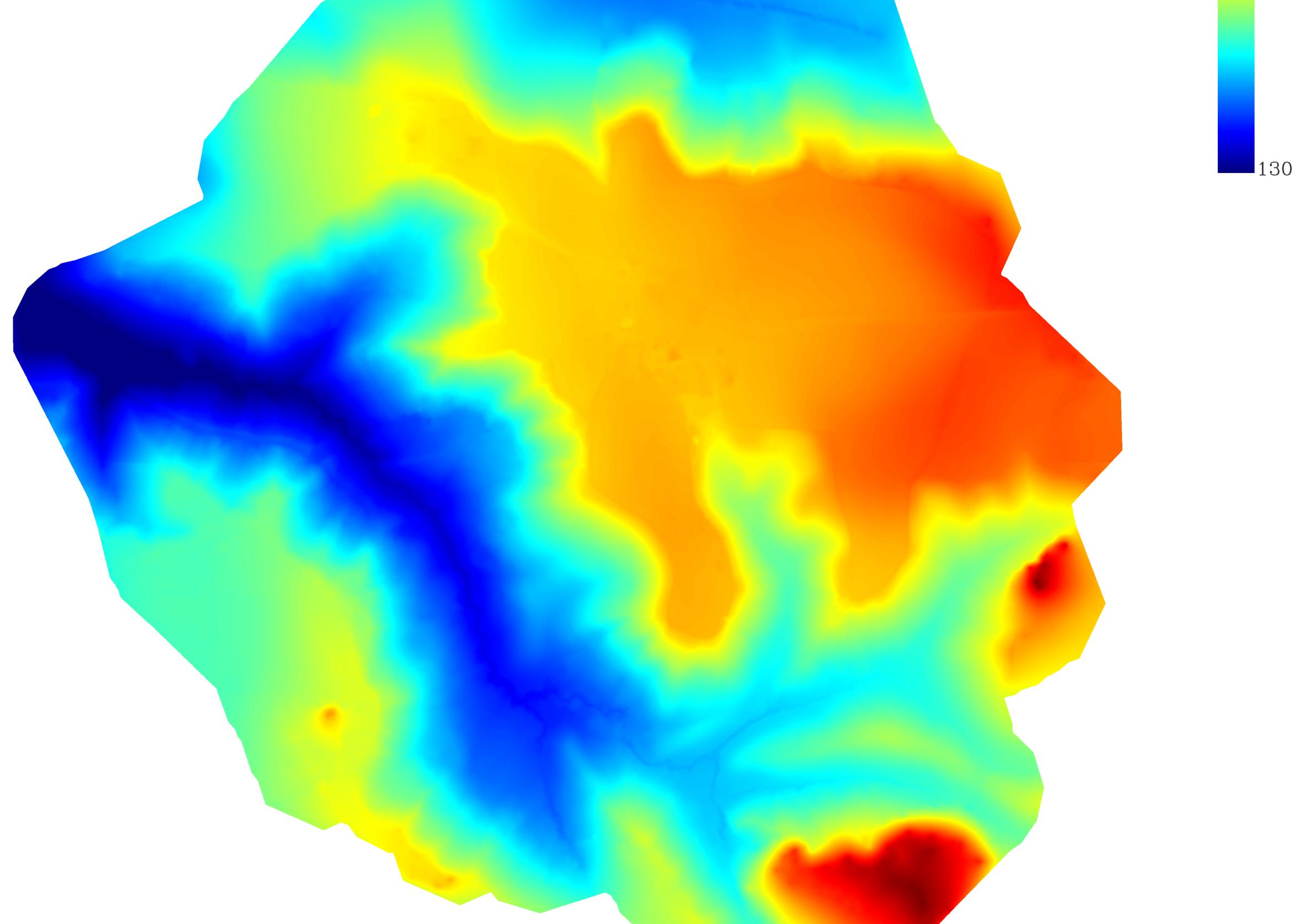
### DEM Checklist

| ID   | Check Point Latitude(Y/N) | Check Point Longitude(X/E) | Check Point Altitude(Z/U) | Reconstruction Altitude | Altitude Difference | Reflectivity |
|------|---------------------------|----------------------------|---------------------------|-------------------------|---------------------|--------------|
| GCP1 | 6694186.476 m             | 625112.9 m                 | 179.5 m                   | 179.474311 m            | -0.024089 m         | 94.02        |
| GCP2 | 6694136.425 m             | 625112.438 m               | 179.2 m                   | 179.188706 m            | -0.007294 m         | 89.2         |
| GCP3 | 6694044.142 m             | 625090.714 m               | 150.69 m                  | 150.67258 m             | -0.01442 m          | 107.17       |
| GCP4 | 6694111.685 m             | 625100.523 m               | 181.57 m                  | 181.56253 m             | -0.015747 m         | 105.61       |
| GCP5 | 6694056.934 m             | 625189.852 m               | 180.32 m                  | 180.285667 m            | -0.032333 m         | 101.78       |
| GCP6 | 6694045.905 m             | 625168.006 m               | 180.66 m                  | 180.618898 m            | -0.036102 m         | 90.72        |
| GCP7 | 6694208.456 m             | 625141.916 m               | 179.95 m                  | 179.927827 m            | -0.018173 m         | 97.02        |
| GCP8 | 6694233.792 m             | 625153.495 m               | 179.75 m                  | 179.730934 m            | -0.018066 m         | 94.19        |
| GCP9 | 6694243.718 m             | 625214.336 m               | 180.77 m                  | 180.722844 m            | -0.050156 m         | 83.05        |
| GCP0 | 6694289.236 m             | 625125.852 m               | 178.88 m                  | 178.863515 m            | -0.019485 m         | 90.96        |
| GCP1 | 6694302.783 m             | 625064.538 m               | 177.18 m                  | 177.175344 m            | -0.006656 m         | 87.81        |
| GCP2 | 6694241.112 m             | 625062.939 m               | 177.07 m                  | 177.074829 m            | 0.005829 m          | 96.04        |
| GCP3 | 6694253.345 m             | 625112.746 m               | 178.79 m                  | 178.792742 m            | -0.002258 m         | 90.96        |

When altitude difference between check point and actual point is greater than 60 cm, error data of the check point will be displayed as \* and the check point will not be used for calculation

## Output Preview

### DEM



## Output Parameters

### Output List

|             |            |
|-------------|------------|
| Point Cloud | PNTS   LAS |
| DEM         | GeoTIFF    |