

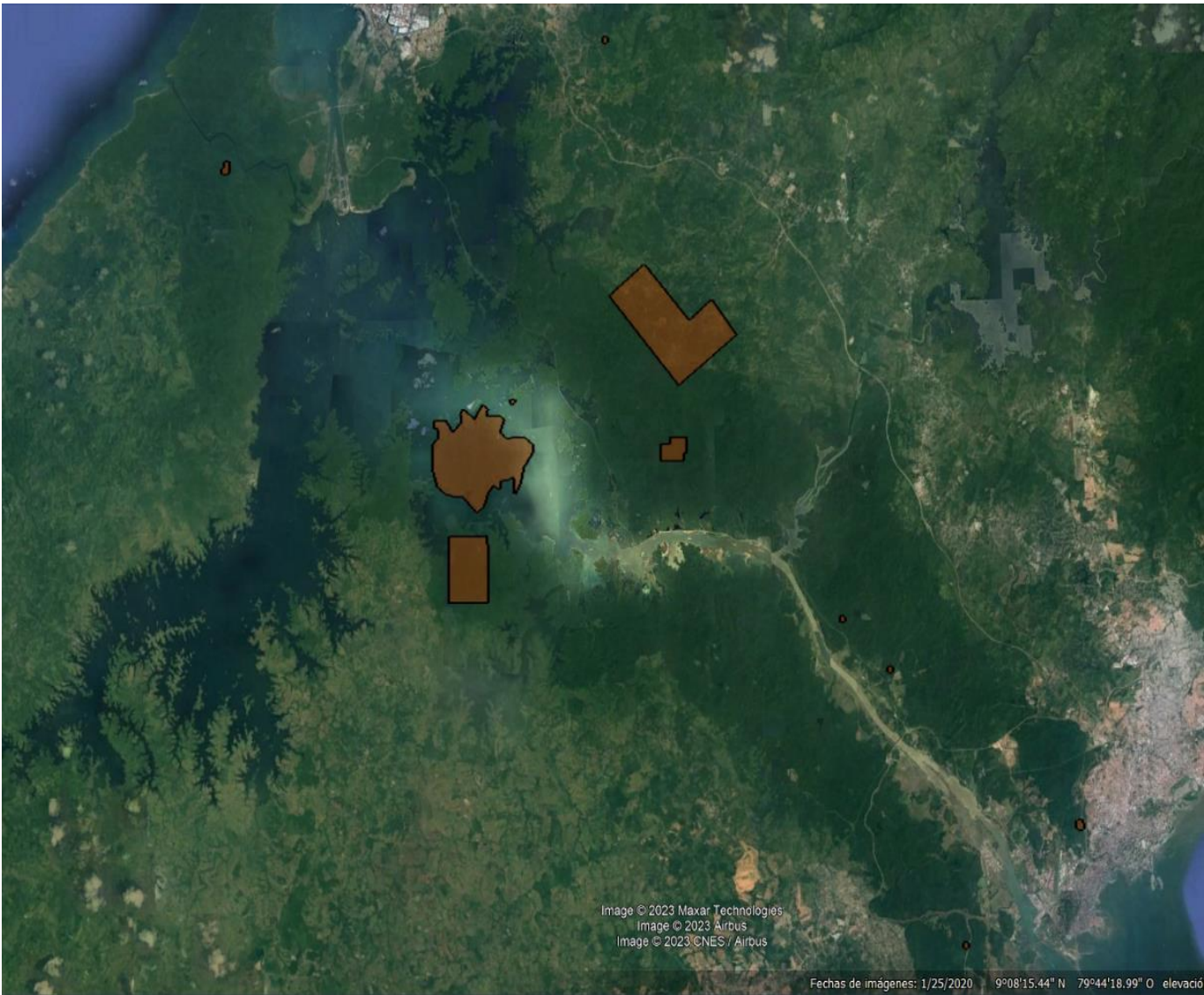


Control de Calidad  
Vuelo Fotogramétrico LiDAR BCNM  
STRI Panamá.

Stereocarto Centroamérica

---

## ÁREAS DE VUELO



## RESUMEN DE AREAS

| NOMBRE AREA            | AREA CONTRATADA (Ha) | DENSIDAD | AREA_VOLADA (Ha) |
|------------------------|----------------------|----------|------------------|
| BARRO COLORADO Y ANEXO | 2447.407692          | 41.99    | 2570.5           |
| ALFAGIA_1              | 2098.5               | 52.01    | 2867.2           |
| ALFAGIA_2              | 209.3                | 37.84    | 401.37           |
| GIGANTE                | 325.23               | 38.18    | 584              |
| PANAMA_PACIFICO        | 15.6                 | 28.5     | 58.73            |
| SAN_LORENZO            | 117.15               | 33.48    | 232.92           |
| SANTA_RITA             | 16.38                | 23.25    | 58.35            |
| SOBERANIA_1            | 16.06                | 22.68    | 52.5             |
| SOBERANIA_2            | 18.2                 | 22.68    | 57.08            |
| METROPOLITANO          | 65.96                | 30       | 144              |

---

## PRECISIÓN DE LA POSICIÓN GEOESPACIAL

## ESTACION DE REFERENCIA

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                   | DESCRIPCIÓN DE PUNTOS DE CONTROL                                                                                              |                                                                                     | FECHA                    |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|------------------|-------------|--|-----------------------------------|--|------|---------------------------------------------------|----------|--------------------------|-----------------|--------------------------|------------------|--------------------------|--------|-------|-----------|-------------------------------------|---------|-----------|--|--|---------|-----------------|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |                                                                                                                               |                                                                                     | 26/05/2023               |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |                                                                                                                               |                                                                                     | Hoja 1 de 1              |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Proyecto:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BARRO COLORADO                                    | Empresa:                                                                                                                      | STEREOCARTO                                                                         | Superficie número:       | ESTACIONAMIENTOS |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| País:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PANAMÁ                                            | Provincia:                                                                                                                    | COLON                                                                               | Localización:            | GAMBOA           |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |                                                                                                                               |                                                                                     | Código:                  | STRI             |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Fotografía de los puntos de control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |                                                                                                                               | Croquis General (Puntos de apoyo y superficie)                                      |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| <div style="display: flex;"> <div style="flex: 1;"> <p>SUR</p>  </div> <div style="flex: 1;"> <p>OESTE</p>  </div> </div>                                                                                                                                                                                                                                                                                                                                                                   |                                                   |                                                                                                                               |  |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| <table border="1"> <tr> <th colspan="2">INSTRUMENTO</th> <th colspan="2">TIPO DE SUPERFICIE (marcar con X)</th> </tr> <tr> <td>RTK:</td> <td>GPS estático: <input checked="" type="checkbox"/></td> <td>Asfalto:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Estación Total:</td> <td><input type="checkbox"/></td> <td>TERRENO NATURAL:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Marca:</td> <td>SOUTH</td> <td>CONCRETO:</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Antena:</td> <td>Modelo G7</td> <td></td> <td></td> </tr> <tr> <td>Serial:</td> <td>S910BA148510501</td> <td></td> <td></td> </tr> </table> |                                                   |                                                                                                                               |                                                                                     |                          |                  | INSTRUMENTO |  | TIPO DE SUPERFICIE (marcar con X) |  | RTK: | GPS estático: <input checked="" type="checkbox"/> | Asfalto: | <input type="checkbox"/> | Estación Total: | <input type="checkbox"/> | TERRENO NATURAL: | <input type="checkbox"/> | Marca: | SOUTH | CONCRETO: | <input checked="" type="checkbox"/> | Antena: | Modelo G7 |  |  | Serial: | S910BA148510501 |  |  |
| INSTRUMENTO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                   | TIPO DE SUPERFICIE (marcar con X)                                                                                             |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| RTK:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | GPS estático: <input checked="" type="checkbox"/> | Asfalto:                                                                                                                      | <input type="checkbox"/>                                                            |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Estación Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>                          | TERRENO NATURAL:                                                                                                              | <input type="checkbox"/>                                                            |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Marca:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SOUTH                                             | CONCRETO:                                                                                                                     | <input checked="" type="checkbox"/>                                                 |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Antena:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Modelo G7                                         |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Serial:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | S910BA148510501                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| STRI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   | SISTEMA DE REFERENCIA                                                                                                         |                                                                                     | ESTACION DE CONTROL      |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| UTM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   | DATUM                                                                                                                         |                                                                                     | PMEC                     |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| NORTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   | WGS84                                                                                                                         |                                                                                     | UBICACIÓN DE CORS        |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| ESTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   | 17 Norte                                                                                                                      |                                                                                     | PENONOME                 |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Elevación(Ortho)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                   | Tipo de solución:                                                                                                             |                                                                                     | PDOP:                    |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 1008231.5830m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   | SD ΔX:                                                                                                                        |                                                                                     | 1.2 - 2.3                |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 641229.5284m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                   | SD ΔY:                                                                                                                        |                                                                                     | GDOP:                    |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 28.1907m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                   | SD ΔZ:                                                                                                                        |                                                                                     | 1.5 - 3.2                |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Global                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   | Observaciones:                                                                                                                |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Latitud                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERCA FRONTAL |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Longitud                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Altura                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 9° 07' 07.48794" N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 79° 42' 53.17793" W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| 40.3789 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| Técnico responsable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |                                                                                                                               |                                                                                     |                          |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
| TOPOGRAFO ROBERTO RESTREPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                   | Empresa contratista:                                                                                                          |                                                                                     | STEREOCARTO              |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   | Fecha de captura:                                                                                                             |                                                                                     | 26/05/2023 6:43:57 a. m. |                  |             |  |                                   |  |      |                                                   |          |                          |                 |                          |                  |                          |        |       |           |                                     |         |           |  |  |         |                 |  |  |

Leica Geosystems AG  
Heinrich Wild Strasse  
CH-9435 Heerbrugg  
St. Gallen, Switzerland  
Phone: + 41 71 727 3131  
Fax: + 41 71 727 4674

- when it has to be right

Leica  
Geosystems

## GNSS Processing Report - Summary

Report created: 05/29/2023 10:55:58

### Project Details

| General                            | Customer Details                  | Master Coordinate System              |
|------------------------------------|-----------------------------------|---------------------------------------|
| Project Name: BASE STRI            | Customer Name: STEREOCARTO        | Coordinate System Name: UTM17N        |
| Owner: STEREOCARTO                 | Contact Person: JOSE IGNACIO MORA | Transformation Type: Classical 3D     |
| Lead Surveyor: Roberto Restrepo    | Number: -                         | Residual Distribution: None           |
| Date Created: 05/29/2023 10:38:18  | Email: -                          | Ellipsoid: WGS 1984                   |
| Last Accessed: 05/29/2023 10:38:19 | Skype: -                          | Projection Type: UTM                  |
| Application Software: Infinity 3.2 | Website: -                        | Geoid Model: egm08_ON-90N_0W-180W_5x5 |
|                                    |                                   | CSCS Model: -                         |

Path: C:\Users\User\Documents\Leica Geosystems\Infinity\Projects\BASE STRI.jpg  
Size: 123.5 MB  
Comments: -

### Baseline Vector and Quality - WGS84

|             |                   |                |          |
|-------------|-------------------|----------------|----------|
| ΔLatitude:  | 0° 08' 01.89918"  | SD ΔLatitude:  | 0.0001 m |
| ΔLongitude: | -0° 10' 44.46062" | SD ΔLongitude: | 0.0001 m |
| ΔHeight:    | -7.1821 m         | SD ΔHeight:    | 0.0002 m |
| ΔX:         | -19 780.6058 m    | SD ΔX:         | 0.0001 m |
| ΔY:         | -1 246.1929 m     | SD ΔY:         | 0.0002 m |
| ΔZ:         | 14 619.8403 m     | SD ΔZ:         | 0.0001 m |
| Slope Dist: | 24 628.5423 m     | SD Slope Dist: | 0.0001 m |

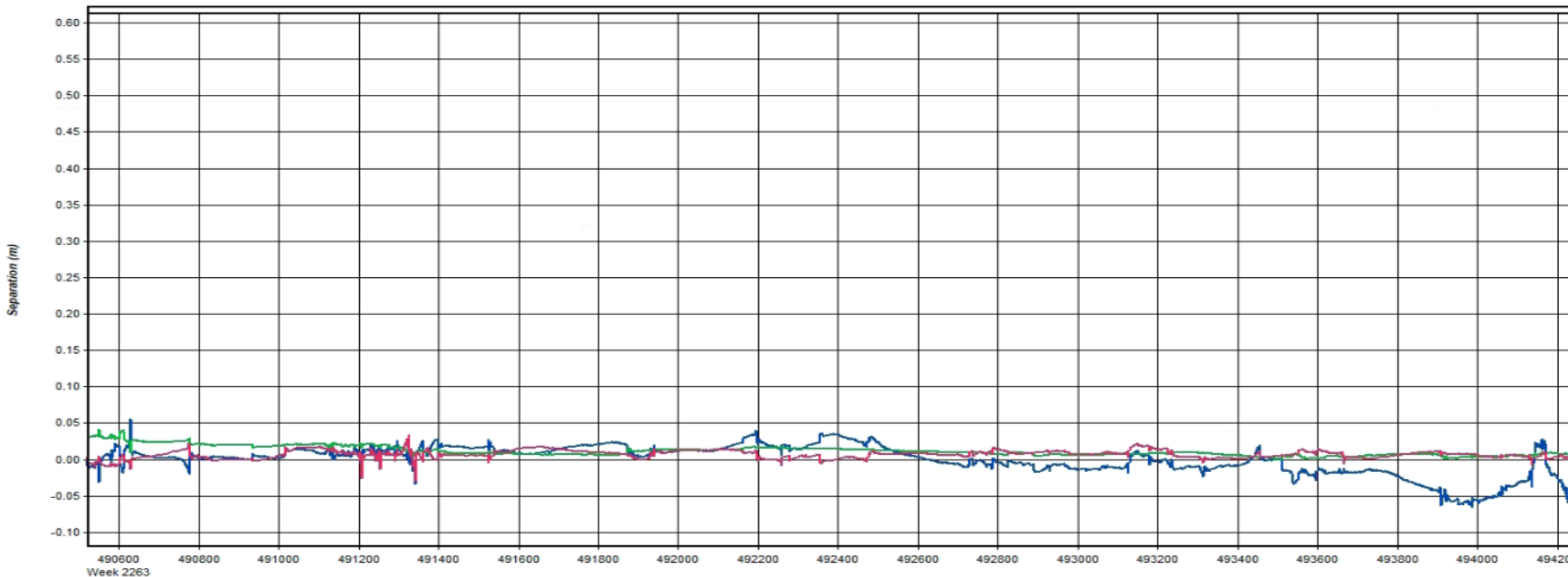
|      |             |        |          |
|------|-------------|--------|----------|
| M0:  | 0.3933 m    | CQ 1D: | 0.0002 m |
| Q11: | 0.00000003  | CQ 2D: | 0.0001 m |
| Q12: | -0.00000002 | CQ 3D: | 0.0002 m |
| Q22: | 0.00000017  |        |          |
| Q13: | 0.00000000  |        |          |
| Q23: | -0.00000003 |        |          |
| Q33: | 0.00000003  |        |          |

|                        |                       |       |           |              |       |
|------------------------|-----------------------|-------|-----------|--------------|-------|
| Frequency:             | L1/L2/L5              | GDOP: | 1.5 - 3.2 | GPS SVs:     | 12/12 |
| Solution Optimisation: | Ionospheric Minimised | PDOP: | 1.2 - 2.3 | GLONASS SVs: | 6/7   |
| Solution Type:         | Phase Fixed           | HDOP: | 0.6 - 1.2 | Beidou SVs:  | -     |
|                        |                       | VDOP: | 1.0 - 2.1 | Galileo SVs: | -     |
| Ephemeris Type:        |                       |       |           | QZSS SVs:    | -     |
| GPS                    | Broadcast             |       |           |              |       |
| GLONASS                | Broadcast             |       |           |              |       |

## TRAYECTORIA



GRÁFICOS DE AJUSTE DE TRAYECTORIAS DONDE SE OBSERVA TODA LA TRAZA DEL RECORRIDO EN FIJO Y ADEMÁS CON **PRECISIONES ABSOLUTAS MENORES A LOS 5 CM CON RESPECTO A LA ESTACIÓN BASE.** ASEGURANDO MÁXIMA PRECISIÓN EN LA POSICIÓN DE LOS DATOS.



## AJUSTE ENTRE PASADAS Y TRAYECTORIA

### Bayes-StripAlign post-correction quality control report

Version, build 2.22 230224 [Win64]  
Report date, time Mon Jun 5 15:52:34 2023  
Output directory C:\34\_STRI\_PANAMA\02\_AJUSTE\_CLASS\_AREAS\00\_ISLA\_BARRO\_COLORADO\04\_flight\_lines\_aligned\  
Units m, km2

N PO used 1  
Attitude original  
Projection TM [WKT] Unit=m Heights=ell  
PO XYZ min 622934 1008601 598  
PO XYZ max 631046 1016384 789  
Mean AGL 633  
Mean SW width 727

Corrections Calib(Bore,Int) HF\_Drift(Pos,Att) Shift  
Calib param EXT=wpk 1/grp n=1 INT=3 1/sw n=22  
Step 1 drift param xyzwpk 1/line Fav=T MeanSub  
Step 1 drift N CP 44  
Step 1 inversion dim 157  
Step 2 drift param xyzwpk dt=2.162 Fav=T MeanSub  
Step 2 drift N CP 3174 (38-112 CP/line)  
Step 2 inversion dim 9522

N vectors used 8064 out of 8205  
N pairs used 68 out of 79

### RESIDUAL STATISTICS

|              |        |        |        |
|--------------|--------|--------|--------|
| StdDev       | 0.100  | 0.190  | 0.010  |
| RMS          | 0.119  | 0.237  | 0.010  |
| Min          | -1.559 | -6.275 | -0.652 |
| Max          | +2.857 | +3.465 | +0.375 |
| Sqrt(Chi2/n) | 5.609  | 10.484 | 7.766  |
| N vectors    | 8064   |        |        |

### CORRECTION COMPONENT STATISTICS

|                        |       |       |       |
|------------------------|-------|-------|-------|
| HF Drift RMS (overlap) | 0.118 | 0.322 | 0.011 |
| Drift RMS (overlap)    | 0.372 | 0.353 | 0.078 |
| Drift RMS (full)       | 0.337 | 0.306 | 0.073 |

### TOTAL CORRECTION STATISTICS

|           |        |        |        |
|-----------|--------|--------|--------|
| Mean      | -0.137 | +0.043 | +0.050 |
| StdDev    | 0.637  | 0.444  | 0.727  |
| RMS       | 1.119  | 2.394  | 0.734  |
| Min       | -3.385 | -4.261 | -1.895 |
| Max       | +2.535 | +3.912 | +2.889 |
| N vectors | 85410  |        |        |
| N swaths  | 22     |        |        |

### CORRECTED DATA STATISTICS

|            |       |
|------------|-------|
| StdDev DZ  | 0.017 |
| RMS DZ     | 0.018 |
| Area       | 2.696 |
| N pairs    | 68    |
| DZ map GSD | 2.977 |

### OUTPUT

Lidar output \* [same format]  
Overviewer CPTIME

RESUMEN DE CORRECCIONES PARA LOS DATOS STRI. SE OBSERVA QUE LOS VALORES DE AJUSTE SON INFERIORES A 2 CM

## CONTROL DE CALIDAD POR ZONAS

|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | GIGANTE              |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

The screenshot displays a Google Earth interface with a satellite view of a forested area. A yellow circular arc is drawn on the map, and a red-shaded irregular polygon is visible. A yellow line points from the text 'ESTACION GNSS STRI' to a specific location on the map. A 'Regla' (Ruler) tool window is open, showing the 'Círculo' (Circle) tab selected. The tool displays the following measurements:

| Radio:          | 17.63          | Kilómetros       |
|-----------------|----------------|------------------|
| Área:           | 973,805,888.00 | Metros cuadrados |
| Circunferencia: | 110.43         | Kilómetros       |

Below the measurements, there is a checkbox for 'Navegación con mouse' (checked), and buttons for 'Guardar' (Save) and 'Borrar' (Delete).

On the right side of the interface, there is a vertical panel with the following information:

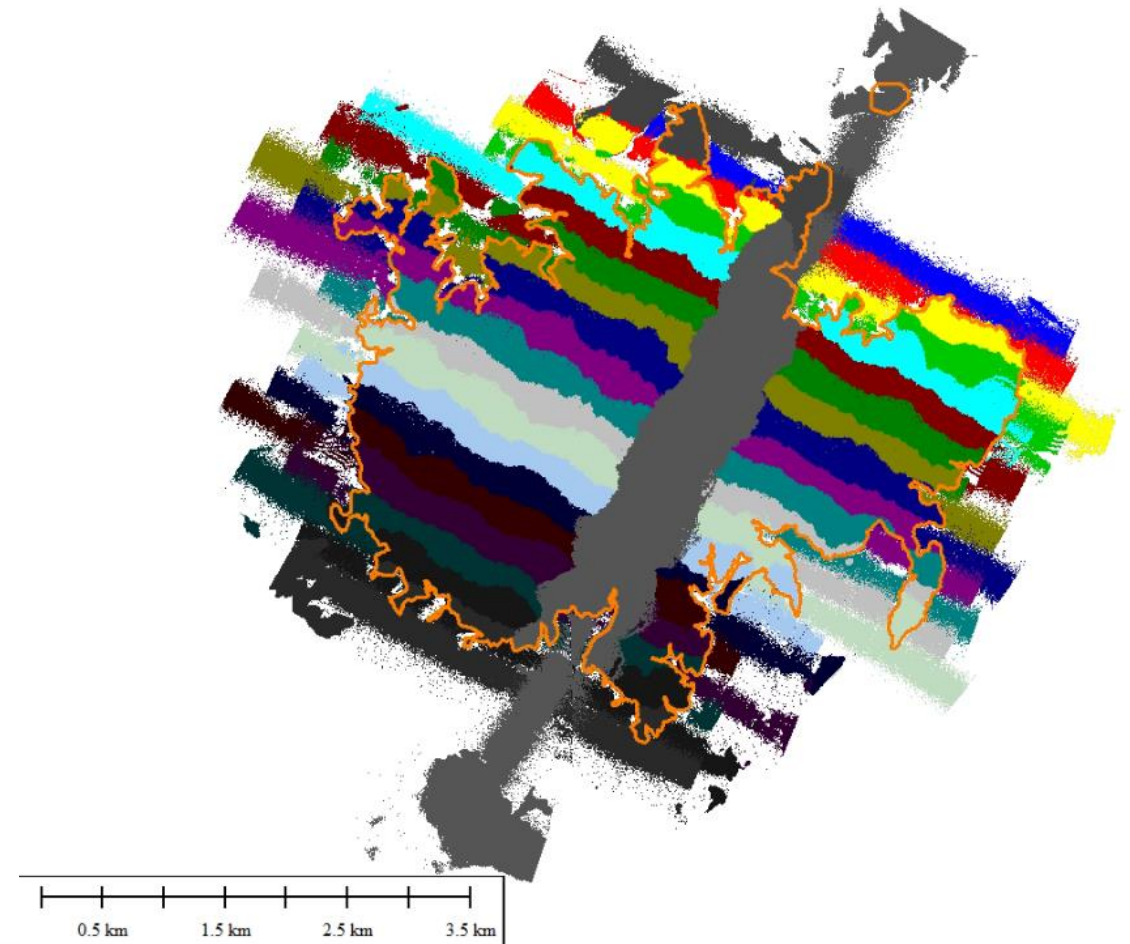
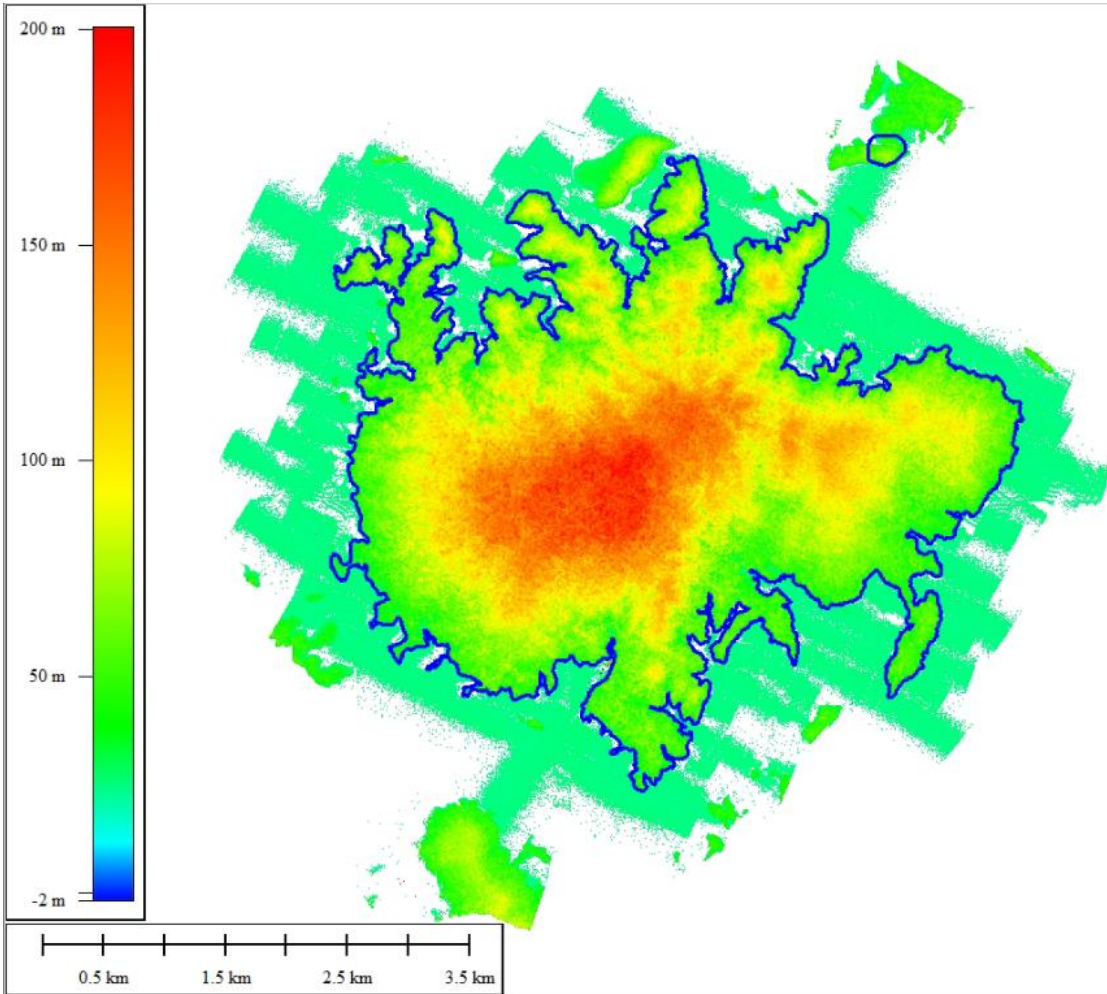
- Logo: ROBERTO RESTREPO TOPOGRAFO
- Proyecto: BARRIO
- País: PANAMÁ
- Fotografía: SUR
- Image of a GNSS station setup on a tripod.
- RTK: ☐ GPS estático: ☒ Es: ☐
- Marca: SOUTH Antena: STRI
- UTM
- NORTE: 1008231.5830m ESTE: 641229.5284m
- Global
- Latitud: 9° 07' 07.48794" N Longitud: 79° 42' 53.17793" W
- Técnico responsable: TOPOGRAFO ROBERTO RES

At the bottom of the screen, the Google Earth status bar shows: 'Fechas de imágenes: 5/25/2023 lat 9.148870° long -79.763679° elevación 0 m alt. ojo 31.05 km'.

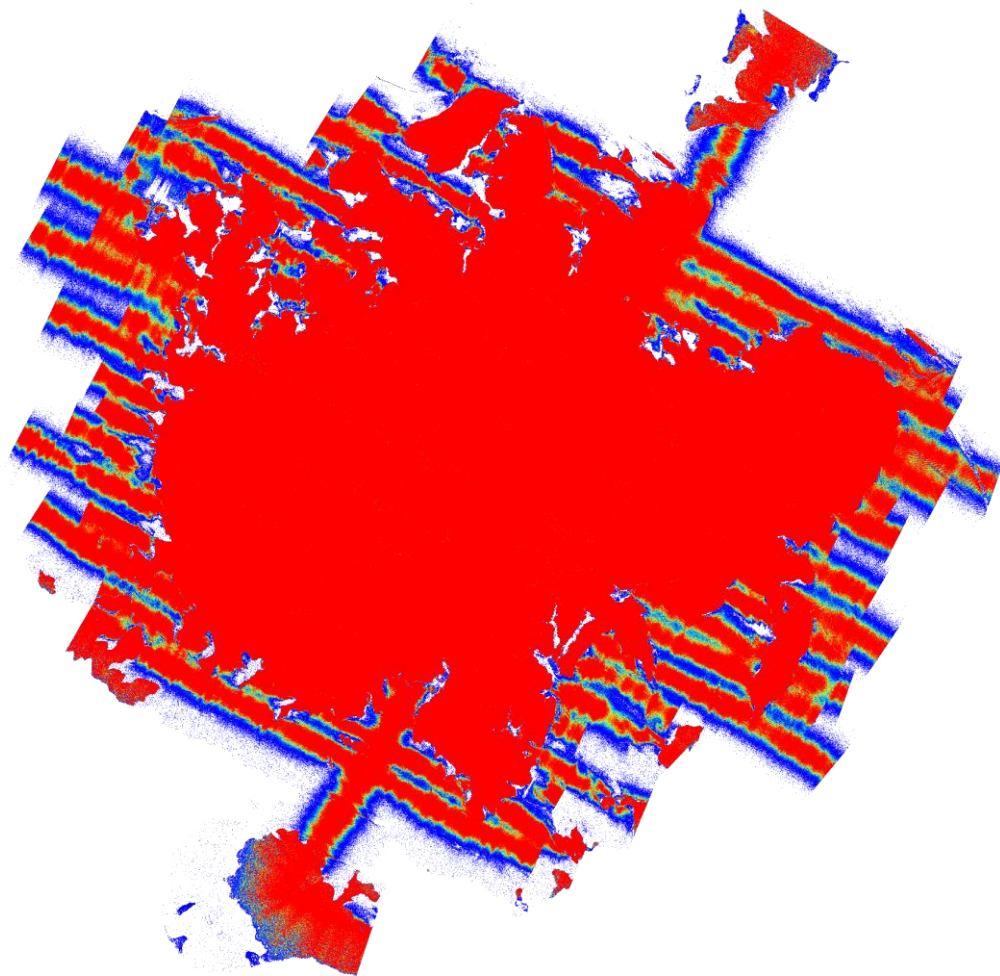
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               | <b>DESCRIPCIÓN DE PUNTOS DE CONTROL</b>                                             |                 | <b>FECHA</b><br>26/05/2023                                                                                                  |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|------------|-------------------|------------------|--|--|-----------------------------------|--|--|--|------|---------------|---|-----------------|--|------------|--|----------|--------|-------|---------|--------|----|---------|-----------------|------------------|-------------|--|--|--|--------------------|--|--|--|-----------------------|--|--|--|---------------------|--|-------------------|--|------------|--|--|--|--------------------------|--|--------------|--|-------|------|-----------------|--|--------|--|-----------|--|---------------|--------------|----------|--|--------|--|-----------|--|--------|--|--|--|--------|--|-----------|--|---------|--|--|--|----------|--|--|--|--------------------|--|--|--|---------------------|--|--|--|--------|--|--|--|-----------|--|--|--|----------------------|--|--|--|----------------|--|--|--|----------------------------|--|--|--|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------|--|--|--|-------------|--|--|--|-------------------|--|--|--|-------------------------|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                     |                 | Hoja 1 de 1                                                                                                                 |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                     |                 |                                                                                                                             |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>Proyecto:</b> BARRO COLORADO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               | <b>Empresa:</b> STEREOCARTO                                                         |                 | <b>Superficie número:</b> ESTACIONAMIENTOS                                                                                  |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>País:</b> PANAMÁ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | <b>Provincia:</b> COLON                                                             |                 | <b>Localización:</b> GAMBOA                                                                                                 |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                     |                 | <b>Código</b> <b>STRI</b>                                                                                                   |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>Fotografía de los puntos de control</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                                                                     |                 | <b>Croquis General (Puntos de apoyo y superficie)</b>                                                                       |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>SUR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               | <b>OESTE</b>                                                                        |                 |                                                                                                                             |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |  |                 |                                          |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <table border="1"> <thead> <tr> <th colspan="4">INSTRUMENTO</th> <th colspan="4">TIPO DE SUPERFICIE (marcar con X)</th> </tr> </thead> <tbody> <tr> <td>RTK:</td> <td>GPS estático:</td> <td>X</td> <td>Estación Total:</td> <td></td> <td>Pavimento:</td> <td></td> <td>Asfalto:</td> </tr> <tr> <td>Marca:</td> <td>SOUTH</td> <td>Antena:</td> <td>Modelo</td> <td>G7</td> <td>Serial:</td> <td>S910BA148510501</td> <td>TERRENO NATURAL:</td> </tr> <tr> <td colspan="4"> <b>STRÍ</b> </td> <td colspan="4"> <b>CONCRETO:</b> X         </td> </tr> <tr> <th colspan="4">SISTEMA DE REFERENCIA</th> <th colspan="2">ESTACION DE CONTROL</th> <th colspan="2">UBICACIÓN DE CORS</th> </tr> <tr> <td colspan="4"> <b>UTM</b> </td> <td colspan="2"> <b>TIPO de solución:</b> </td> <td colspan="2"> <b>PDOP:</b> </td> </tr> <tr> <td>NORTE</td> <td>ESTE</td> <td colspan="2">Elevación(Orto)</td> <td colspan="2">SD ΔX:</td> <td colspan="2">1.2 - 2.3</td> </tr> <tr> <td>1008231.5830m</td> <td>641229.5284m</td> <td colspan="2">28.1907m</td> <td colspan="2">SD ΔY:</td> <td colspan="2">1.2 - 2.3</td> </tr> <tr> <td colspan="4">Global</td> <td colspan="2">SD ΔZ:</td> <td colspan="2">1.5 - 3.2</td> </tr> <tr> <td colspan="4">Latitud</td> <td colspan="4">Longitud</td> </tr> <tr> <td colspan="4">9° 07' 07.48794" N</td> <td colspan="4">79° 42' 53.17793" W</td> </tr> <tr> <td colspan="4">Altura</td> <td colspan="4">20.3789 m</td> </tr> <tr> <td colspan="4">Técnico responsable:</td> <td colspan="4">Observaciones:</td> </tr> <tr> <td colspan="4">TOPOGRAFO ROBERTO RESTREPO</td> <td colspan="4">CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL</td> </tr> <tr> <td colspan="4">Empresa contratista:</td> <td colspan="4">STEREOCARTO</td> </tr> <tr> <td colspan="4">Fecha de captura:</td> <td colspan="4">26/05/2023 6:43:57 a.m.</td> </tr> </tbody> </table> |               |                                                                                     |                 |                                                                                                                             |            | INSTRUMENTO       |                  |  |  | TIPO DE SUPERFICIE (marcar con X) |  |  |  | RTK: | GPS estático: | X | Estación Total: |  | Pavimento: |  | Asfalto: | Marca: | SOUTH | Antena: | Modelo | G7 | Serial: | S910BA148510501 | TERRENO NATURAL: | <b>STRÍ</b> |  |  |  | <b>CONCRETO:</b> X |  |  |  | SISTEMA DE REFERENCIA |  |  |  | ESTACION DE CONTROL |  | UBICACIÓN DE CORS |  | <b>UTM</b> |  |  |  | <b>TIPO de solución:</b> |  | <b>PDOP:</b> |  | NORTE | ESTE | Elevación(Orto) |  | SD ΔX: |  | 1.2 - 2.3 |  | 1008231.5830m | 641229.5284m | 28.1907m |  | SD ΔY: |  | 1.2 - 2.3 |  | Global |  |  |  | SD ΔZ: |  | 1.5 - 3.2 |  | Latitud |  |  |  | Longitud |  |  |  | 9° 07' 07.48794" N |  |  |  | 79° 42' 53.17793" W |  |  |  | Altura |  |  |  | 20.3789 m |  |  |  | Técnico responsable: |  |  |  | Observaciones: |  |  |  | TOPOGRAFO ROBERTO RESTREPO |  |  |  | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL |  |  |  | Empresa contratista: |  |  |  | STEREOCARTO |  |  |  | Fecha de captura: |  |  |  | 26/05/2023 6:43:57 a.m. |  |  |  |
| INSTRUMENTO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                                                                                     |                 | TIPO DE SUPERFICIE (marcar con X)                                                                                           |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| RTK:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | GPS estático: | X                                                                                   | Estación Total: |                                                                                                                             | Pavimento: |                   | Asfalto:         |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Marca:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SOUTH         | Antena:                                                                             | Modelo          | G7                                                                                                                          | Serial:    | S910BA148510501   | TERRENO NATURAL: |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>STRÍ</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                                                                                     |                 | <b>CONCRETO:</b> X                                                                                                          |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| SISTEMA DE REFERENCIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                                                                                     |                 | ESTACION DE CONTROL                                                                                                         |            | UBICACIÓN DE CORS |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| <b>UTM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                                                                     |                 | <b>TIPO de solución:</b>                                                                                                    |            | <b>PDOP:</b>      |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| NORTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ESTE          | Elevación(Orto)                                                                     |                 | SD ΔX:                                                                                                                      |            | 1.2 - 2.3         |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| 1008231.5830m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 641229.5284m  | 28.1907m                                                                            |                 | SD ΔY:                                                                                                                      |            | 1.2 - 2.3         |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Global                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                                     |                 | SD ΔZ:                                                                                                                      |            | 1.5 - 3.2         |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Latitud                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                                                                                     |                 | Longitud                                                                                                                    |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| 9° 07' 07.48794" N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                                                                                     |                 | 79° 42' 53.17793" W                                                                                                         |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Altura                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                                     |                 | 20.3789 m                                                                                                                   |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Técnico responsable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                                                                     |                 | Observaciones:                                                                                                              |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| TOPOGRAFO ROBERTO RESTREPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                                                                     |                 | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Empresa contratista:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                                                                     |                 | STEREOCARTO                                                                                                                 |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |
| Fecha de captura:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                     |                 | 26/05/2023 6:43:57 a.m.                                                                                                     |            |                   |                  |  |  |                                   |  |  |  |      |               |   |                 |  |            |  |          |        |       |         |        |    |         |                 |                  |             |  |  |  |                    |  |  |  |                       |  |  |  |                     |  |                   |  |            |  |  |  |                          |  |              |  |       |      |                 |  |        |  |           |  |               |              |          |  |        |  |           |  |        |  |  |  |        |  |           |  |         |  |  |  |          |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |           |  |  |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |  |  |                   |  |  |  |                         |  |  |  |

## COBERTURA SEGÚN AREA CONTRATADA

## LINEAS DE VUELO



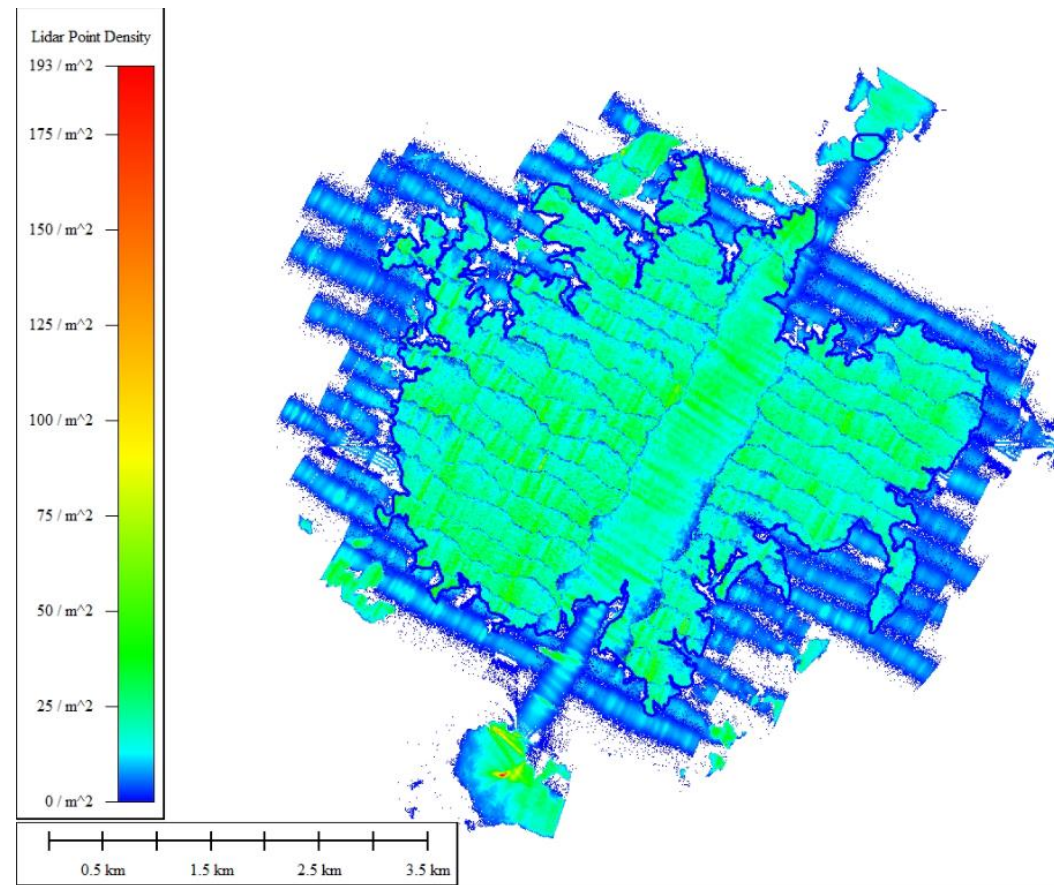
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 28992984/28.99  
point density: all returns 41.99 last only 20.31 (per square meter)  
spacing: all returns 0.15 last only 0.22 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

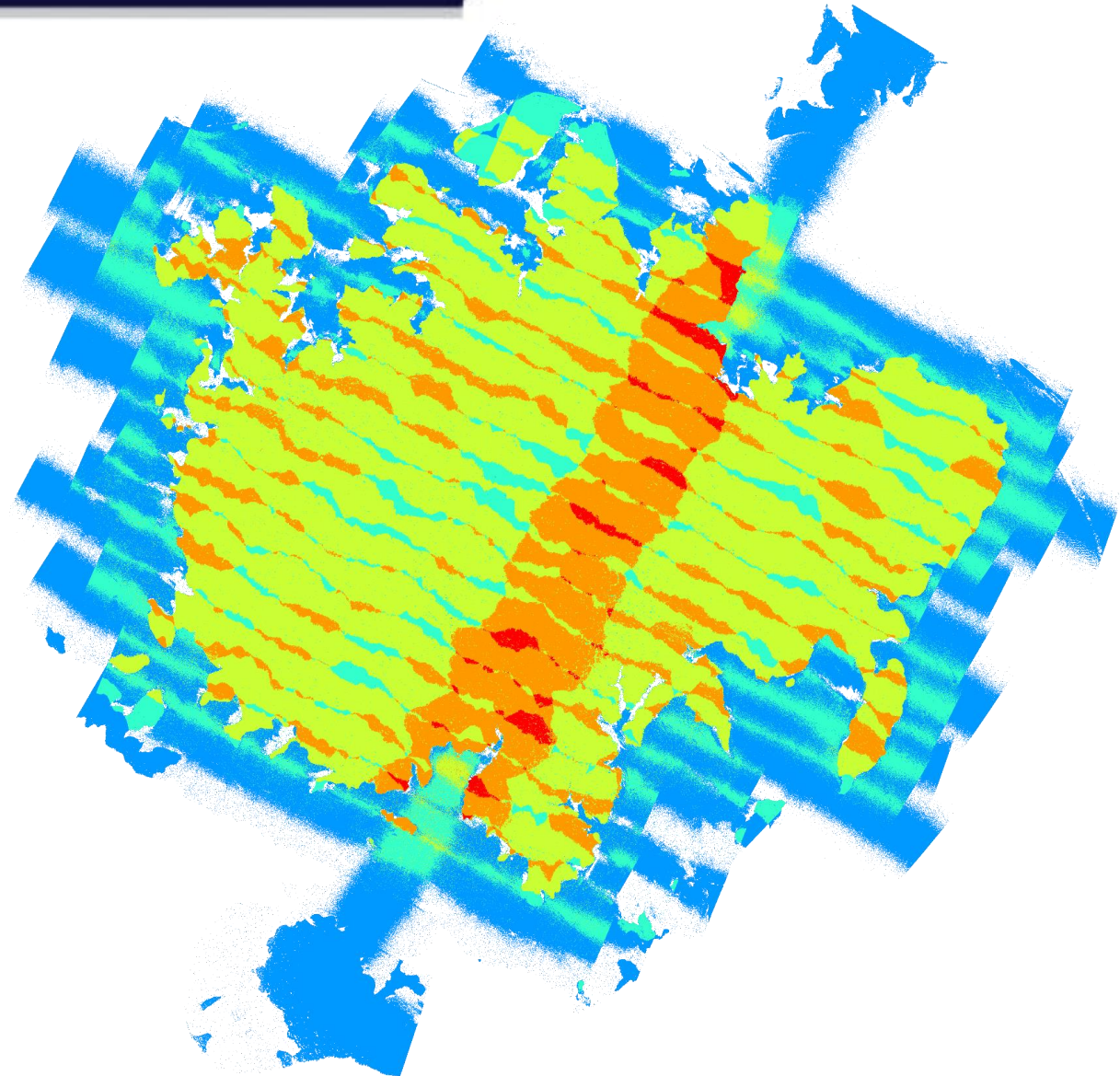
AZUL: 1 PASADA

CIAN: 2 PASADAS

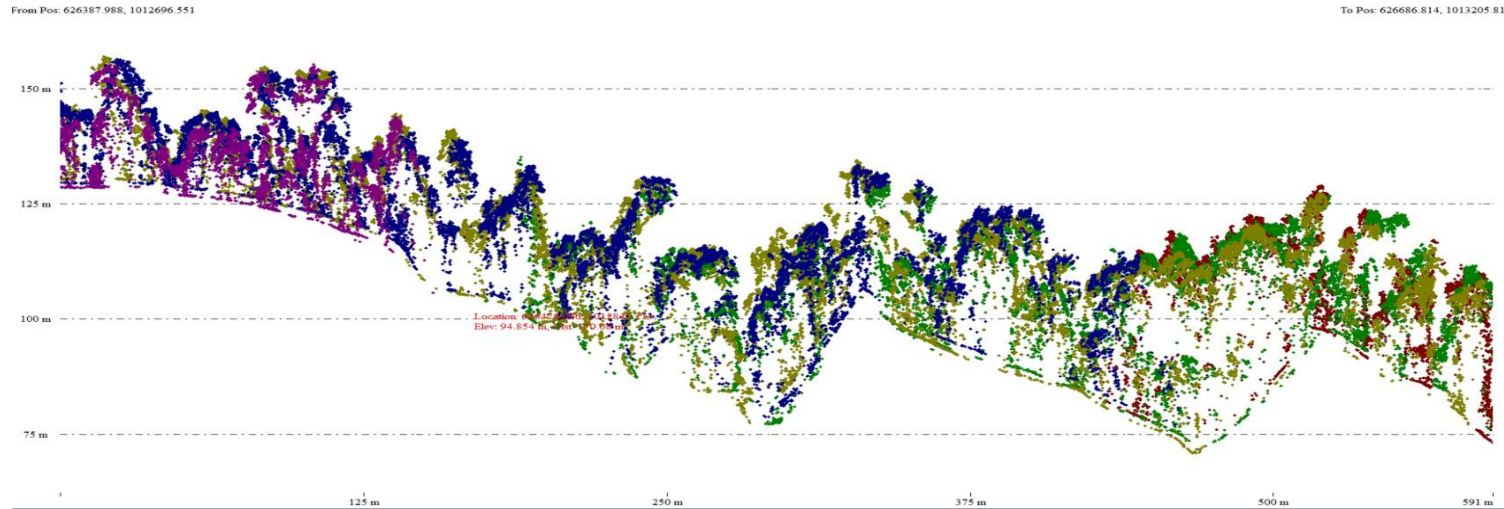
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

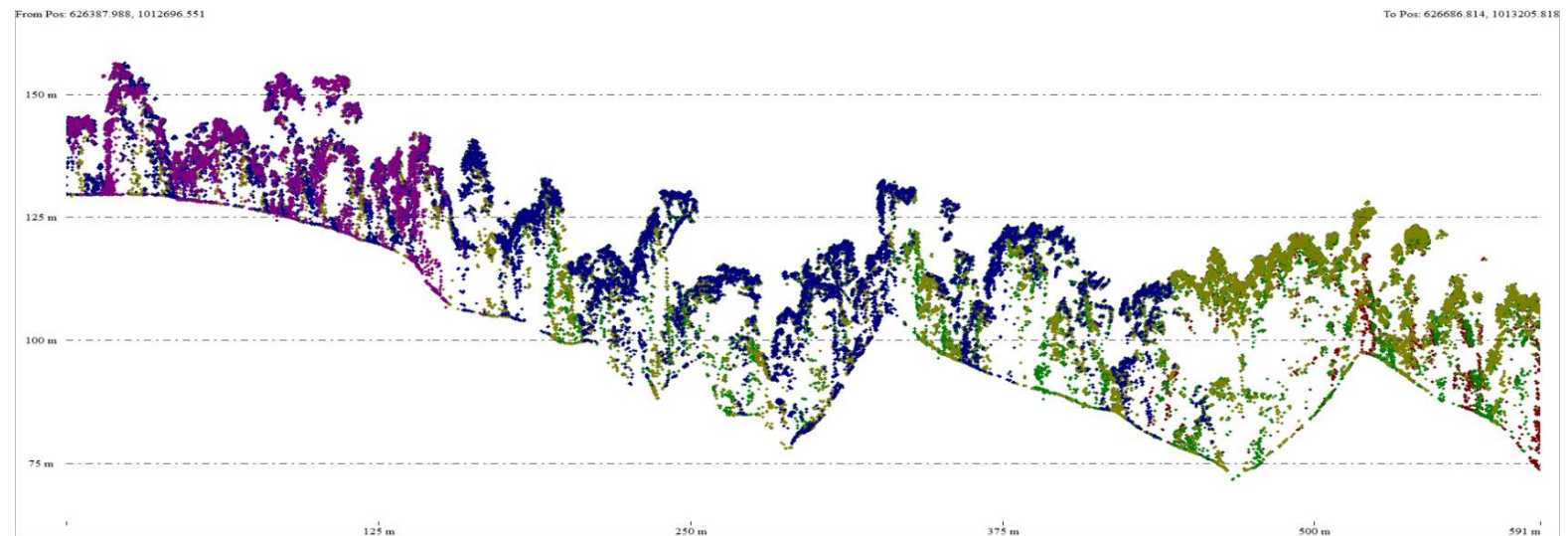


## AJUSTE ENTRE PASADAS

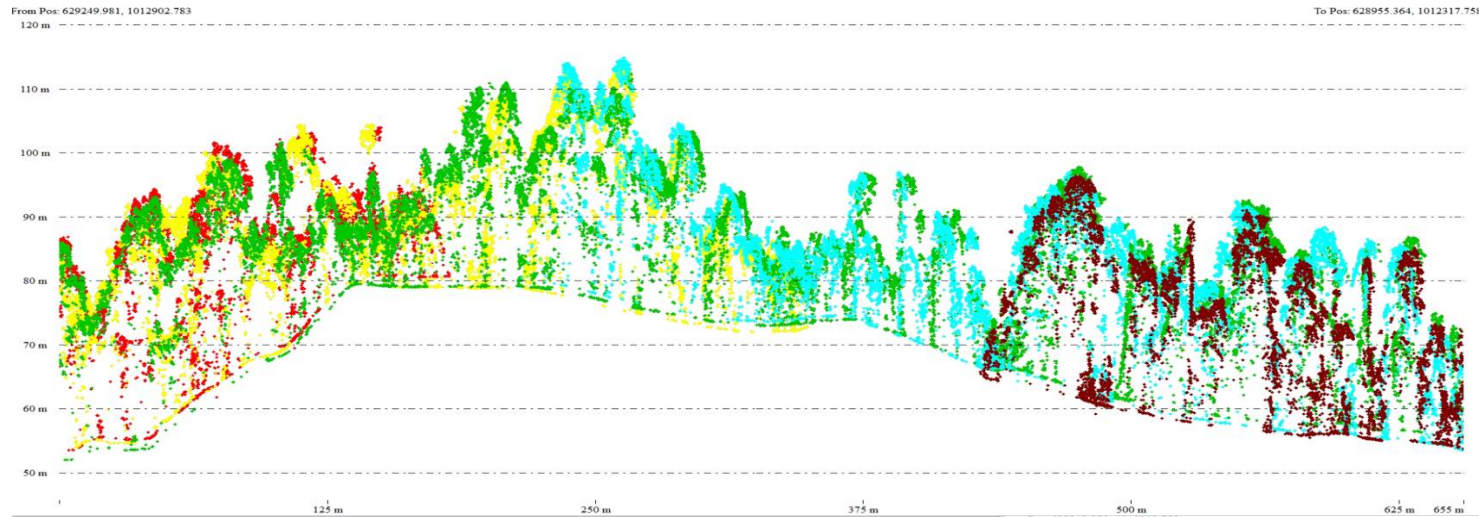


POSTERIOR AL AJUSTE

ANTES DEL AJUSTE

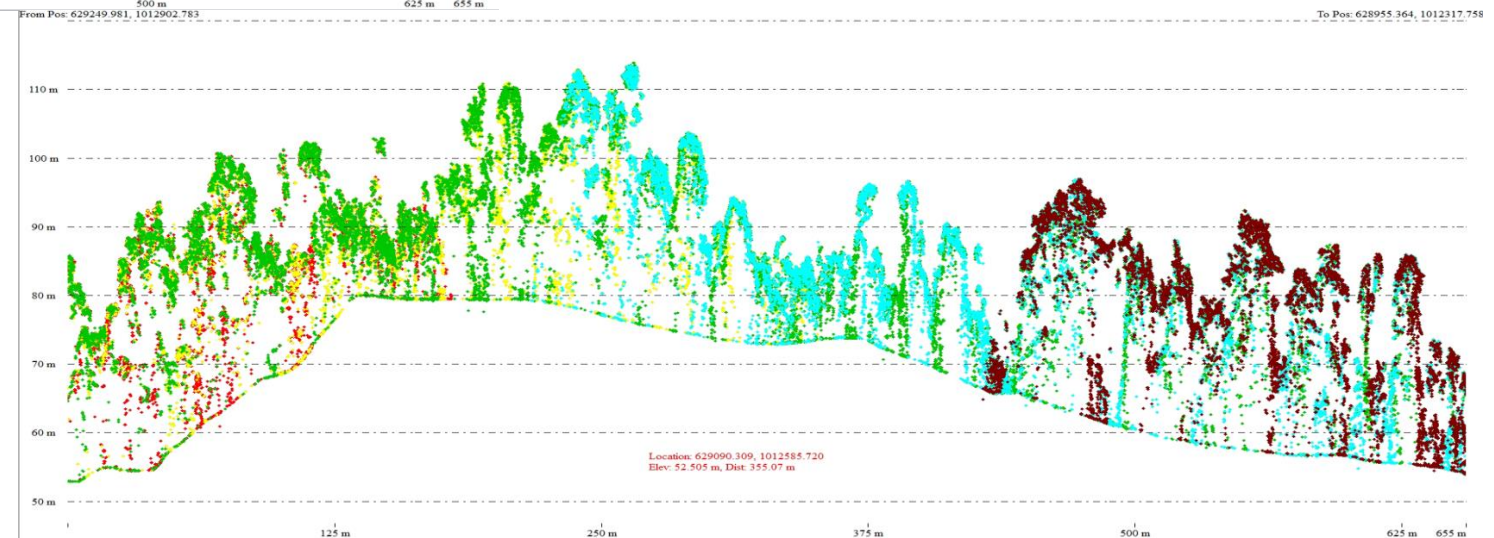


## AJUSTE ENTRE PASADAS

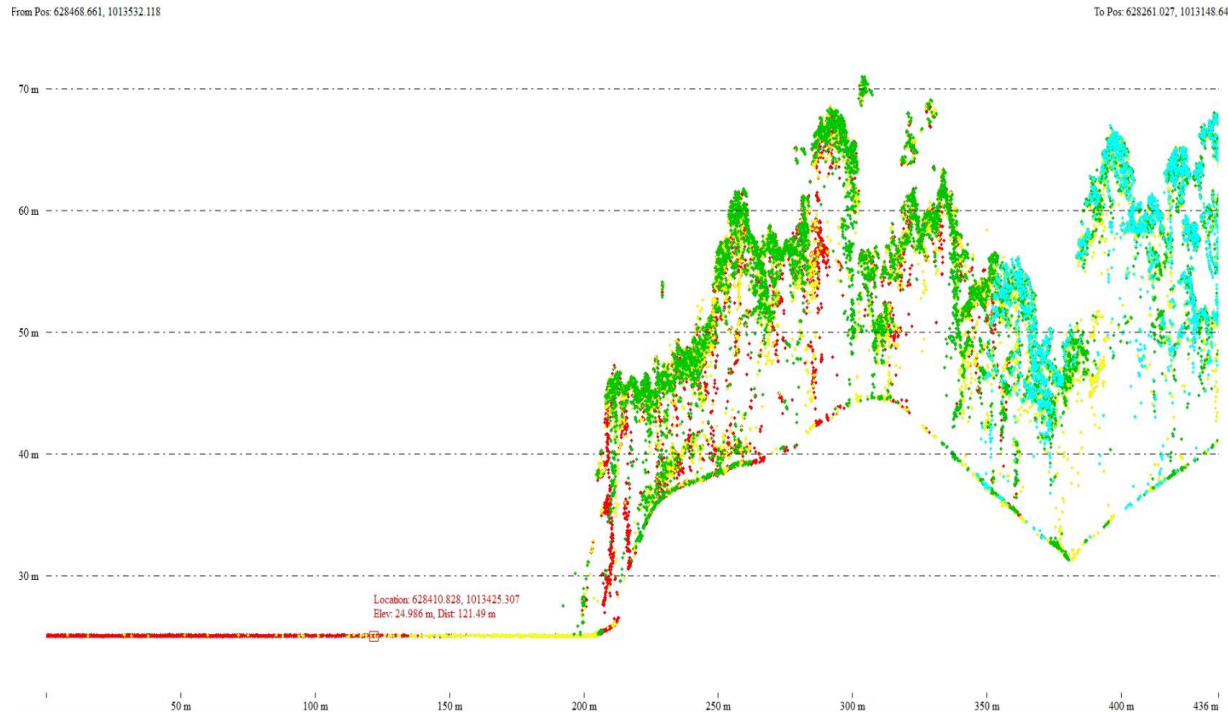


POSTERIOR AL AJUSTE

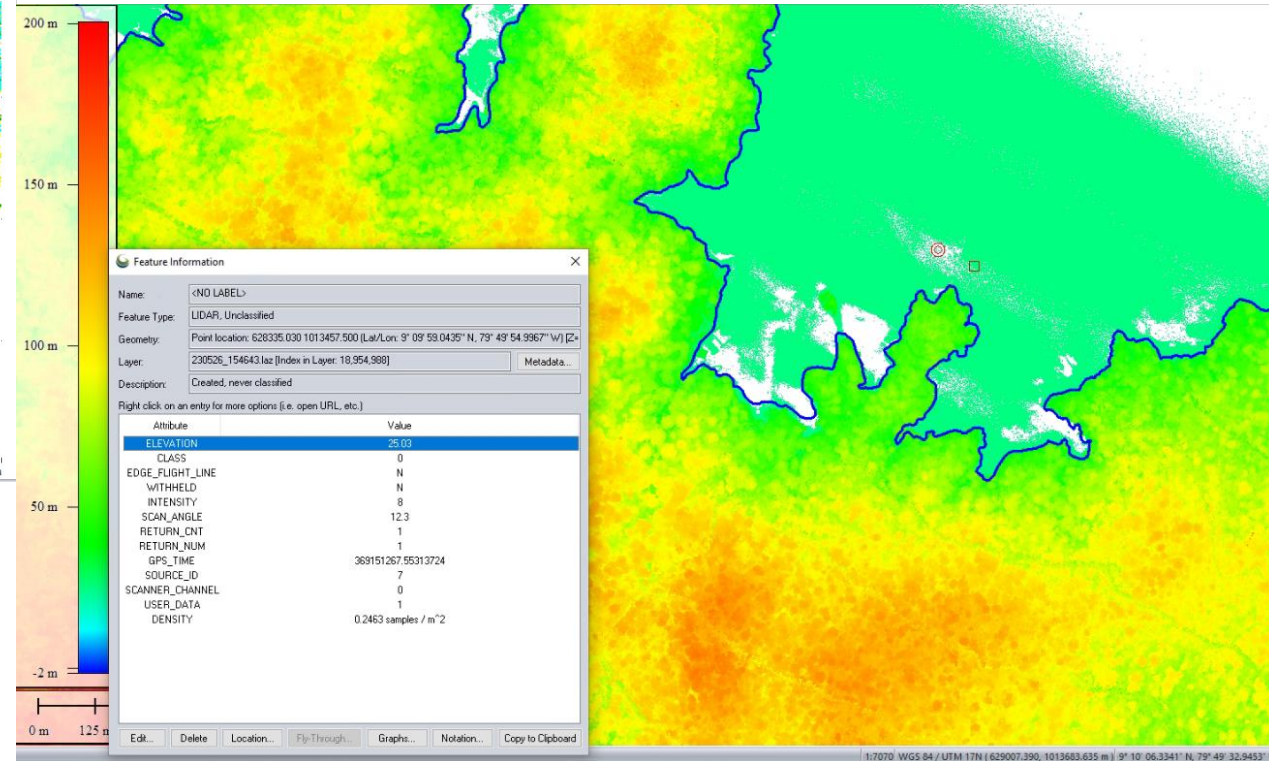
ANTES DEL AJUSTE



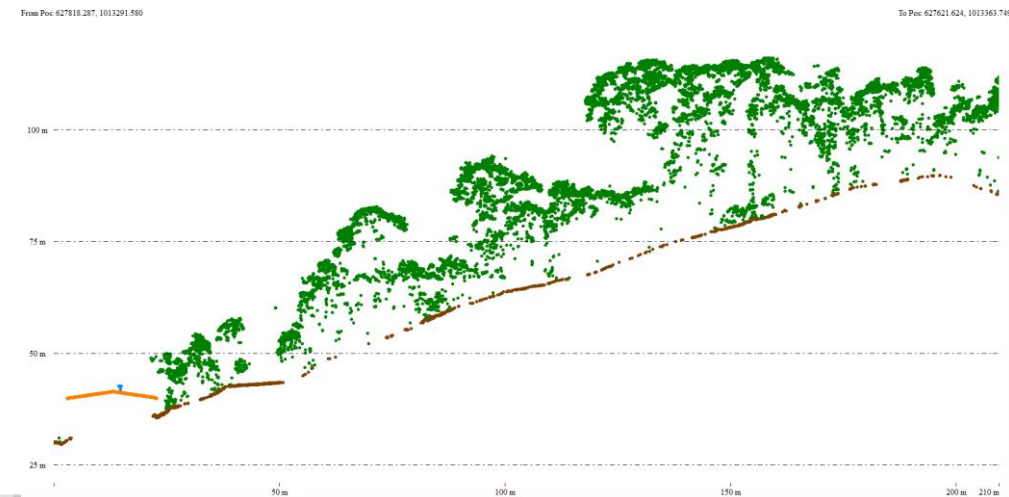
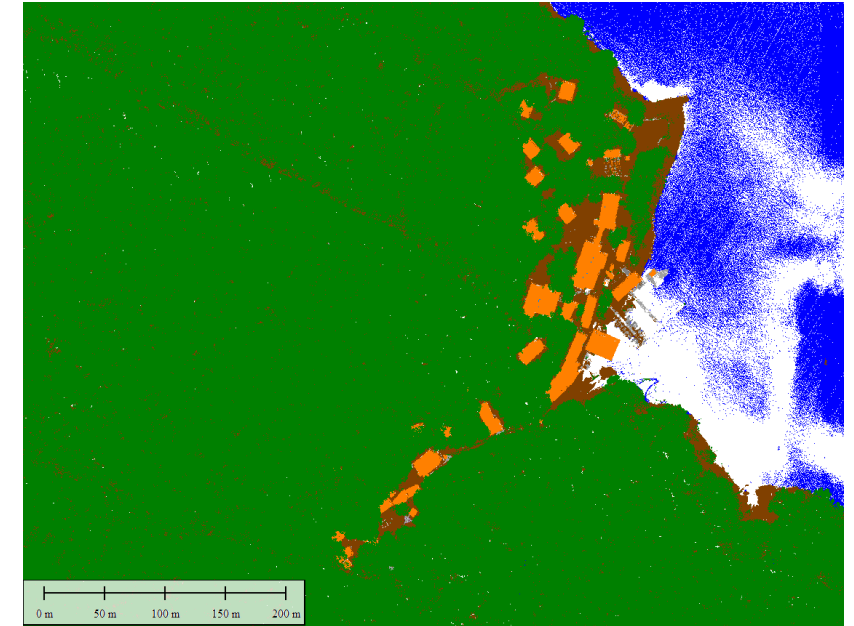
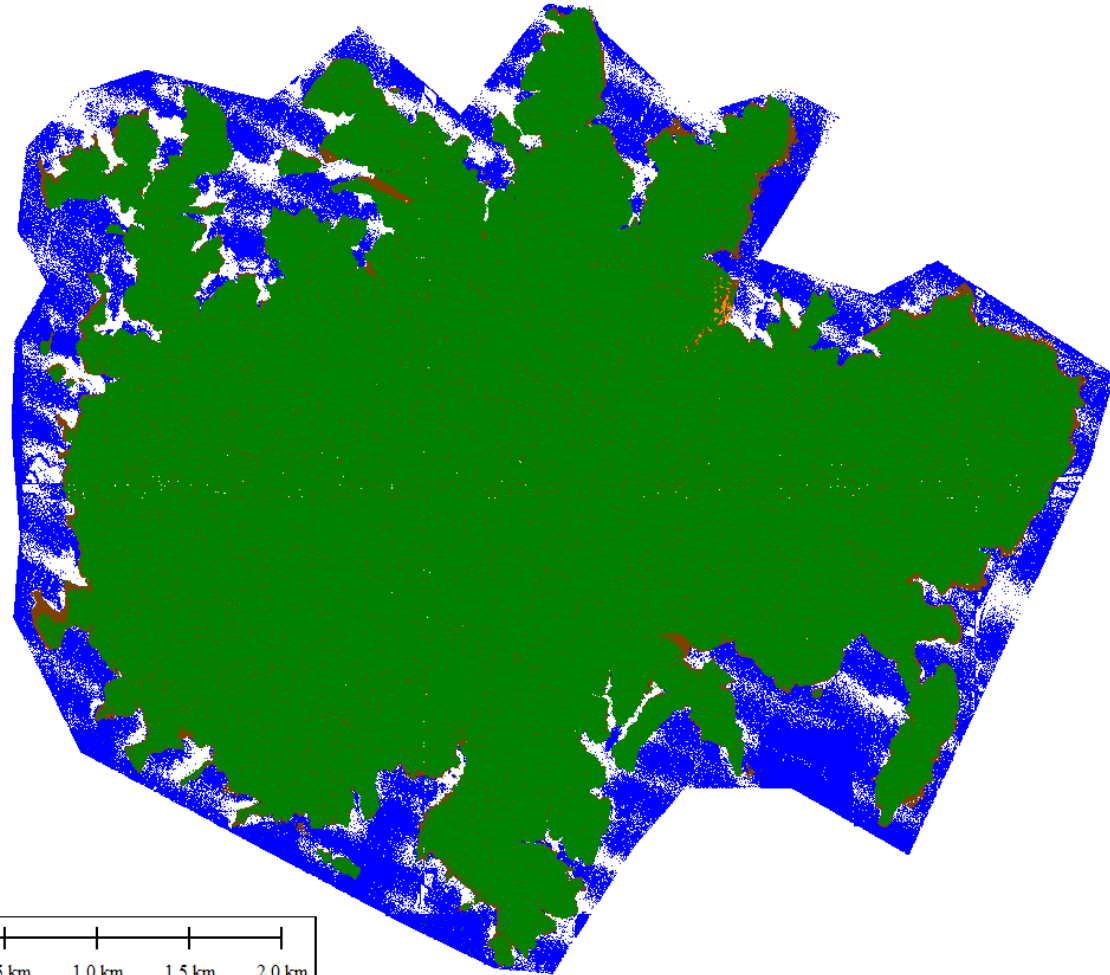
## AJUSTE ENTRE PASADAS Y AJUSTE ALTIMETRICO: NIVEL DE LA LAMINA DE AGUA



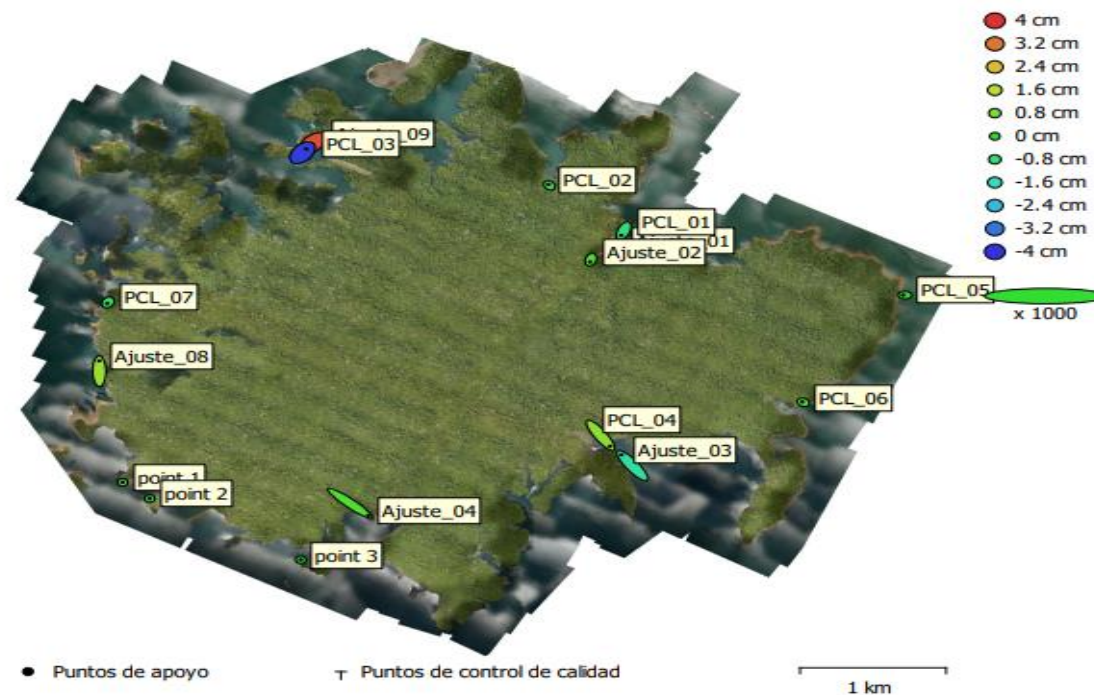
LAMINA DE AGUA CON  
COTA EN LOS 25 M



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 16     | 8.32277         | 11.0188         | 1.46294         | 13.8088          | 13.8861    |

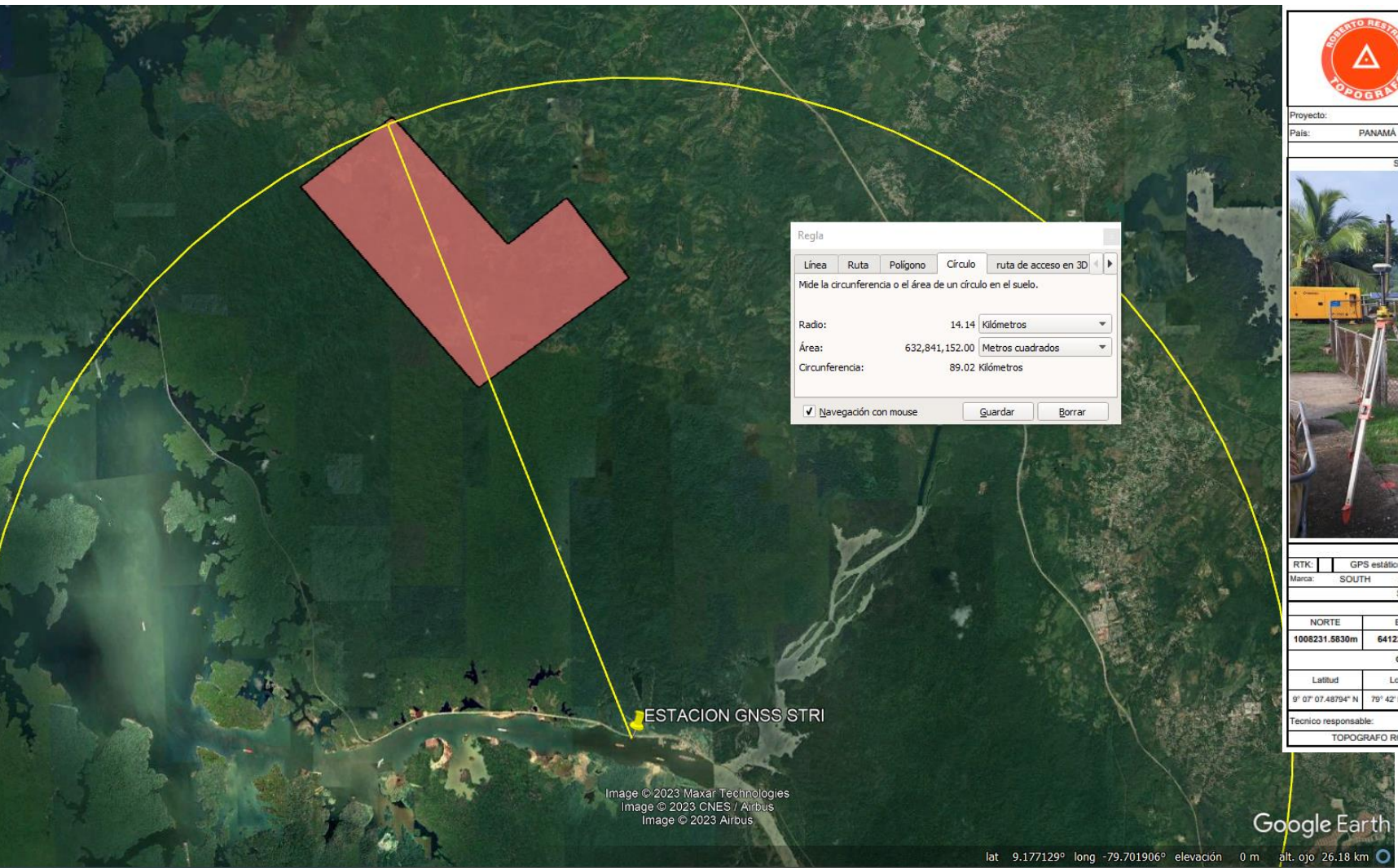
Tabla 4. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

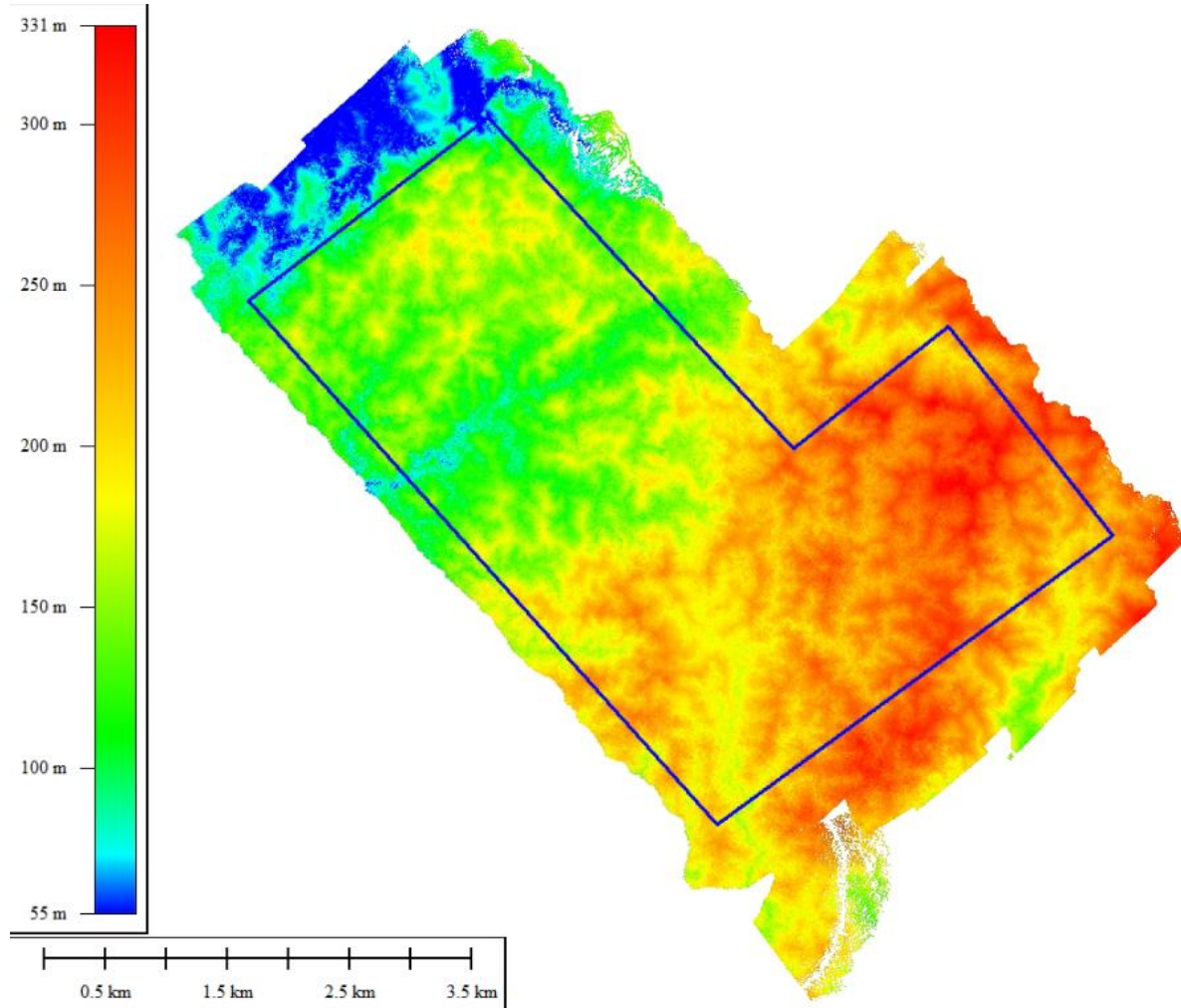
|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | GIGANTE              |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

## ESTACION DE REFERENCIA

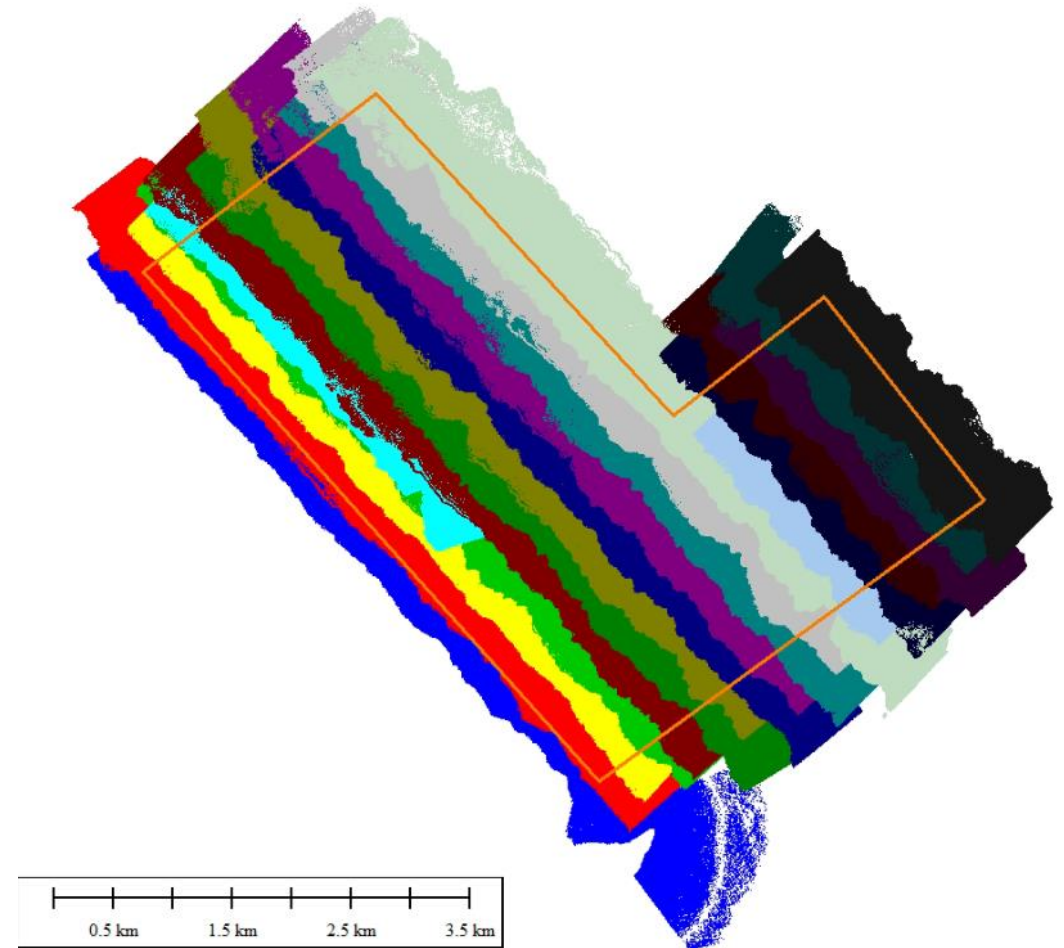


|                                                                                                                                                                                                          |  |                                                                                                                                                 |  |                                                                                                                                                                                                           |  |                                                                       |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|
|                                                                                                                                                                                                          |  | DESCRIPCIÓN DE PUNTOS DE CONTROL                                                                                                                |  |                                                                                                                                                                                                           |  | FECHA                                                                 |  |
|                                                                                                                                                                                                          |  |                                                                                                                                                 |  |                                                                                                                                                                                                           |  | 26/05/2023                                                            |  |
|                                                                                                                                                                                                          |  |                                                                                                                                                 |  |                                                                                                                                                                                                           |  | Hoja 1 de 1                                                           |  |
| Proyecto: BARRO COLORADO                                                                                                                                                                                 |  | Empresa: STEREOCARTO                                                                                                                            |  | Superficie número: ESTACIONAMIENTOS                                                                                                                                                                       |  |                                                                       |  |
| País: PANAMÁ                                                                                                                                                                                             |  | Provincia: COLON                                                                                                                                |  | Localización: GAMBOA                                                                                                                                                                                      |  | Codigo: STRI                                                          |  |
| Fotografía de los puntos de control                                                                                                                                                                      |  |                                                                                                                                                 |  | Croquis General (Puntos de apoyo y superficie)                                                                                                                                                            |  |                                                                       |  |
| SUR                                                                                                                                                                                                      |  | OESTE                                                                                                                                           |  |                                                                                                                                                                                                           |  |                                                                       |  |
|                                                                                                                                                                                                          |  |                                                                                                                                                 |  |                                                                                                                                                                                                           |  |                                                                       |  |
| <b>INSTRUMENTO</b><br>RTK: <input type="checkbox"/> GPS estático: <input checked="" type="checkbox"/> Estación Total: <input type="checkbox"/><br>Marca: SOUTH Antena: Modelo G7 Serial: S910BA145510501 |  |                                                                                                                                                 |  | <b>TIPO DE SUPERFICIE (marcar con X)</b><br>Pavimento: <input type="checkbox"/> Asfalto: <input type="checkbox"/> TERRENO NATURAL: <input type="checkbox"/> CONCRETO: <input checked="" type="checkbox"/> |  |                                                                       |  |
| <b>STR</b><br>DATUM: UTM<br>NORTE: 1008231.5830m<br>ESTE: 641229.5284m<br>Elevación(Ortfo): 28.1907m                                                                                                     |  | <b>SISTEMA DE REFERENCIA</b><br>DATUM: WGS84<br>UTM Zona: 17 Norte<br>Modelo Geoidal: EGM2008 (Global) SXS                                      |  | <b>ESTACION DE CONTROL</b><br>Tipo de solución: SD ΔX: 0.0001m<br>SD ΔY: 0.0002m<br>SD ΔZ: 0.0001m                                                                                                        |  | <b>UBICACIÓN DE CORS</b><br>Phase Fixed: 1.2 - 2.3<br>GDOP: 1.5 - 3.2 |  |
| Latitud: 9° 07' 07.48794" N<br>Longitud: 79° 42' 53.17793" W<br>Altura: 40.3789 m                                                                                                                        |  | Observaciones:<br>CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERCA FRONTAL |  |                                                                                                                                                                                                           |  |                                                                       |  |
| Técnico responsable: TOPOGRAFO ROBERTO RESTREPO                                                                                                                                                          |  |                                                                                                                                                 |  | Empresa contratista: STEREOCARTO                                                                                                                                                                          |  | Fecha de captura: 26/05/2023 6:43:57 a. m.                            |  |

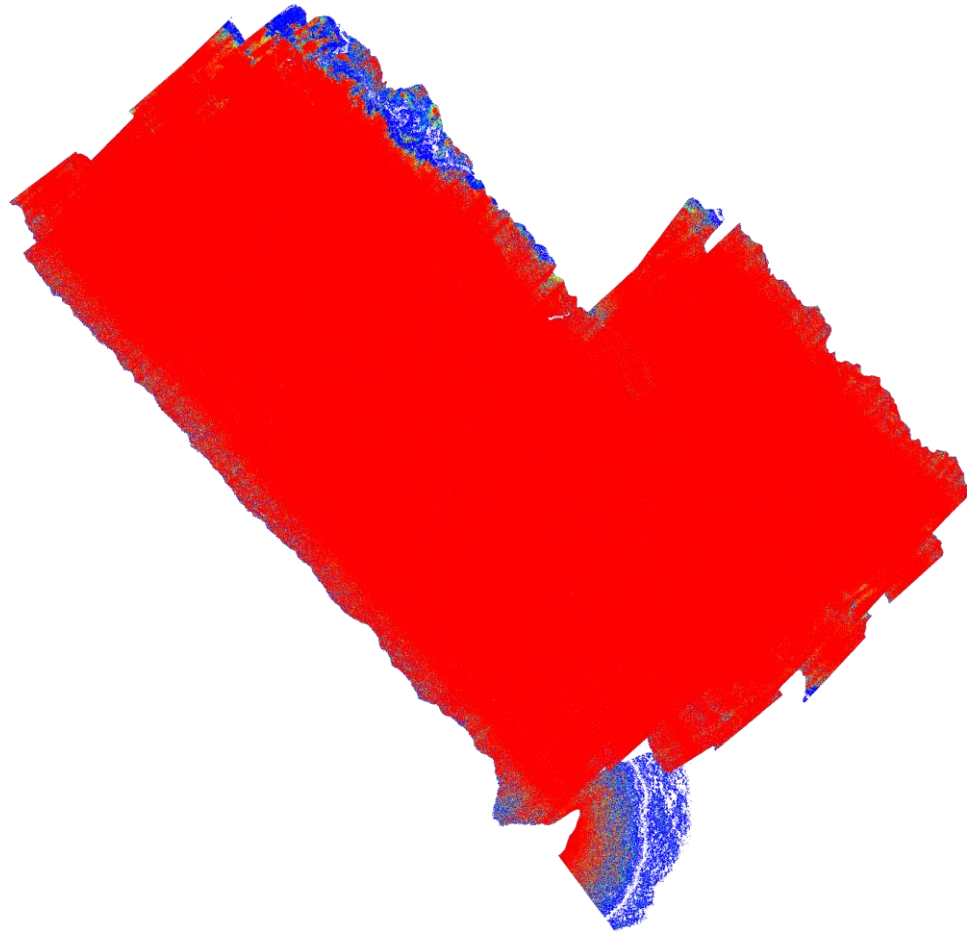
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



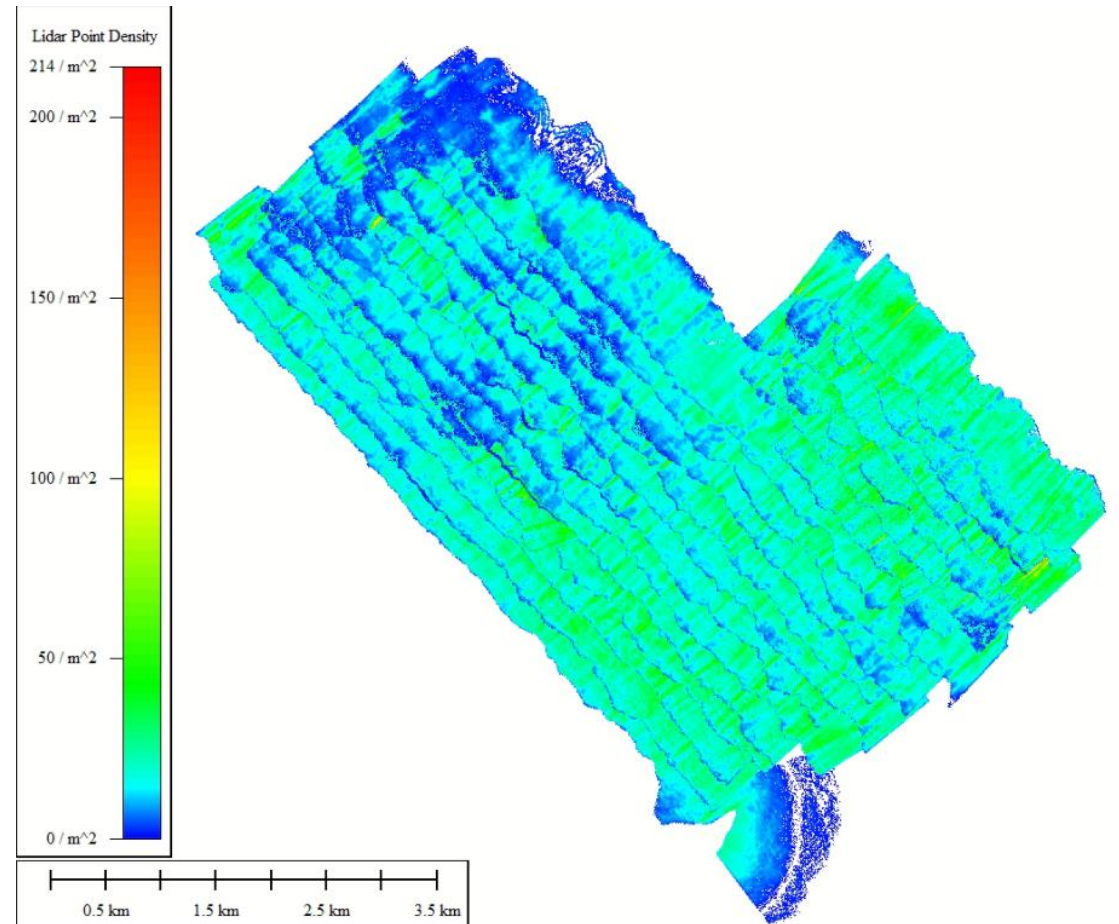
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 29746280/29.75  
point density: all returns 52.01 last only 25.74 (per square meter)  
spacing: all returns 0.14 last only 0.20 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

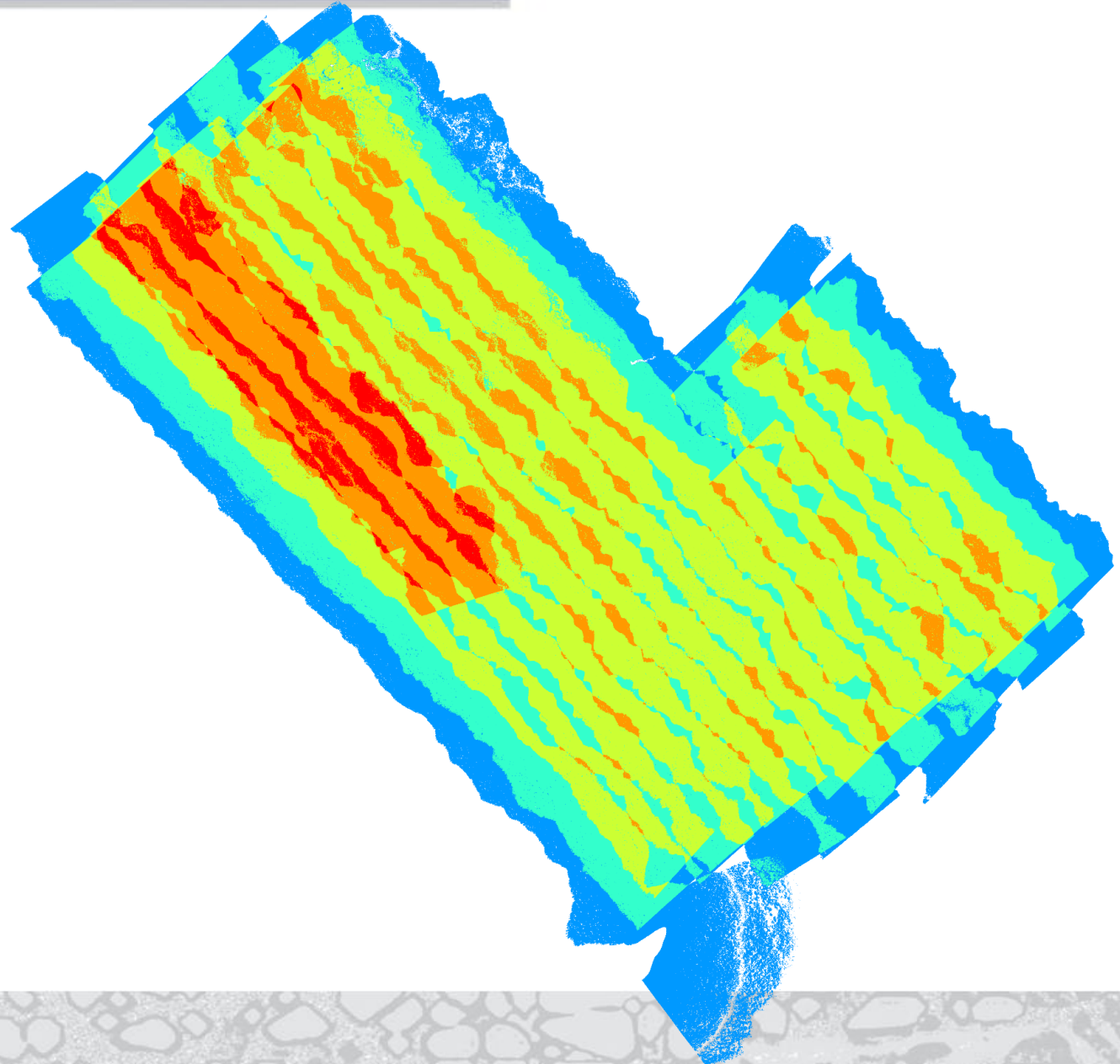
AZUL: 1 PASADA

CIAN: 2 PASADAS

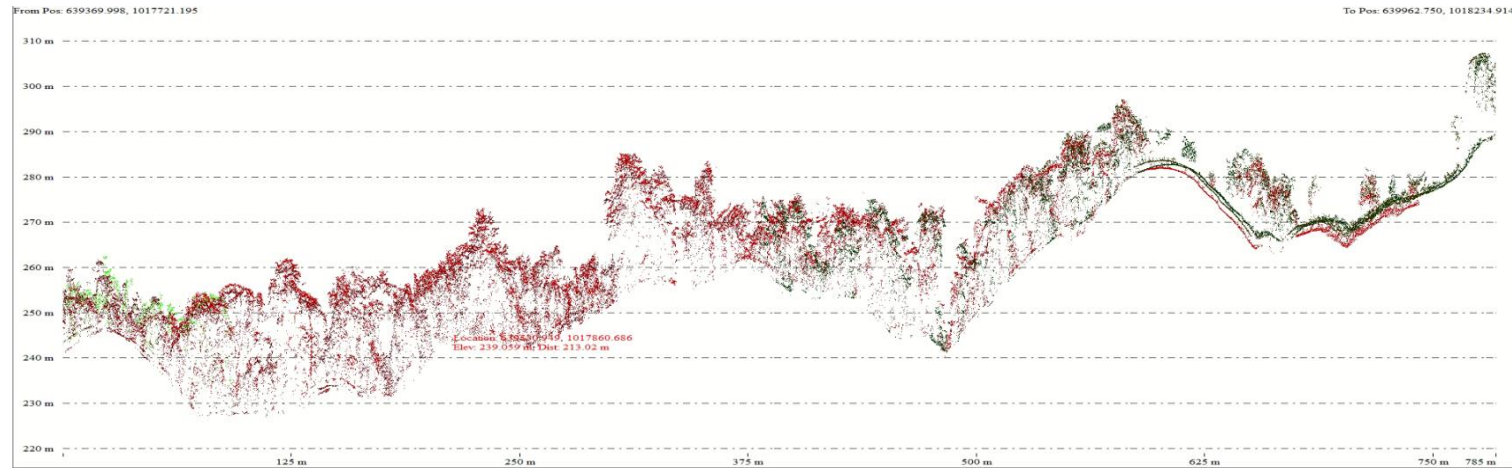
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

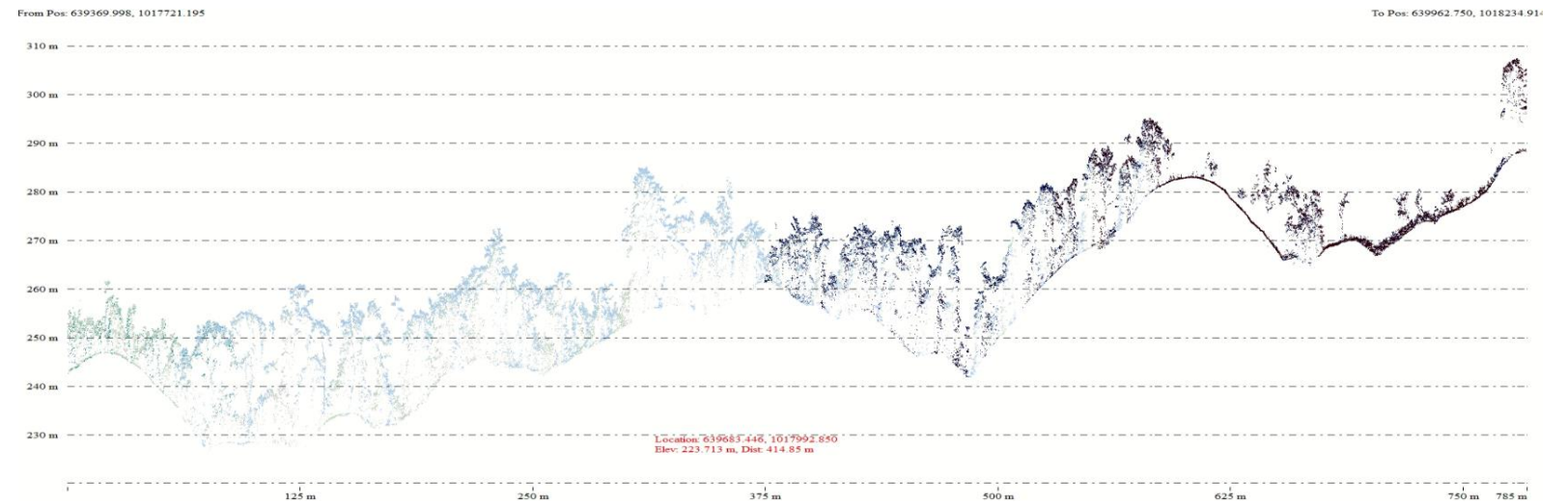


## AJUSTE ENTRE PASADAS

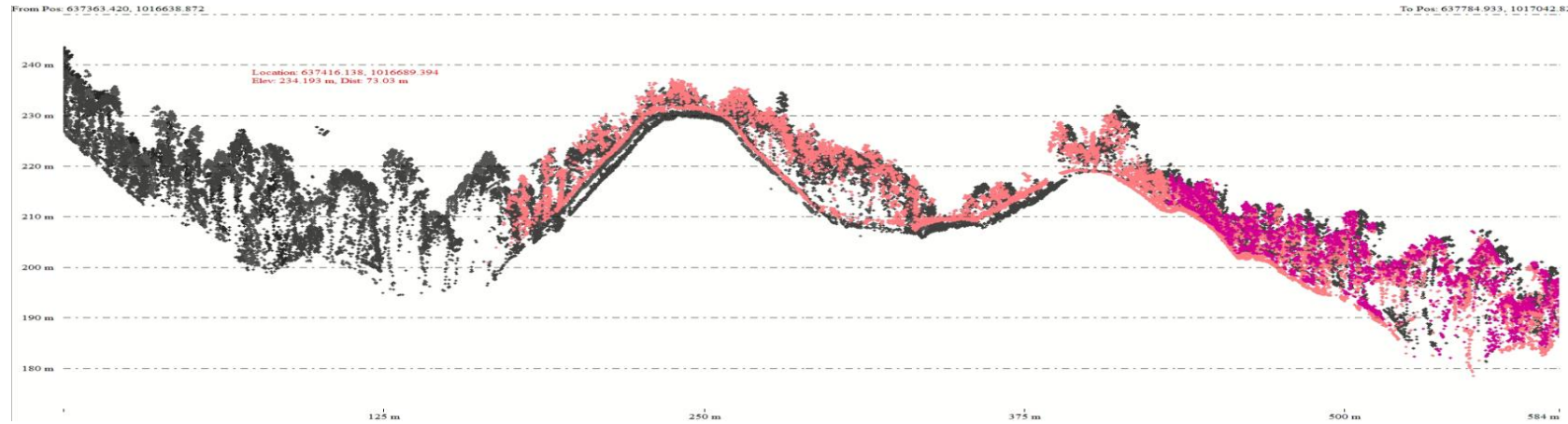


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE

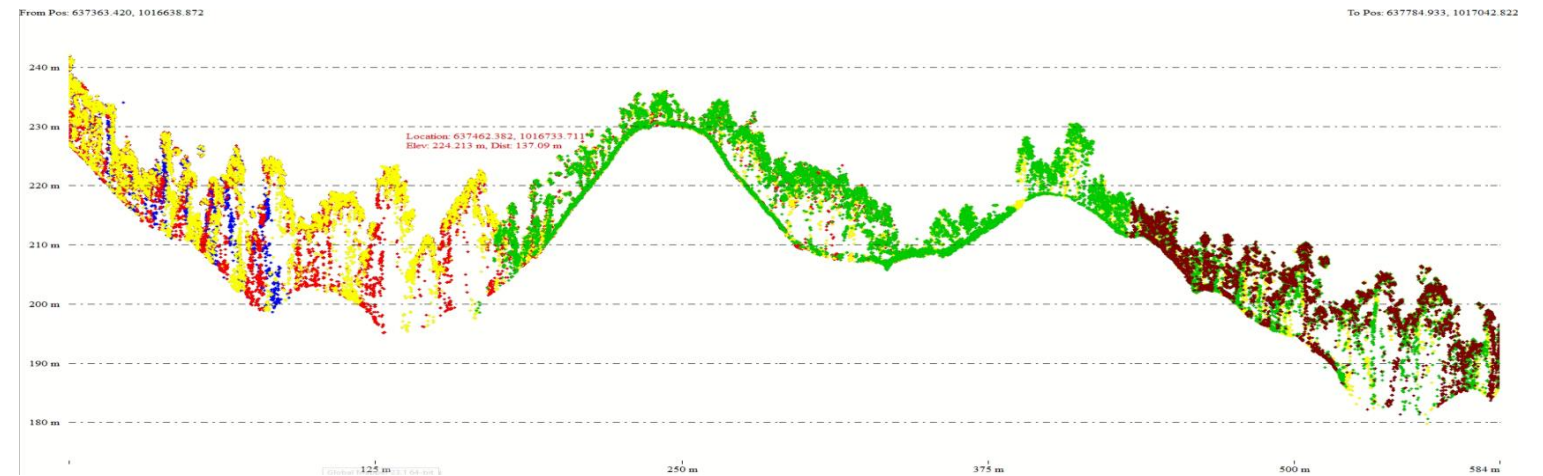


## AJUSTE ENTRE PASADAS

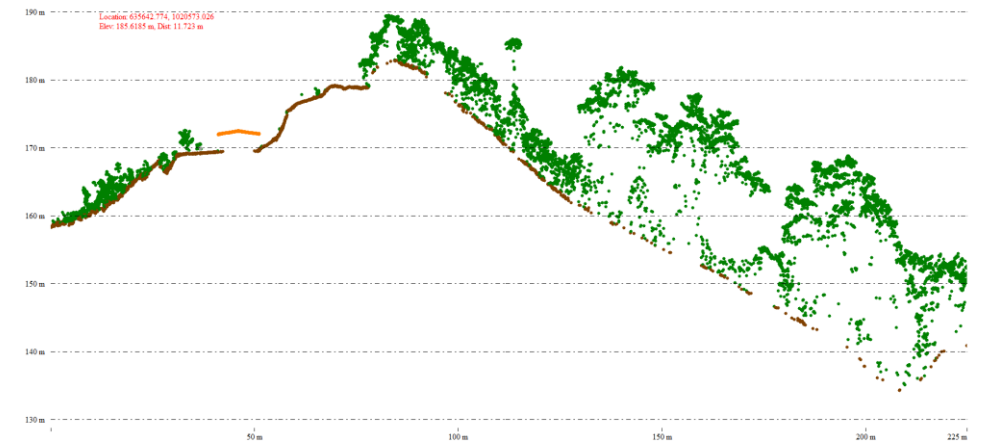
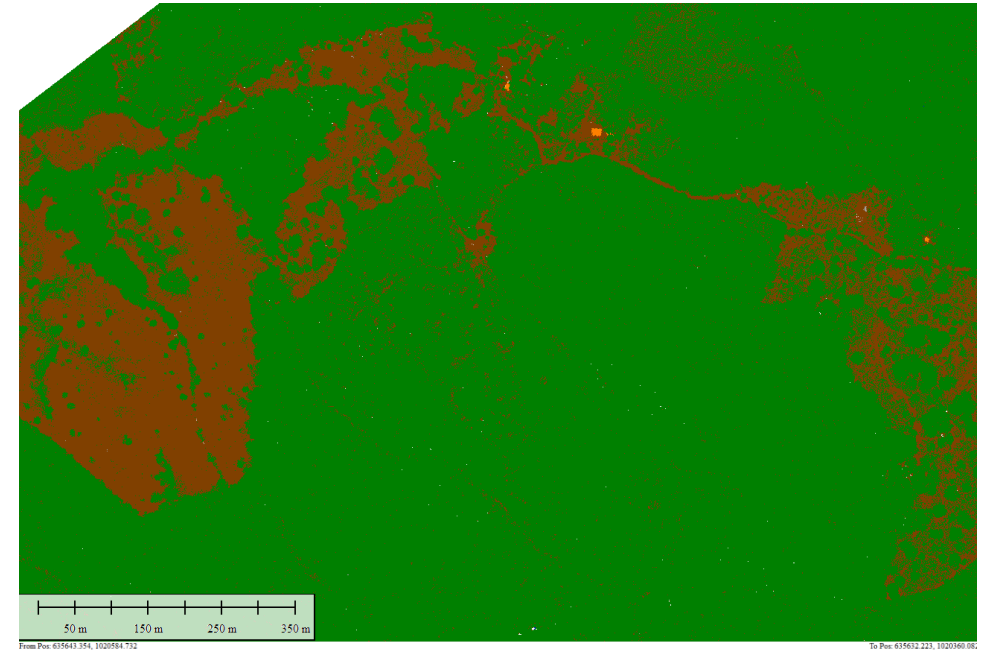
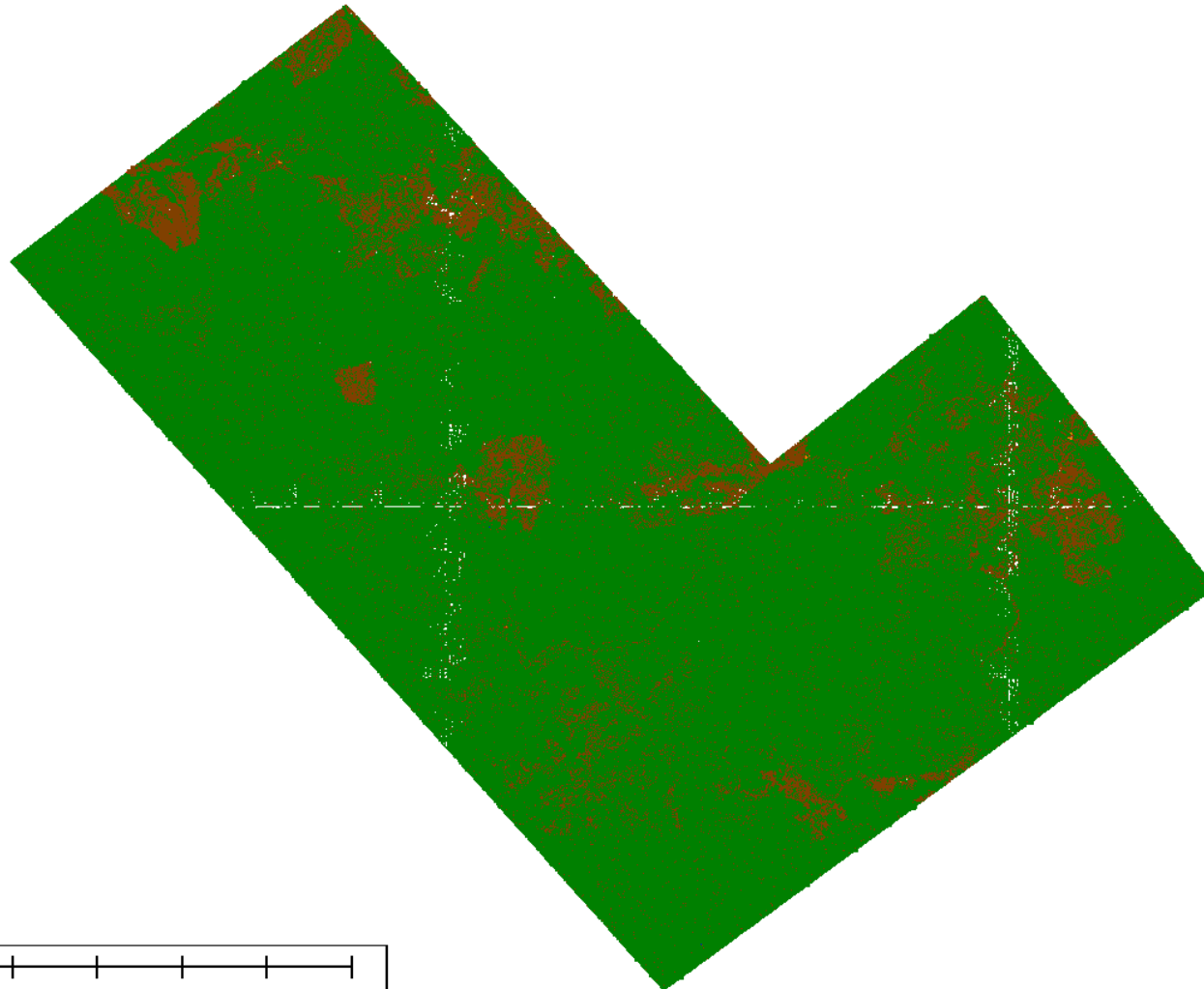


## POSTERIOR AL AJUSTE

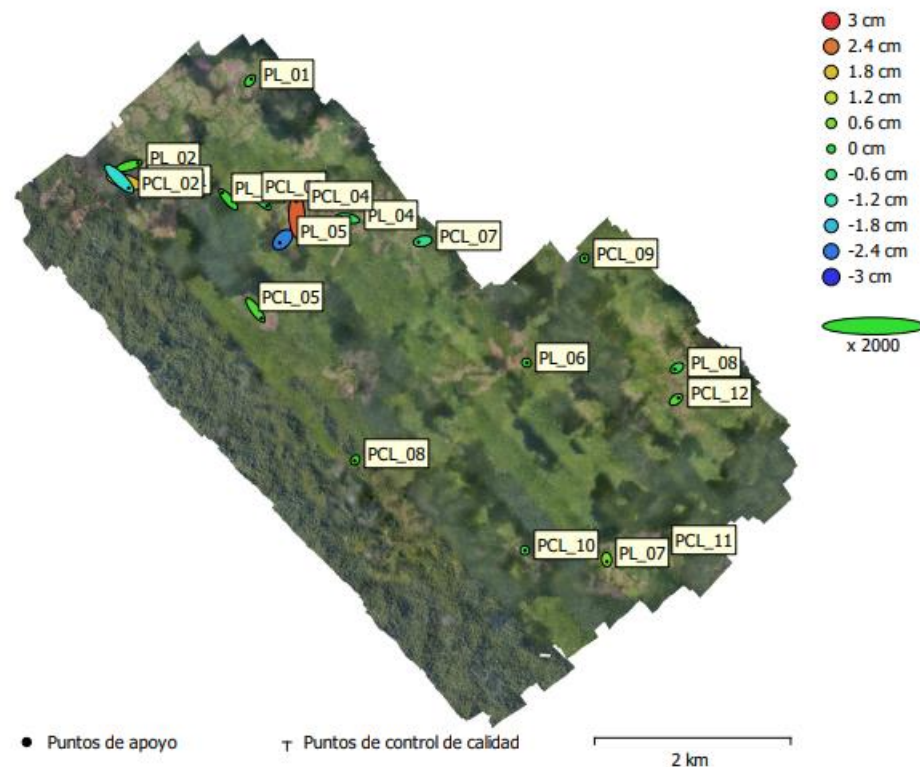
## ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 19     | 5.33984         | 5.28512         | 1.00261         | 7.51309          | 7.57969    |

Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | GIGANTE              |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

Regla

Línea Ruta Polígono Círculo ruta de acceso en 3D

Mide la circunferencia o el área de un círculo en el suelo.

|                 |                |                  |
|-----------------|----------------|------------------|
| Radio:          | 6.34           | Kilómetros       |
| Área:           | 126,955,664.00 | Metros cuadrados |
| Circunferencia: | 39.87          | Kilómetros       |

☒ Navegación con mouse

Guardar Borrar

ESTACION GNSS STRI

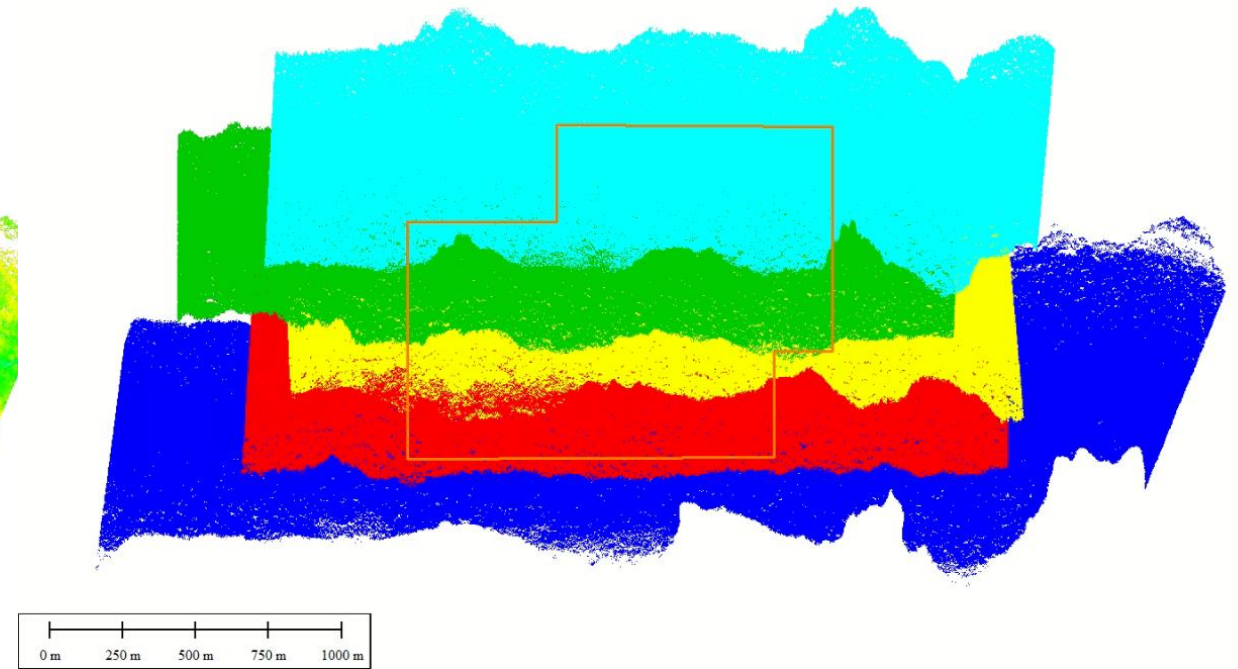
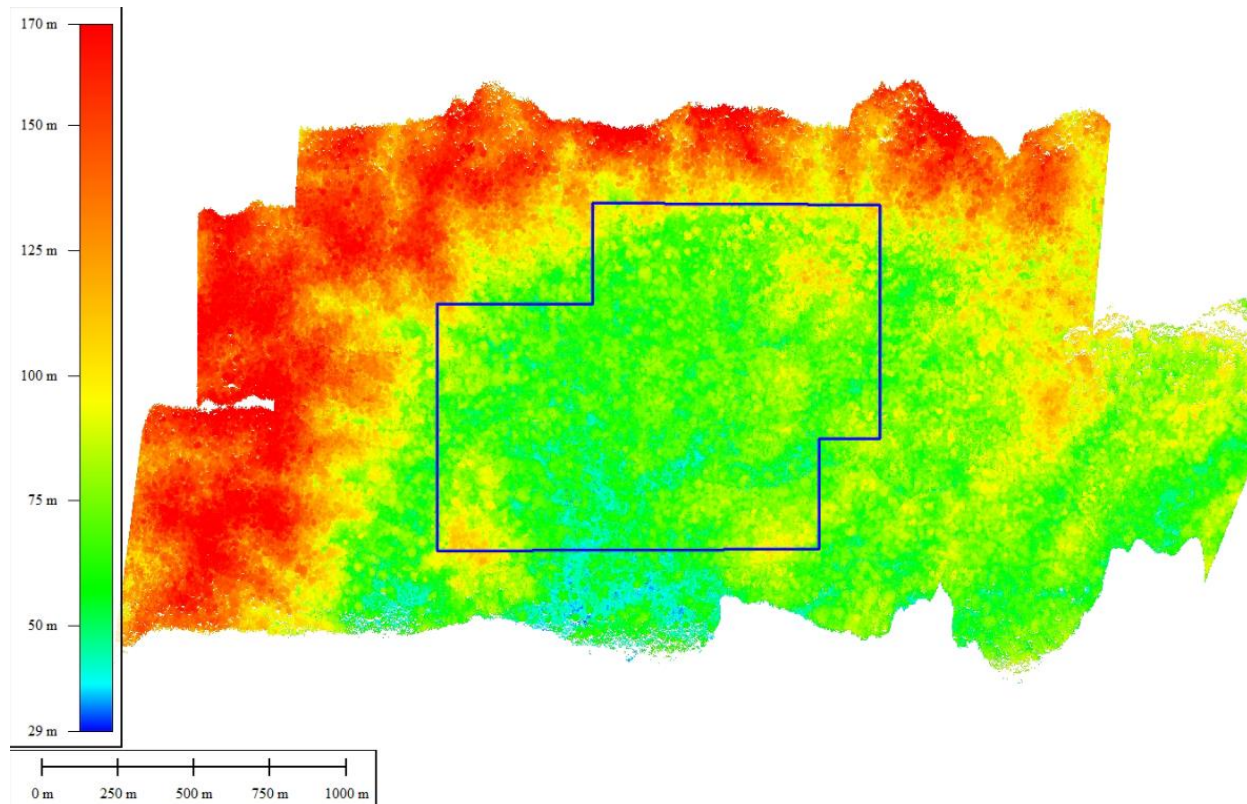
Image © 2023 Maxar Technologies  
Image © 2023 CNES / Airbus

Fechas de imágenes: 1/25/2020 lat 9.149876° long -79.707615° elevación

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               | <b>DESCRIPCIÓN DE PUNTOS DE CONTROL</b>                                             |                 | <b>FECHA</b><br>26/05/2023                                                                                                  |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------|-----------|--|--|-----------------------------------|--|--|--|------|---------------|---|-----------------|------------|----------|------------------|-----------|--------|-------|---------|-----------|---------|-----------------|--|--|-------------|--|--|--|------------------------------|--|--|--|------------|--|--|--|----------------------------|--|--|--|----------------------------|--|--|--|-------------|--|------------------------|--|-------------------------------------|--|--|--|------------------|--|-------------|--|--------|--|--|--|-------------------------------------|--|----------------|--|-------------------------|--|--|--|---------------------|--|----------------|--|--------------------------------------------------|--|--|--|----------------|--|-----------------|--|----------------------|--|--|--|----------------|--|--|--|----------------------------|--|--|--|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------|--|--|--|-------------|--|-------------------------------------------|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |                                                                                     |                 | Hoja 1 de 1                                                                                                                 |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| <b>Proyecto:</b> BARRO COLORADO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               | <b>Empresa:</b> STEREOCARTO                                                         |                 | <b>Superficie número:</b> ESTACIONAMIENTOS                                                                                  |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| <b>País:</b> PANAMÁ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | <b>Provincia:</b> COLON                                                             |                 | <b>Localización:</b> GAMBOA                                                                                                 |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |                                                                                     |                 | <b>Código</b> <b>STRI</b>                                                                                                   |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Fotografía de los puntos de control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |                 | Croquis General (Puntos de apoyo y superficie)                                                                              |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| SUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | OESTE                                                                               |                 |                                                                                                                             |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |  |                 |                                          |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| <table border="1"> <thead> <tr> <th colspan="4">INSTRUMENTO</th> <th colspan="4">TIPO DE SUPERFICIE (marcar con X)</th> </tr> </thead> <tbody> <tr> <td>RTK:</td> <td>GPS estático:</td> <td>X</td> <td>Estación Total:</td> <td>Pavimento:</td> <td>Asfalto:</td> <td>TERRENO NATURAL:</td> <td>CONCRETO:</td> </tr> <tr> <td>Marca:</td> <td>SOUTH</td> <td>Antena:</td> <td>Modelo G7</td> <td>Serial:</td> <td colspan="3">S910BA148510501</td> </tr> <tr> <td colspan="4"> <b>STRI</b> </td> <td colspan="4"> <b>SISTEMA DE REFERENCIA</b> </td> </tr> <tr> <td colspan="4"> <b>UTM</b> </td> <td colspan="4"> <b>ESTACION DE CONTROL</b> </td> </tr> <tr> <td colspan="4">           NORTE ESTE Elevación(Orto)         </td> <td colspan="2">           DATUM WGS84         </td> <td colspan="2">           PMEC UBICACIÓN DE CORS         </td> </tr> <tr> <td colspan="4">           1008231.5830m 641229.5284m 28.1907m         </td> <td colspan="2">           Tpo de solución:         </td> <td colspan="2">           Phase Fixed         </td> </tr> <tr> <td colspan="4">           Global         </td> <td colspan="2">           Modelo Geoidal EGM2008 (Global) SMS         </td> <td colspan="2">           SD ΔX: 0.0001m         </td> </tr> <tr> <td colspan="4">           Latitud Longitud Altura         </td> <td colspan="2">           Frequency: L1/L2/L5         </td> <td colspan="2">           SD ΔY: 0.0002m         </td> </tr> <tr> <td colspan="4">           9° 07' 07.48794" N 79° 42' 53.17793" W 40.3789 m         </td> <td colspan="2">           SD ΔZ: 0.0001m         </td> <td colspan="2">           GDOP: 1.5 - 3.2         </td> </tr> <tr> <td colspan="4">           Técnico responsable:         </td> <td colspan="4">           Observaciones:         </td> </tr> <tr> <td colspan="4">           TOPOGRAFO ROBERTO RESTREPO         </td> <td colspan="4">           CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL         </td> </tr> <tr> <td colspan="4">           Empresa contratista:         </td> <td colspan="2">           STEREOCARTO         </td> <td colspan="2">           Fecha de captura: 26/05/2023 6:43:57 a.m.         </td> </tr> </tbody> </table> |               |                                                                                     |                 |                                                                                                                             |                 | INSTRUMENTO                               |           |  |  | TIPO DE SUPERFICIE (marcar con X) |  |  |  | RTK: | GPS estático: | X | Estación Total: | Pavimento: | Asfalto: | TERRENO NATURAL: | CONCRETO: | Marca: | SOUTH | Antena: | Modelo G7 | Serial: | S910BA148510501 |  |  | <b>STRI</b> |  |  |  | <b>SISTEMA DE REFERENCIA</b> |  |  |  | <b>UTM</b> |  |  |  | <b>ESTACION DE CONTROL</b> |  |  |  | NORTE ESTE Elevación(Orto) |  |  |  | DATUM WGS84 |  | PMEC UBICACIÓN DE CORS |  | 1008231.5830m 641229.5284m 28.1907m |  |  |  | Tpo de solución: |  | Phase Fixed |  | Global |  |  |  | Modelo Geoidal EGM2008 (Global) SMS |  | SD ΔX: 0.0001m |  | Latitud Longitud Altura |  |  |  | Frequency: L1/L2/L5 |  | SD ΔY: 0.0002m |  | 9° 07' 07.48794" N 79° 42' 53.17793" W 40.3789 m |  |  |  | SD ΔZ: 0.0001m |  | GDOP: 1.5 - 3.2 |  | Técnico responsable: |  |  |  | Observaciones: |  |  |  | TOPOGRAFO ROBERTO RESTREPO |  |  |  | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL |  |  |  | Empresa contratista: |  |  |  | STEREOCARTO |  | Fecha de captura: 26/05/2023 6:43:57 a.m. |  |
| INSTRUMENTO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                                                                     |                 | TIPO DE SUPERFICIE (marcar con X)                                                                                           |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| RTK:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GPS estático: | X                                                                                   | Estación Total: | Pavimento:                                                                                                                  | Asfalto:        | TERRENO NATURAL:                          | CONCRETO: |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Marca:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SOUTH         | Antena:                                                                             | Modelo G7       | Serial:                                                                                                                     | S910BA148510501 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| <b>STRI</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                                                                     |                 | <b>SISTEMA DE REFERENCIA</b>                                                                                                |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| <b>UTM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                                                                                     |                 | <b>ESTACION DE CONTROL</b>                                                                                                  |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| NORTE ESTE Elevación(Orto)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                                                                                     |                 | DATUM WGS84                                                                                                                 |                 | PMEC UBICACIÓN DE CORS                    |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| 1008231.5830m 641229.5284m 28.1907m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |                 | Tpo de solución:                                                                                                            |                 | Phase Fixed                               |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Global                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                                                                                     |                 | Modelo Geoidal EGM2008 (Global) SMS                                                                                         |                 | SD ΔX: 0.0001m                            |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Latitud Longitud Altura                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                                                                                     |                 | Frequency: L1/L2/L5                                                                                                         |                 | SD ΔY: 0.0002m                            |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| 9° 07' 07.48794" N 79° 42' 53.17793" W 40.3789 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |                                                                                     |                 | SD ΔZ: 0.0001m                                                                                                              |                 | GDOP: 1.5 - 3.2                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Técnico responsable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                                                                                     |                 | Observaciones:                                                                                                              |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| TOPOGRAFO ROBERTO RESTREPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                                                                                     |                 | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL |                 |                                           |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |
| Empresa contratista:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                                                                                     |                 | STEREOCARTO                                                                                                                 |                 | Fecha de captura: 26/05/2023 6:43:57 a.m. |           |  |  |                                   |  |  |  |      |               |   |                 |            |          |                  |           |        |       |         |           |         |                 |  |  |             |  |  |  |                              |  |  |  |            |  |  |  |                            |  |  |  |                            |  |  |  |             |  |                        |  |                                     |  |  |  |                  |  |             |  |        |  |  |  |                                     |  |                |  |                         |  |  |  |                     |  |                |  |                                                  |  |  |  |                |  |                 |  |                      |  |  |  |                |  |  |  |                            |  |  |  |                                                                                                                             |  |  |  |                      |  |  |  |             |  |                                           |  |

## COBERTURA SEGÚN AREA CONTRATADA

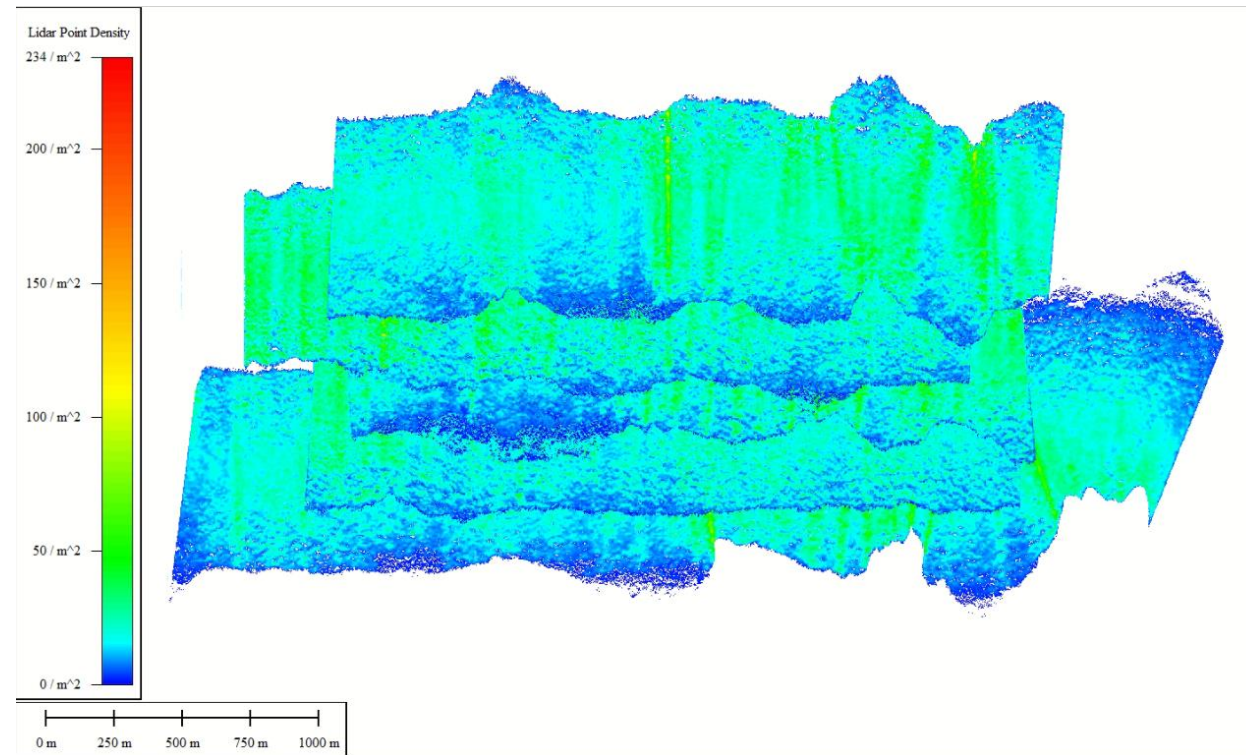
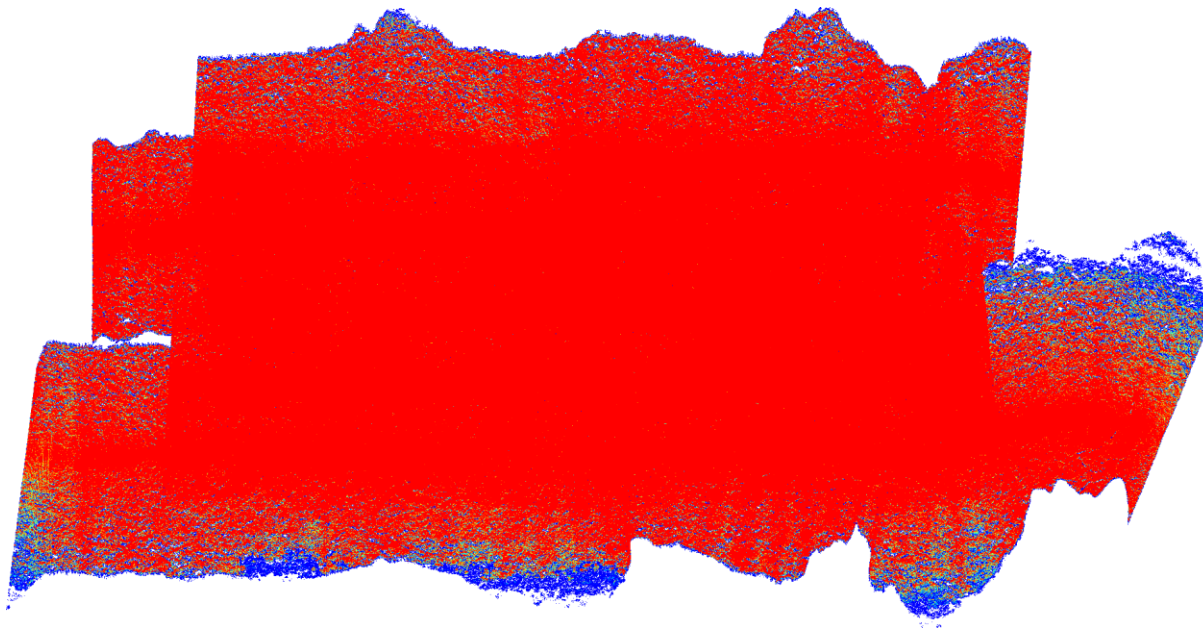
## LINEAS DE VUELO



## DENSIDAD DE PUNTOS

### LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 5476828/5.48  
point density: all returns 37.84 last only 19.15 (per square meter)  
spacing: all returns 0.16 last only 0.23 (in meters)



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA  
DENSIDAD SUPERA LOS 15 PTS/M2

## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

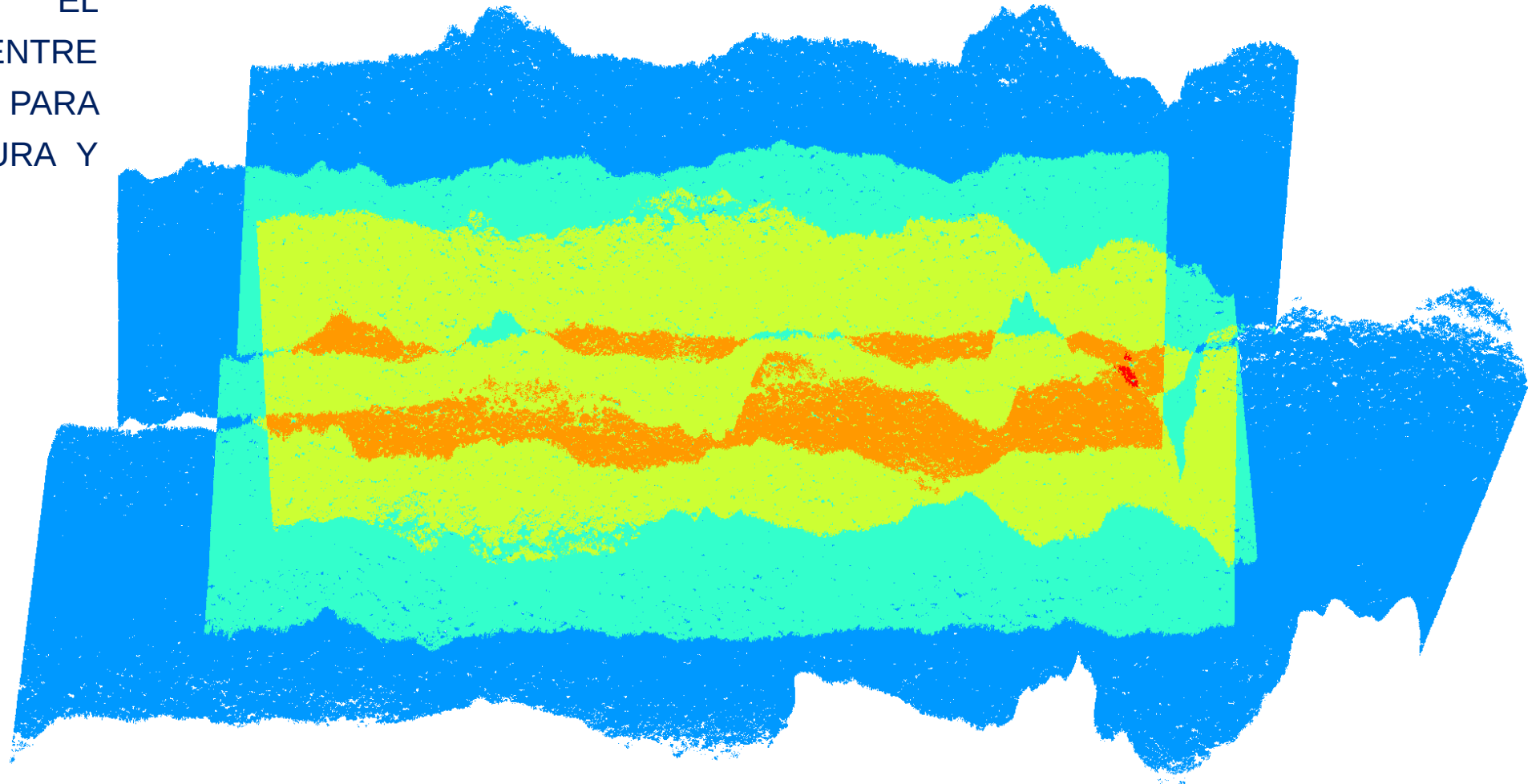
AZUL: 1 PASADA

CIAN: 2 PASADAS

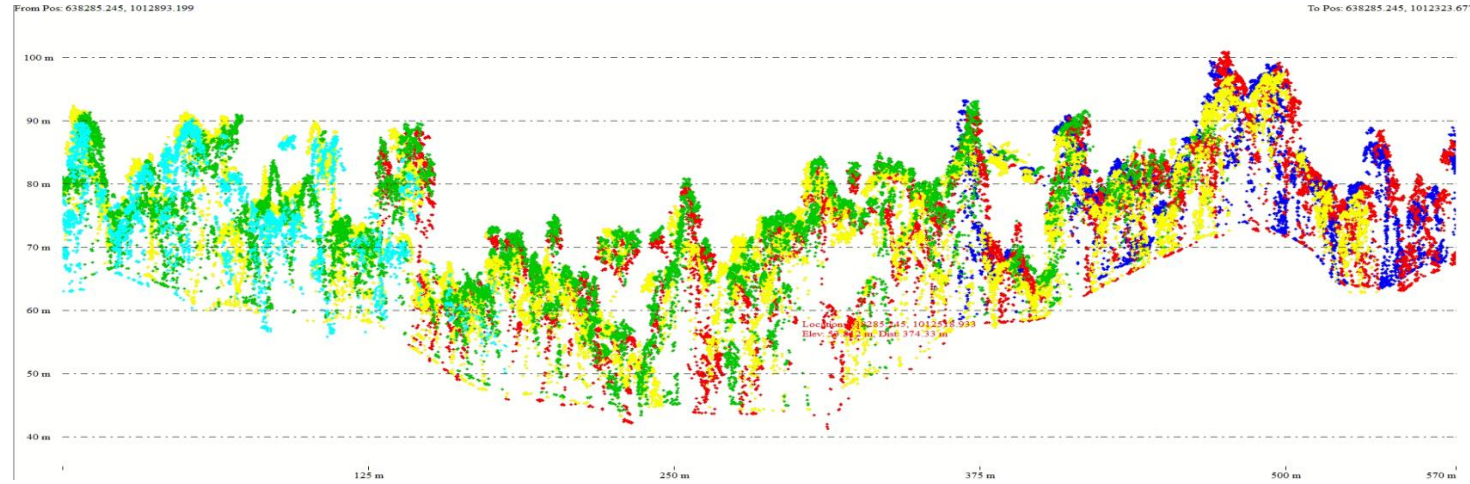
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

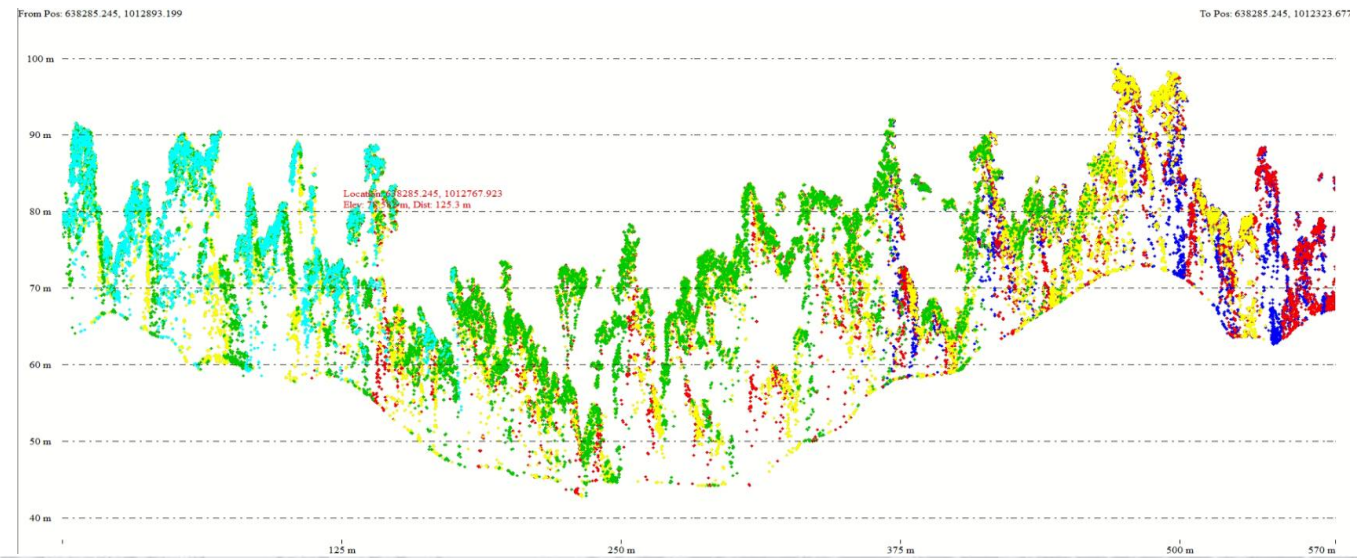


## AJUSTE ENTRE PASADAS

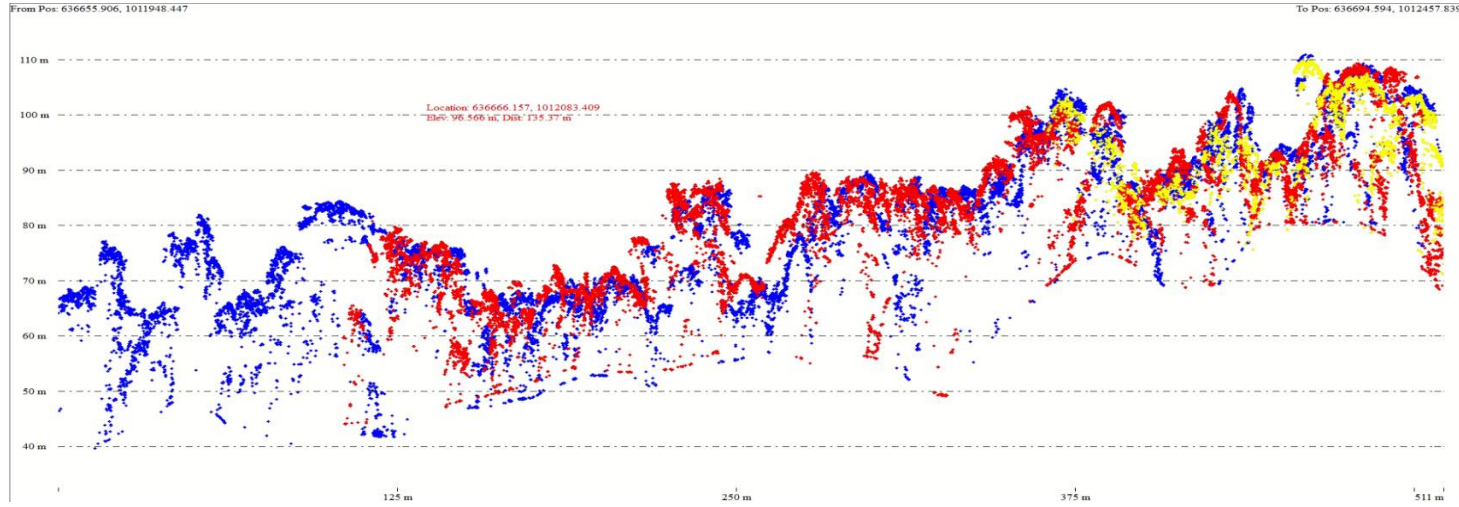


ANTES DEL AJUSTE

POSTERIOR AL AJUSTE

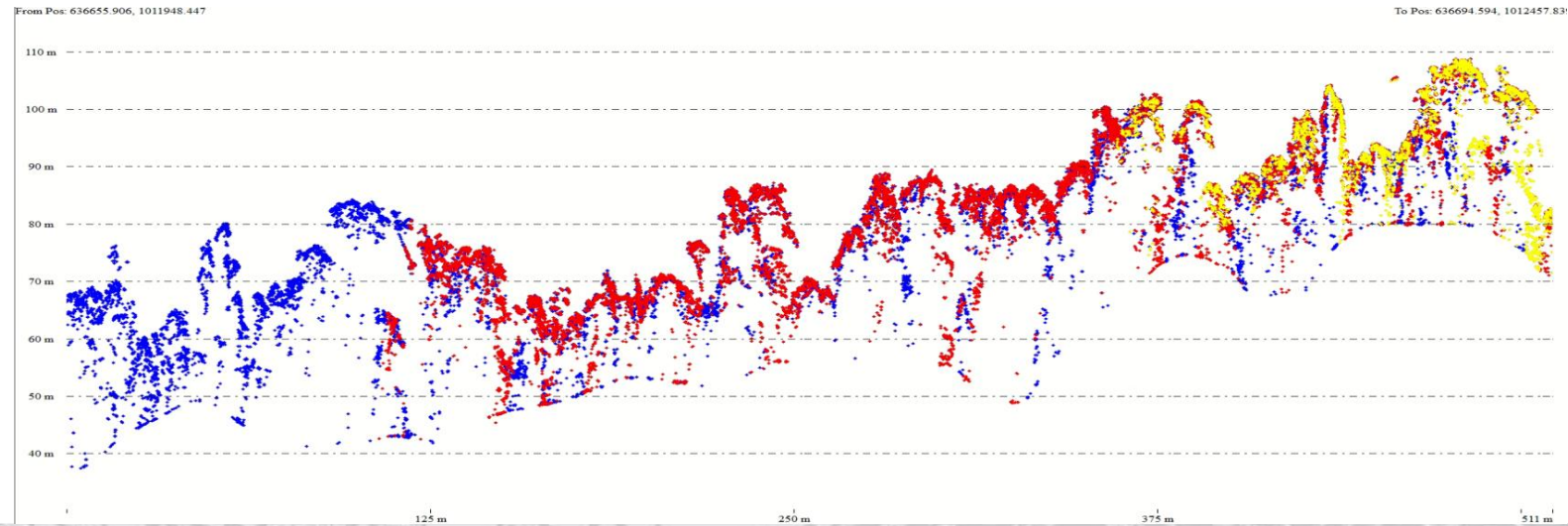


## AJUSTE ENTRE PASADAS

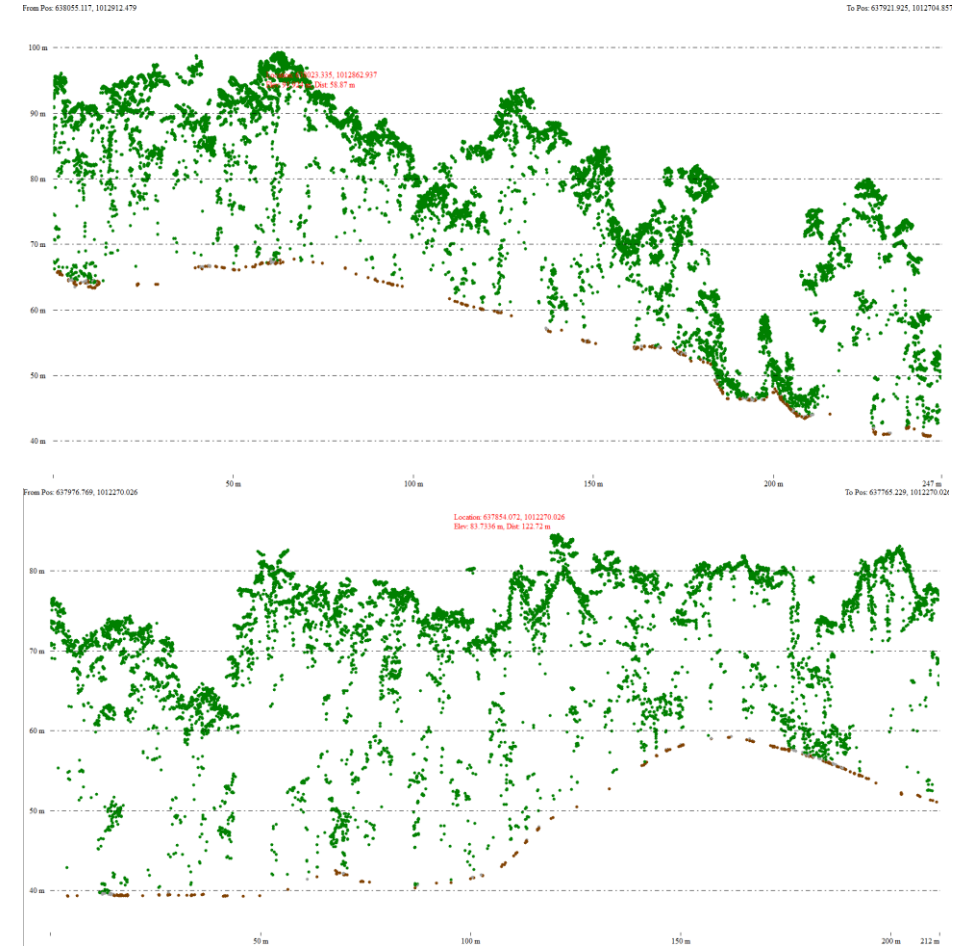
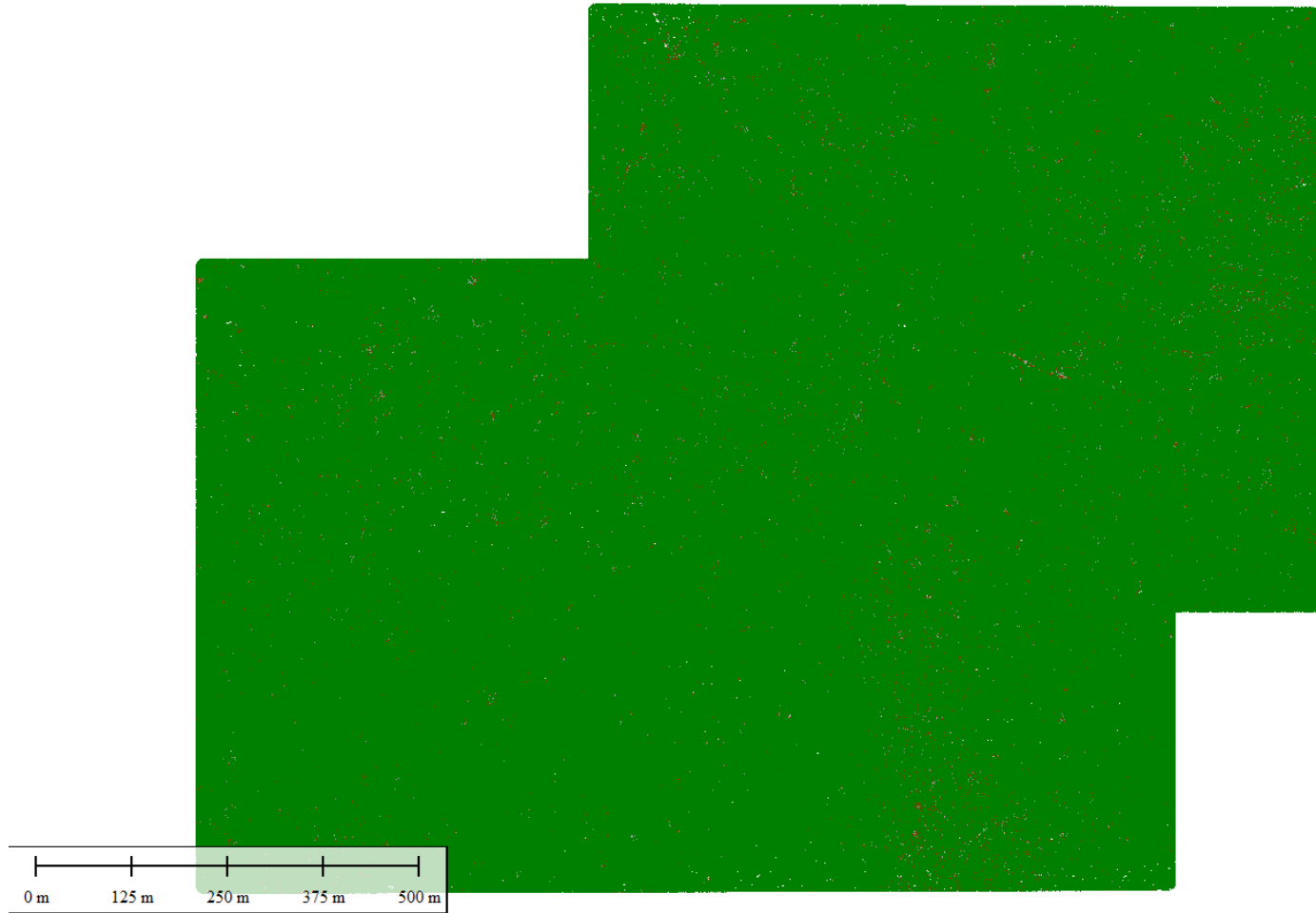


POSTERIOR AL AJUSTE

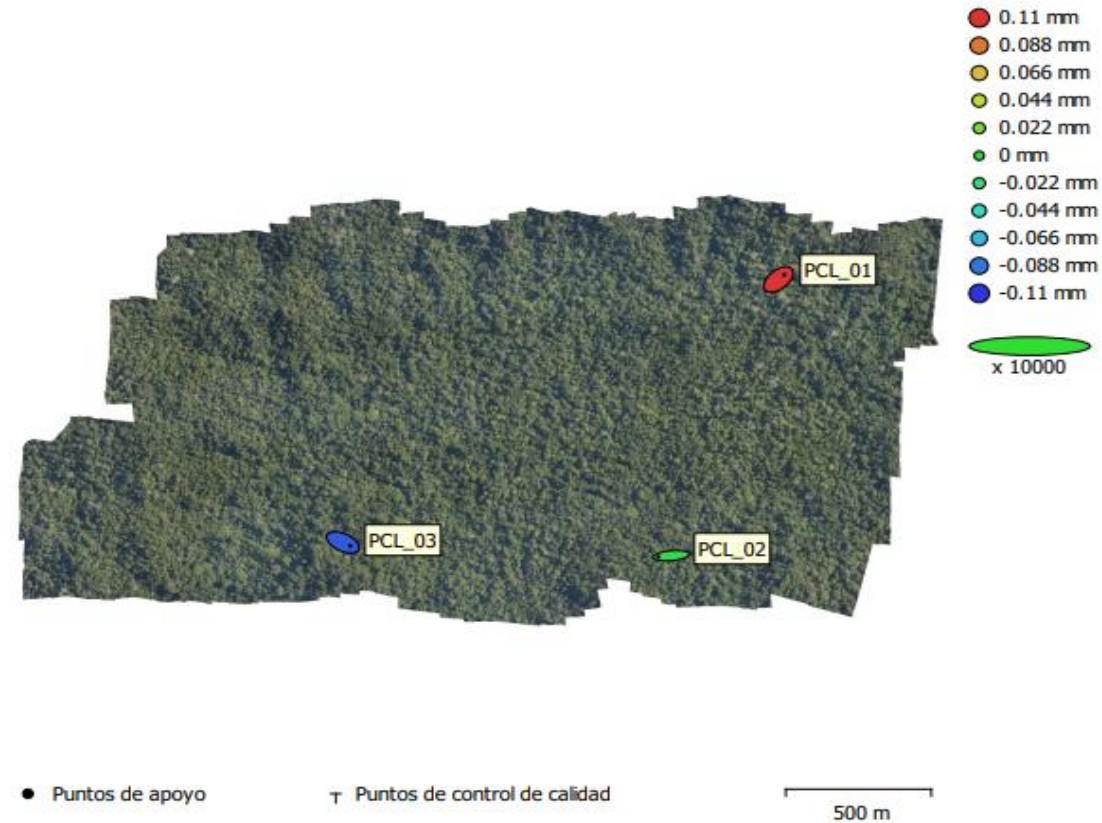
ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



| Número | Error en X (mm) | Error en Y (mm) | Error en Z (mm) | Error en XY (mm) | Total (mm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 3      | 6.32268         | 2.60176         | 0.0846582       | 6.83707          | 6.83759    |

Tabla 3. ECM de puntos de apoyo.  
X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | <b>GIGANTE</b>       |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

Regla

Línea Ruta Polígono Círculo ruta de acceso en 3D

Mide la circunferencia o el área de un círculo en el suelo.

Radio: 15.97 Kilómetros

Área: 798,143,872.00 Metros cuadrados

Circunferencia: 99.97 Kilómetros

☒ Navegación con mouse Guardar Borrar

ESTACION GNSS STRI

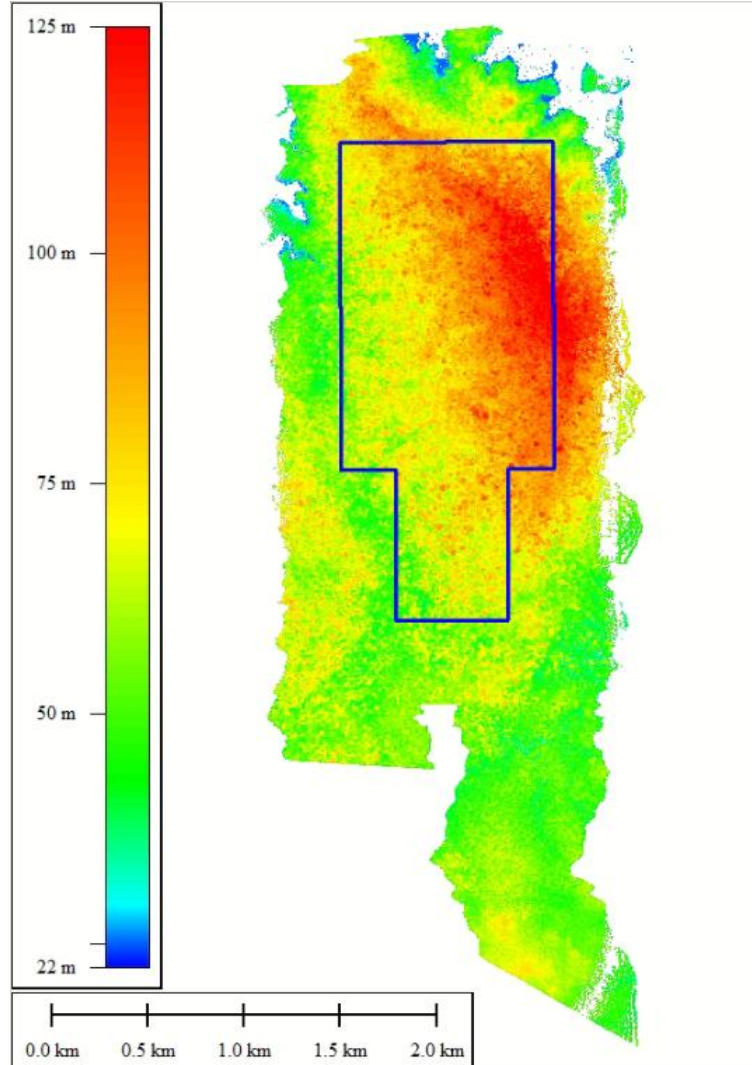
Image © 2023 Maxar Technologies  
Image © 2023 CNES / Airbus

Google Earth

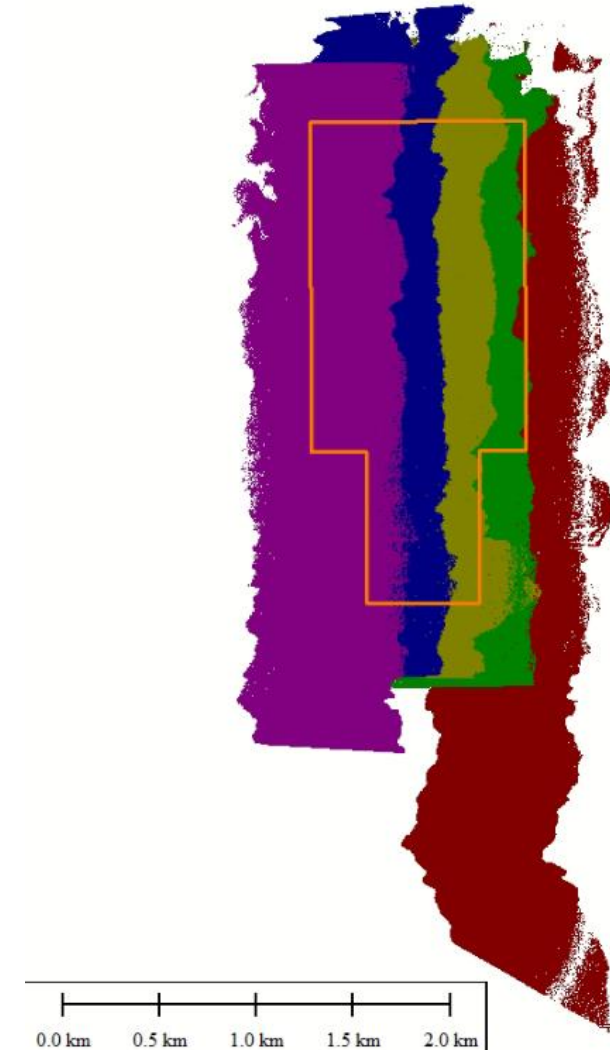
Fechas de imágenes: 10/29/2021 lat 9.124140° long -79.864031° elevación 0 m alt. ojo 25.81 km

|                                                                                     |               |                                                                                     |                                                                                                                             |                                                                                     |                         |
|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------|
|  |               | DESCRIPCIÓN DE PUNTOS DE CONTROL                                                    |                                                                                                                             | FECHA<br>26/05/2023                                                                 |                         |
|                                                                                     |               |                                                                                     |                                                                                                                             | Hoja 1 de 1                                                                         |                         |
|                                                                                     |               |                                                                                     |                                                                                                                             |                                                                                     |                         |
| Proyecto: BARRO COLORADO                                                            |               | Empresa: STEREOCARTO                                                                |                                                                                                                             | Superficie número: ESTACIONAMIENTOS                                                 |                         |
| País: PANAMÁ                                                                        |               | Provincia: COLON                                                                    |                                                                                                                             | Localización: GAMBOA                                                                |                         |
|                                                                                     |               |                                                                                     |                                                                                                                             | Codigo: <b>STRI</b>                                                                 |                         |
| Fotografía de los puntos de control                                                 |               |                                                                                     |                                                                                                                             | Croquis General (Puntos de apoyo y superficie)                                      |                         |
| SUR                                                                                 |               | OESTE                                                                               |                                                                                                                             |                                                                                     |                         |
|  |               |  |                                                                                                                             |  |                         |
|  |               |  |                                                                                                                             |  |                         |
| INSTRUMENTO                                                                         |               |                                                                                     |                                                                                                                             |                                                                                     |                         |
| RTK:                                                                                | GPS estático: | X                                                                                   | Estación Total:                                                                                                             |                                                                                     |                         |
| Marca:                                                                              | SOUTH         | Antena:                                                                             | Modelo                                                                                                                      | G7                                                                                  | Serial: S910BA148510501 |
| STRÍ                                                                                |               |                                                                                     | SISTEMA DE REFERENCIA                                                                                                       |                                                                                     |                         |
| UTM                                                                                 |               |                                                                                     | ESTACION DE CONTROL                                                                                                         |                                                                                     |                         |
| NORTE                                                                               |               |                                                                                     | PMEC                                                                                                                        |                                                                                     |                         |
| ESTE                                                                                |               |                                                                                     | UBICACIÓN DE CORS                                                                                                           |                                                                                     |                         |
| Elevación(Orto)                                                                     |               |                                                                                     | PENONOME                                                                                                                    |                                                                                     |                         |
| 1008231.5830m                                                                       |               |                                                                                     | 641229.5284m                                                                                                                |                                                                                     |                         |
| 28.1907m                                                                            |               |                                                                                     | Modelo Geoidal                                                                                                              |                                                                                     |                         |
| Global                                                                              |               |                                                                                     | Frequency:                                                                                                                  |                                                                                     |                         |
| Latitud                                                                             |               |                                                                                     | Longitud                                                                                                                    |                                                                                     |                         |
| Altura                                                                              |               |                                                                                     | Observaciones:                                                                                                              |                                                                                     |                         |
| 9° 07' 07.48794" N                                                                  |               |                                                                                     | 79° 42' 53.17793" W                                                                                                         |                                                                                     |                         |
| 40.3789 m                                                                           |               |                                                                                     | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL |                                                                                     |                         |
| Técnico responsable:                                                                |               |                                                                                     |                                                                                                                             |                                                                                     |                         |
| TOPOGRAFO ROBERTO RESTREPO                                                          |               |                                                                                     | Empresa contratista: STEREOCARTO                                                                                            |                                                                                     |                         |
|                                                                                     |               |                                                                                     | Fecha de captura: 26/05/2023 6:43:57 a.m.                                                                                   |                                                                                     |                         |

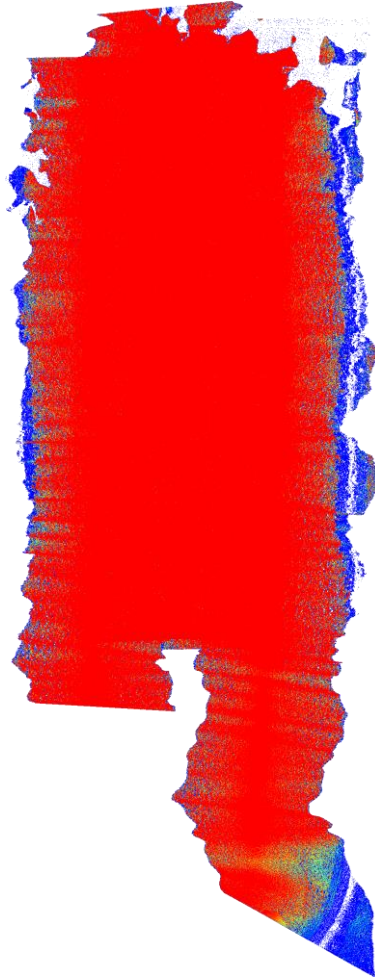
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



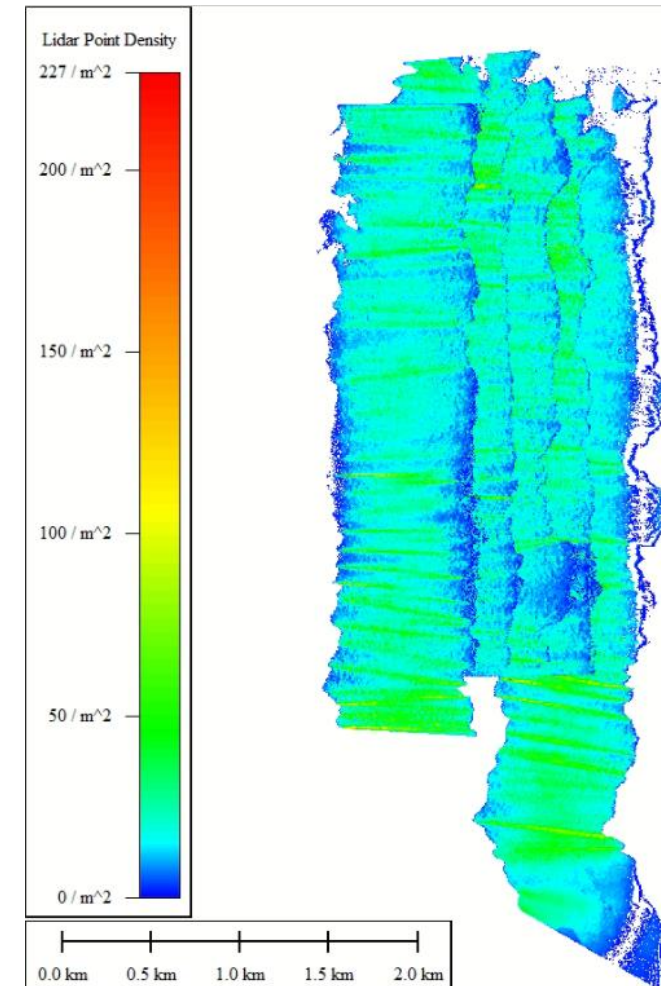
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 7101668/7.10  
point density: all returns 38.18 last only 19.36 (per square meter)  
spacing: all returns 0.16 last only 0.23 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

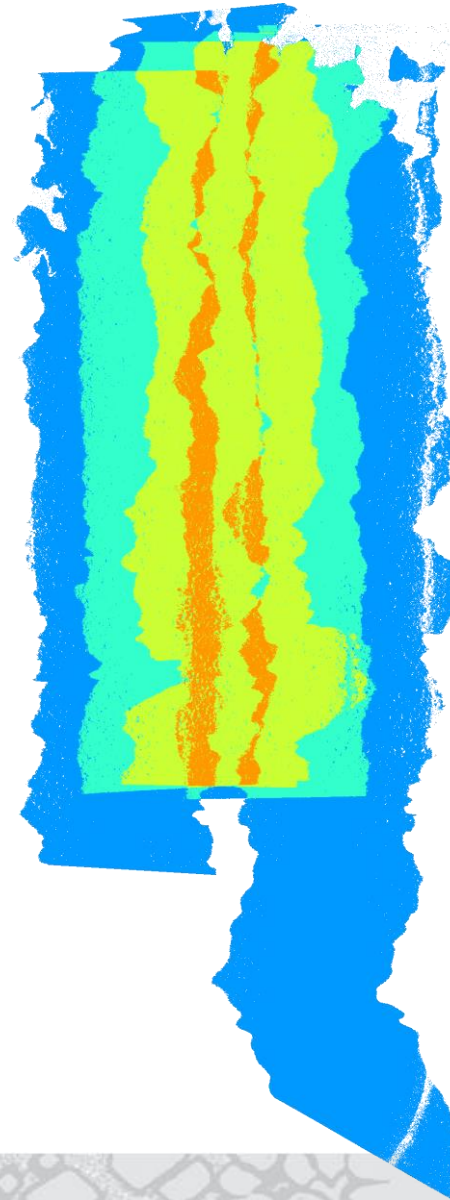
AZUL: 1 PASADA

CIAN: 2 PASADAS

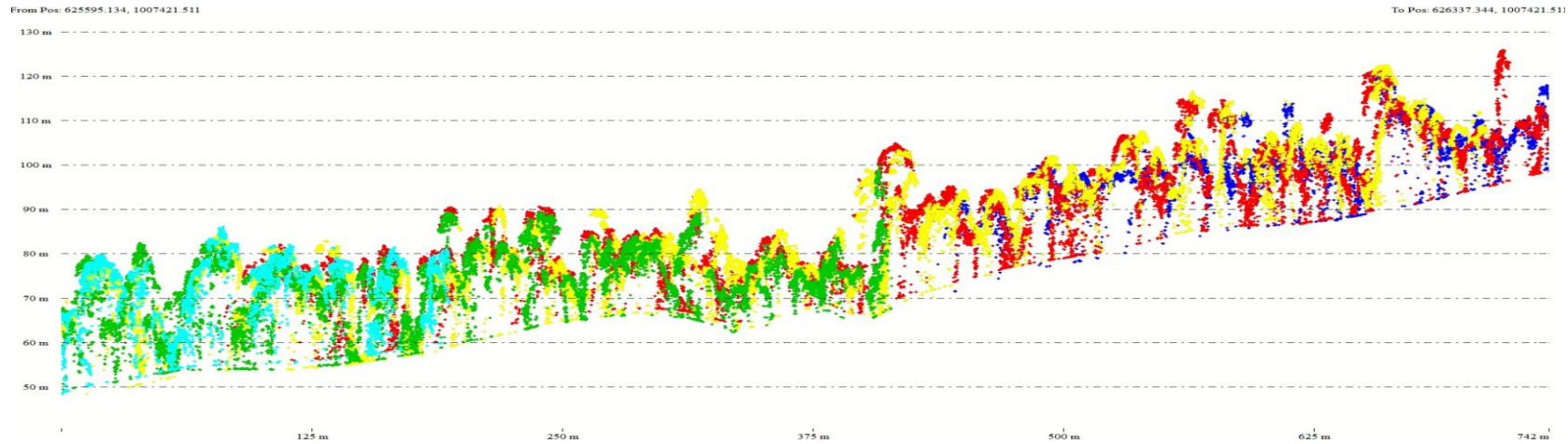
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

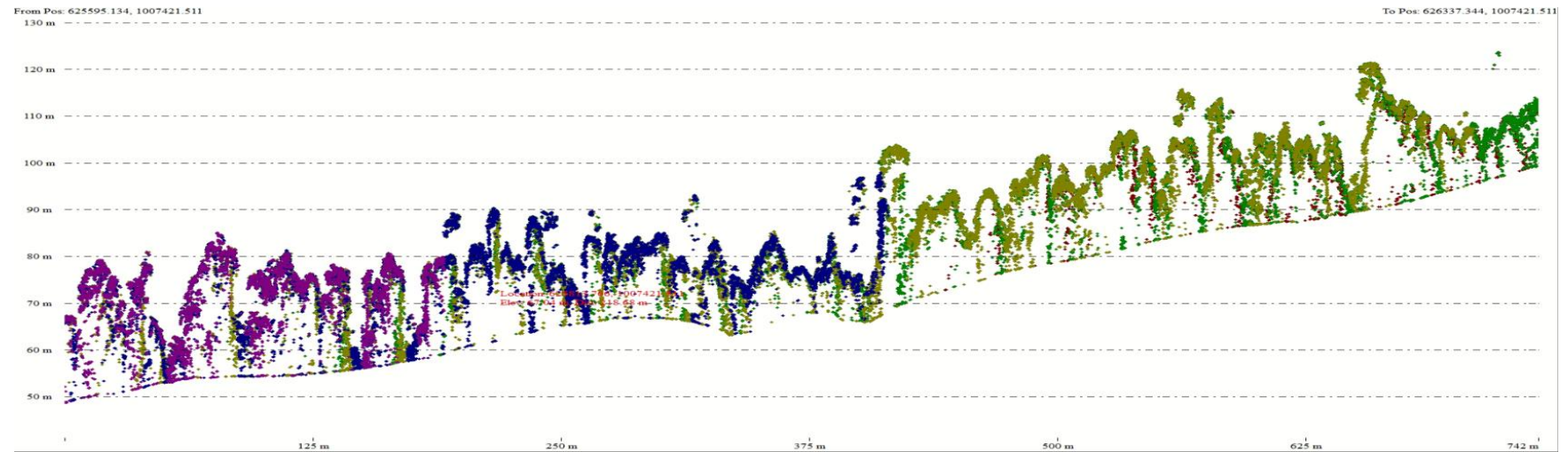


## AJUSTE ENTRE PASADAS

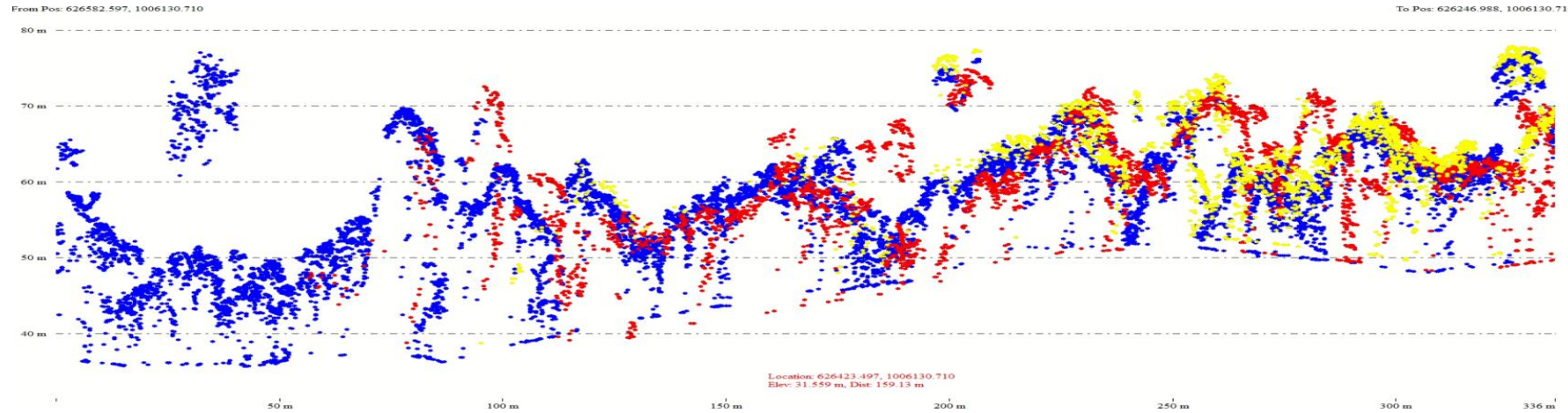


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE

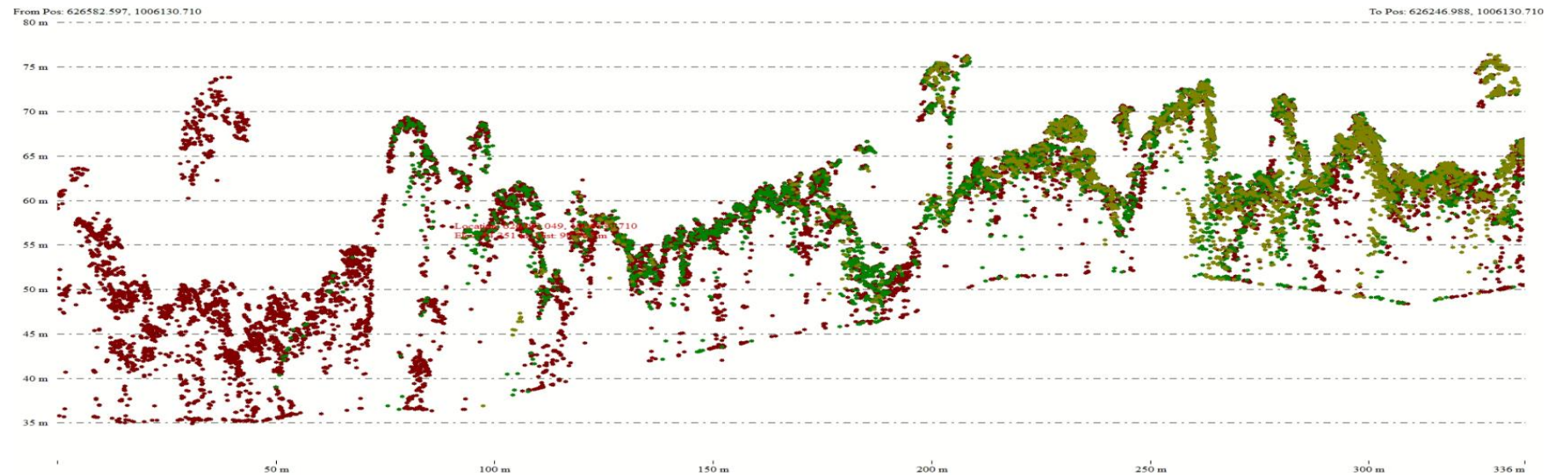


## AJUSTE ENTRE PASADAS

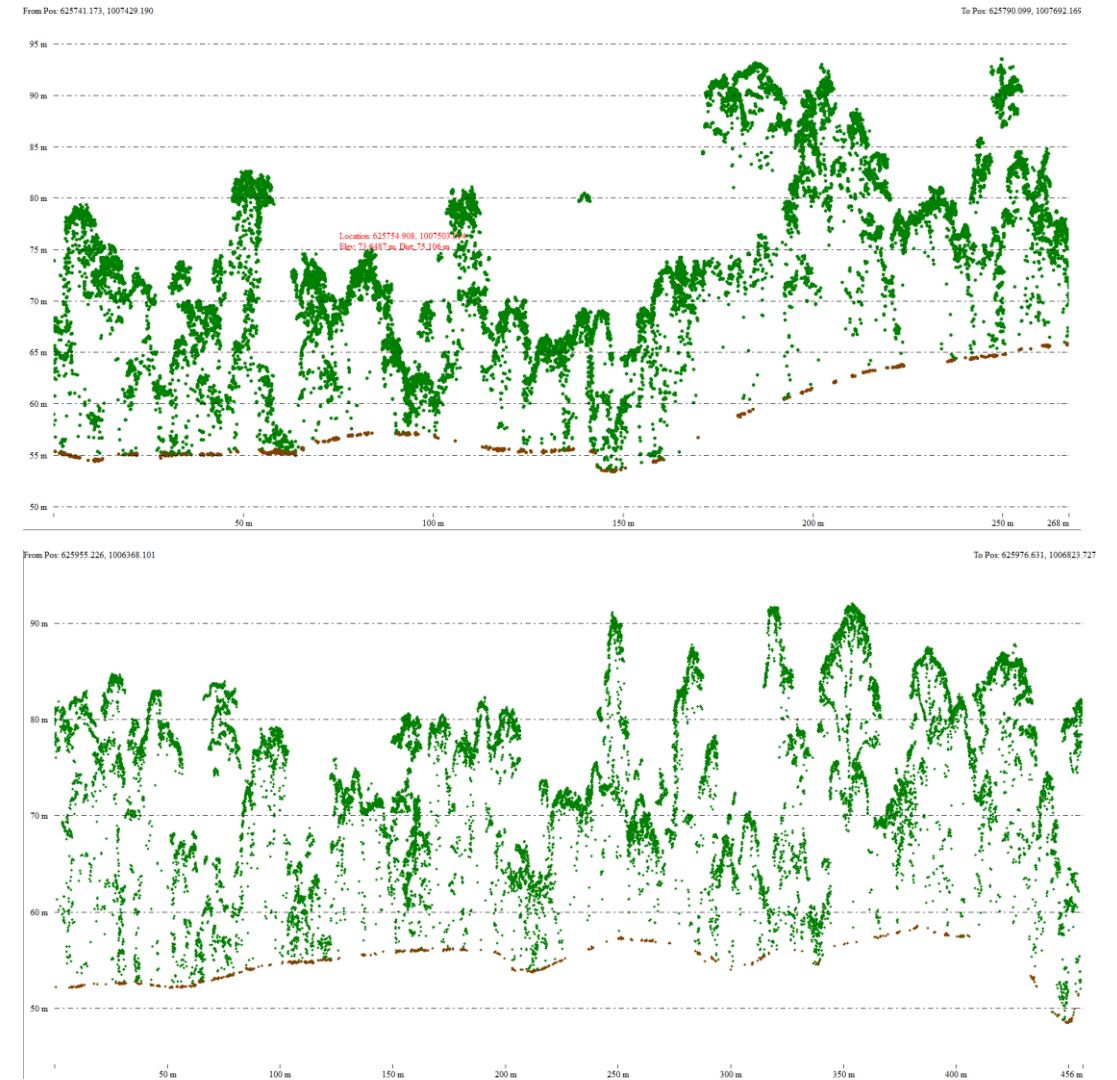
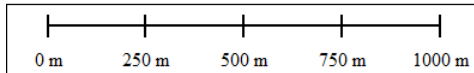
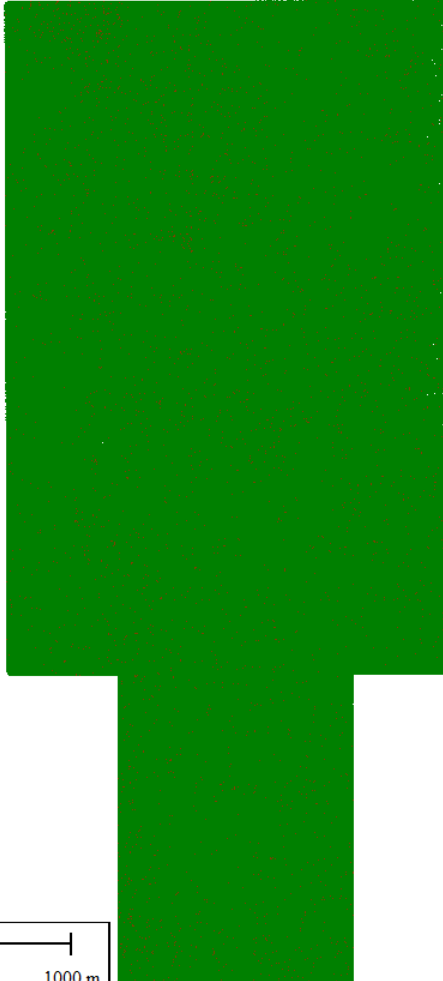


## POSTERIOR AL AJUSTE

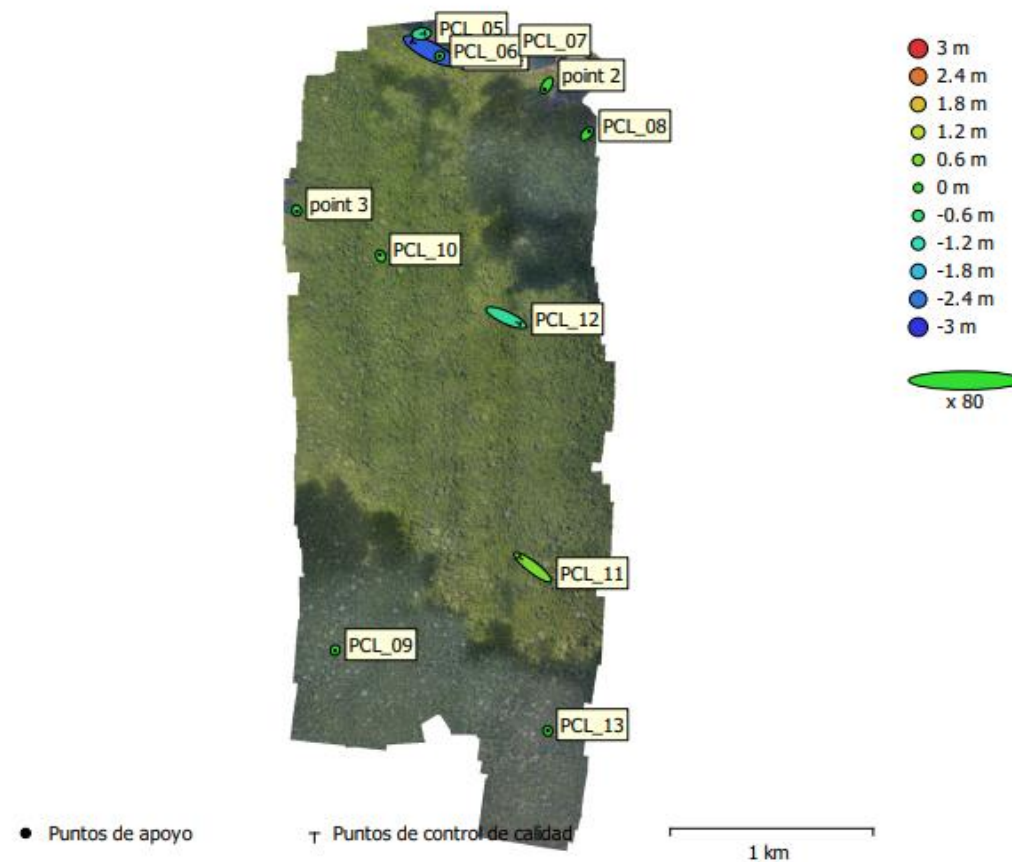
## ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



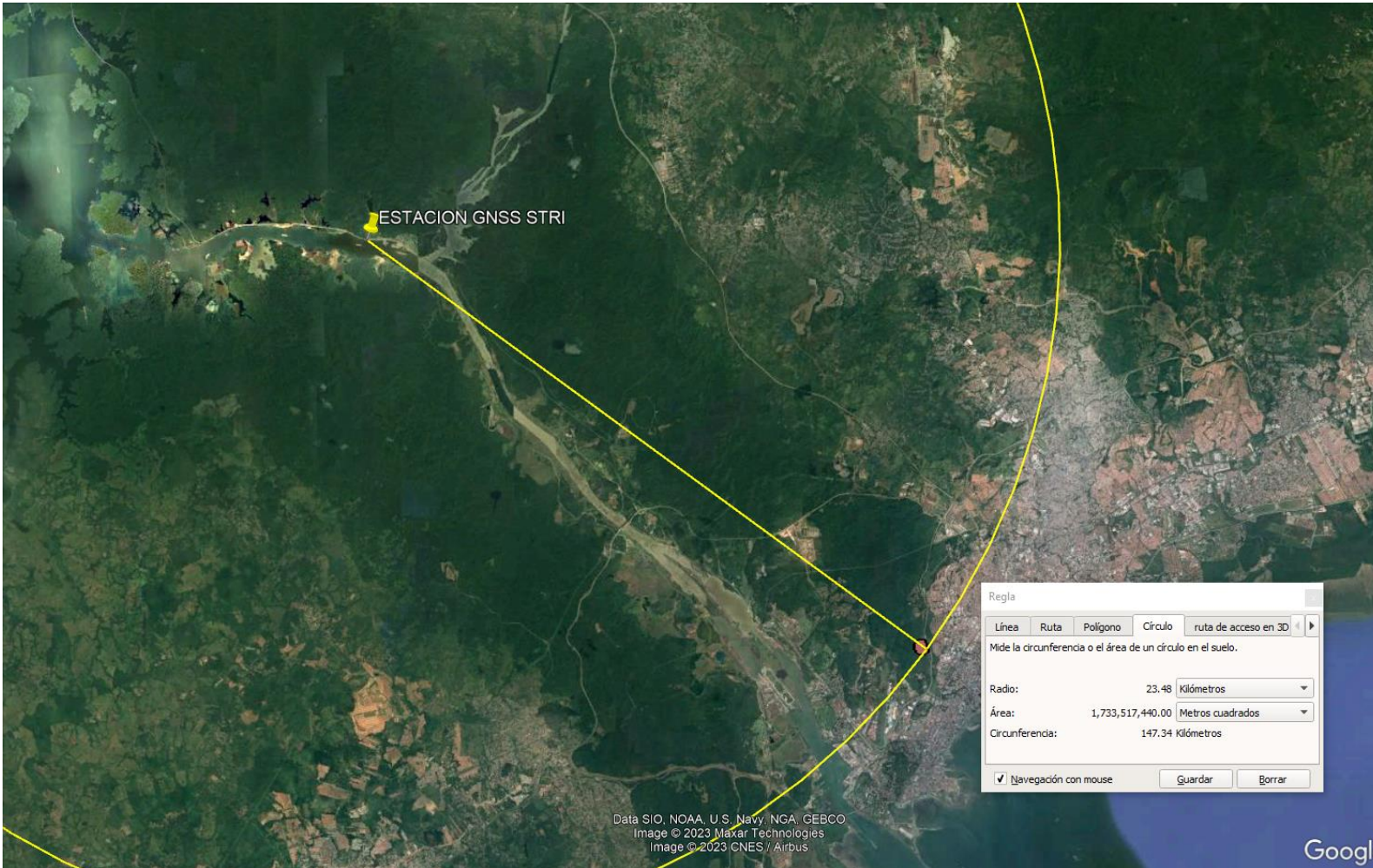
| Número | Error en X (m) | Error en Y (m) | Error en Z (m) | Error en XY (m) | Total (m) |
|--------|----------------|----------------|----------------|-----------------|-----------|
| 8      | 0.151332       | 0.225569       | 0.0100085      | 0.27163         | 0.271814  |

Tabla 3. ECM de puntos de apoyo.  
X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

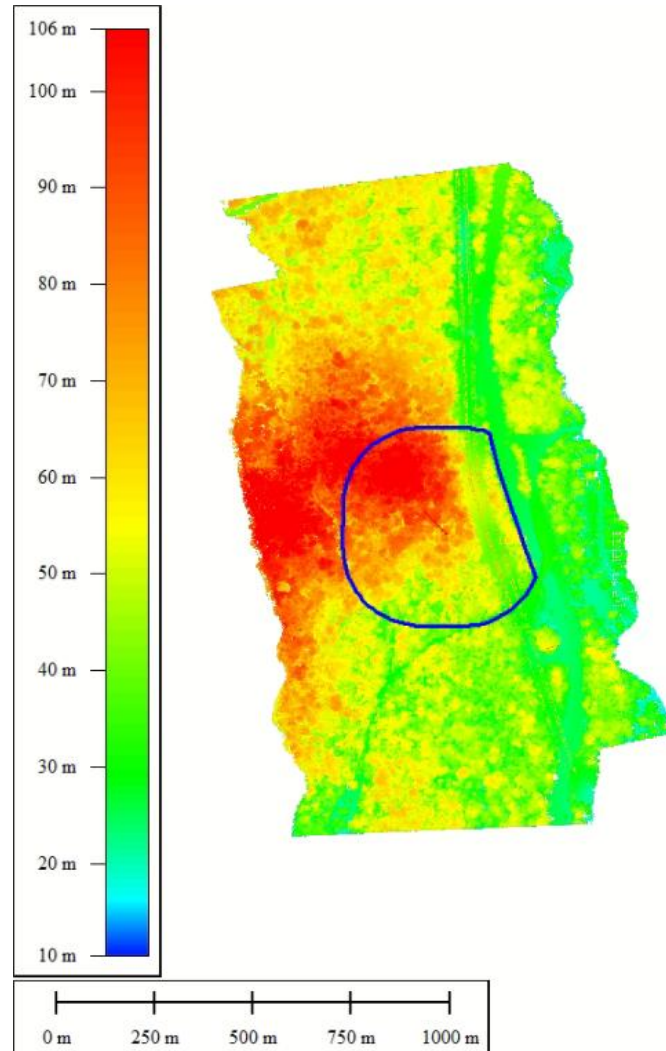


## ESTACION DE REFERENCIA

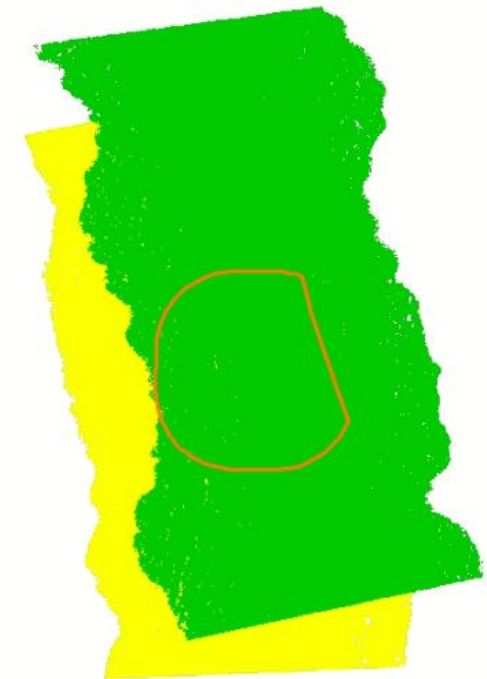


| ROBERTO RESTREPO TOPOGRAFO          |                          | DESCRIPCIÓN DE PUNTOS DE CONTROL |                                     |                                                |                          | FECHA<br>26/05/2023 |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
|-------------------------------------|--------------------------|----------------------------------|-------------------------------------|------------------------------------------------|--------------------------|---------------------|--------------------------|----------------------|--------------------------|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------|--|-------------------|-------|--|--|--------------------------|--|--|--|
|                                     |                          |                                  |                                     |                                                |                          | Hoja 1 de 1         |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| Proyecto:                           | BARRO COLORADO           |                                  | Empresa:                            | STEREOCARTO                                    |                          | Superficie número:  | ESTACIONAMIENTOS         |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| País:                               | PANAMÁ                   | Provincia:                       | COLON                               | Localización:                                  | GAMBOA                   | Código              | STRI                     |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| Fotografía de los puntos de control |                          |                                  |                                     | Croquis General (Puntos de apoyo y superficie) |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| SUR                                 |                          |                                  |                                     | OESTE                                          |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
|                                     |                          |                                  |                                     |                                                |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
|                                     |                          |                                  |                                     |                                                |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
|                                     |                          |                                  |                                     |                                                |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| INSTRUMENTO                         |                          |                                  |                                     | TIPO DE SUPERFICIE (marcar con X)              |                          |                     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| RTK:                                | <input type="checkbox"/> | GPS estático:                    | <input checked="" type="checkbox"/> | Estación Total:                                | <input type="checkbox"/> | Pavimento:          | <input type="checkbox"/> | Asfalto:             | <input type="checkbox"/> | TERRENO NATURAL: | <input type="checkbox"/> | CONCRETO:                                                                                                                     | <input checked="" type="checkbox"/> |          |  |                   |       |  |  |                          |  |  |  |
| Marca:                              | SOUTH                    | Antena:                          | Modelo                              | G7                                             | Serial:                  | S910BA145510501     |                          |                      |                          |                  |                          |                                                                                                                               |                                     |          |  |                   |       |  |  |                          |  |  |  |
| STR1                                |                          |                                  |                                     | SISTEMA DE REFERENCIA                          |                          |                     |                          | ESTACION DE CONTROL  |                          |                  |                          | PMEC                                                                                                                          | UBICACIÓN DE CORS                   | PENÓNOME |  |                   |       |  |  |                          |  |  |  |
| UTM                                 |                          |                                  |                                     | DATUM                                          |                          |                     |                          | WGS84                |                          |                  |                          | Tipo de solución:                                                                                                             |                                     |          |  | Phase Fixed       | PDOP: |  |  |                          |  |  |  |
| NORTE                               |                          |                                  |                                     | ESTE                                           |                          |                     |                          | Elevación(Ortfo)     |                          |                  |                          | SD ΔX:                                                                                                                        |                                     |          |  | 0.0001m           |       |  |  | 1.2 - 2.3                |  |  |  |
| 1008231.5830m                       |                          |                                  |                                     | 641229.5284m                                   |                          |                     |                          | 28.1907m             |                          |                  |                          | SD ΔY:                                                                                                                        |                                     |          |  | 0.0002m           |       |  |  | GDOP:                    |  |  |  |
| Global                              |                          |                                  |                                     | Frecuency:                                     |                          |                     |                          | L1/L2/L5             |                          |                  |                          | SD ΔZ:                                                                                                                        |                                     |          |  | 0.0001m           |       |  |  | 1.5 - 3.2                |  |  |  |
| Latitud                             |                          |                                  |                                     | Longitud                                       |                          |                     |                          | Altura               |                          |                  |                          | Observaciones:                                                                                                                |                                     |          |  |                   |       |  |  |                          |  |  |  |
| 9° 07' 07.48794" N                  |                          |                                  |                                     | 79° 42' 53.17793" W                            |                          |                     |                          | 40.3789 m            |                          |                  |                          | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERCA FRONTAL |                                     |          |  |                   |       |  |  |                          |  |  |  |
| Técnico responsable:                |                          |                                  |                                     | TOPOGRAFO ROBERTO RESTREPO                     |                          |                     |                          | Empresa contratista: |                          |                  |                          | STEREOCARTO                                                                                                                   |                                     |          |  | Fecha de captura: |       |  |  | 26/05/2023 6:43:57 a. m. |  |  |  |

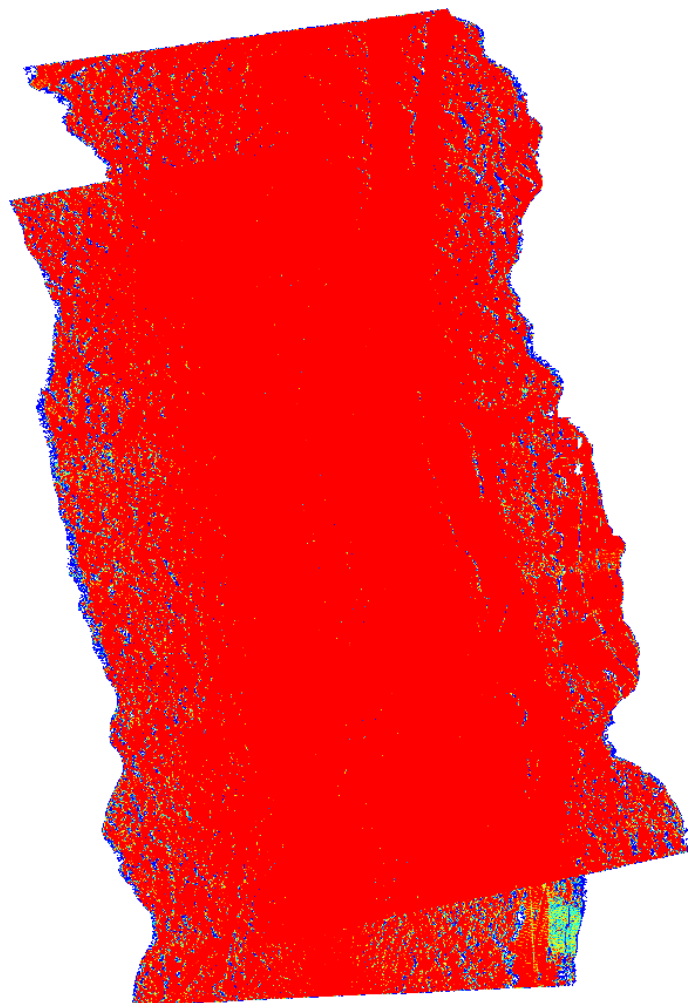
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



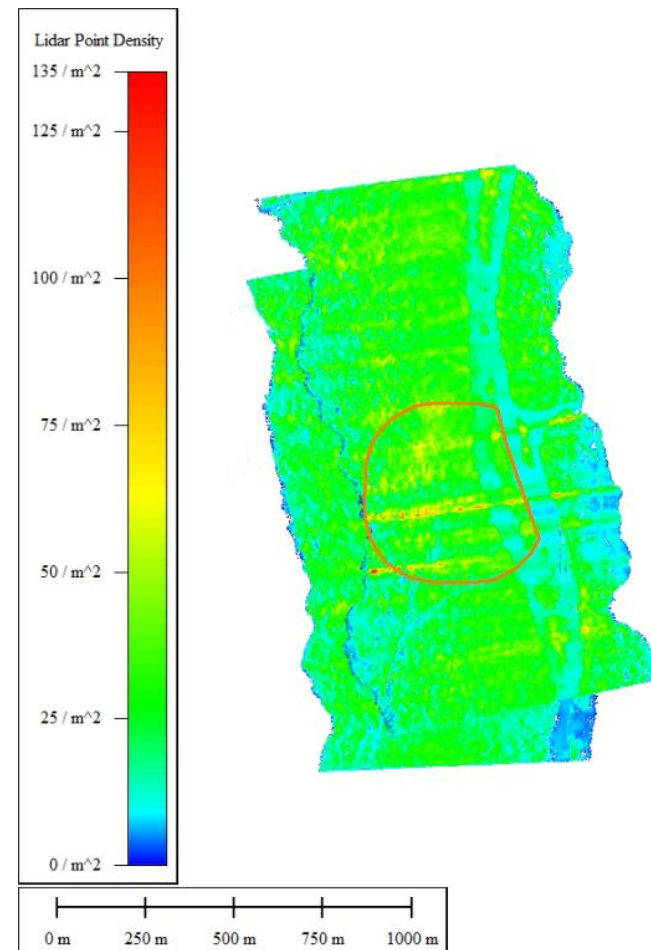
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 1400336/1.40  
point density: all returns 36.40 last only 17.71 (per square meter)  
spacing: all returns 0.17 last only 0.24 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

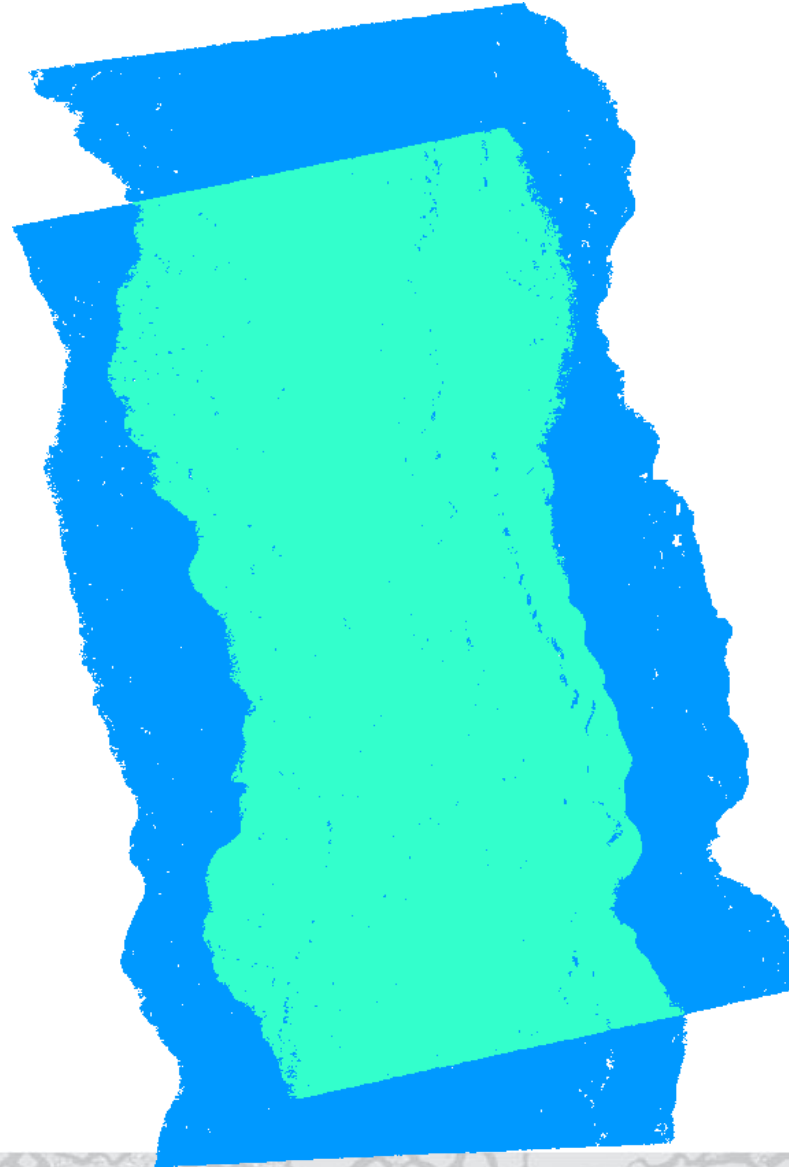
AZUL: 1 PASADA

CIAN: 2 PASADAS

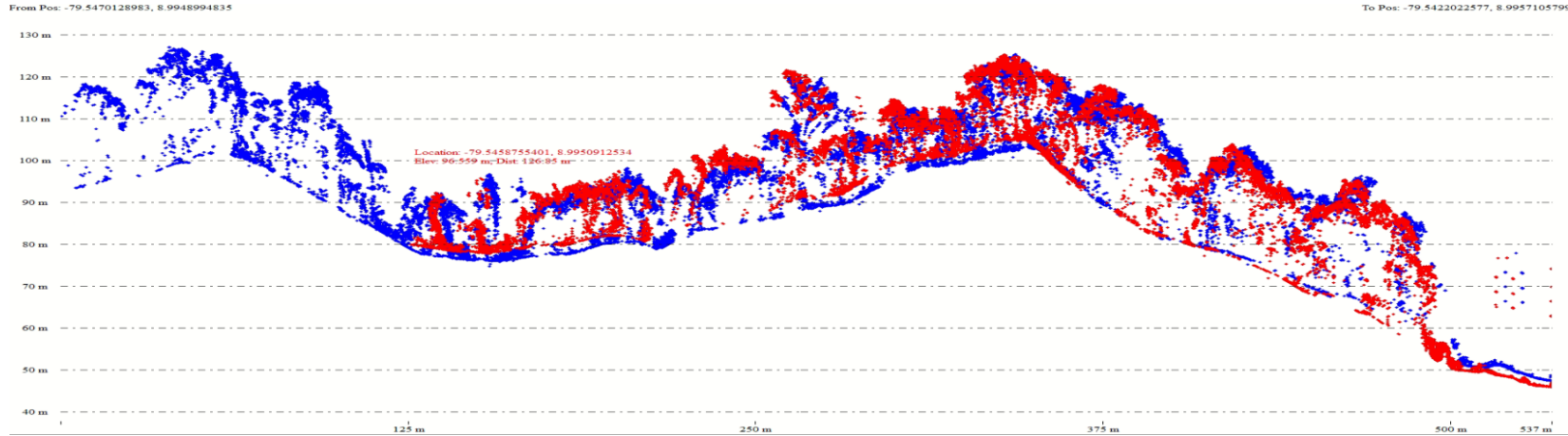
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

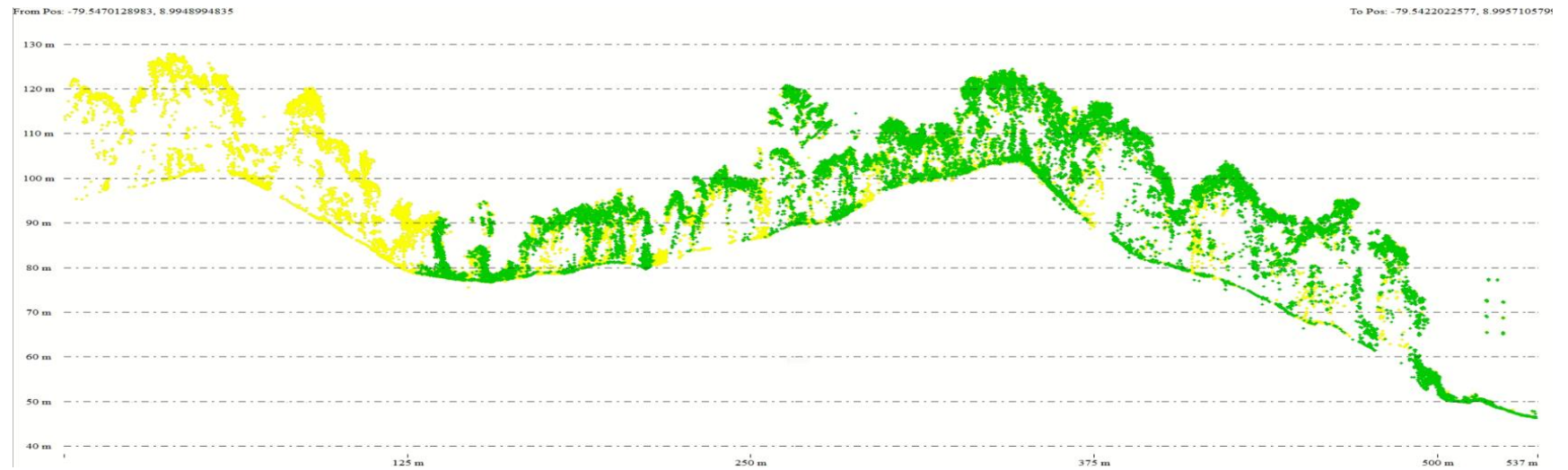


## AJUSTE ENTRE PASADAS

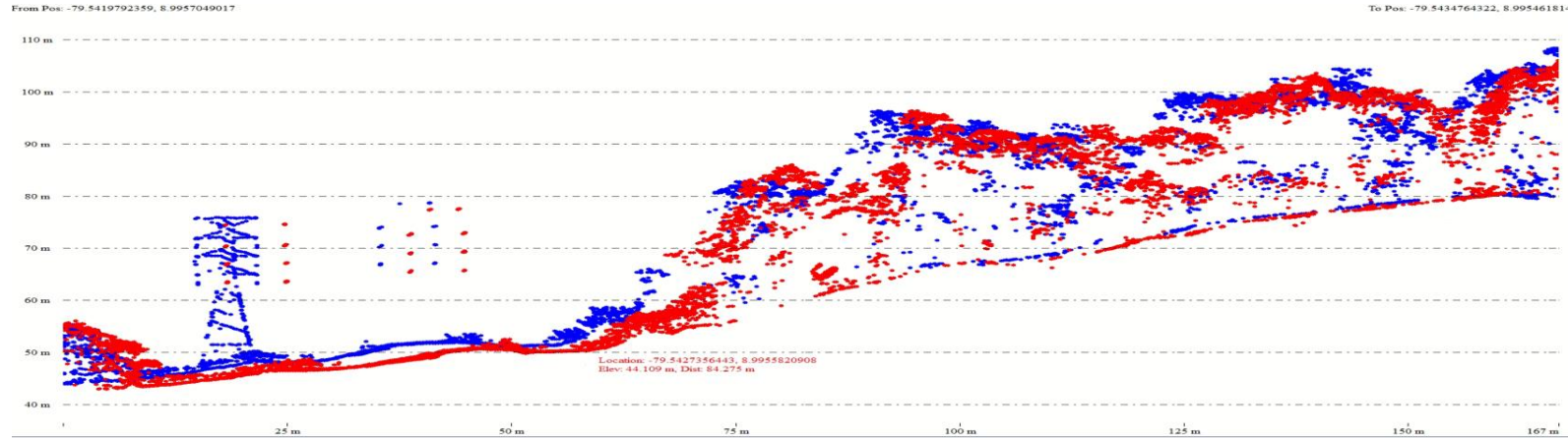


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE

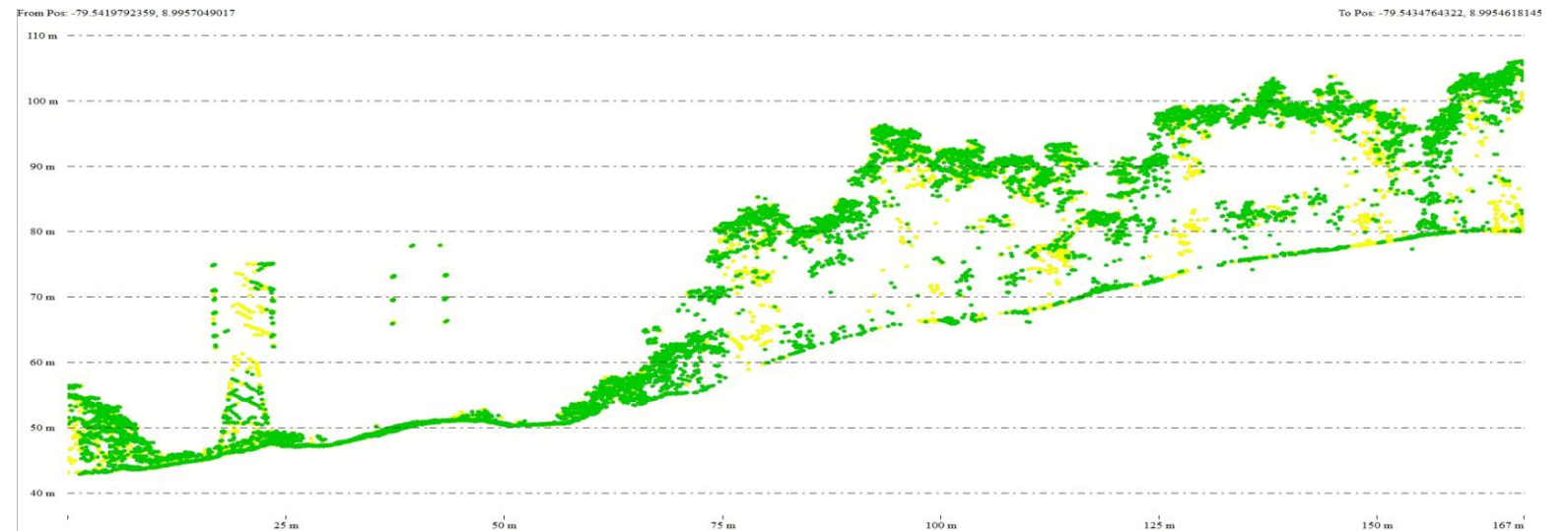


## AJUSTE ENTRE PASADAS

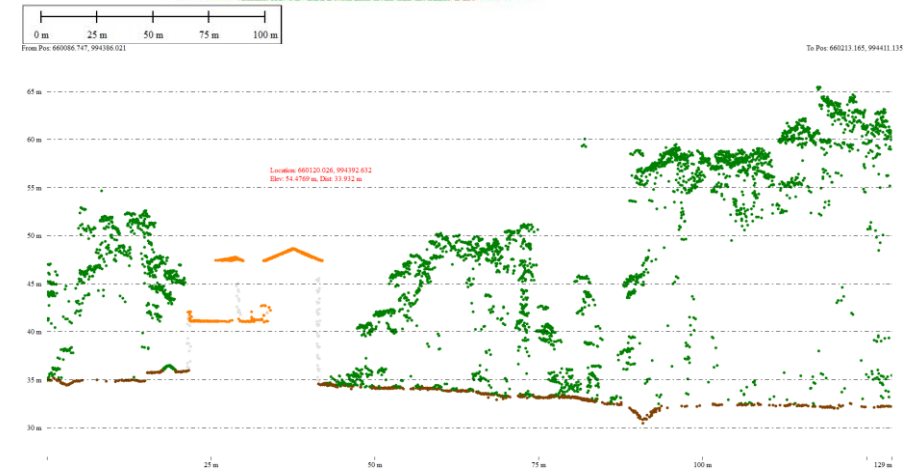
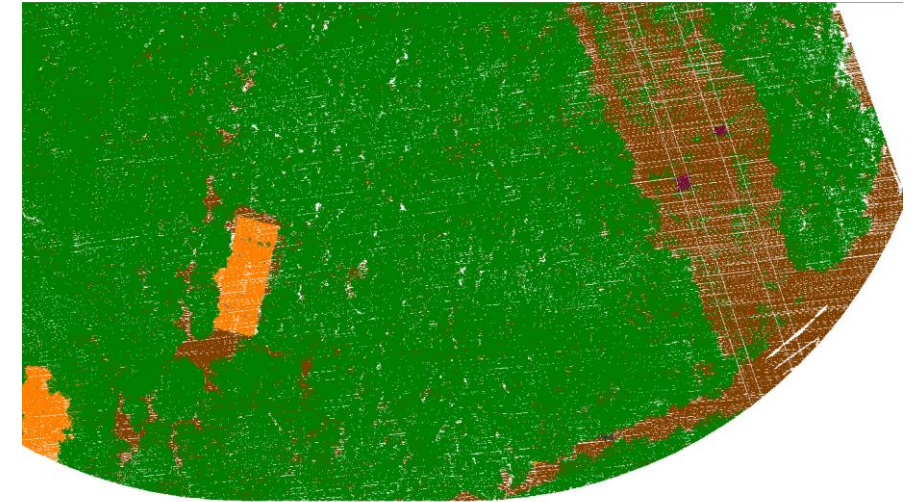
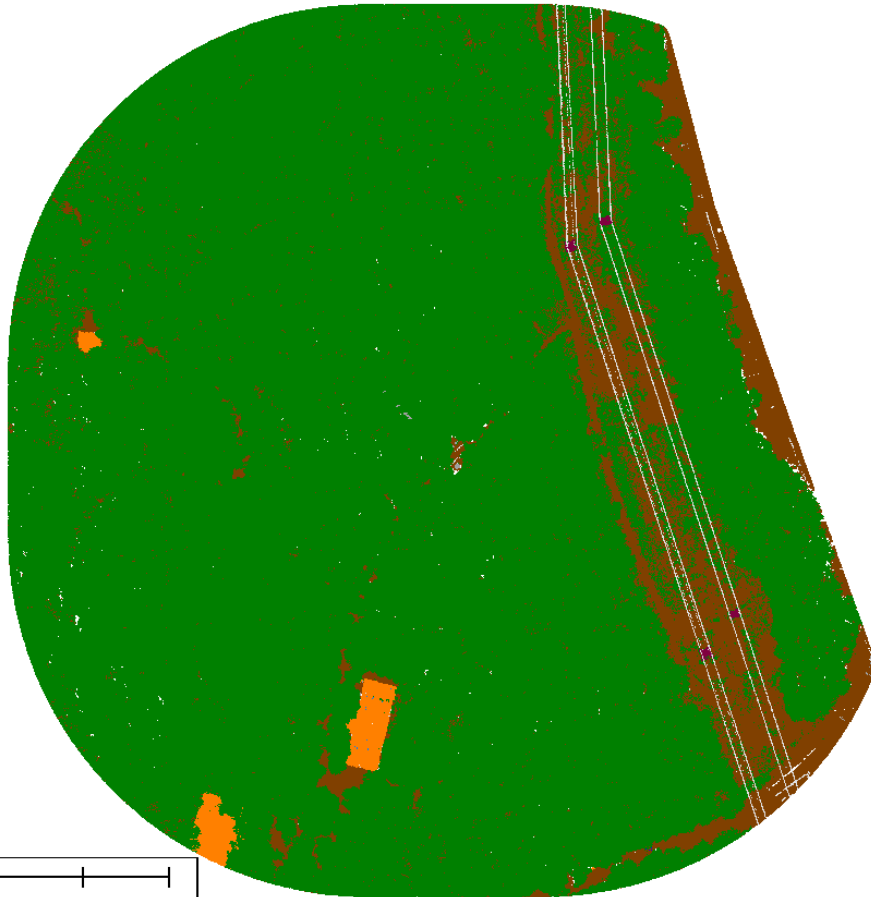


## POSTERIOR AL AJUSTE

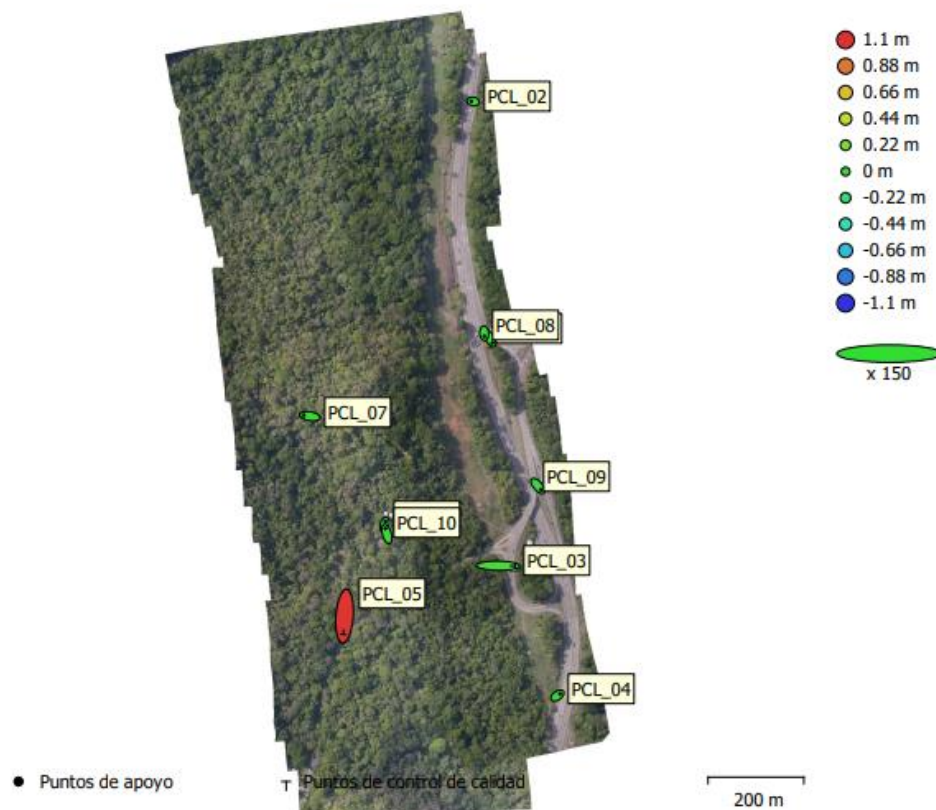
### ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)

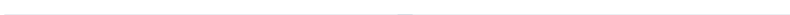


| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 8      | 8.10612         | 9.25842         | 1.63137         | 12.3056          | 12.4133    |

Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | GIGANTE              |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

ESTACION GNSS STRI

Regla

Línea Ruta Polígono **Círculo** ruta de acceso en 3D

Mide la circunferencia o el área de un círculo en el suelo.

Radio: 10.61 Kilómetros

Área: 354,107,616.00 Metros cuadrados

Circunferencia: 66.59 Kilómetros

☒ Navegación con mouse

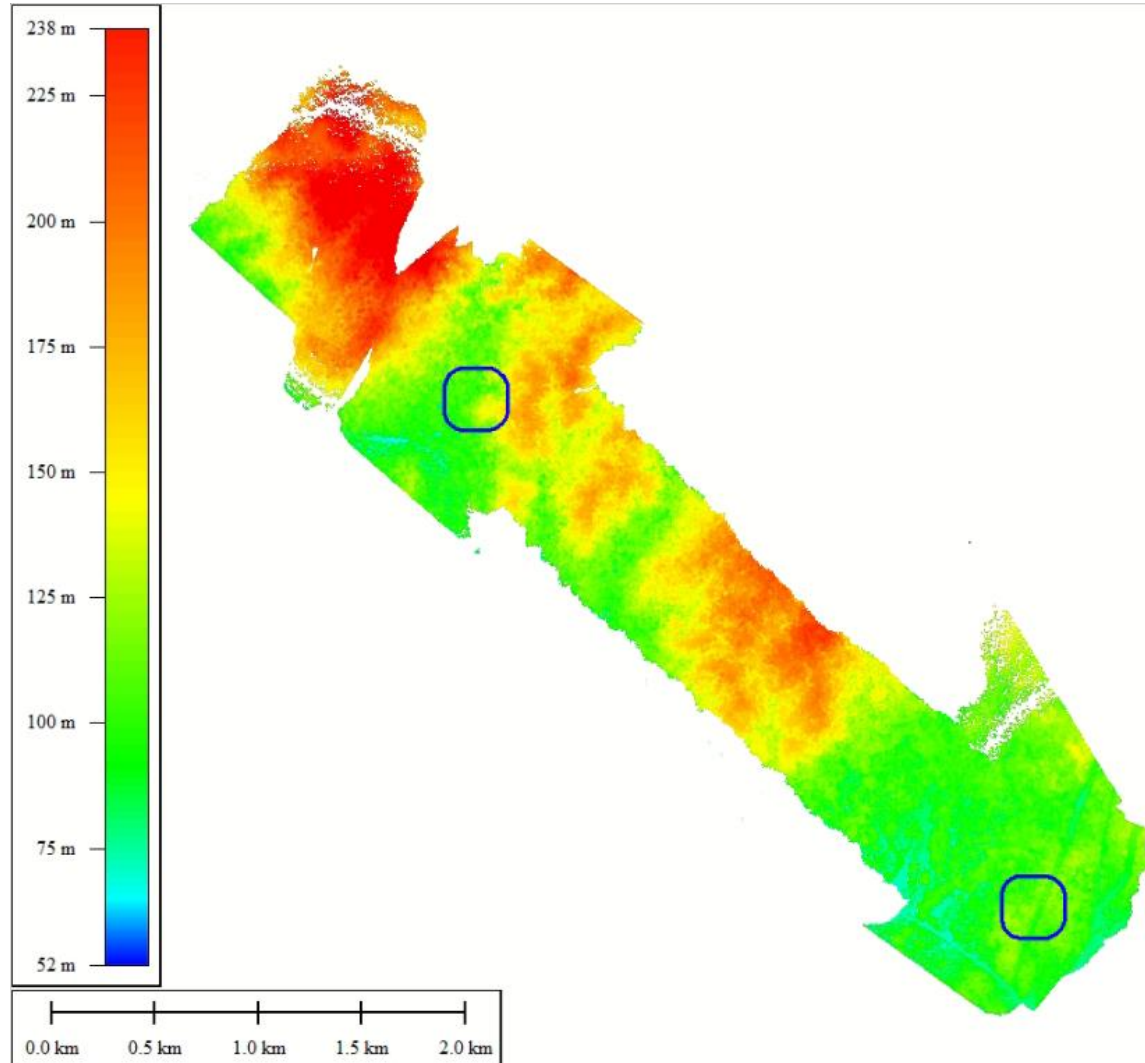
Image © 2023 Maxar Technologies  
Image © 2023 CNES / Airbus

Google

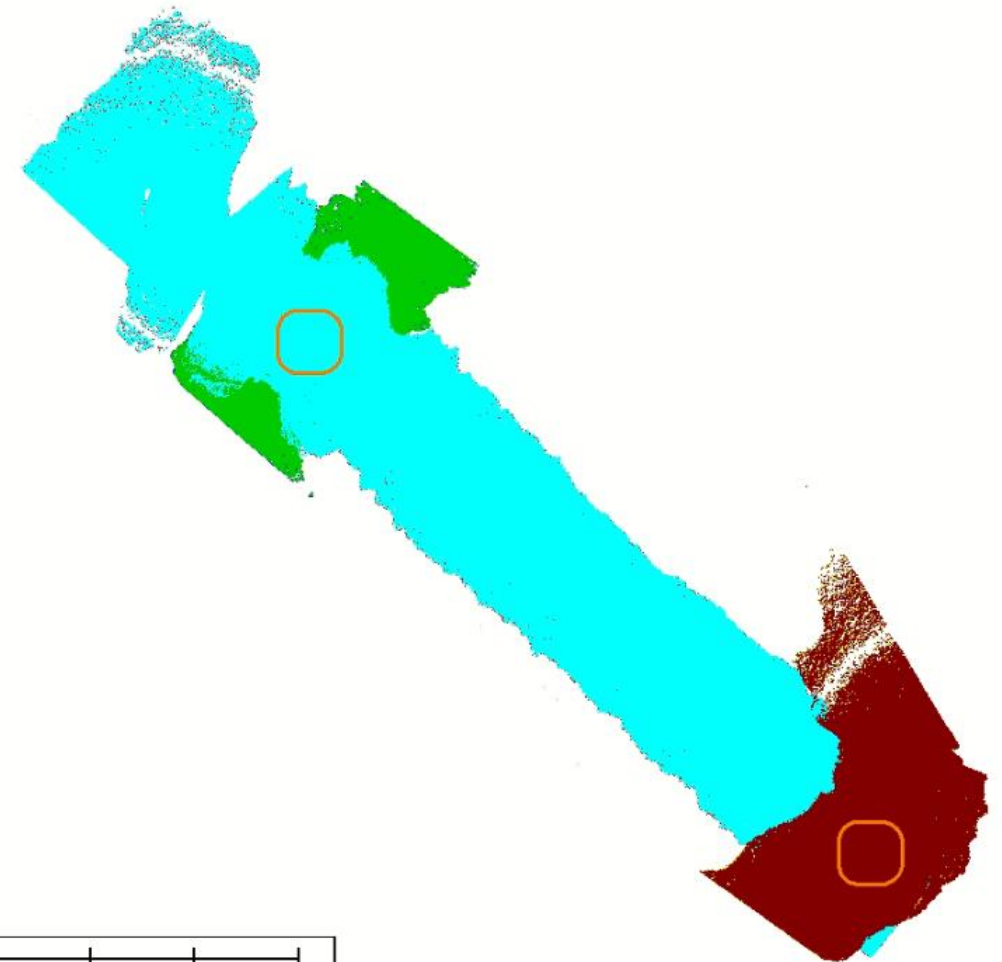
Fechas de imágenes: 12/2/2022 lat 9.021743° long -79.601396° elevación 0 m alt. ojo

|                                                                                     |  |                                                                       |  |                                     |  |                                                                                                                                                |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|-------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|------------------|--|-------------------------------------------------------------------------------------|--|----------|--|--------------------------|--|-------------------|--|--------------------------|--|-----------|--|-------------------------------------|--|-------|--|--|--|--------|--|--|--|--|--|-------------------|--|-----------|--|--|--|--|--|--|--|--|--|--------------------------|--|--|--|--|--|--|--|--|--|--|--|
|  |  | <h2 style="text-align: center;">DESCRIPCIÓN DE PUNTOS DE CONTROL</h2> |  |                                     |  | FECHA<br>26/05/2023                                                                                                                            |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     |  |                                                                       |  |                                     |  | Hoja 1 de 1                                                                                                                                    |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Proyecto:                                                                           |  | BARRO COLORADO                                                        |  | Empresa:                            |  | STEREOCARTO                                                                                                                                    |  | Superficie número: |  | ESTACIONAMIENTOS |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| País:                                                                               |  | PANAMÁ                                                                |  | Provincia:                          |  | COLON                                                                                                                                          |  | Localización:      |  | GAMBOA           |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     |  |                                                                       |  |                                     |  |                                                                                                                                                |  | Codigo             |  | STRI             |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Fotografía de los puntos de control                                                 |  |                                                                       |  |                                     |  | Croquis General (Puntos de apoyo y superficie)                                                                                                 |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| SUR                                                                                 |  |                                                                       |  |                                     |  | OESTE                                                                                                                                          |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
|  |  |                                                                       |  |                                     |  |                                                             |  |                    |  |                  |  |  |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| <b>INSTRUMENTO</b>                                                                  |  |                                                                       |  |                                     |  |                                                                                                                                                |  |                    |  |                  |  | <b>TIPO DE SUPERFICIE (marcar con X)</b>                                            |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| RTK:                                                                                |  | GPS estático                                                          |  | <input checked="" type="checkbox"/> |  | Estación Total:                                                                                                                                |  |                    |  | Pavimento:       |  | <input type="checkbox"/>                                                            |  | Asfalto: |  | <input type="checkbox"/> |  | TERRENO NATURAL   |  | <input type="checkbox"/> |  | CONCRETO: |  | <input checked="" type="checkbox"/> |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Marca:                                                                              |  | SOUTH                                                                 |  | Antena:                             |  | Modelo                                                                                                                                         |  | G7                 |  | Serial:          |  | S910BA148510501                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| STRI                                                                                |  |                                                                       |  |                                     |  | SISTEMA DE REFERENCIA                                                                                                                          |  |                    |  |                  |  | ESTACION DE CONTROL                                                                 |  |          |  |                          |  | PIMEC             |  | UBICACIÓN DE CORS        |  | PENONOME  |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| UTM                                                                                 |  |                                                                       |  |                                     |  | DATUM                                                                                                                                          |  |                    |  |                  |  | WGS84                                                                               |  |          |  |                          |  | Tipo de solución: |  |                          |  |           |  | Phase Fixed                         |  | PDOP: |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| NORTE                                                                               |  |                                                                       |  |                                     |  | ESTE                                                                                                                                           |  |                    |  |                  |  | Elevación(Ortfo)                                                                    |  |          |  |                          |  | UTM Zona          |  |                          |  |           |  | 17 Norte                            |  |       |  |  |  | SD AX: |  |  |  |  |  | 0.0001m           |  | 1.2 - 2.3 |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| 1008231.5830m                                                                       |  |                                                                       |  |                                     |  | 641229.5284m                                                                                                                                   |  |                    |  |                  |  | 28.1907m                                                                            |  |          |  |                          |  | Modelo Geoidal    |  |                          |  |           |  | EGM2008 (Global) SXS                |  |       |  |  |  | SD AY: |  |  |  |  |  | 0.0002m           |  | GDOP:     |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Global                                                                              |  |                                                                       |  |                                     |  |                                                                                                                                                |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  | Frequency:        |  |                          |  |           |  | L1/L2/L5                            |  |       |  |  |  | SD AZ: |  |  |  |  |  | 0.0001m           |  | 1.5 - 3.2 |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Latitud                                                                             |  | Longitud                                                              |  | Altura                              |  | Observaciones:<br>CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE LA CERCA FRONTAL. |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| 9° 07' 07.48794" N                                                                  |  | 79° 42' 53.17793" W                                                   |  | 40.3789 m                           |  |                                                                                                                                                |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |
| Técnico responsable:                                                                |  |                                                                       |  |                                     |  |                                                                                                                                                |  |                    |  |                  |  | Empresa contratista:                                                                |  |          |  |                          |  |                   |  |                          |  |           |  | STEREOCARTO                         |  |       |  |  |  |        |  |  |  |  |  | Fecha de captura: |  |           |  |  |  |  |  |  |  |  |  | 26/05/2023 6:43:57 a. m. |  |  |  |  |  |  |  |  |  |  |  |
| TOPOGRAFO ROBERTO RESTREPO                                                          |  |                                                                       |  |                                     |  |                                                                                                                                                |  |                    |  |                  |  |                                                                                     |  |          |  |                          |  |                   |  |                          |  |           |  |                                     |  |       |  |  |  |        |  |  |  |  |  |                   |  |           |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |

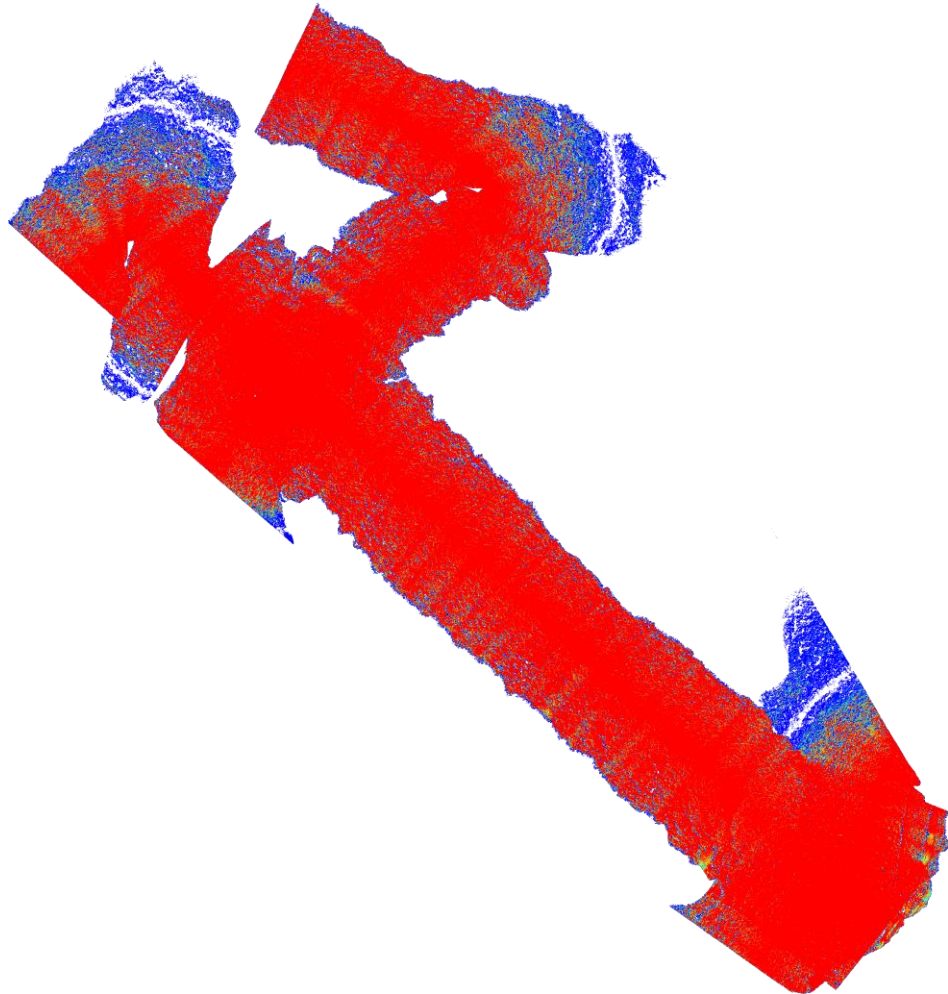
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



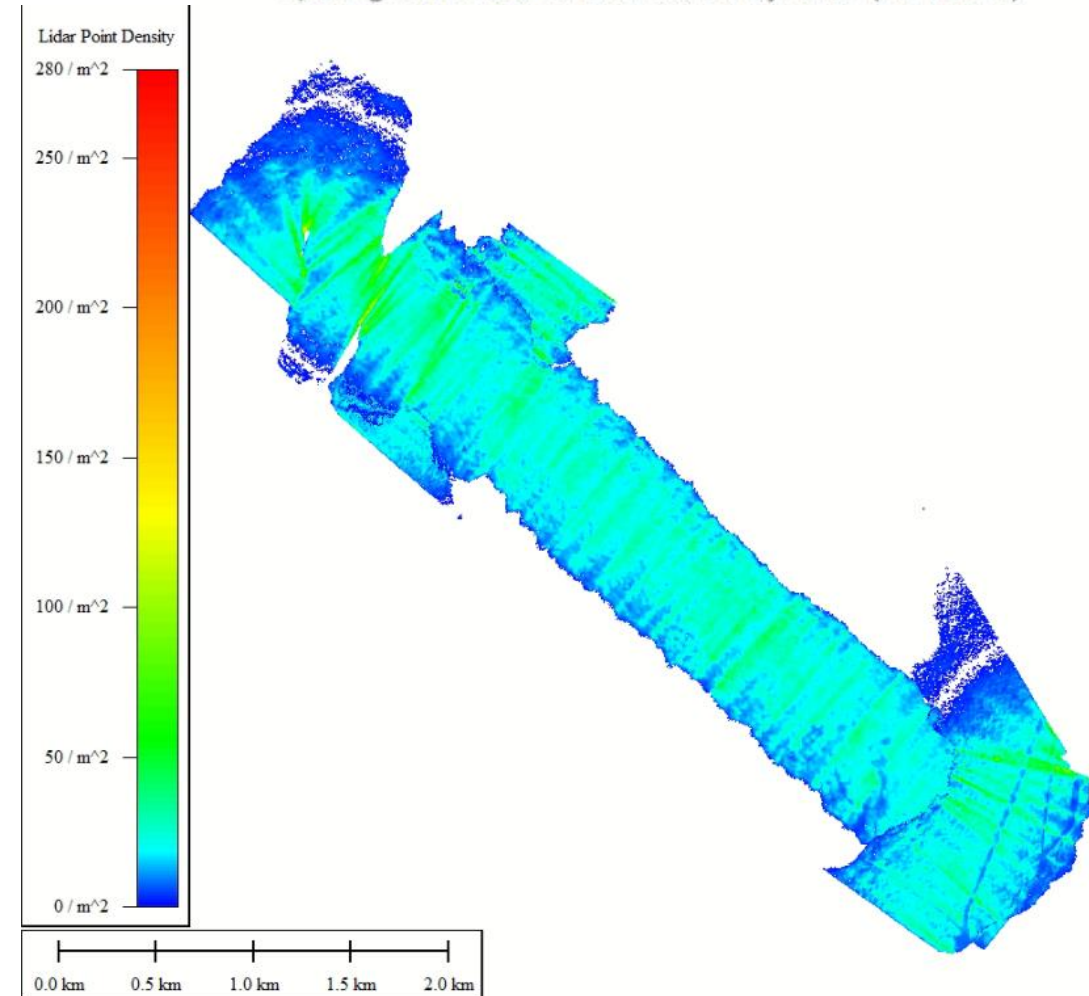
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 6680804/6.68  
point density: all returns 22.68 last only 11.25 (per square meter)  
spacing: all returns 0.21 last only 0.30 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

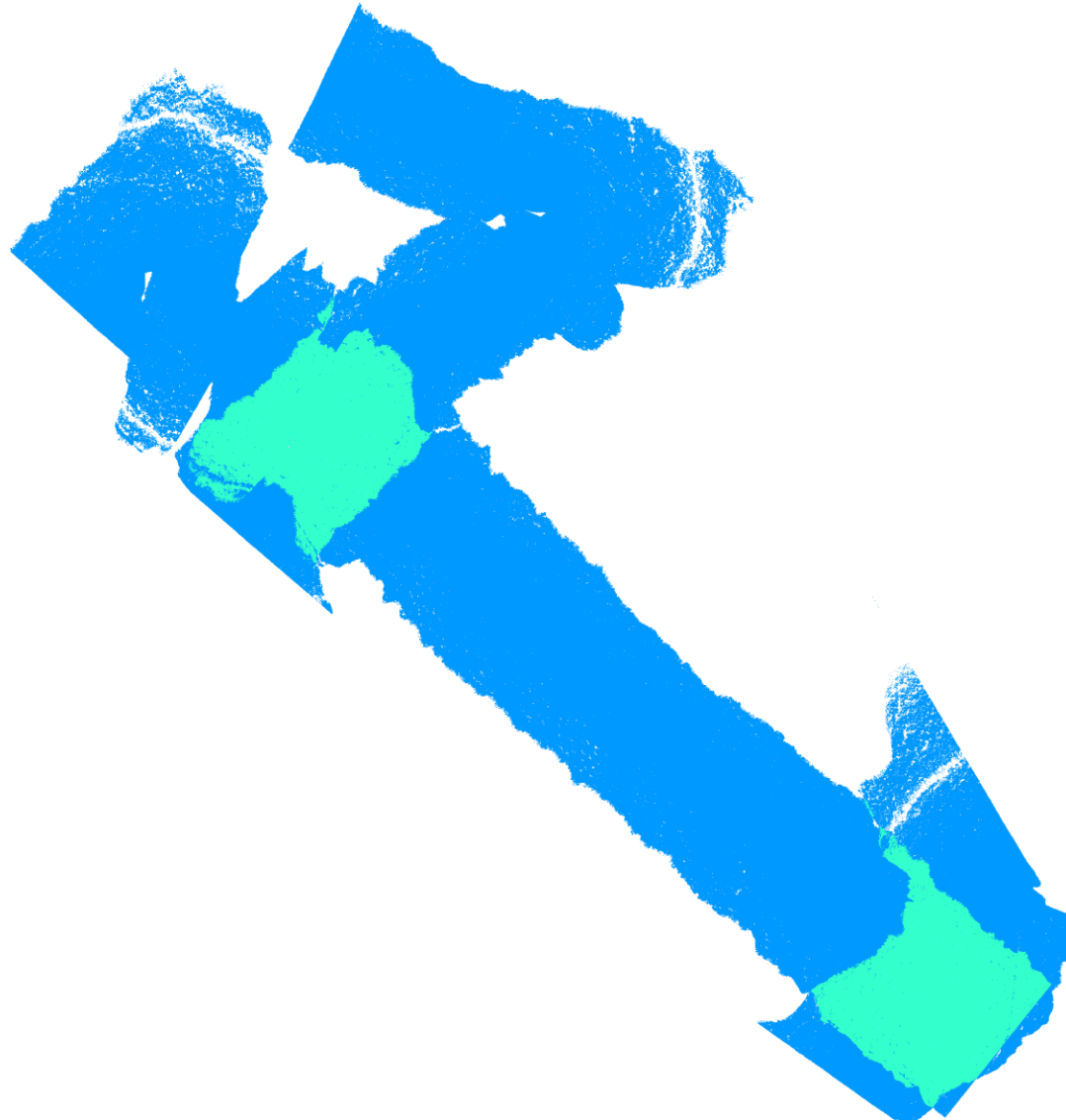
AZUL: 1 PASADA

CIAN: 2 PASADAS

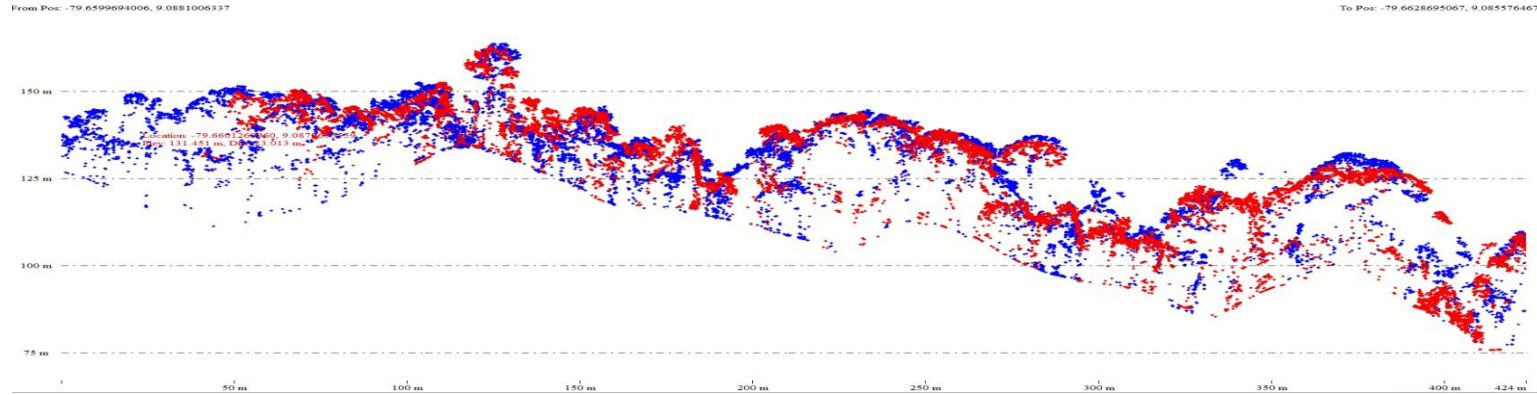
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

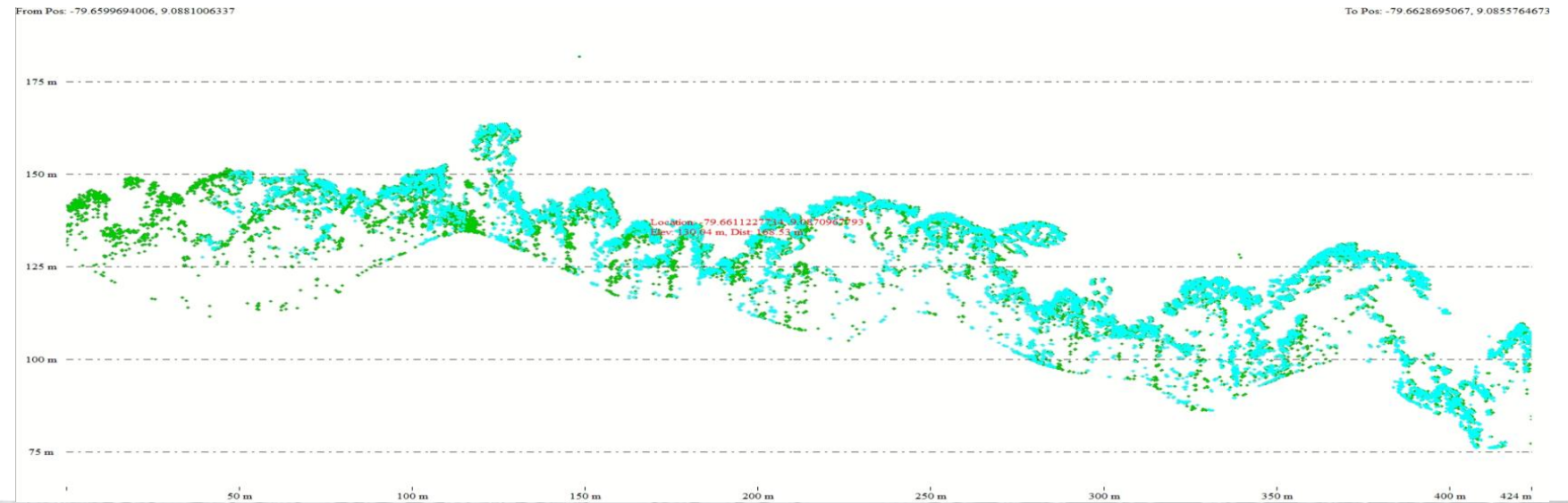


## AJUSTE ENTRE PASADAS

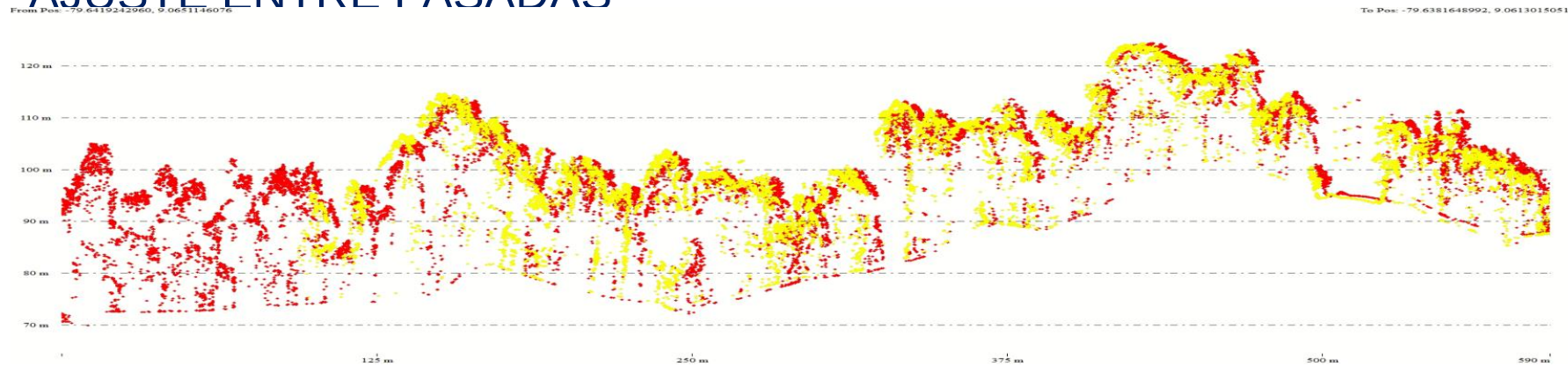


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE

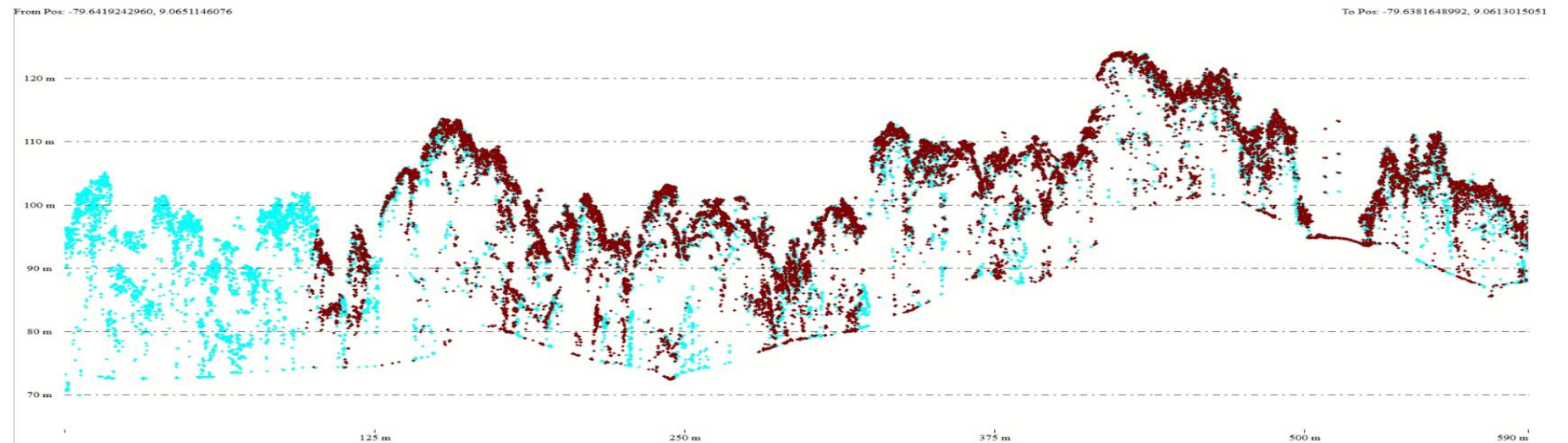


## AJUSTE ENTRE PASADAS

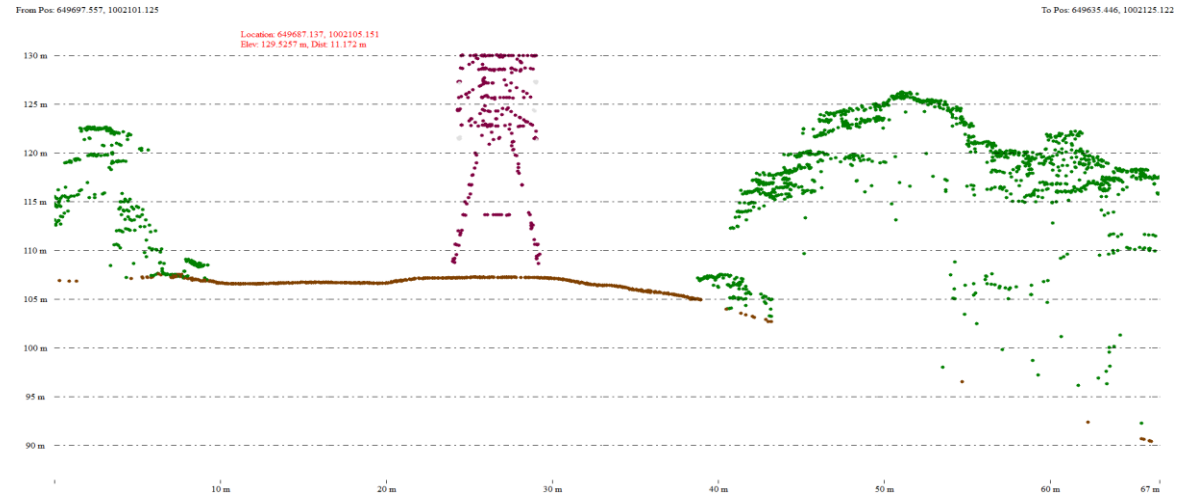
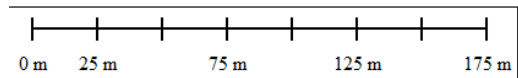
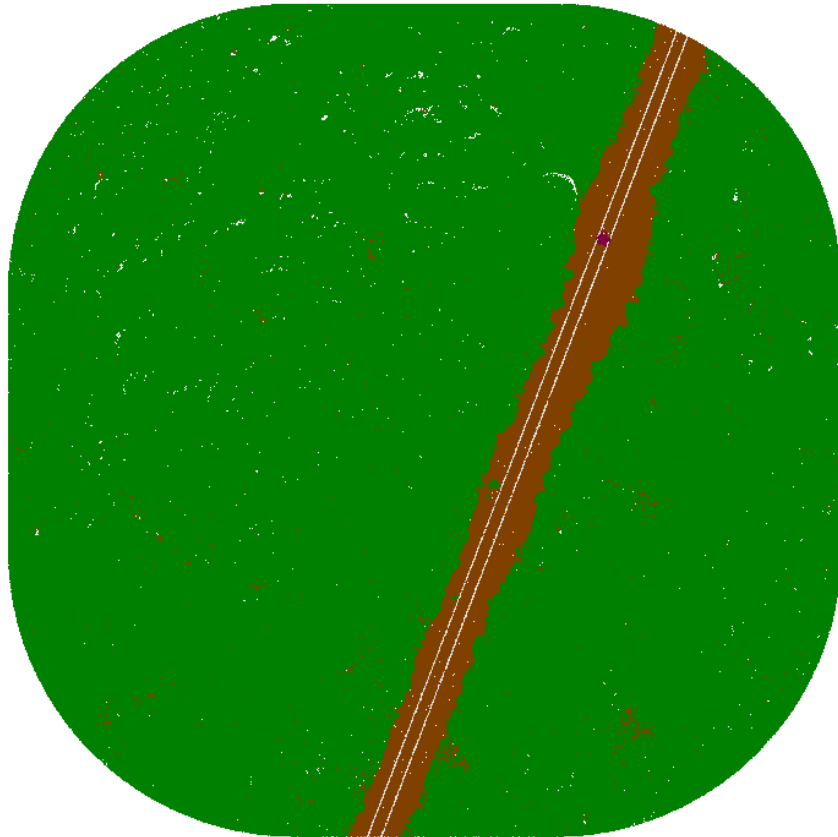


## POSTERIOR AL AJUSTE

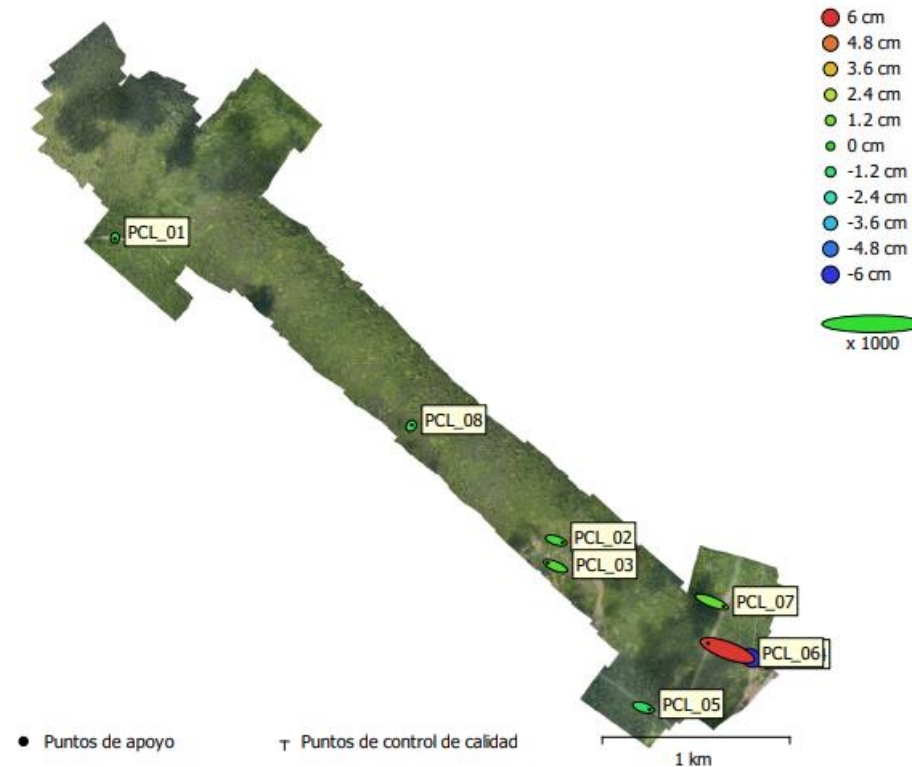
### ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 8      | 9.57211         | 3.63798         | 3.01426         | 10.2401          | 10.6745    |

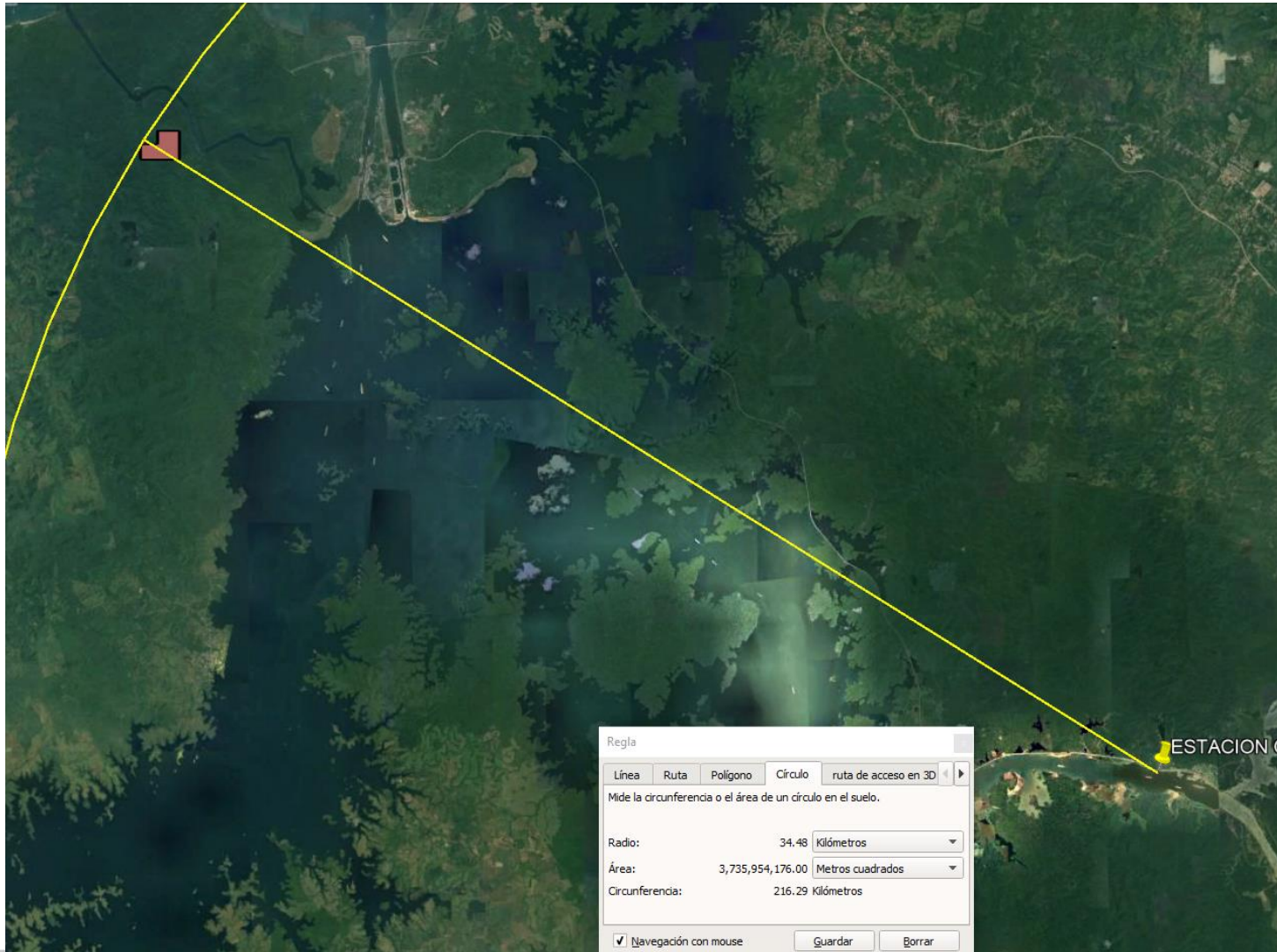
Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS



## ESTACION DE REFERENCIA



Regla

Línea Ruta Polígono Círculo ruta de acceso en 3D

Mide la circunferencia o el área de un círculo en el suelo.

Radio: 34.48 Kilómetros

Área: 3,735,954,176.00 Metros cuadrados

Circunferencia: 216.29 Kilómetros

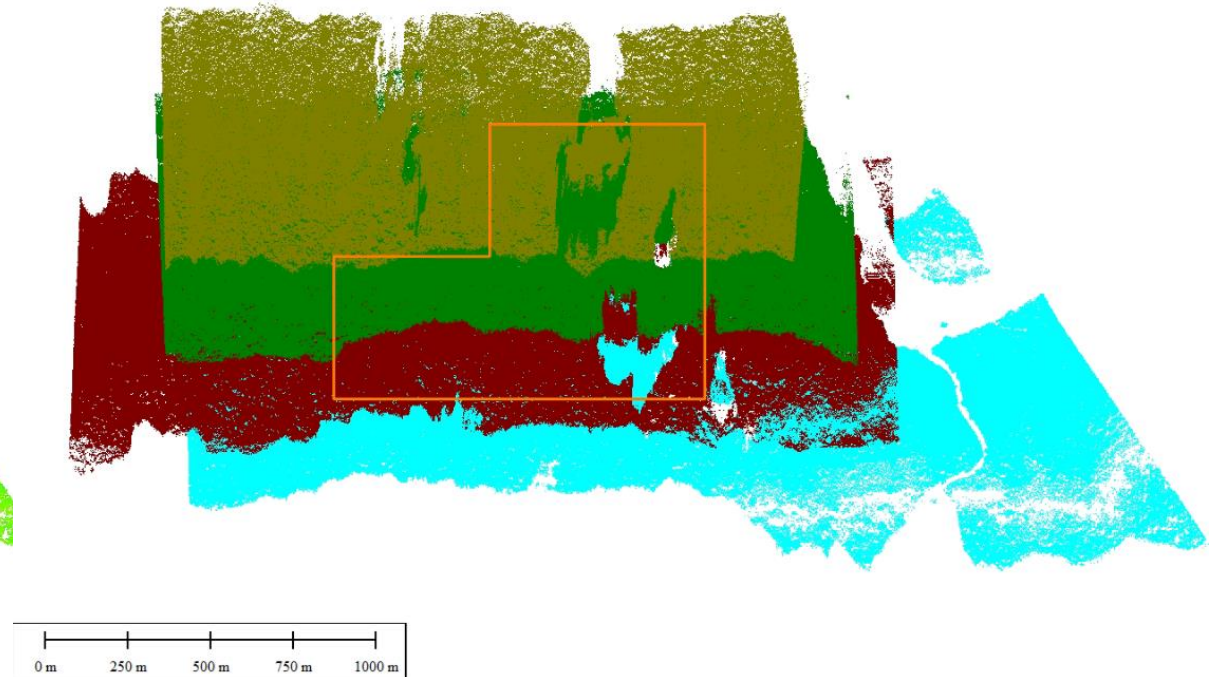
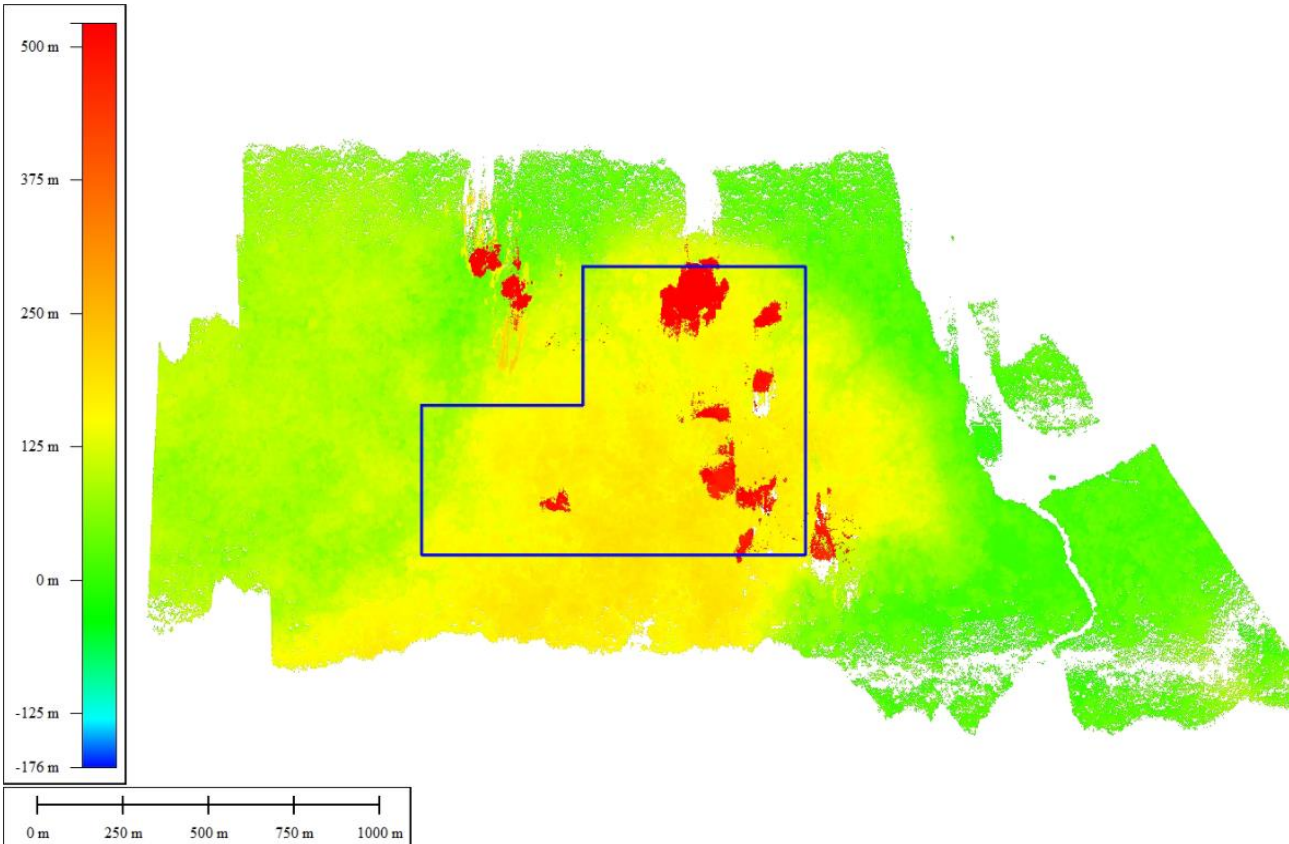
☒ Navegación con mouse

Guardar Borrar

| ROBERTO RESTREPO TOPOGRAFO          |                                                  | DESCRIPCIÓN DE PUNTOS DE CONTROL |             |                                                                                                                               |                  | FECHA<br>26/05/2023<br>Hoja 1 de 1 |
|-------------------------------------|--------------------------------------------------|----------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------|
| Proyecto:                           | BARRO COLORADO                                   | Empresa:                         | STEREOCARTO | Superficie número:                                                                                                            | ESTACIONAMIENTOS |                                    |
| País:                               | PANAMÁ                                           | Provincia:                       | COLON       | Localización:                                                                                                                 | GAMBOA           |                                    |
|                                     |                                                  |                                  |             | Código                                                                                                                        | STRI             |                                    |
| Fotografía de los puntos de control |                                                  |                                  |             | Croquis General (Puntos de apoyo y superficie)                                                                                |                  |                                    |
| SUR                                 |                                                  | OESTE                            |             |                                                                                                                               |                  |                                    |
|                                     |                                                  |                                  |             |                                                                                                                               |                  |                                    |
| <b>INSTRUMENTO</b>                  |                                                  |                                  |             |                                                                                                                               |                  |                                    |
| RTK:                                | <input checked="" type="checkbox"/> GPS estático | Estación Total:                  |             |                                                                                                                               |                  |                                    |
| Marca:                              | SOUTH                                            | Antena:                          | Modelo      | G7                                                                                                                            | Serial:          |                                    |
| UTM                                 |                                                  | SISTEMA DE REFERENCIA            |             | TIPO DE SUPERFICIE (marcar con X)                                                                                             |                  |                                    |
| NORTE                               |                                                  | DATUM                            |             | Pavimento:                                                                                                                    |                  |                                    |
| ESTE                                |                                                  | WGS84                            |             | <input checked="" type="checkbox"/> Asfalto:                                                                                  |                  |                                    |
| Elevación(Ortfo)                    |                                                  | UTM Zona                         |             | <input checked="" type="checkbox"/> TERRENO NATURAL:                                                                          |                  |                                    |
| 1008231.5830m                       |                                                  | 17 Norte                         |             | <input checked="" type="checkbox"/> CONCRETO:                                                                                 |                  |                                    |
| 641229.5284m                        |                                                  | Modelo Geoidal                   |             | ESTACION DE CONTROL                                                                                                           |                  |                                    |
| 28.1907m                            |                                                  | EGM2008 (Global) SXS             |             | PMEC                                                                                                                          |                  |                                    |
| Global                              |                                                  | Frequency:                       |             | UBICACIÓN DE CORS                                                                                                             |                  |                                    |
| Latitud                             |                                                  | L1/L2/L5                         |             | PENÓNOME                                                                                                                      |                  |                                    |
| Longitud                            |                                                  |                                  |             | PADO:                                                                                                                         |                  |                                    |
| Altura                              |                                                  |                                  |             | GDOP:                                                                                                                         |                  |                                    |
| 9° 07' 07.48794" N                  |                                                  |                                  |             | Observaciones:                                                                                                                |                  |                                    |
| 79° 42' 53.17793" W                 |                                                  |                                  |             | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERCA FRONTAL |                  |                                    |
| 40.3789 m                           |                                                  |                                  |             |                                                                                                                               |                  |                                    |
| Técnico responsable:                |                                                  |                                  |             |                                                                                                                               |                  |                                    |
| TOPOGRAFO ROBERTO RESTREPO          |                                                  | Empresa contratista:             |             | STEREOCARTO                                                                                                                   |                  |                                    |
|                                     |                                                  | Fecha de captura:                |             | 26/05/2023 6:43:57 a. m                                                                                                       |                  |                                    |

## COBERTURA SEGÚN AREA CONTRATADA

## LINEAS DE VUELO



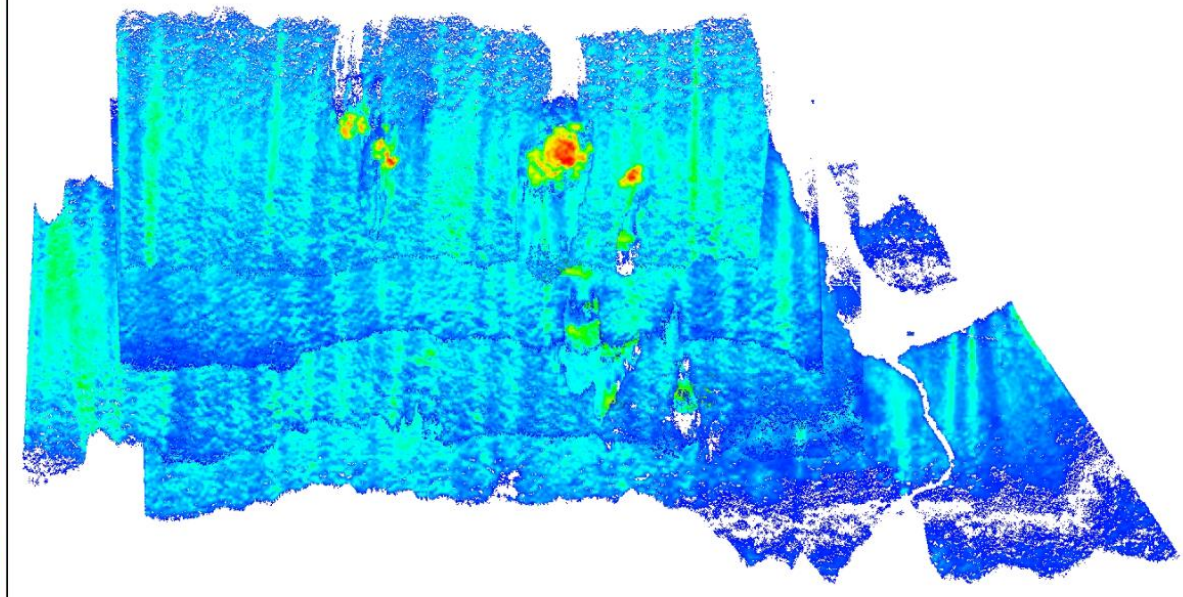
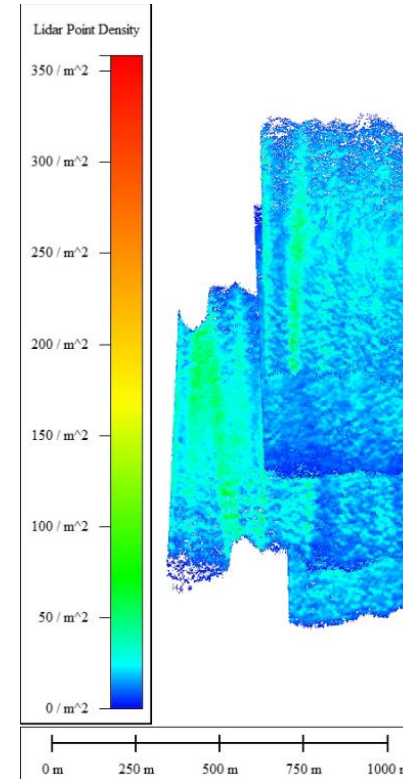
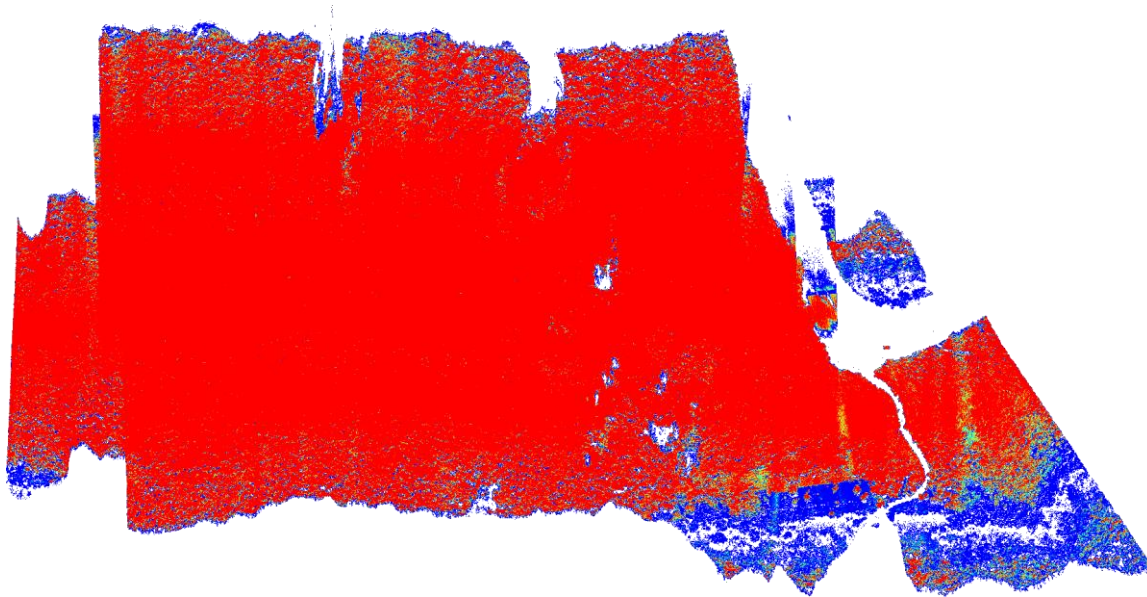
## DENSIDAD DE PUNTOS

### LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 3675496/3.68

point density: all returns 33.48 last only 16.99 (per square meter)

spacing: all returns 0.17 last only 0.24 (in meters)



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

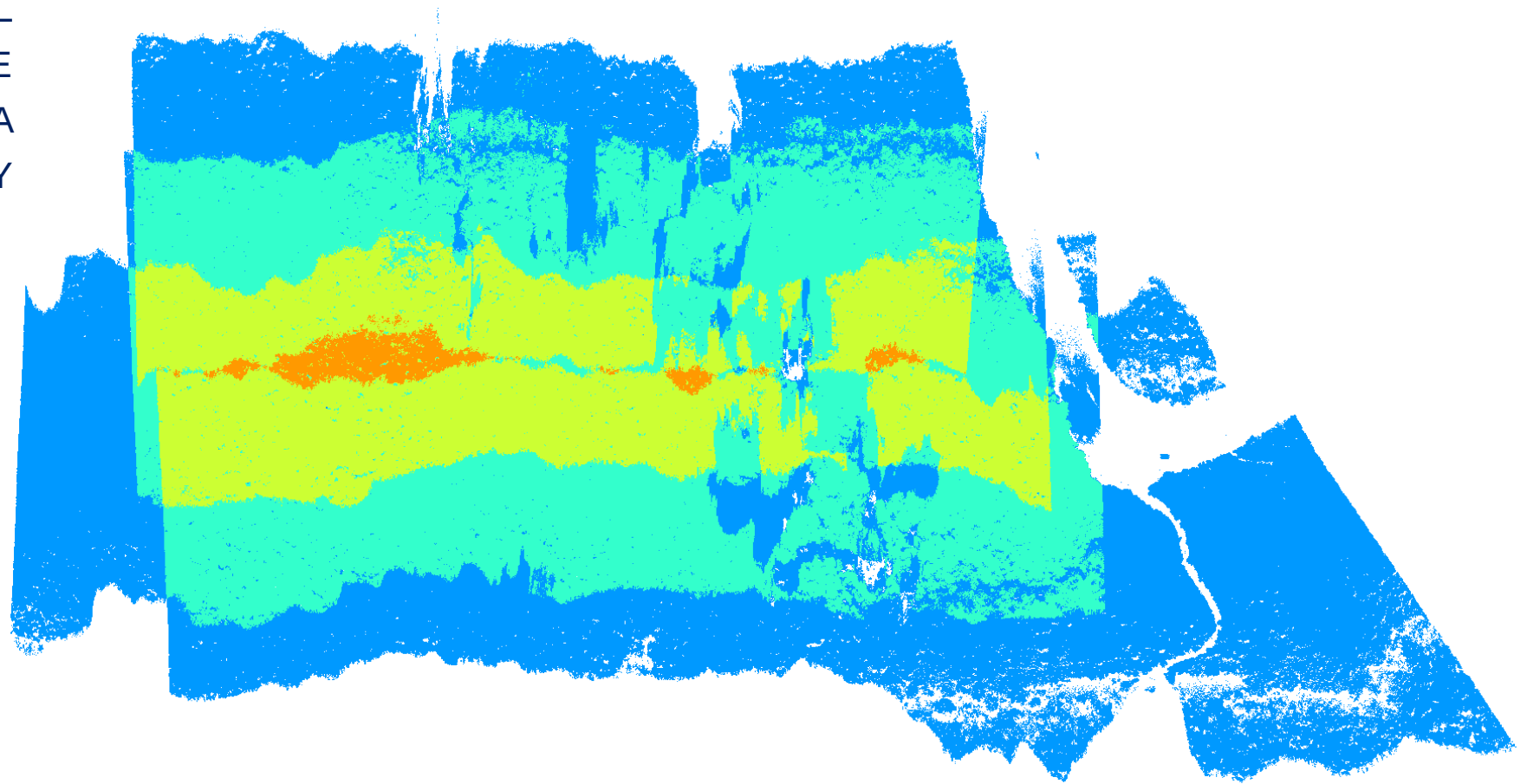
AZUL: 1 PASADA

CIAN: 2 PASADAS

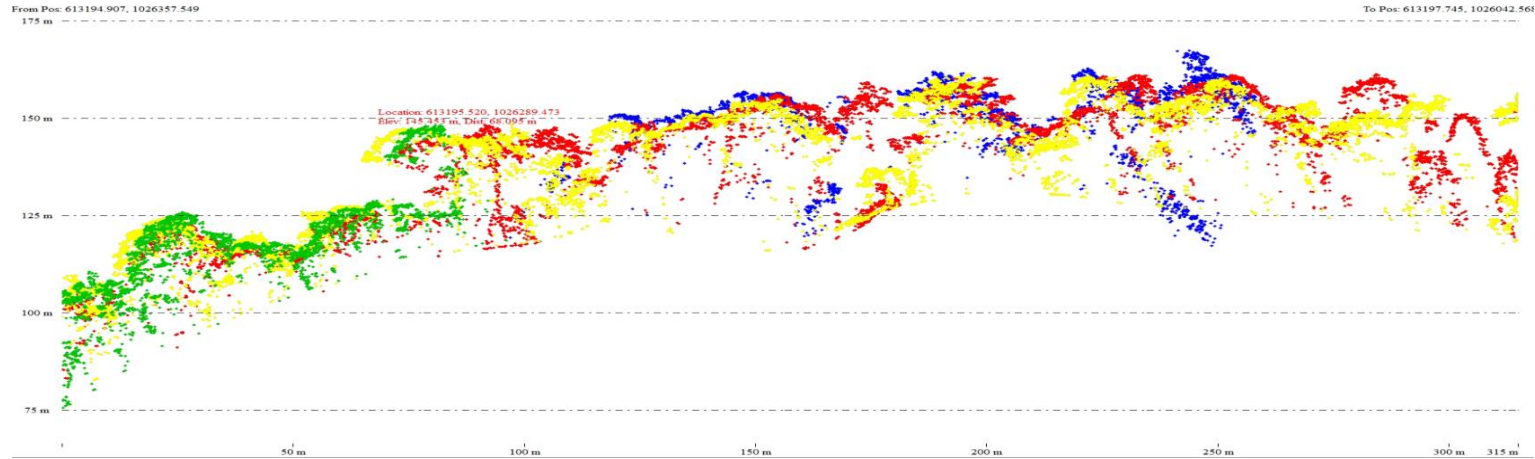
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

ROJO: 5 PASADAS

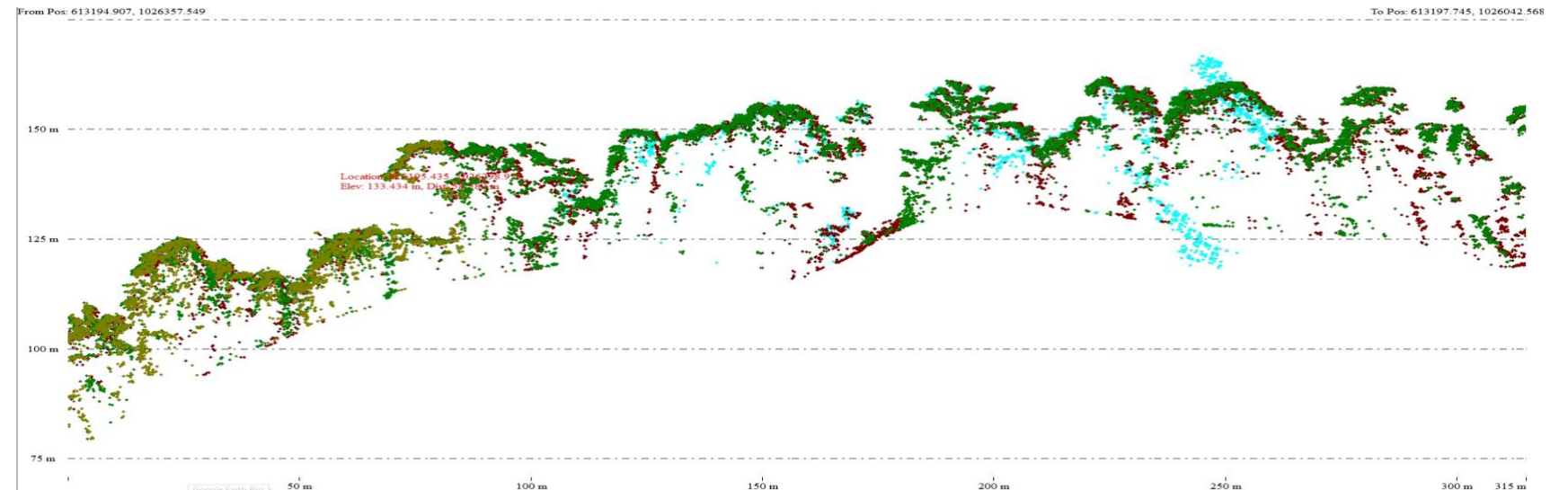


## AJUSTE ENTRE PASADAS

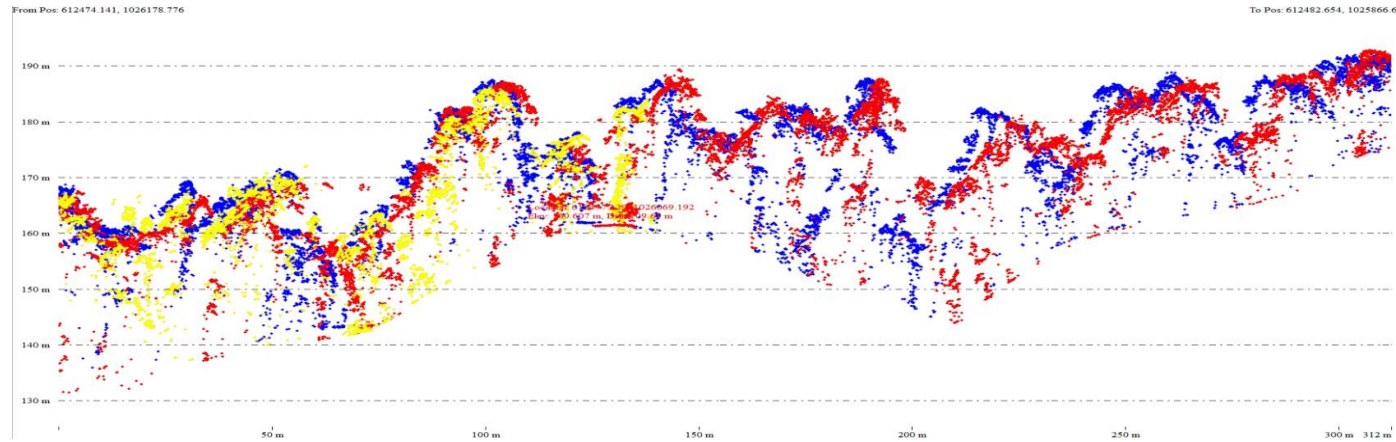


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE

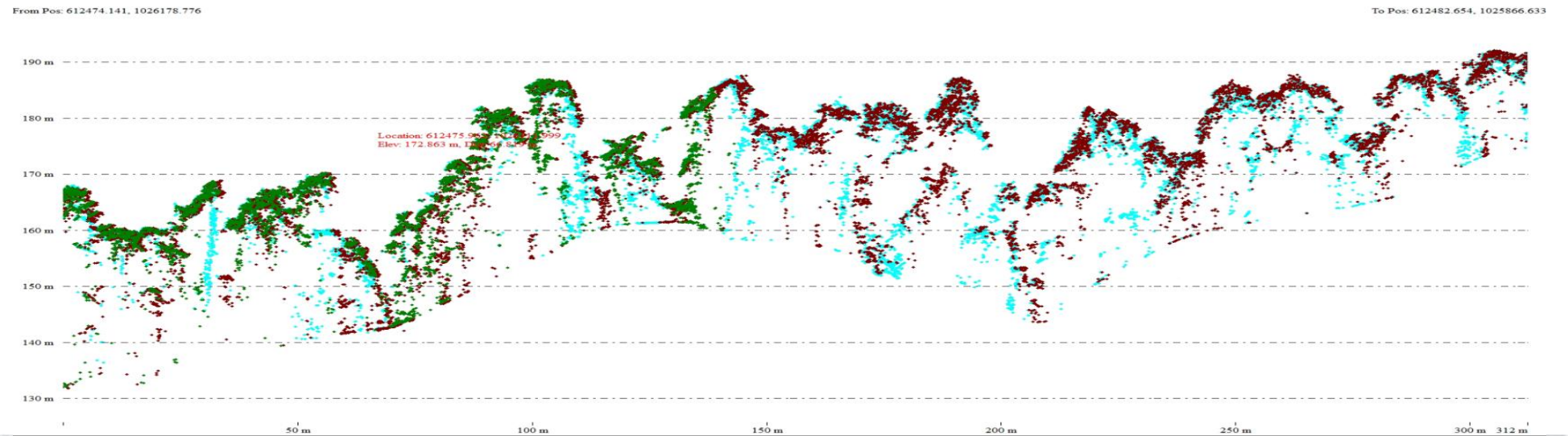


## AJUSTE ENTRE PASADAS

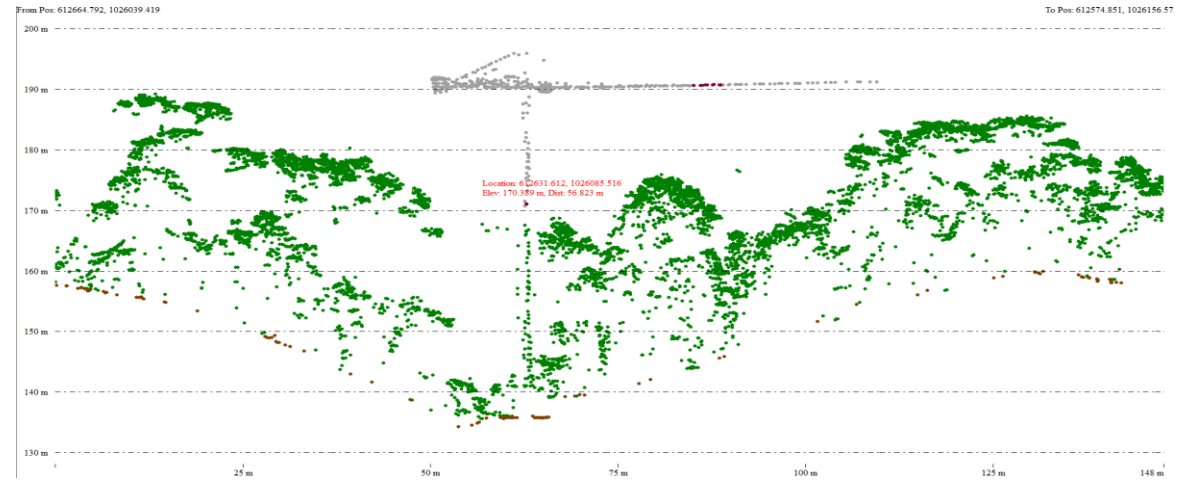
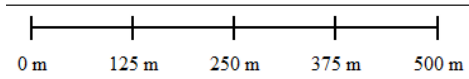
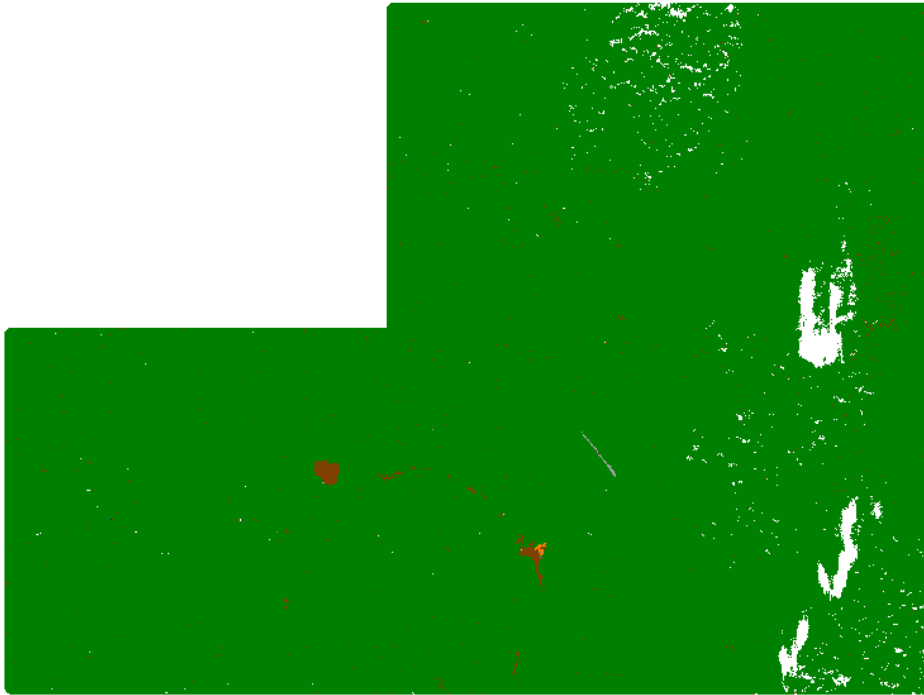


POSTERIOR AL AJUSTE

ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)



● Puntos de apoyo

┐ Puntos de control de calidad

500 m

| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 7      | 14.3142         | 46.7851         | 6.0781          | 48.9258          | 49.3019    |

Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

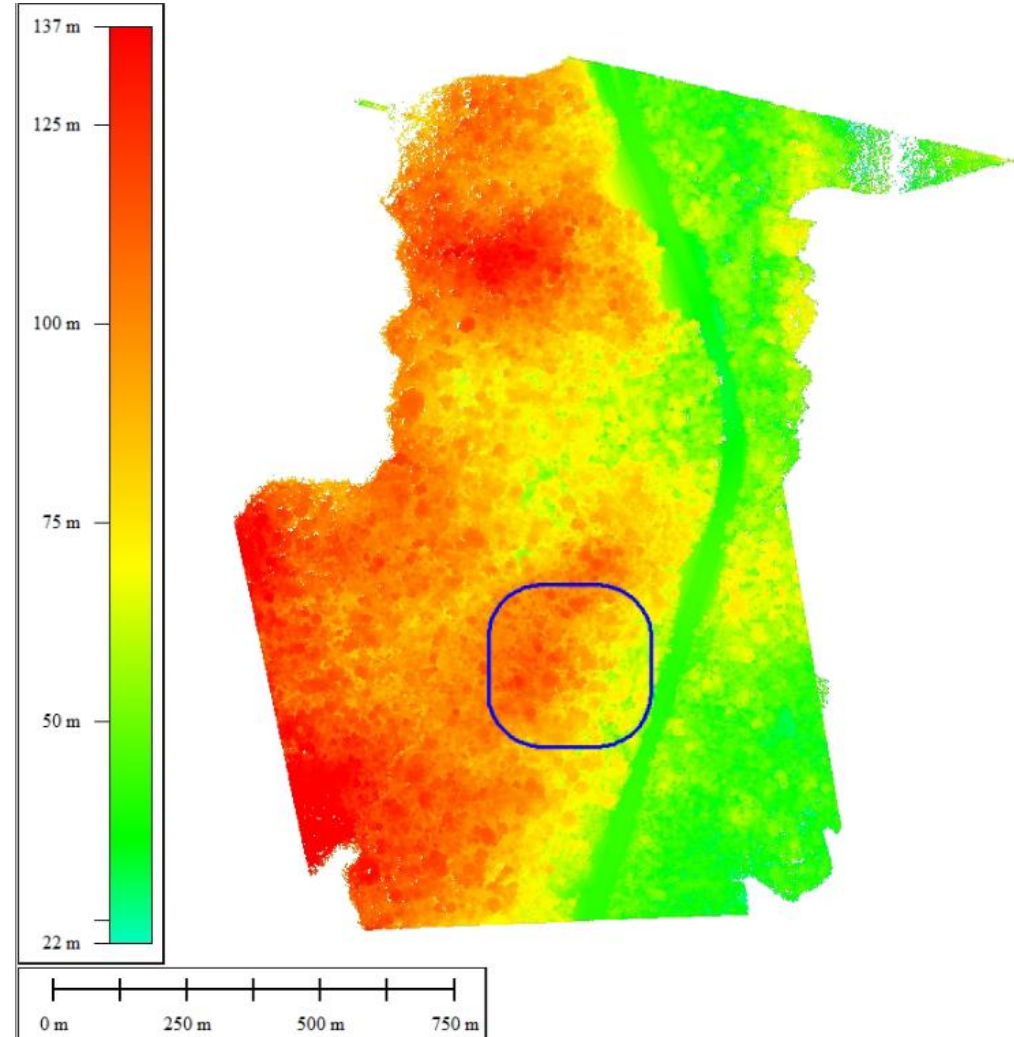


## ESTACION DE REFERENCIA

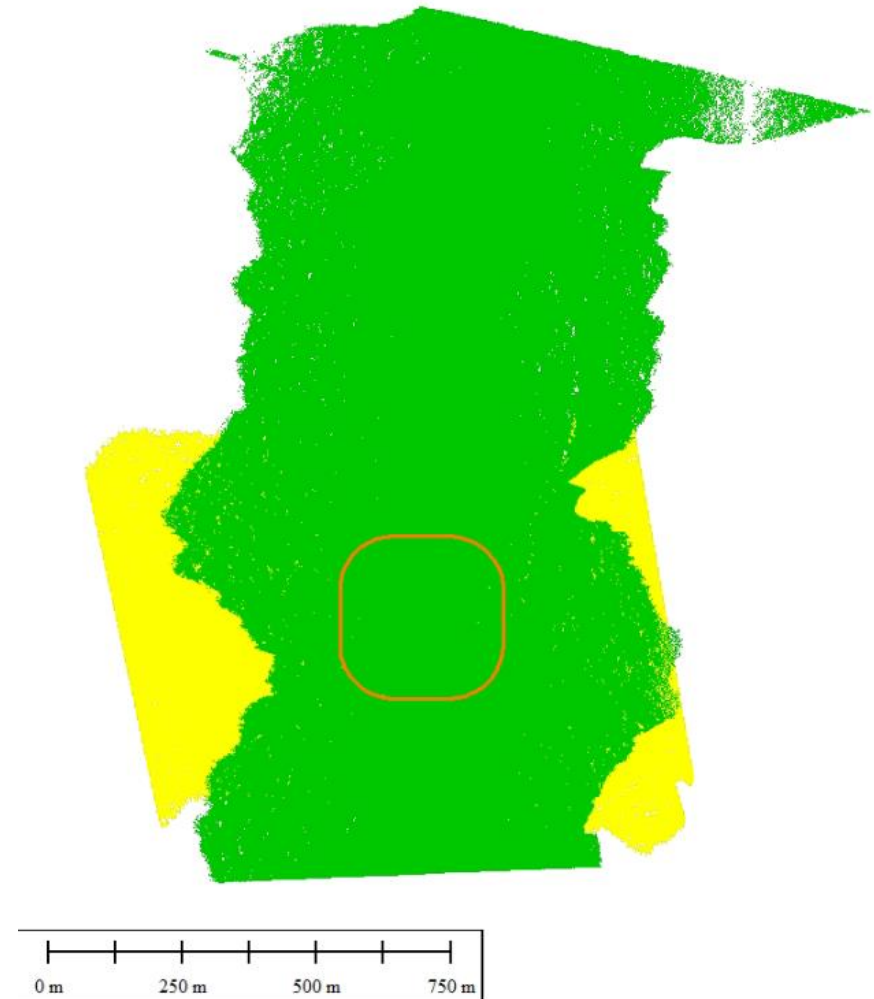


| ROBERTO RESTREPO TOPOGRAFO          |                                     | DESCRIPCIÓN DE PUNTOS DE CONTROL                                                                                              |                                     |                                                |                          | FECHA<br>26/05/2023                        |
|-------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------|--------------------------------------------|
|                                     |                                     |                                                                                                                               |                                     |                                                |                          | Hoja 1 de 1                                |
| Proyecto:                           | BARRO COLORADO                      | Empresa:                                                                                                                      | STEREOCARTO                         | Superficie número:                             | ESTACIONAMIENTOS         |                                            |
| País:                               | PANAMÁ                              | Provincia:                                                                                                                    | COLON                               | Localización:                                  | GAMBOA                   | Código<br><b>STRI</b>                      |
| Fotografía de los puntos de control |                                     |                                                                                                                               |                                     | Croquis General (Puntos de apoyo y superficie) |                          |                                            |
| SUR                                 |                                     | OESTE                                                                                                                         |                                     |                                                |                          |                                            |
|                                     |                                     |                                                                                                                               |                                     |                                                |                          |                                            |
| INSTRUMENTO                         |                                     |                                                                                                                               |                                     | TIPO DE SUPERFICIE (marcar con X)              |                          |                                            |
| RTK:                                | <input checked="" type="checkbox"/> | GPS estático:                                                                                                                 | <input checked="" type="checkbox"/> | Estación Total:                                | <input type="checkbox"/> |                                            |
| Marca:                              | SOUTH                               | Antena:                                                                                                                       | Modelo G7                           | Serial:                                        | S910BA145510501          |                                            |
| STRI                                |                                     | SISTEMA DE REFERENCIA                                                                                                         |                                     | ESTACION DE CONTROL                            |                          | PMEC                                       |
| UTM                                 |                                     | DATUM WGS84                                                                                                                   |                                     | Tipo de solución:                              |                          | Phase Fixed                                |
| NORTE                               | ESTE                                | Elevación(Ortfo)                                                                                                              | UTM Zona                            | SD ΔX:                                         |                          | PDOP:                                      |
| 1008231.5830m                       | 641229.5284m                        | 28.1907m                                                                                                                      | 17 Norte                            | 0.0001m                                        |                          | 1.2 - 2.3                                  |
| Global                              |                                     | Modelo Geoidal EGM2008 (Global) SXS                                                                                           |                                     | SD ΔY:                                         |                          | GDOP:                                      |
| Latitud                             |                                     | Longitud                                                                                                                      |                                     | SD ΔZ:                                         |                          | 1.5 - 3.2                                  |
| 9° 07' 07.48794" N                  |                                     | 79° 42' 53.17793" W                                                                                                           |                                     | 0.0001m                                        |                          |                                            |
| Altura                              |                                     | 40.3789 m                                                                                                                     |                                     | Observaciones:                                 |                          |                                            |
| Técnico responsable:                |                                     | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERCA FRONTAL |                                     |                                                |                          |                                            |
| TOPOGRAFO ROBERTO RESTREPO          |                                     | Empresa contratista:                                                                                                          |                                     | STEREOCARTO                                    |                          | Fecha de captura: 26/05/2023 6:43:57 a. m. |

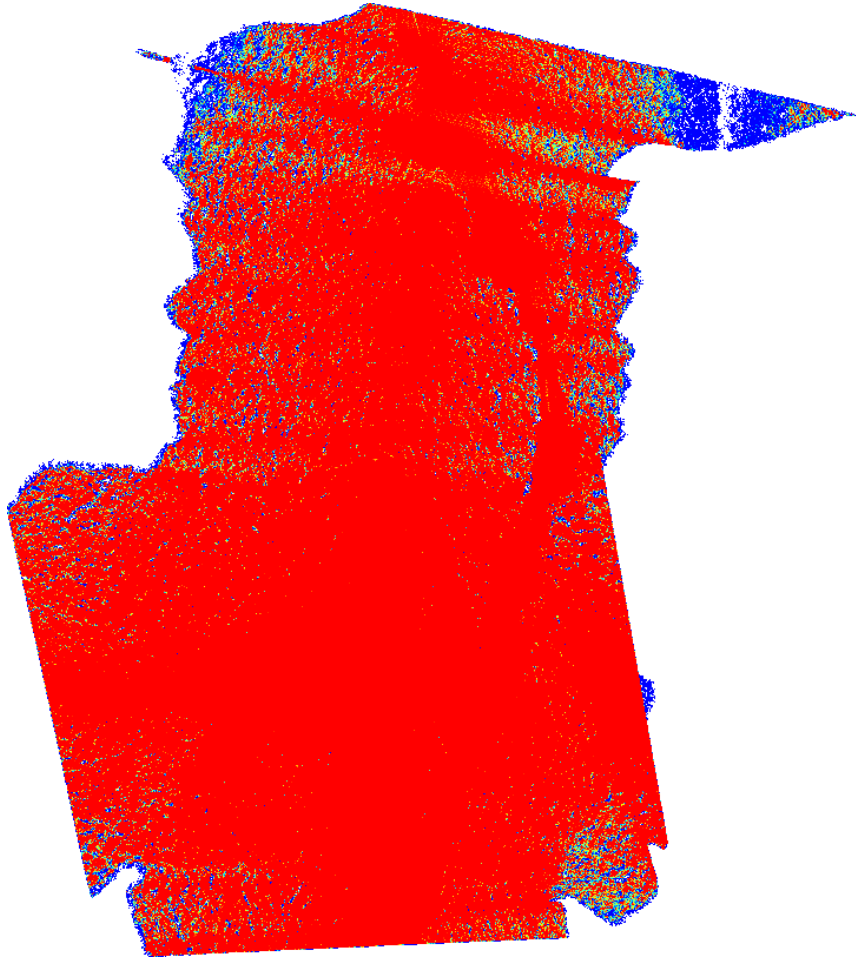
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



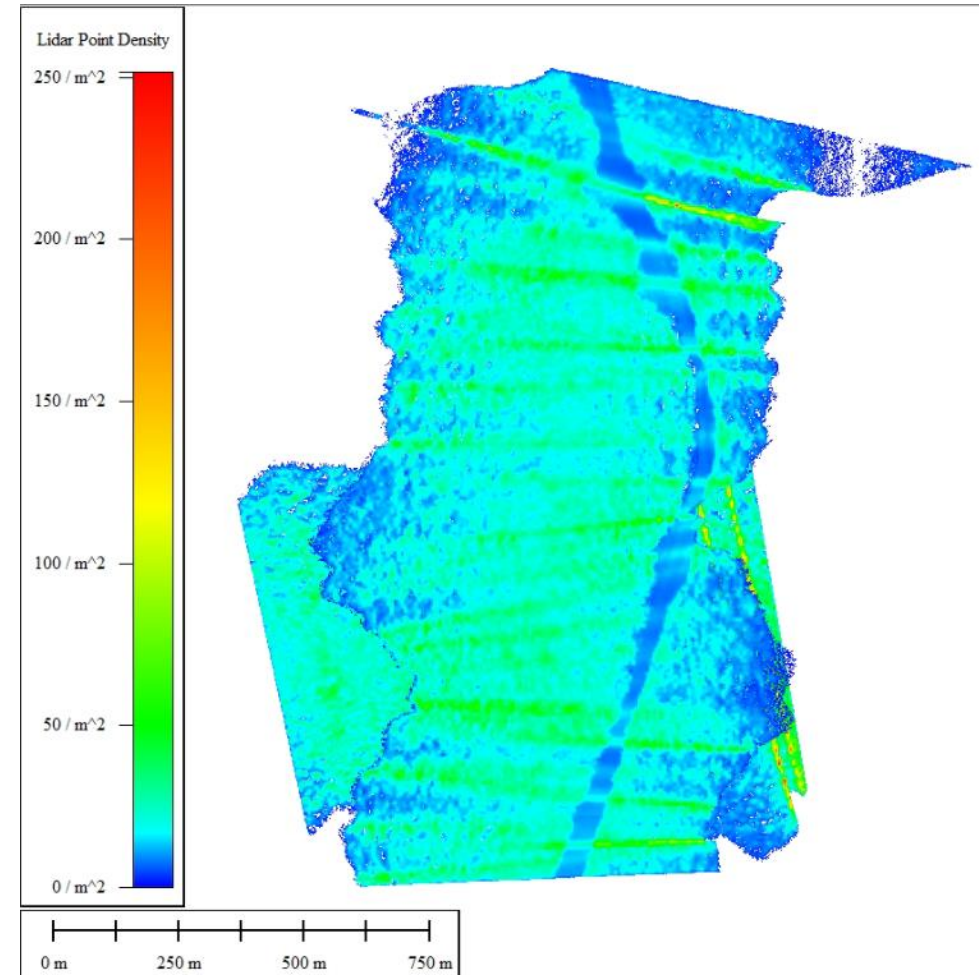
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 1390912/1.39  
point density: all returns 28.50 last only 15.27 (per square meter)  
spacing: all returns 0.19 last only 0.26 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

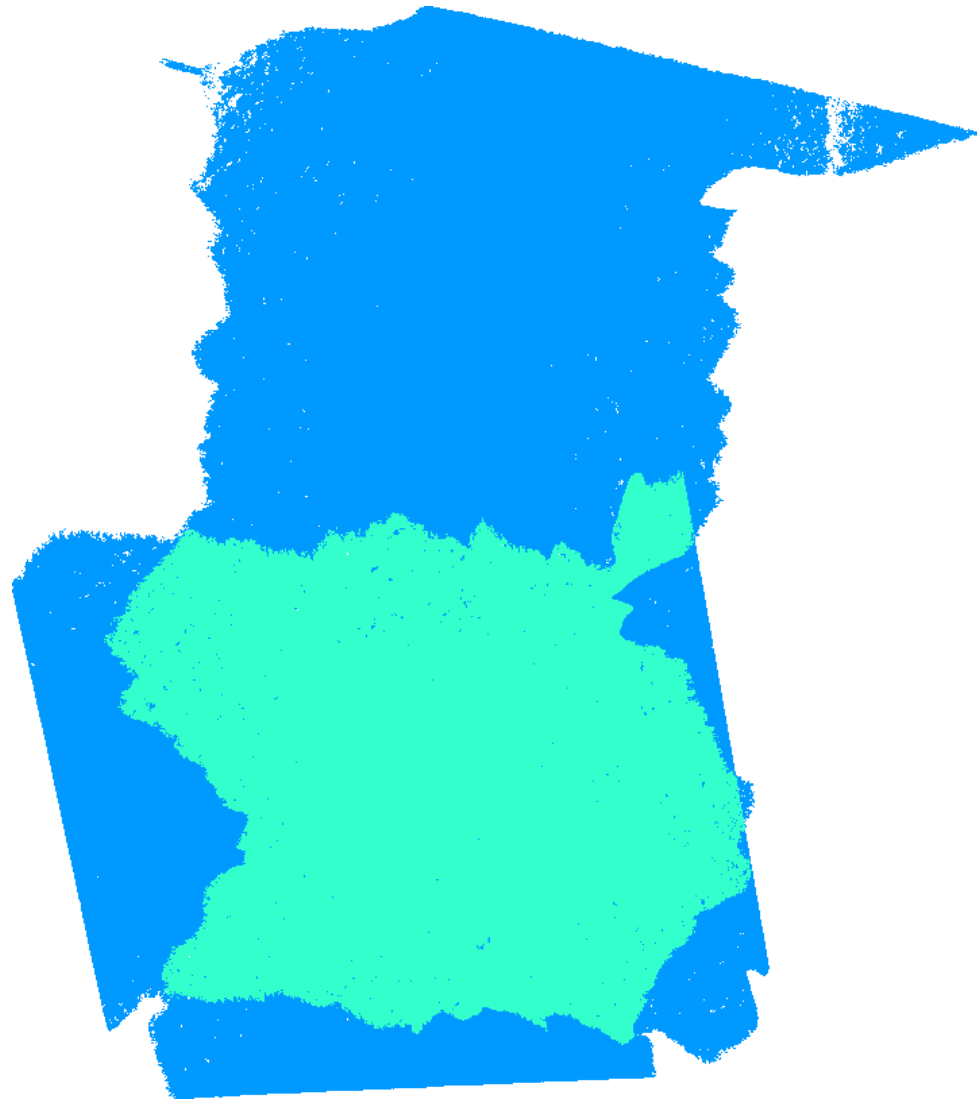
AZUL: 1 PASADA

CIAN: 2 PASADAS

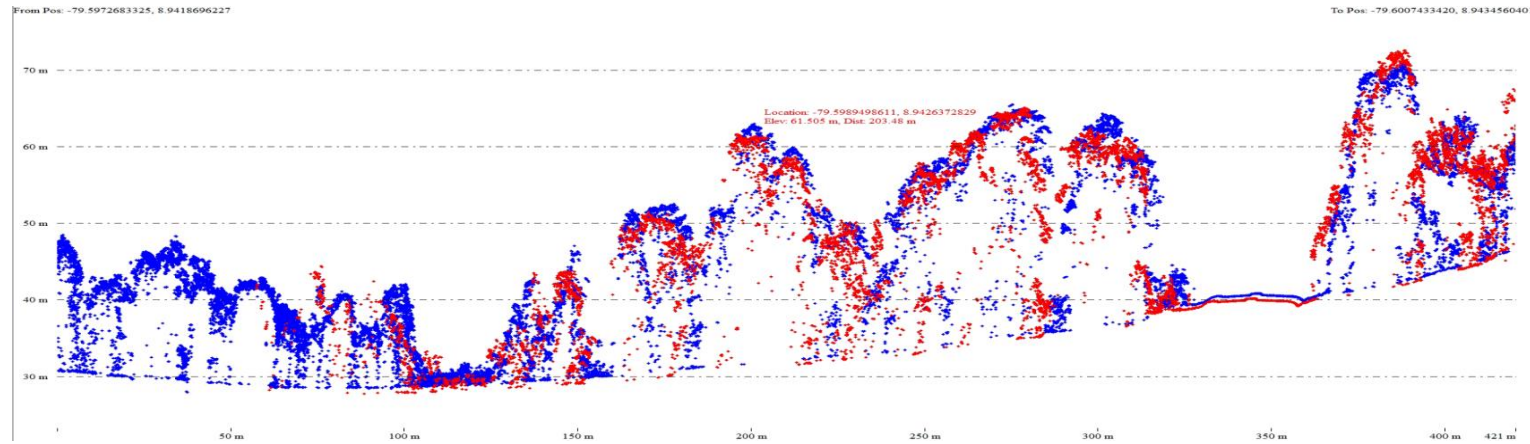
AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

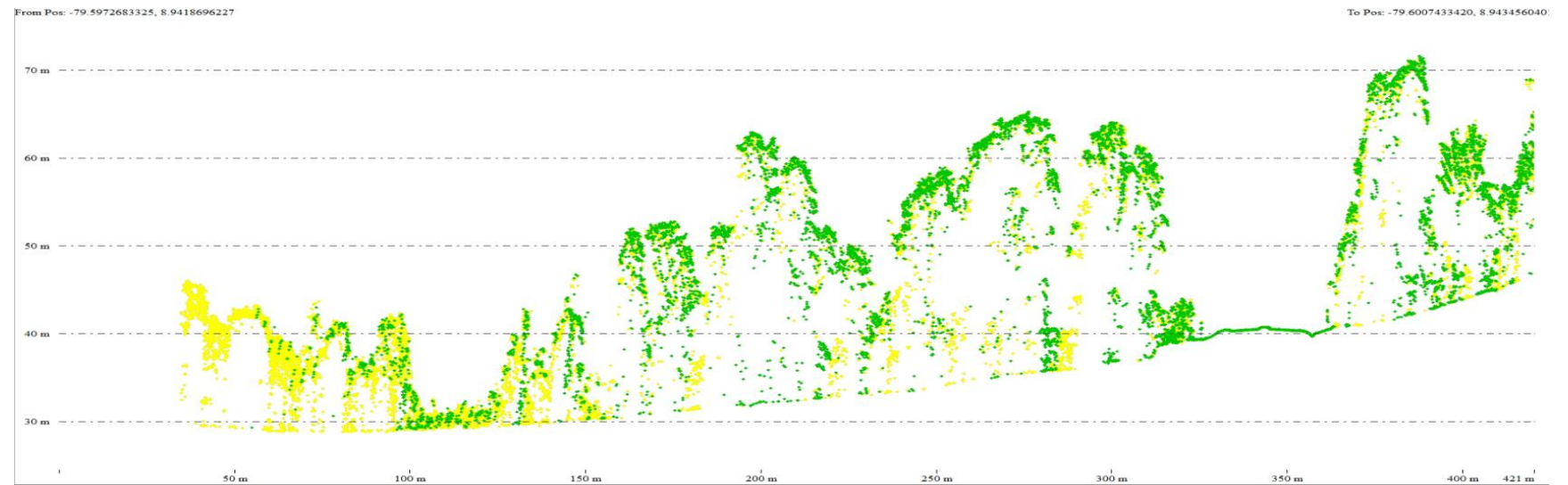
ROJO: 5 PASADAS



## AJUSTE ENTRE PASADAS

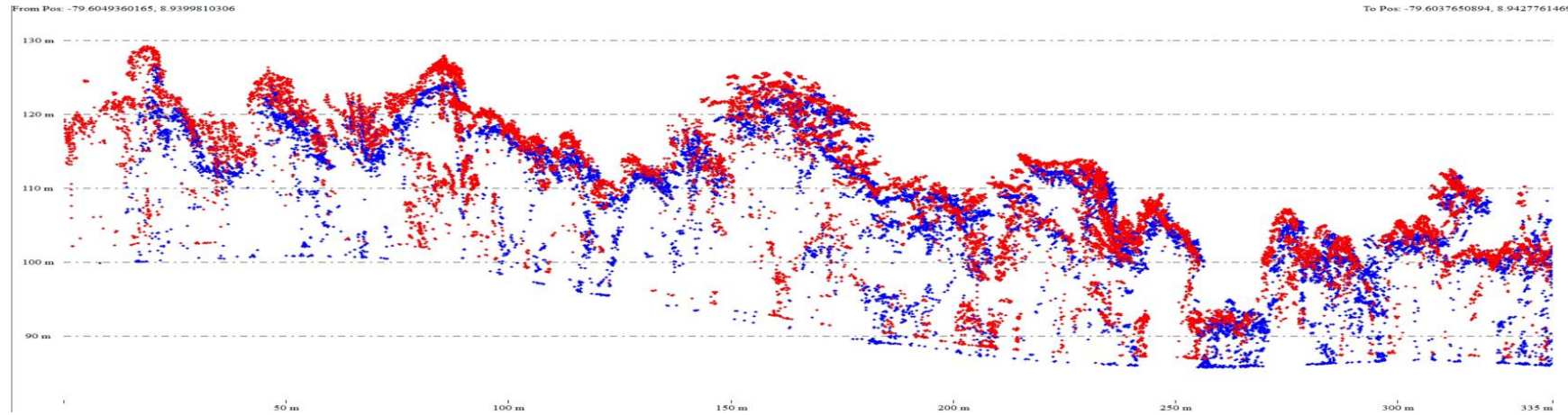


ANTES DEL AJUSTE



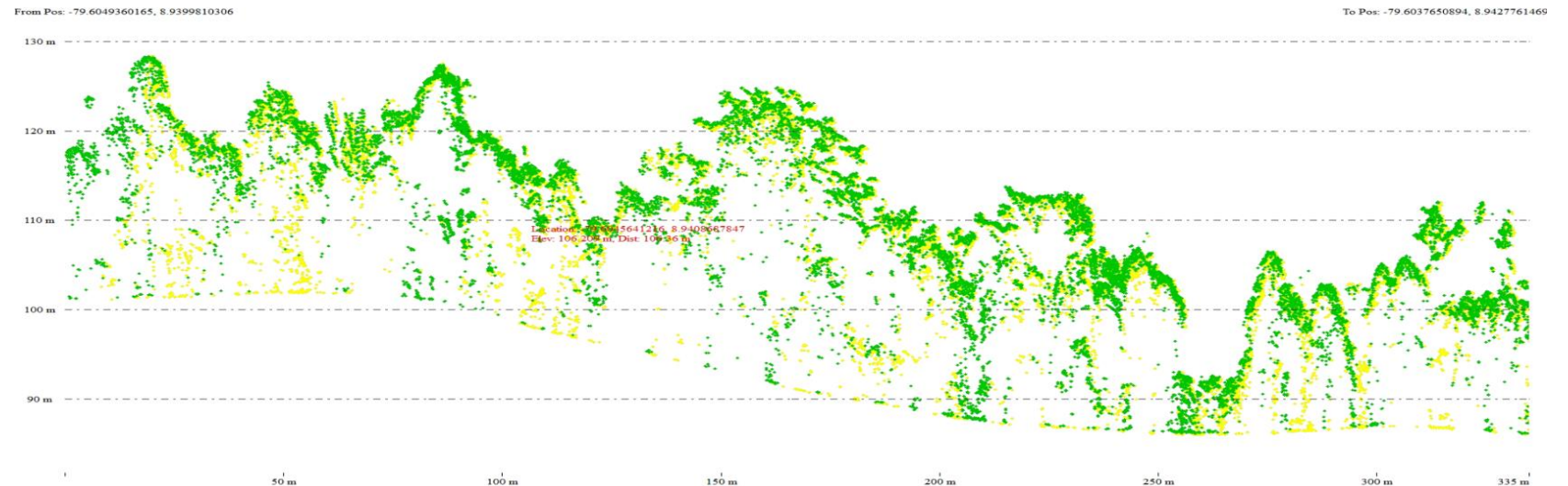
POSTERIOR AL AJUSTE

## AJUSTE ENTRE PASADAS

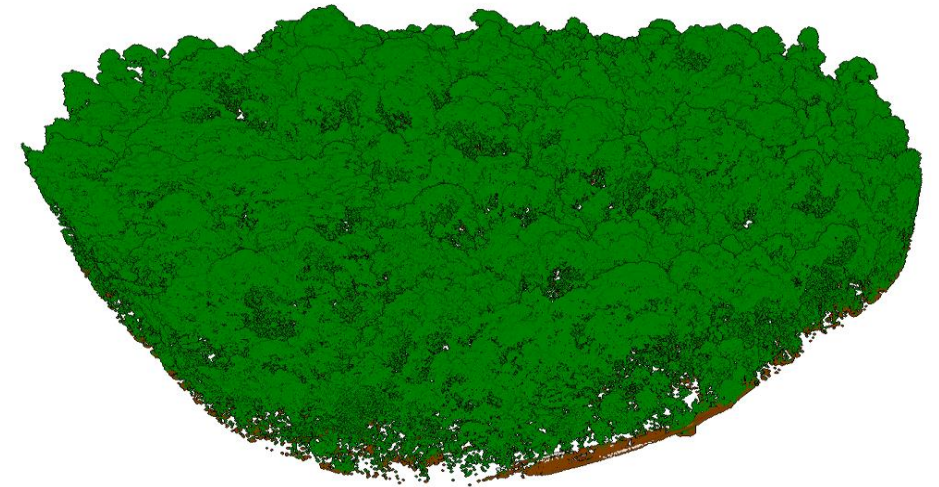
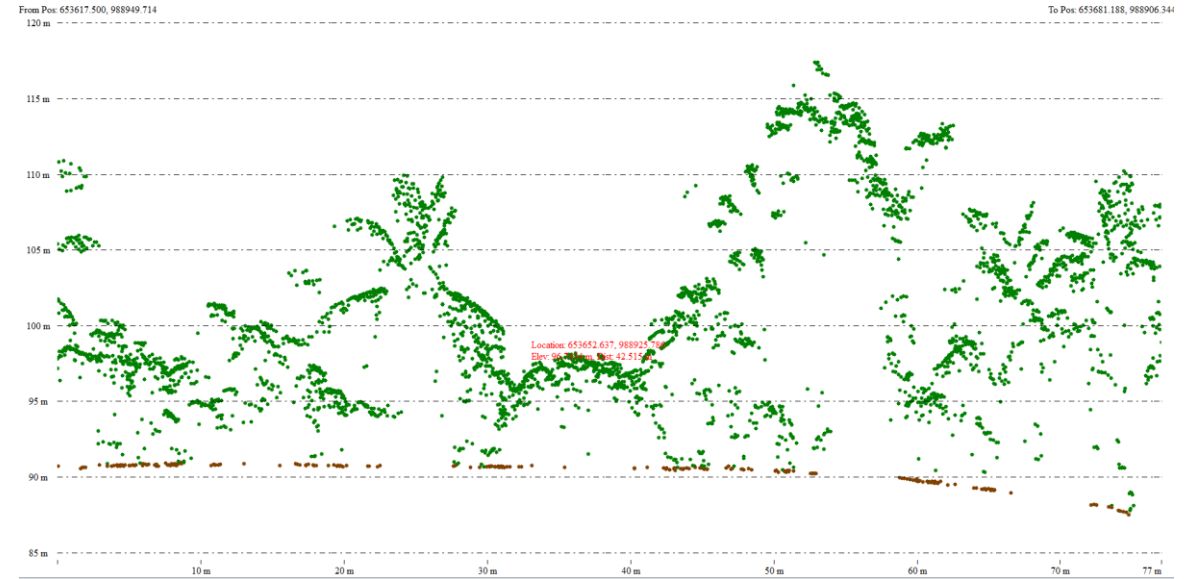
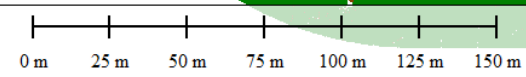
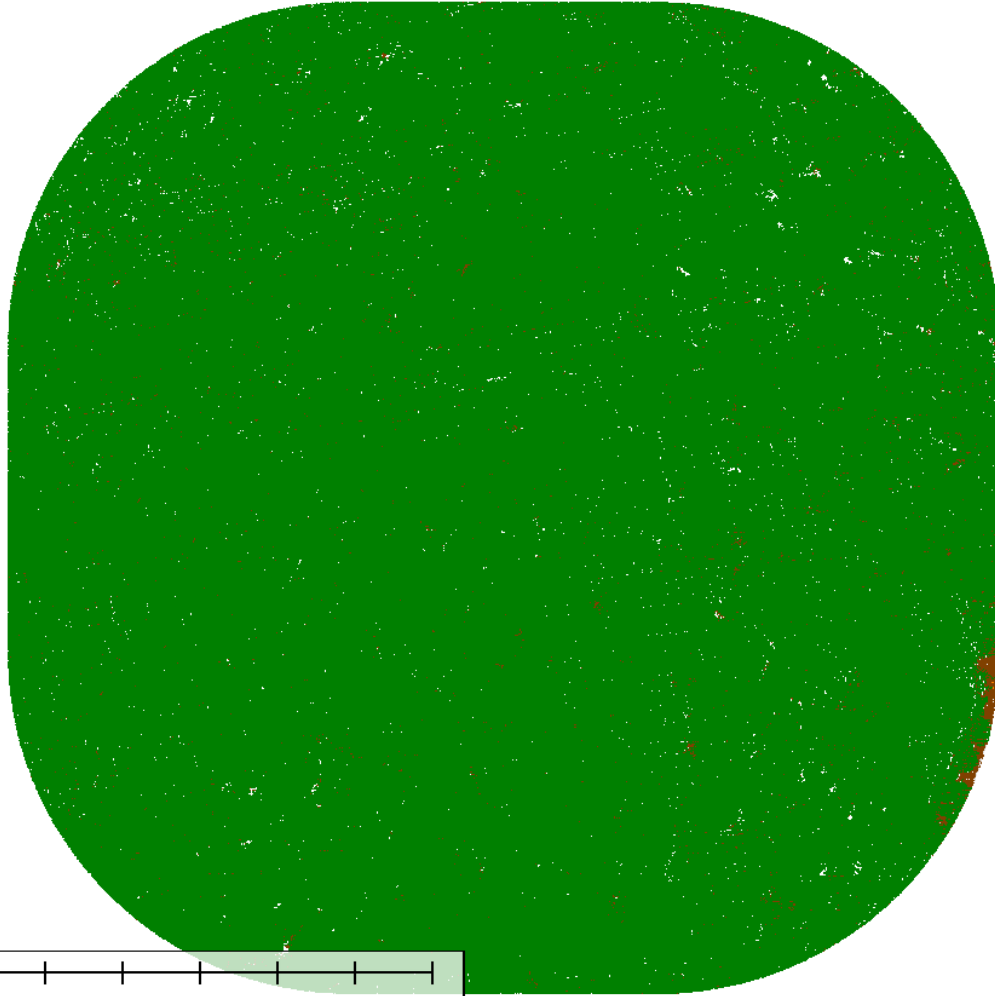


POSTERIOR AL AJUSTE

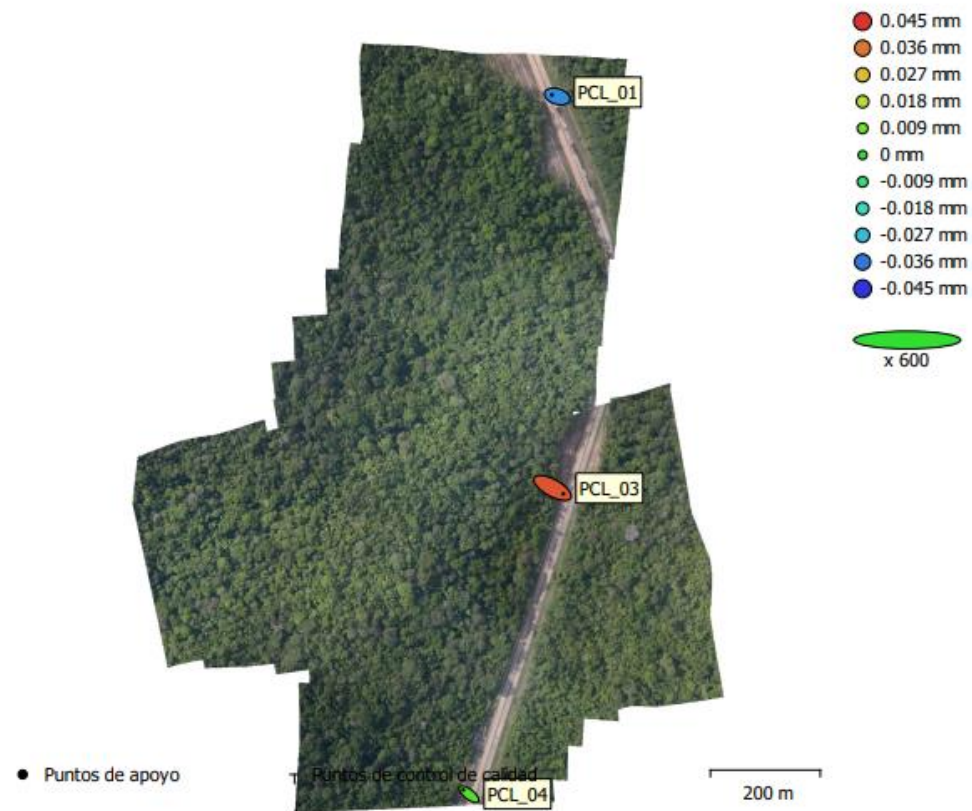
ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)

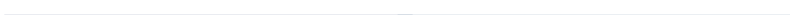


| Número | Error en X (cm) | Error en Y (cm) | Error en Z (cm) | Error en XY (cm) | Total (cm) |
|--------|-----------------|-----------------|-----------------|------------------|------------|
| 3      | 4.66718         | 2.63609         | 0.00303946      | 5.36018          | 5.36018    |

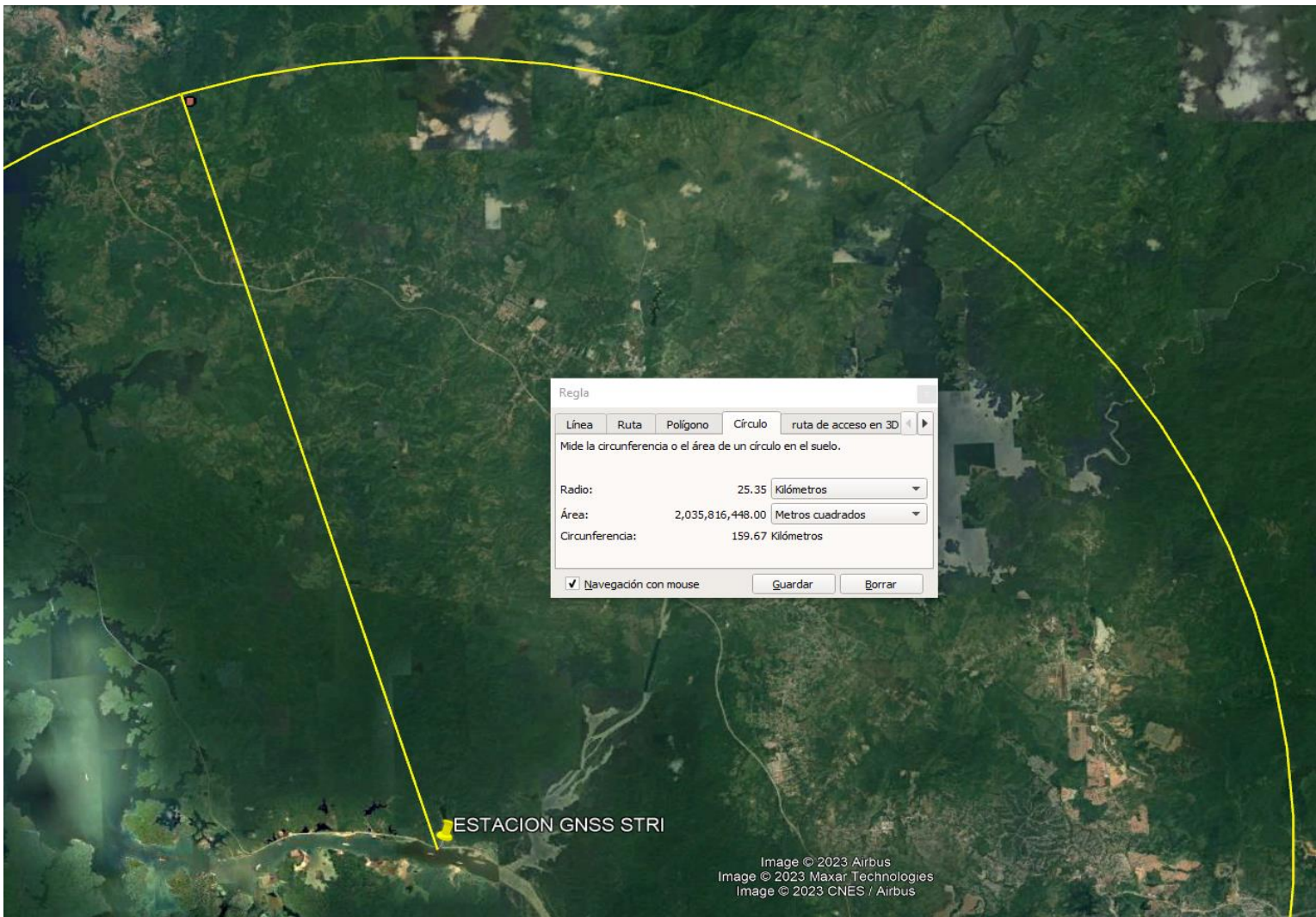
Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.

## CONTROL DE CALIDAD POR ZONAS

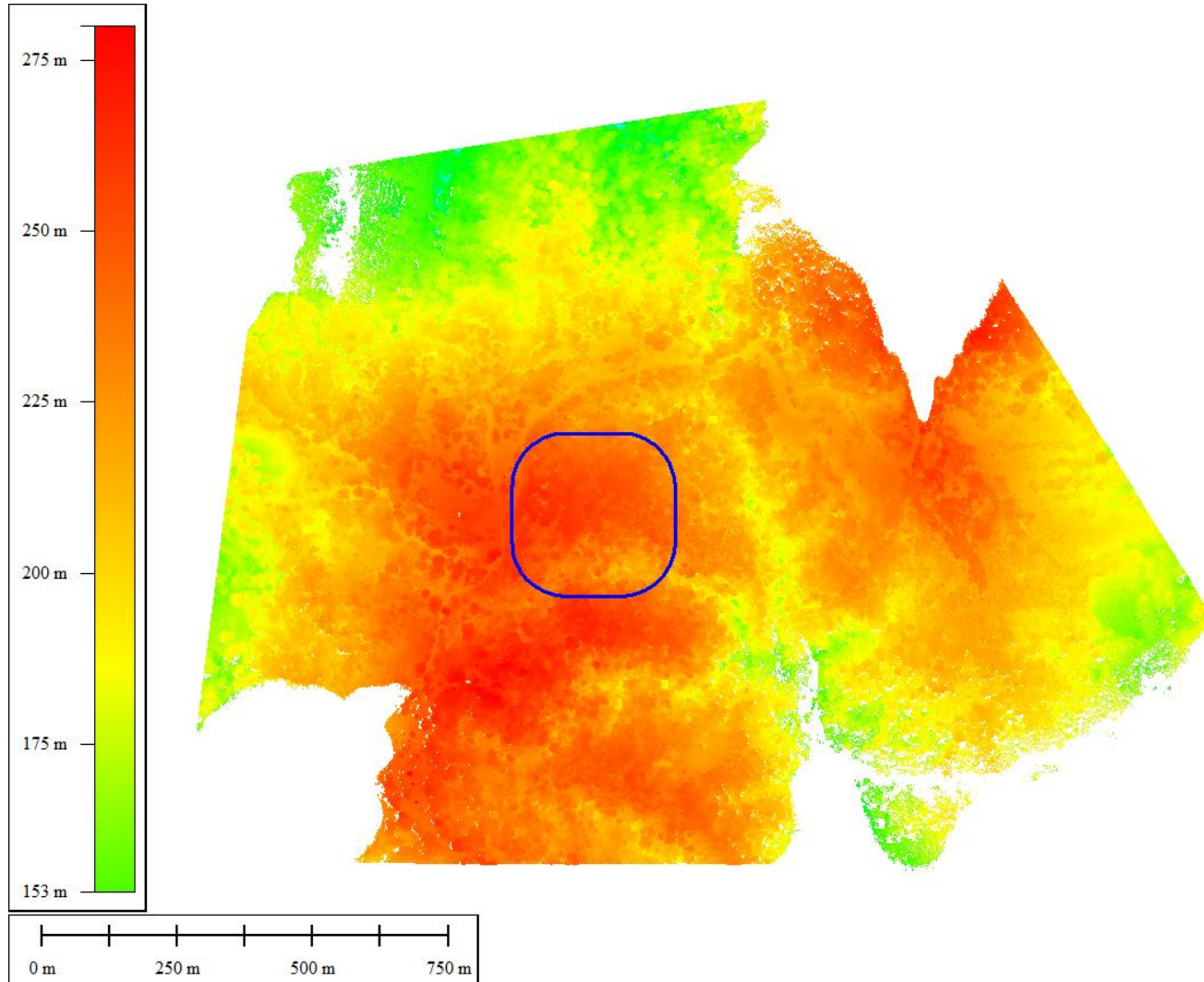
|                                                                                    |                      |
|------------------------------------------------------------------------------------|----------------------|
|  | ISLA BARRO COLORADO  |
|  | ALFAGIA 1            |
|  | ALFAGIA 2            |
|  | GIGANTE              |
|  | PARQUE METROPOLITANO |
|  | SOBERANIA 1 Y 2      |
|  | SAN LORENZO          |
|  | PANAMA-PACIFICO      |
|  | SANTA RITA           |

## ESTACION DE REFERENCIA

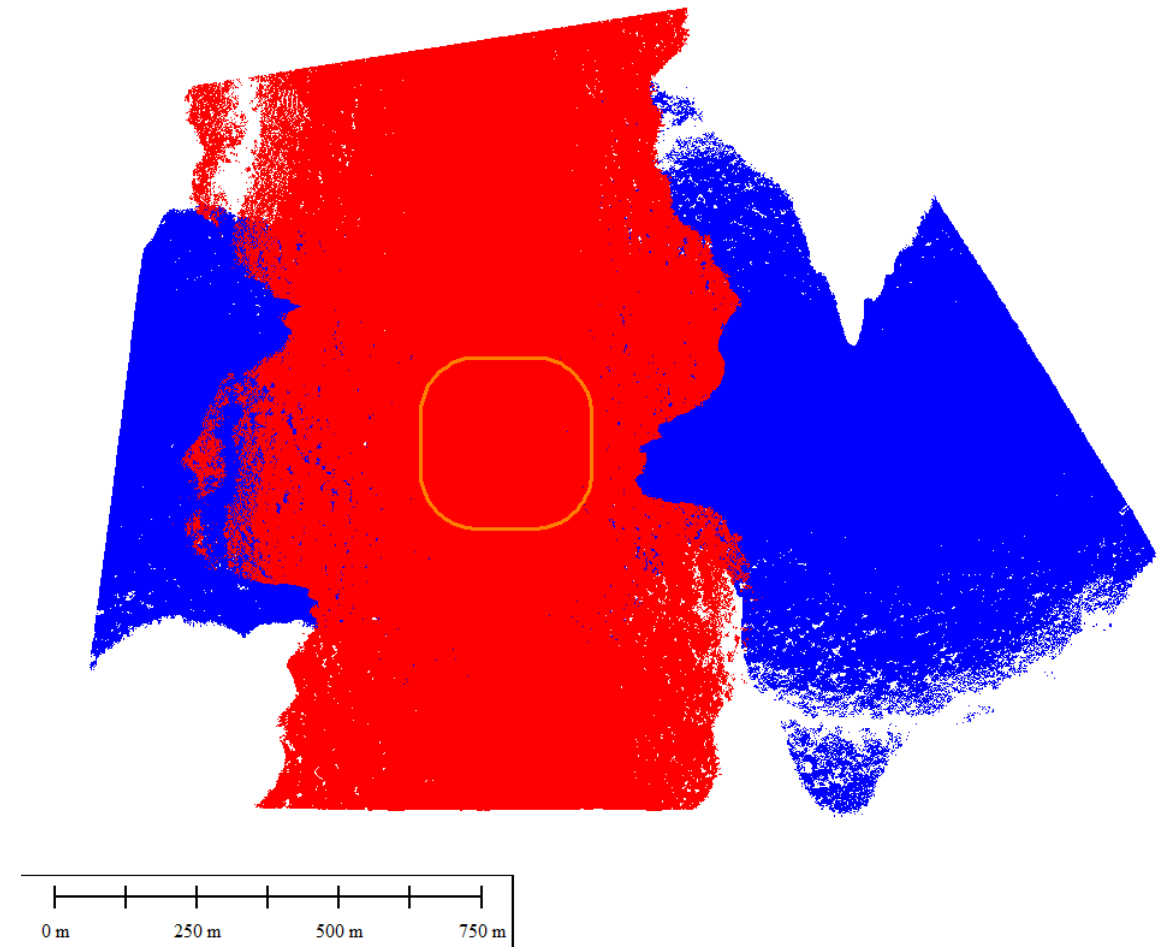


|                                     |                     |                                     |                                                                                                                               |                                                |                  |                          |           |
|-------------------------------------|---------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------|--------------------------|-----------|
|                                     |                     | DESCRIPCIÓN DE PUNTOS DE CONTROL    |                                                                                                                               |                                                |                  | FECHA                    |           |
|                                     |                     |                                     |                                                                                                                               |                                                |                  | 26/05/2023               |           |
|                                     |                     |                                     |                                                                                                                               |                                                |                  | Hoja 1 de 1              |           |
| Proyecto: BARRO COLORADO            |                     | Empresa: STEREOCARTO                |                                                                                                                               | Superficie número: ESTACIONAMIENTOS            |                  |                          |           |
| País: PANAMÁ                        |                     | Provincia: COLON                    |                                                                                                                               | Localización: GAMBOA                           |                  | Codigo: STRI             |           |
| Fotografía de los puntos de control |                     |                                     |                                                                                                                               | Croquis General (Puntos de apoyo y superficie) |                  |                          |           |
| SUR                                 |                     | OESTE                               |                                                                                                                               |                                                |                  |                          |           |
|                                     |                     |                                     |                                                                                                                               |                                                |                  |                          |           |
| INSTRUMENTO                         |                     |                                     |                                                                                                                               | TIPO DE SUPERFICIE (marcar con X)              |                  |                          |           |
| RTK:                                | GPS estático:       | <input checked="" type="checkbox"/> | Estación Total:                                                                                                               |                                                | Pavimento:       | <input type="checkbox"/> | Asfalto:  |
| Marca: SOUTH                        | Antena: Modelo G7   | Serial: S910BA145510501             |                                                                                                                               |                                                | TERRENO NATURAL: | <input type="checkbox"/> | CONCRETO: |
| STR1                                |                     | SISTEMA DE REFERENCIA               |                                                                                                                               | ESTACION DE CONTROL                            |                  | PMEC                     |           |
| UTM                                 |                     | DATUM WGS84                         |                                                                                                                               | Tipo de solución:                              |                  | UBICACIÓN DE CORS        |           |
| NORTE                               | ESTE                | Elevación(Ortfo)                    | UTM Zona                                                                                                                      | 17 Norte                                       | SD ΔX:           | Phase Fixed              |           |
| 1008231.5830m                       | 641229.5284m        | 28.1907m                            | Modelo Geoidal                                                                                                                | EGM2008 (Global) SXS                           | SD ΔY:           | 0.0001m                  |           |
| Global                              |                     | Frequency:                          | L1/L2/L5                                                                                                                      | SD ΔZ:                                         | 0.0001m          |                          | 1.5 - 3.2 |
| Latitud                             |                     | Longitud                            | Altura                                                                                                                        | Observaciones:                                 |                  |                          |           |
| 9° 07' 07.48794" N                  | 79° 42' 53.17793" W | 40.3789 m                           | CLAVO DE ACERO, DE 2.5" INCRUSTADO SOBRE LA ACERA DE CONCRETO DEL ESTACIONAMIENTO DEL MUELLE A 5 METROS DE A LA CERRA FRONTAL |                                                |                  |                          |           |
| Técnico responsable:                |                     |                                     |                                                                                                                               | Fecha de captura:                              |                  |                          |           |
| TOPOGRAFO ROBERTO RESTREPO          |                     |                                     |                                                                                                                               | Empresa contratista:                           |                  | STEREOCARTO              |           |
|                                     |                     |                                     |                                                                                                                               | Fecha de captura:                              |                  | 26/05/2023 6:43:57 a. m. |           |

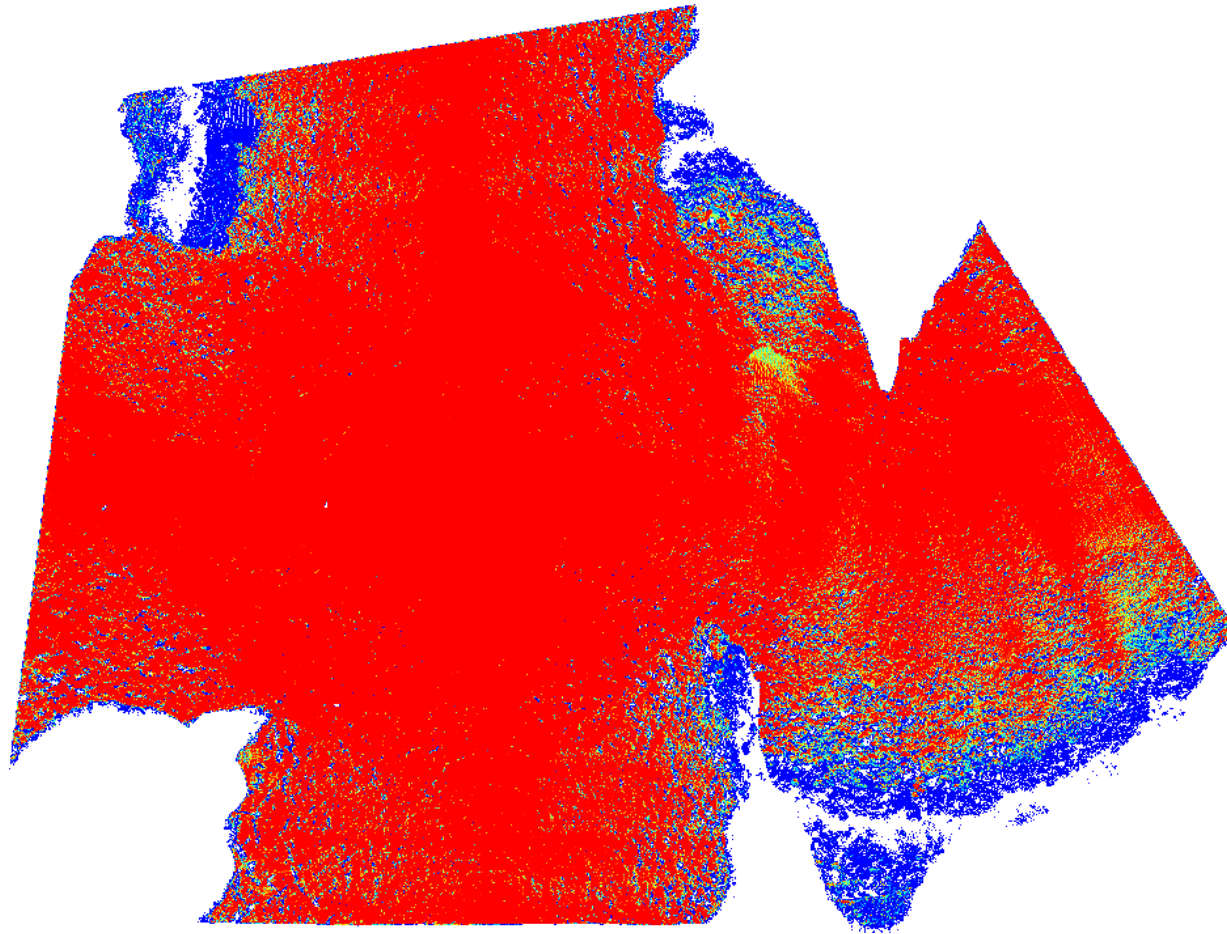
## COBERTURA SEGÚN AREA CONTRATADA



## LINEAS DE VUELO



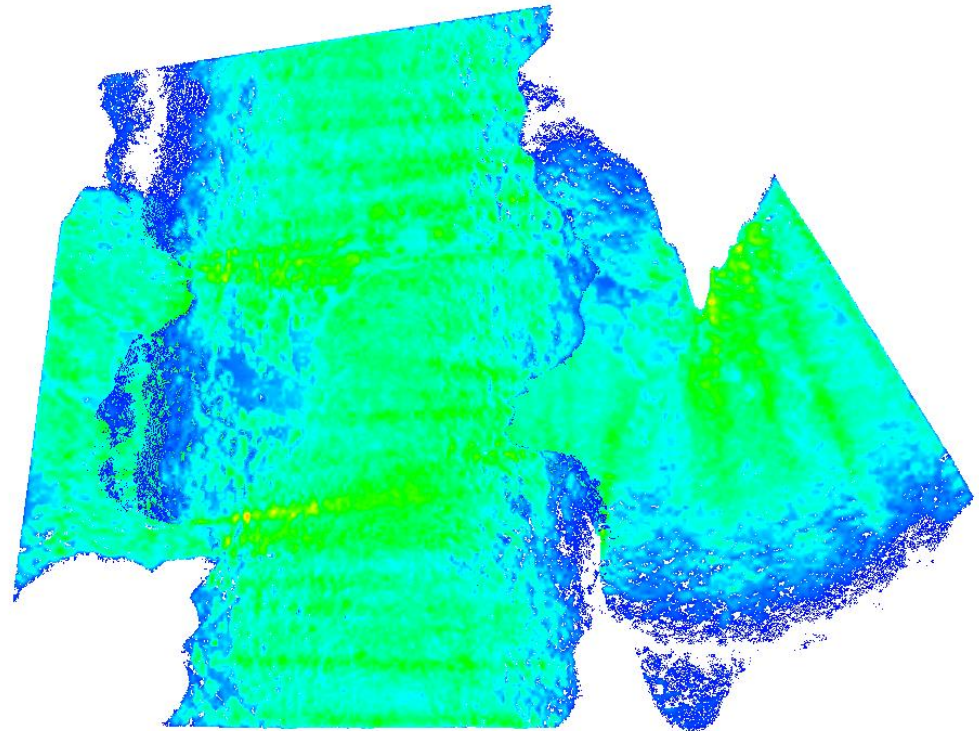
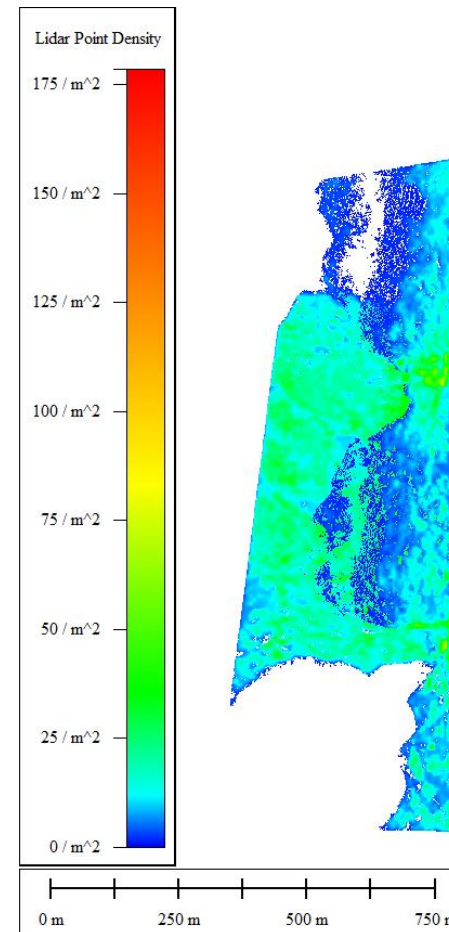
## DENSIDAD DE PUNTOS



EL COLOR ROJO REPRESENTA LAS ZONAS DONDE LA DENSIDAD SUPERA LOS 15 PTS/M2

## LAZ INFO DENSIDAD PROMEDIO

covered area in square meters/kilometers: 1750184/1.75  
point density: all returns 23.25 last only 12.31 (per square meter)  
spacing: all returns 0.21 last only 0.29 (in meters)



## AREAS DE TRASLAPE

SE REPRESENTA EL  
TRASLAPE EXISTENTE ENTRE  
LAS PASADAS PARA  
ASEGURAR LA COBERTURA Y  
DENSIDAD DEL VUELO

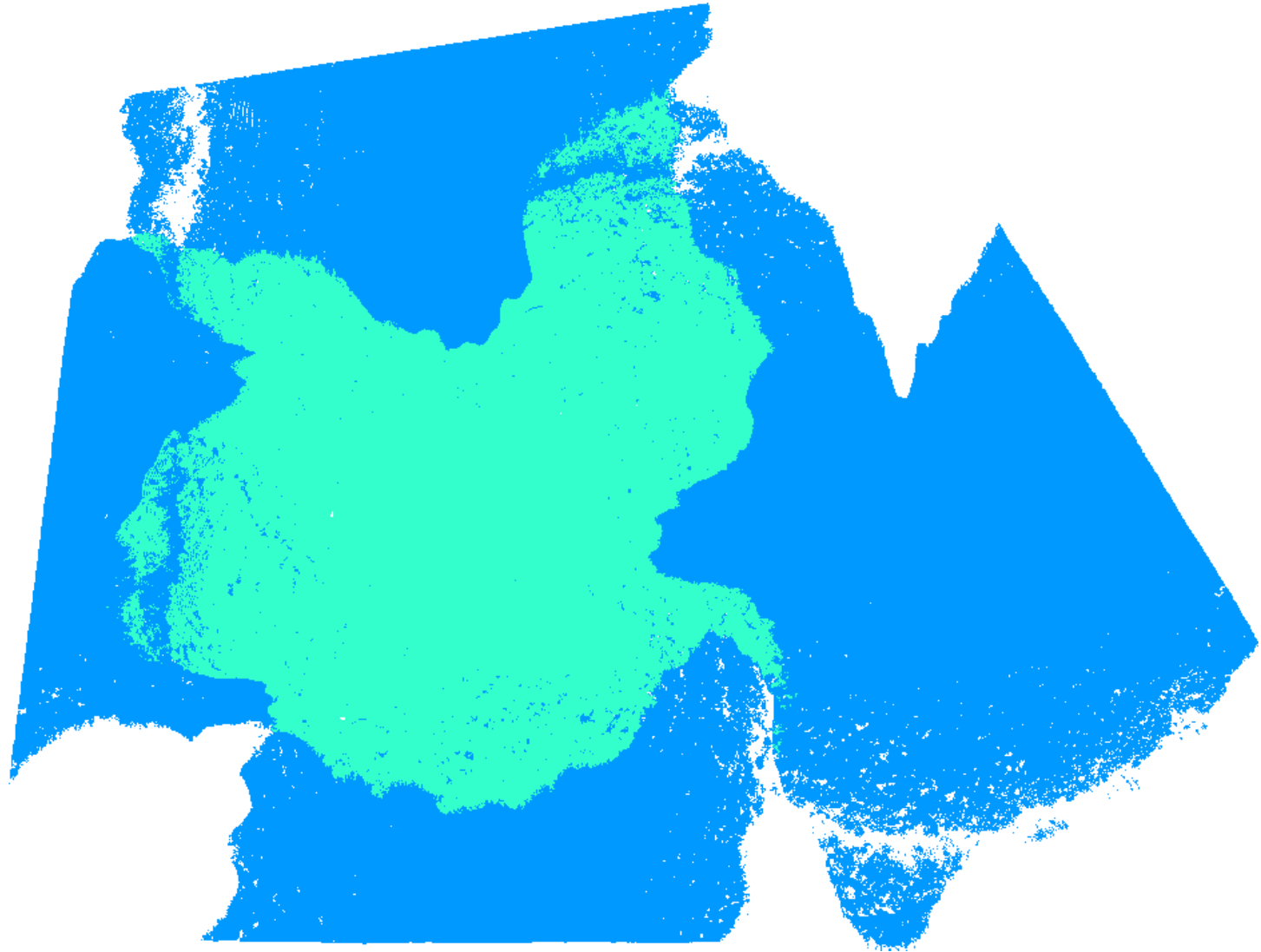
AZUL: 1 PASADA

CIAN: 2 PASADAS

AMARILLO: 3 PASADAS

NARANJA: 4 PASADAS

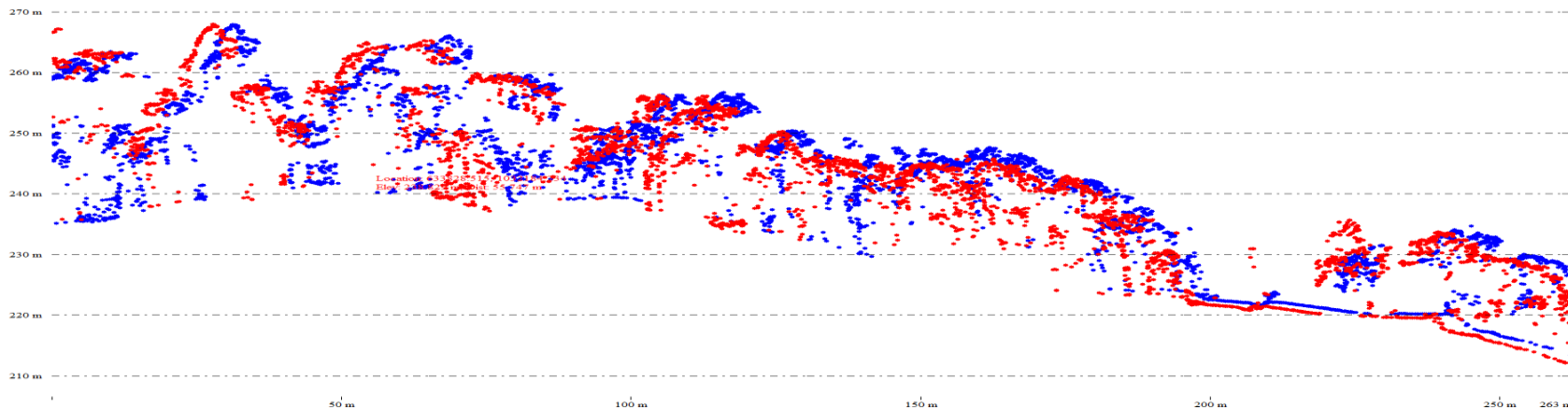
ROJO: 5 PASADAS



## AJUSTE ENTRE PASADAS

From Pos: 633828.515, 1032128.497

To Pos: 633828.515, 1032391.005

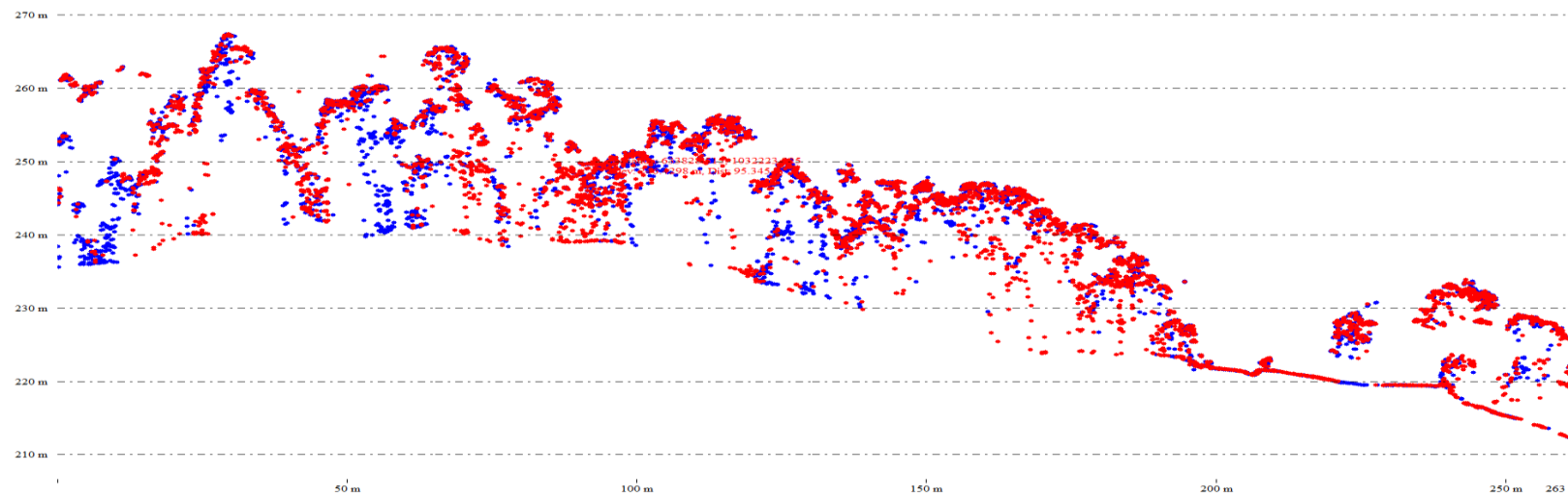


## POSTERIOR AL AJUSTE

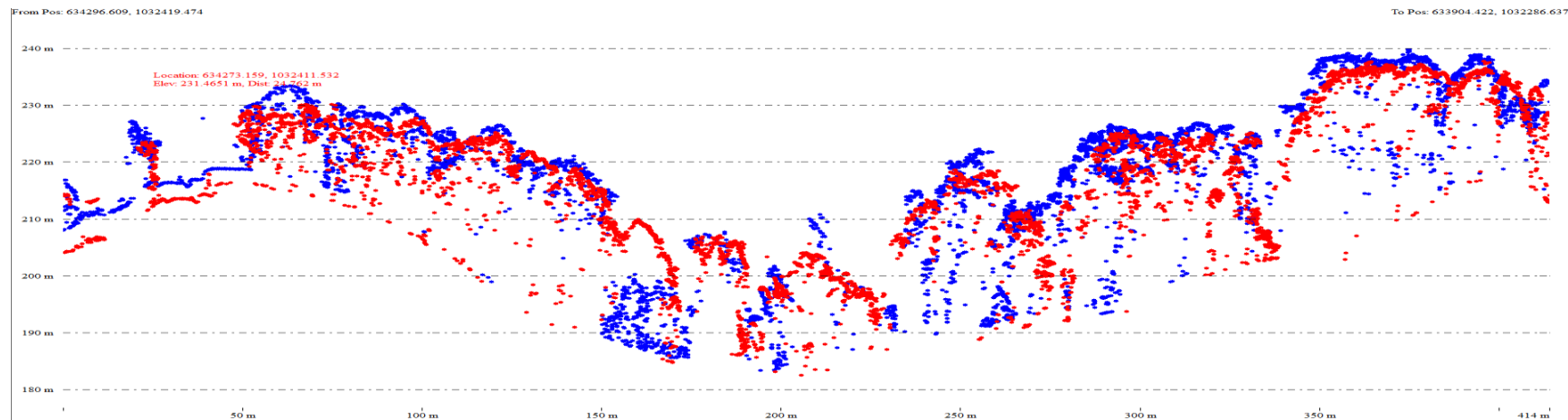
### ANTES DEL AJUSTE

From Pos: 633828.515, 1032128.497

To Pos: 633828.515, 1032391.009

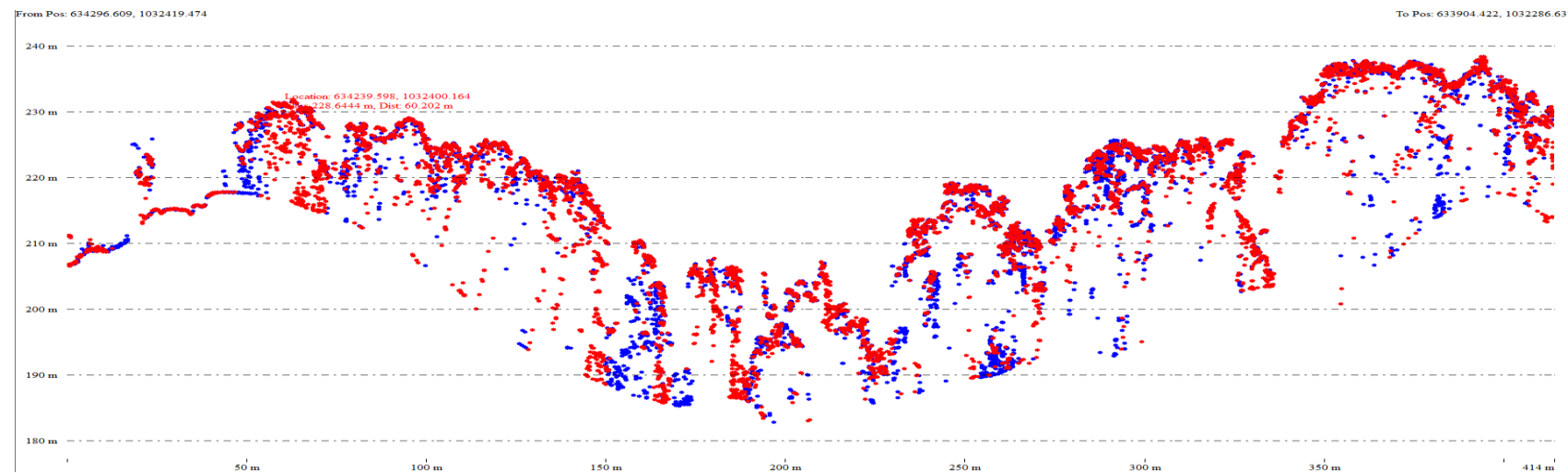


## AJUSTE ENTRE PASADAS

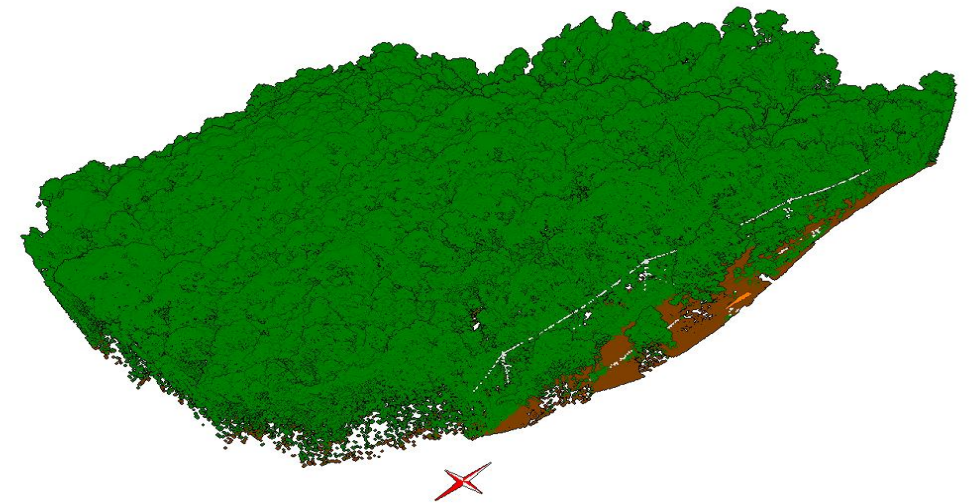
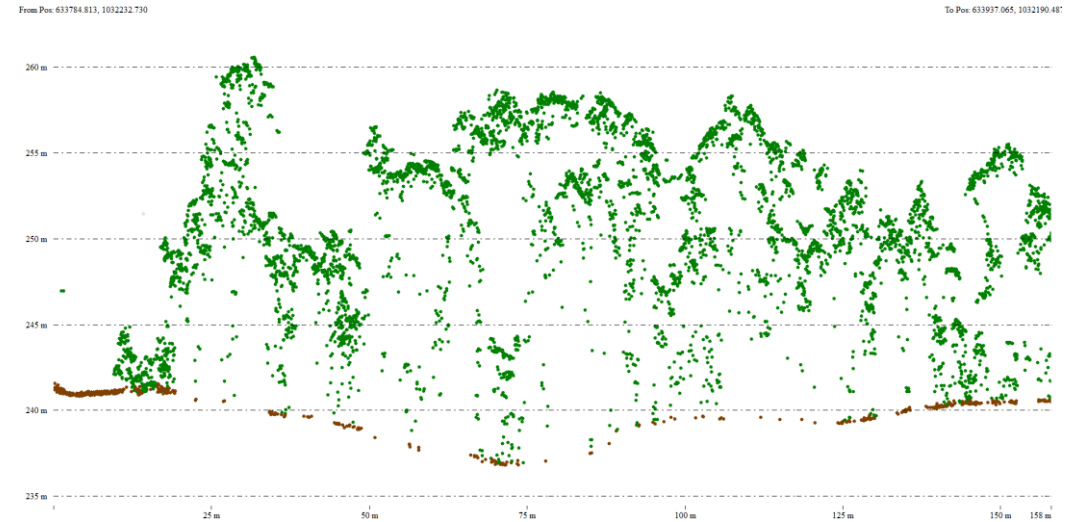
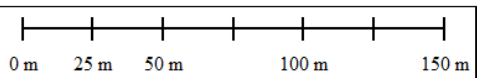
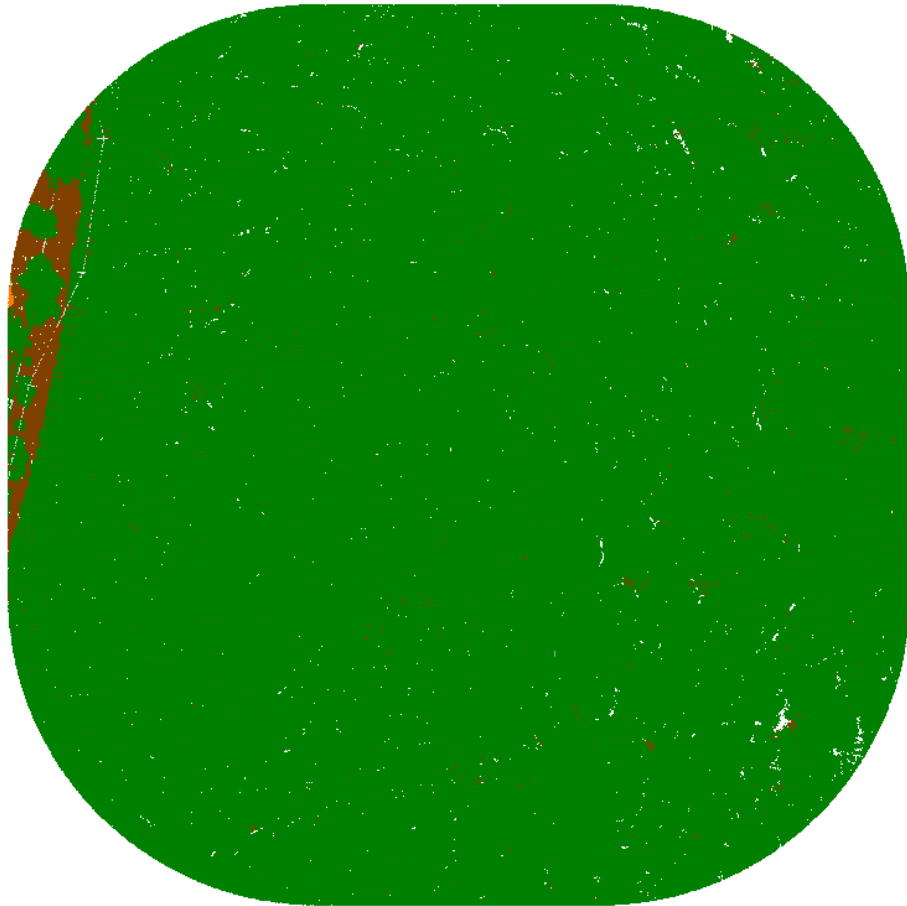


## POSTERIOR AL AJUSTE

### ANTES DEL AJUSTE



## CLASIFICACION NUBE DE PUNTOS



## PRECISIONES ORTOFOTO (CON PUNTOS DE CONTROL OBTENIDOS DE LIDAR)

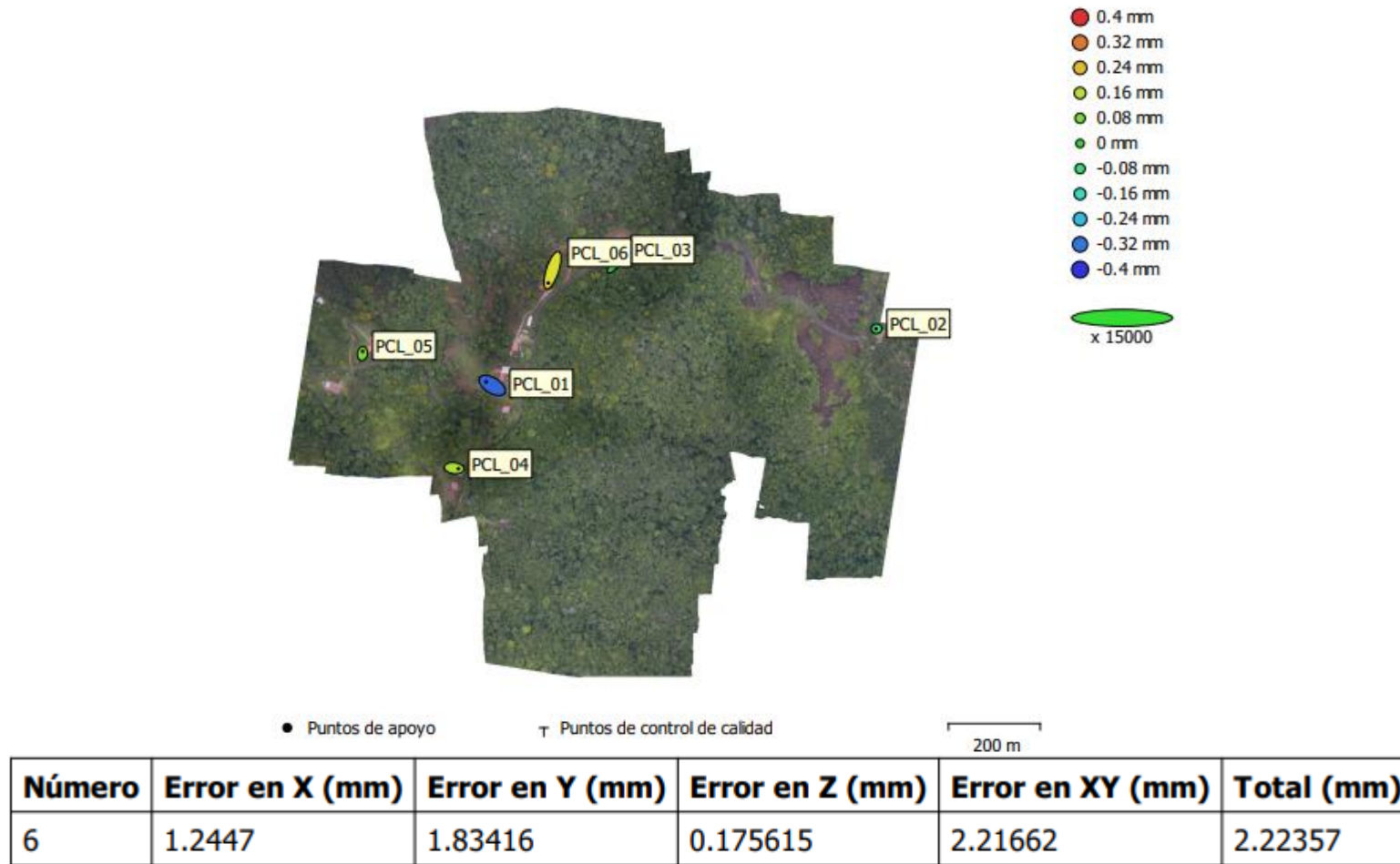


Tabla 3. ECM de puntos de apoyo.

X - Este, Y - Norte, Z - Altitud.