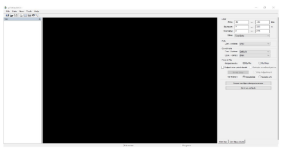

FOXTECH gAirhawk Software User Guide

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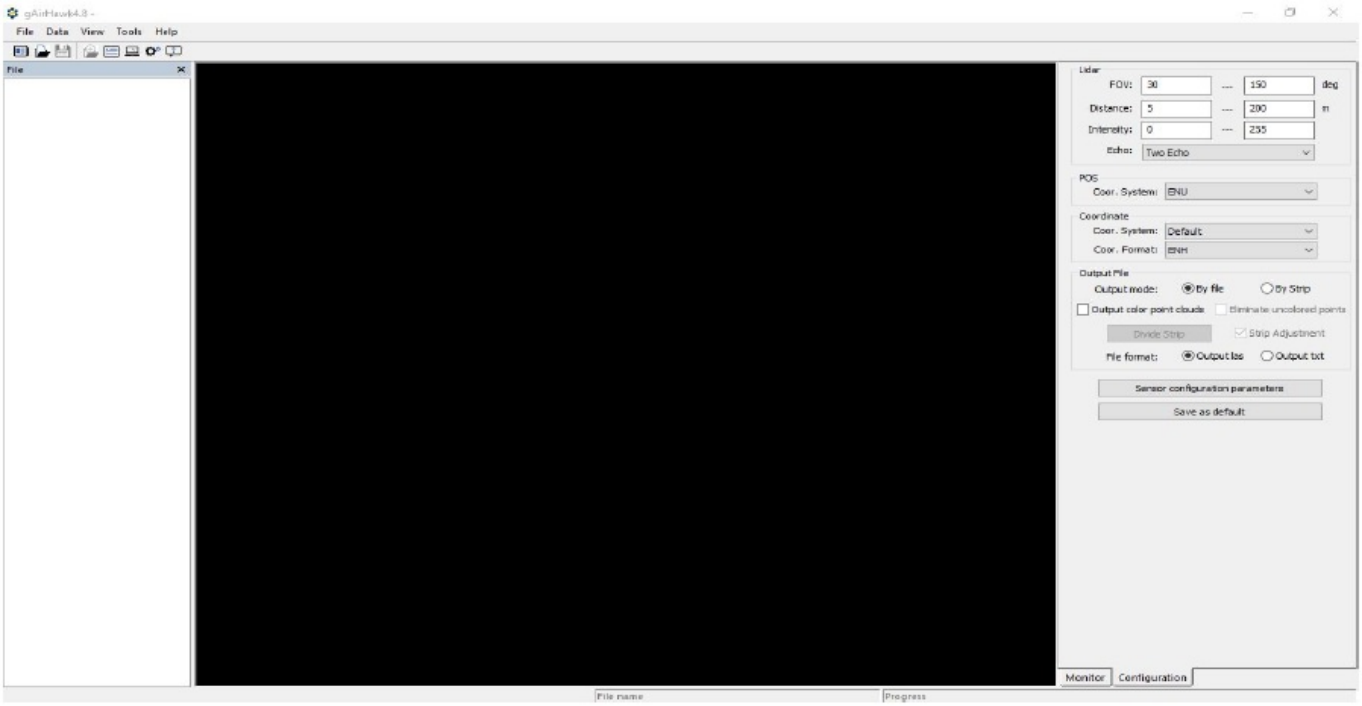
FOXTECH gAirhawk Software



Product Information

gAirhawk Software 4.8 Version

The gAirhawk Software 4.8 Version is a software solution designed to provide a one-key process solution for GNSS differential data input. It requires base data, POS data, lidar data, and image folder (if required) to function properly. The software includes tools for creating new projects, setting coordinate systems, and setting parameters for FOV, distance, intensity, and echo.

Product Usage Instructions

1. **Software Installation:** Install the gAirhawk software on your desktop. After successful installation, double-click the gAirhawk icon to enter into the interface of operation.
2. **Create a New Project:** Click the File icon and select New Project. Enter the name of the file and save it in the same location. Load data by clicking on GNSS Base bar, GNSS Rover bar, Lidar File bar, and Img bar (if applicable). Input coordinates if base station coordinate is required or select approximate coordinates.
3. **Set the Coordinate System:** Click the Tools bar and select Coordinate System. Create a new coordinate system and name it as WGS 84 (for example). Set the parameter for the ellipsoid bar and save the setting.
4. **Set the Parameter:** Set the parameters for FOV, distance, intensity, and echo according to your requirements.
5. **Divide Strip:** Click the Divide Strip Bar to open the trajectory dialogue. Enter into the Manual Divide Strip interface and choose the strips according to your requirements. Select only straight strips and remove radius parts by clicking on the strip from start to end with left-click (mouse, not holding the mouse).

Precautions

Note

1. One-Key Process solution
    - It means the all parameters are recorded in the LiDAR unit (Hardware) before Shipment, and the offset

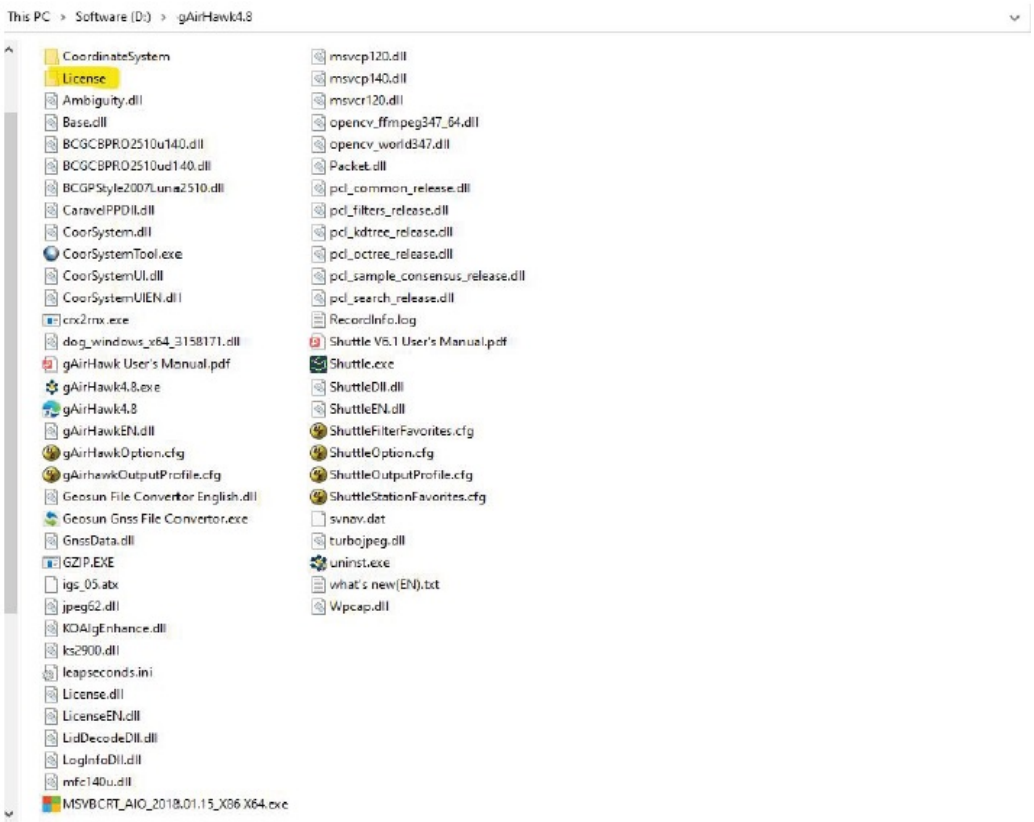
(The position of the Antenna to the position of LiDAR center, also called Lever Arm) should be fixed, then it supports the One-Key Process solution.

- When process the data, only add the Base data, POS data and LiDAR data(Camera folders if necessary) not input the parameter manually.
- Of course we support One-Key Process firmware for the clients, just share us the parameter of offset (The clients use their designed mounting kit). Some type (shipped before Nov 2020) do not support One-Key Process.

2. The gAirhawk software (4.8 version) is combined trajectory processing and lidar data processing together in gAirhawk software, it is only for LiDAR System which support the One-Key Process solution. If do not support One-Key Process solution, the trajectory processing should be in Shuttle software separately.
    - Please install the gAirhawk software at D/E/F drive, not C drive. Just in case it works in abnormally (In Window 10 system, user' full control should be get if install on C drive).
    - Please copy and paste the license.dat file to the license folder which locate in the content of gAirhawk software.

Software Installation

- The following figure is the content of gAirhawk software after installation successfully.

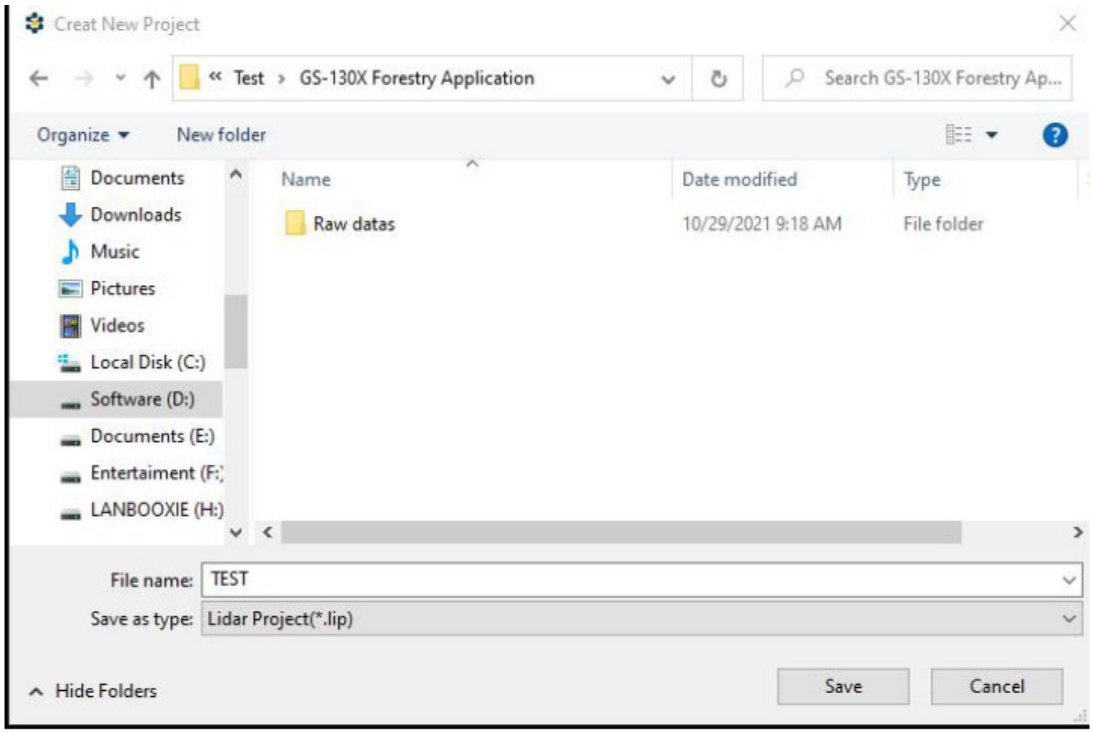


- Before running the gAirhawk software, please make sure the files (base data, POS data, lidar data and image folder if required) are ready.

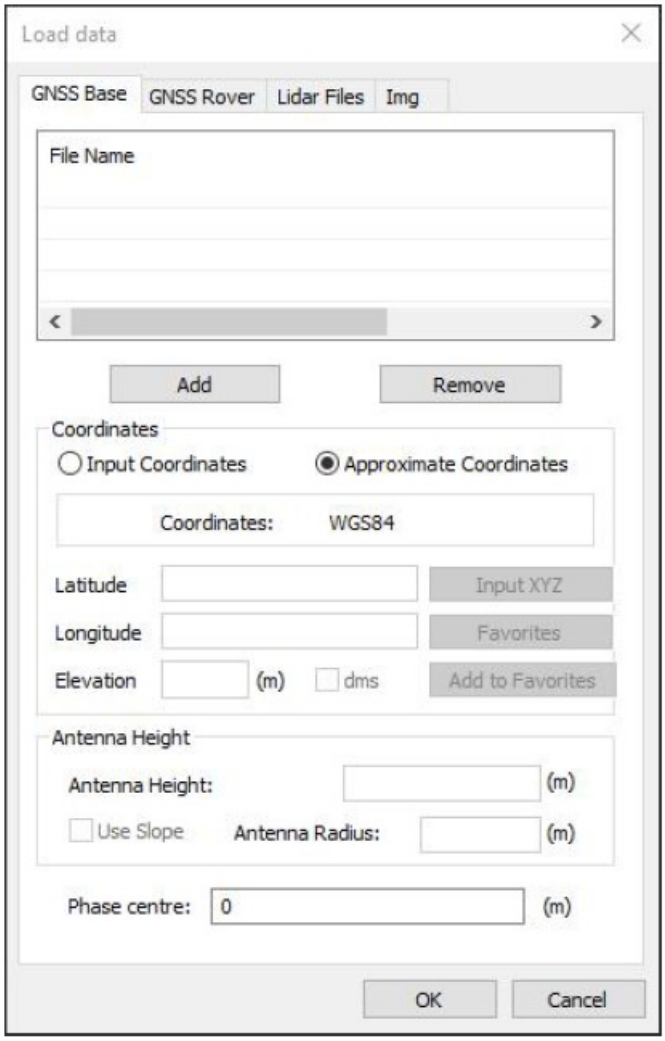
- Double click the gAirhawk icon on desktop, enter into the interface of operation, as following.

Create a New Project

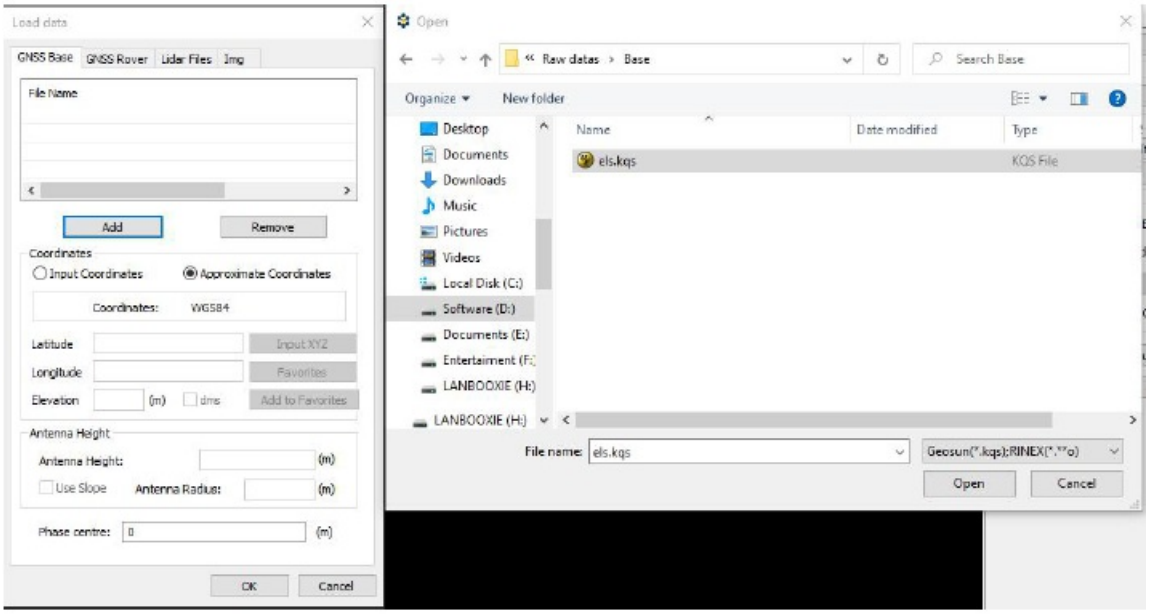
Click the File icon, select New Project, enter into Create New Project interface,as following

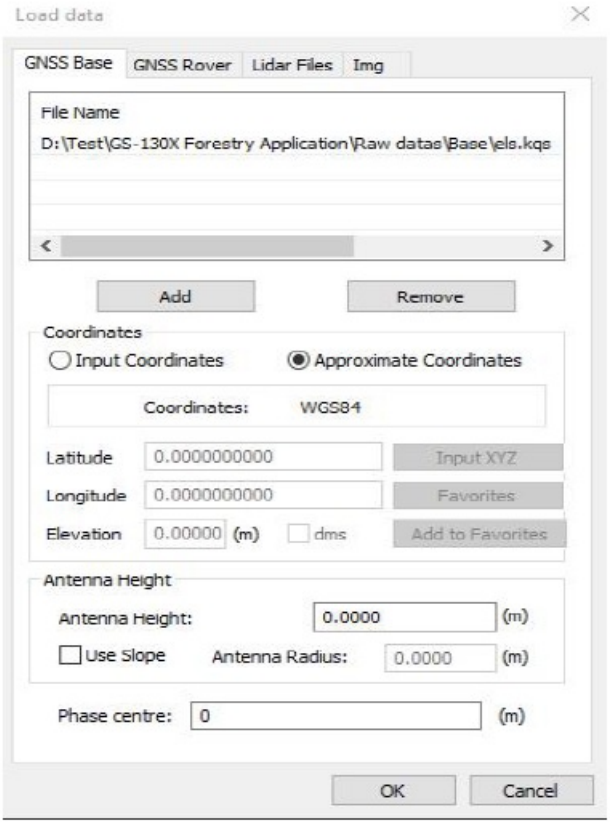


- The file is namedas the TEST, then click the Save icon(Save the file with the same location), enter into Load data interface, as following.

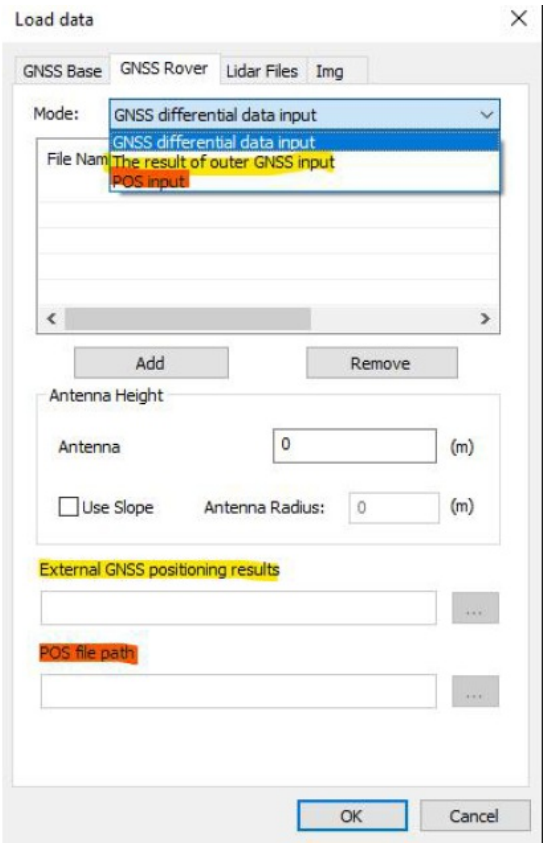


- There are GNSS Base bar, GNSS Rover bar, Lidar File bar and Img bar (Only for the lidar system with Camera)

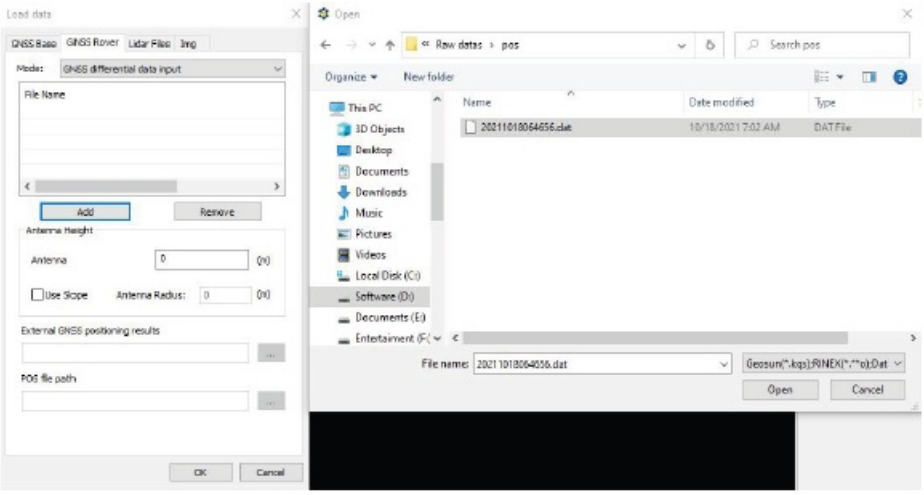




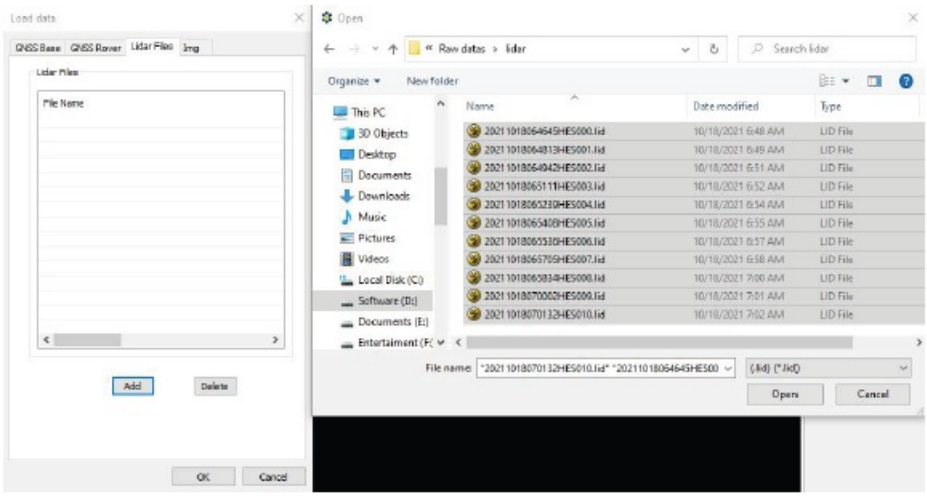
- Click the GNSS Base bar enter into GNSS Base interface, click the Add bar to add the base data, as following
- Please input coordinates if base station coordinate required.
- Or select Approximate Coordinates.
- Click the GNSS Rover bar enter into GNSS Rover interface.



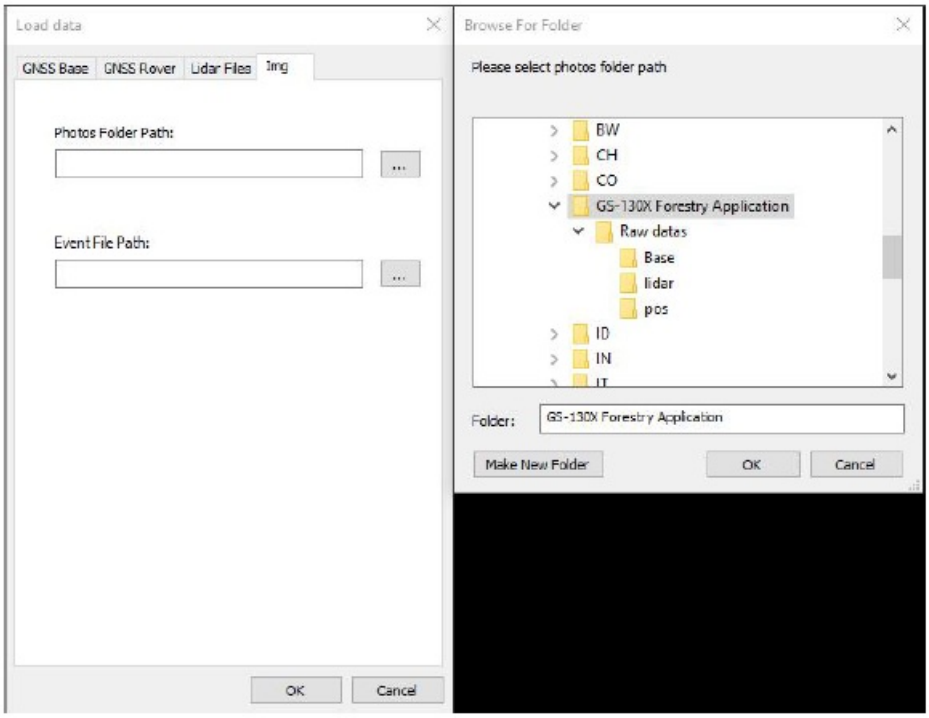
- **The Mode:** there is drop-down menu,as follows 6-2.
- Hereby we only select the GNSS differential data input for One-Key Process solution.
- If select The result of outer GNSS input, only External GNSS Positioning results is available.
- If select POS input, only POS file path is available.
- Click the Add bar to add the GNSS Rover data, as following



- Click the Lidar files bar enter into Lidar files interface, click the Add bar to add the lidar files, as following

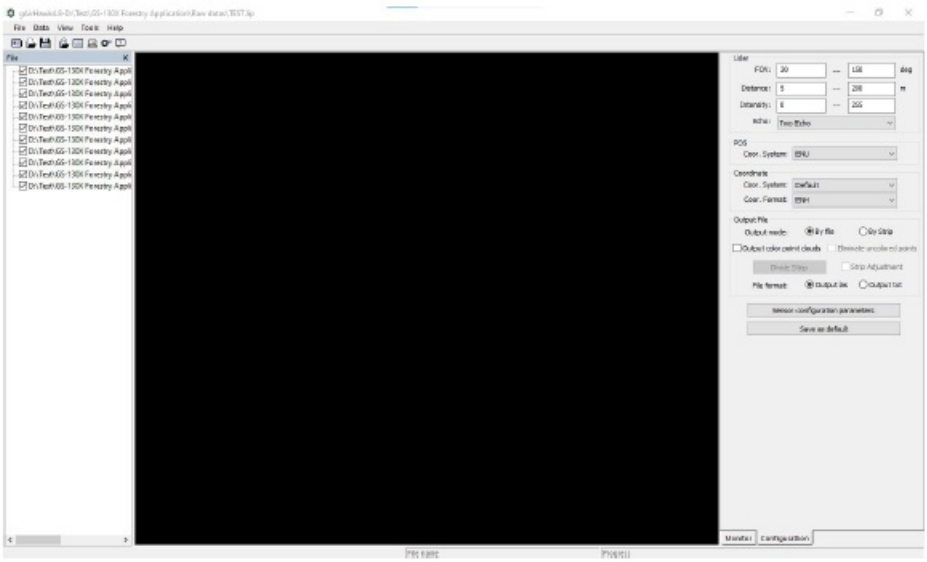


- Click the Img bar enter into Img interface, click the checking box to load the Photos Folder Path, as following (If the LiDAR System is with Camera)



- In this step, no need to load Event File Path (Only for One-Key Process solution)

Click the OK bar, finish Adding files, as following (7-1)

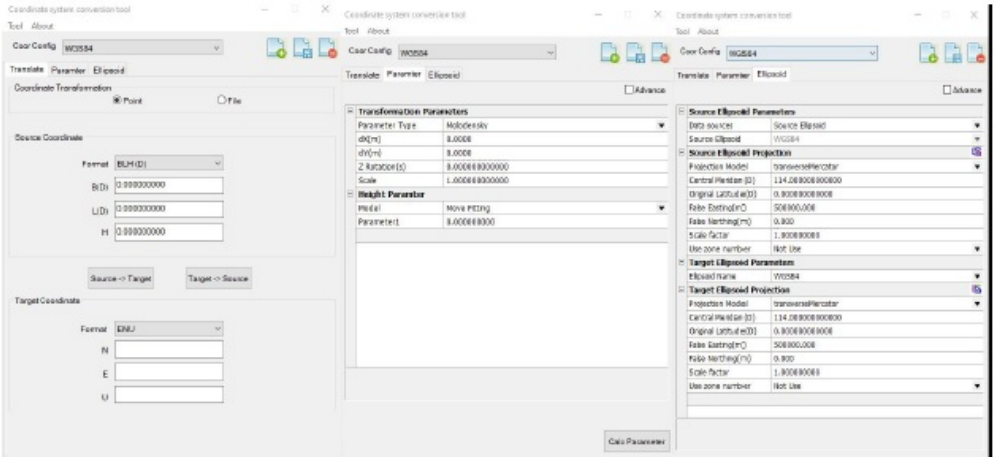


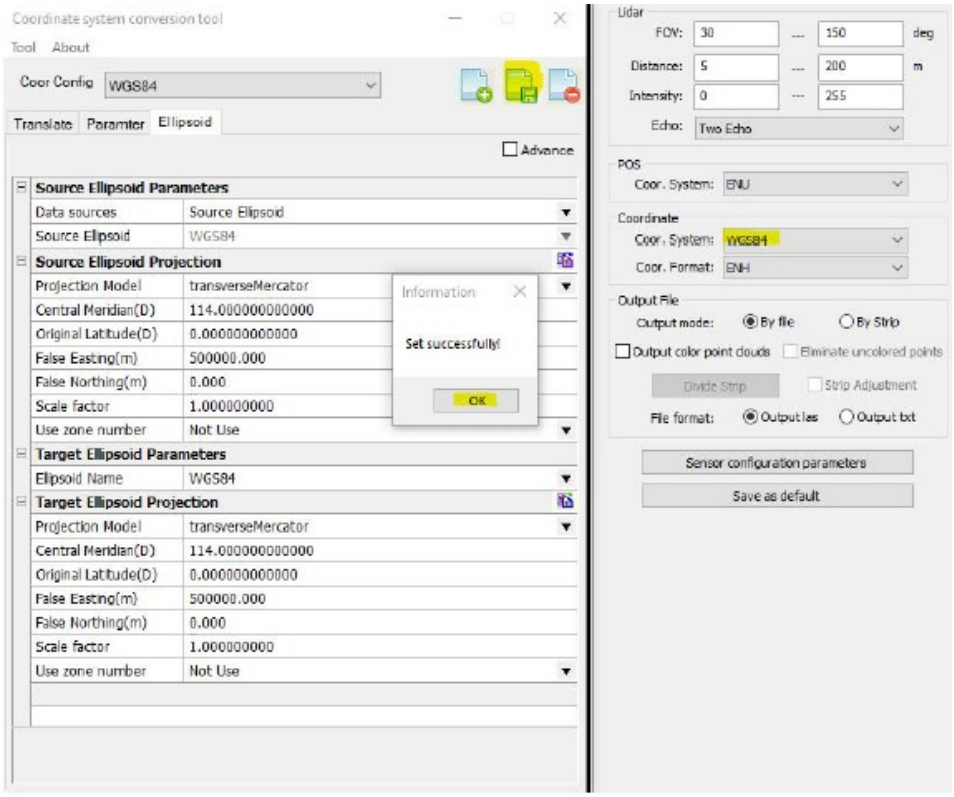
- After processing data and color point cloud output, if a mismatch happens(image and point cloud), please delete the first photo from the beginning whatever the number of trigger event and the photos is.

Set the Coordinate System

- Click the  Tools bar, select Coordinate System, enter into the Coordinate System Conversion Tool interface.
- Click the-, Create a new coordinate system, name as WGS 84 (For example), click the OK icon, enter into Coor Config interface.
- There are Translate bar, Parameter bar and Ellipsoid bar

In this step, only click the Ellipsoid bar to set the parameter, as follows

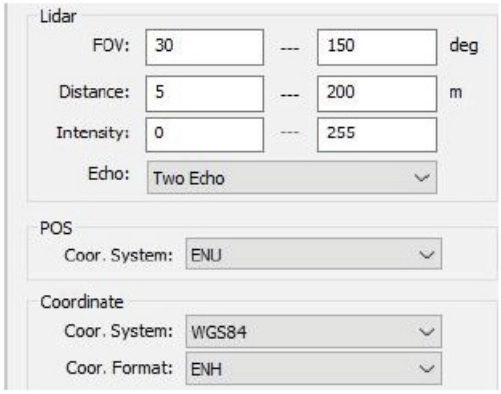




- click the OK bar to save setting.
- In this step, the local coordinate system is available according to the clients requirements. If not familiar with

setting, please check the local surveyor or consult engineers.

Set the Parameter



- **FOV:** 30-150 (According to Recommendation)
- **Distance:** 5-200M (According to flight height)
- **Intensity:** 0-255
- **Echo:** Two Echos (Two and Triple Echos are available)

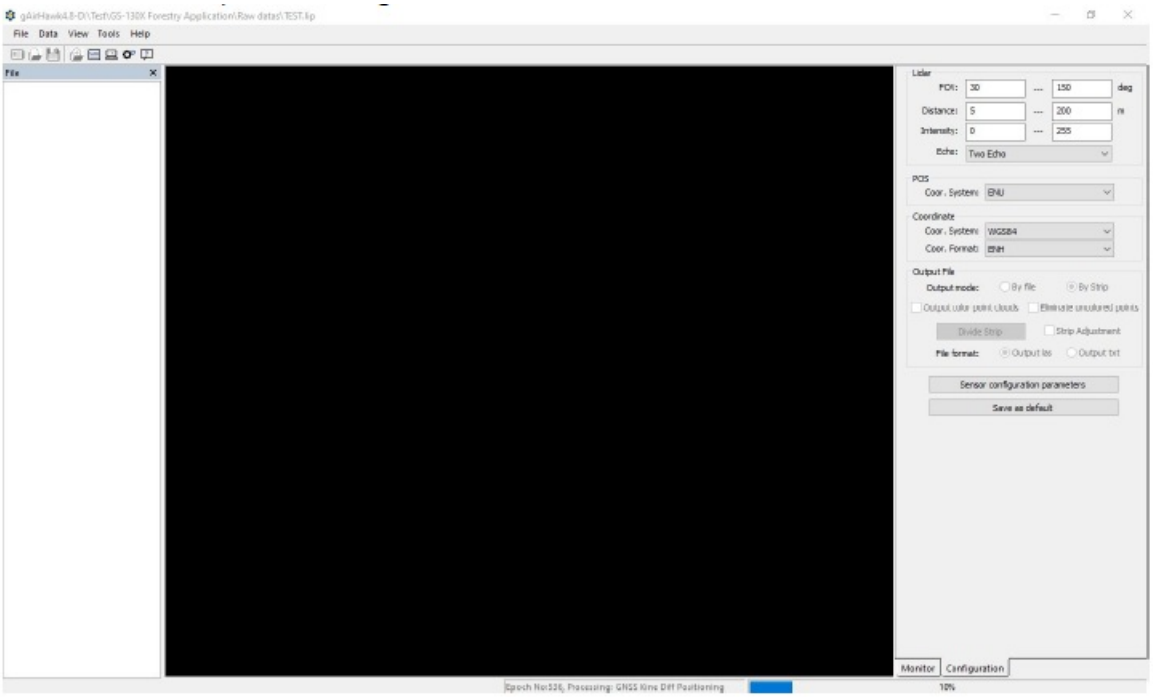
Then select

- POS (ENU, NED) ENU is default.
- Coordinate system and Format (ENH, XYZ(ECEF), BLH (DMS) and BLH (Degree) are available according to the requirement.

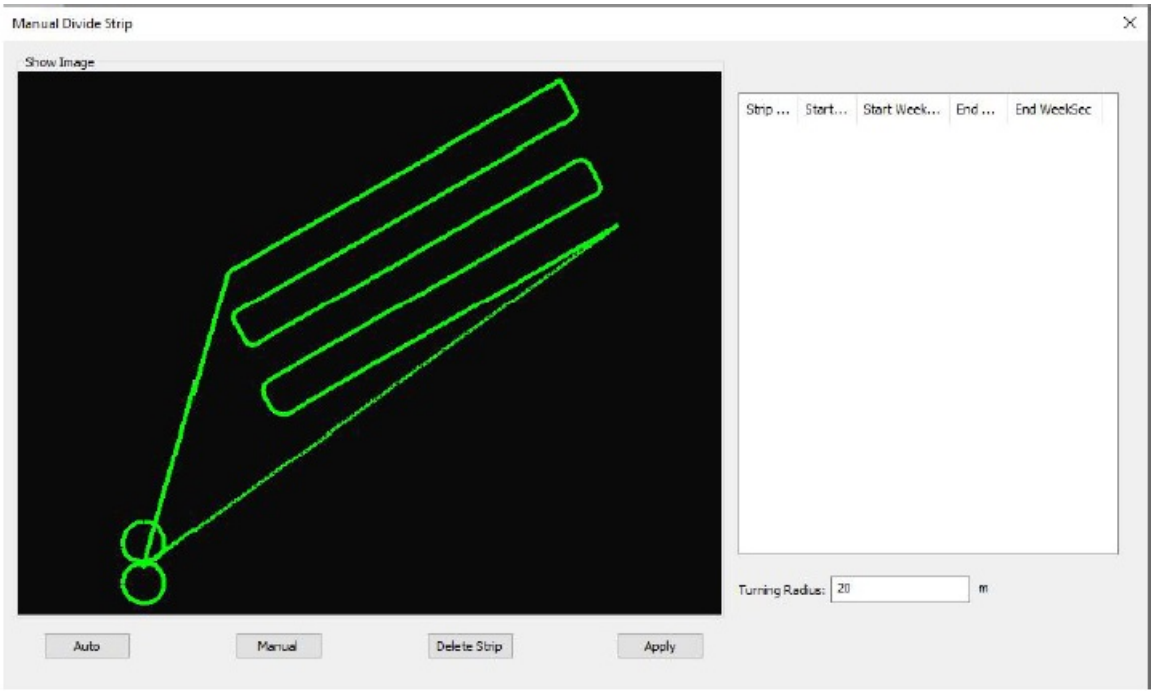
Output file

- Output mode By file or By Strip
- File format By Output Las or Output txt (According to the clients' requirement)
- Output color point clouds is selected only for the LiDAR system with a Camera.
- Eliminating uncolored points is selected means the point cloud without color will be eliminated.

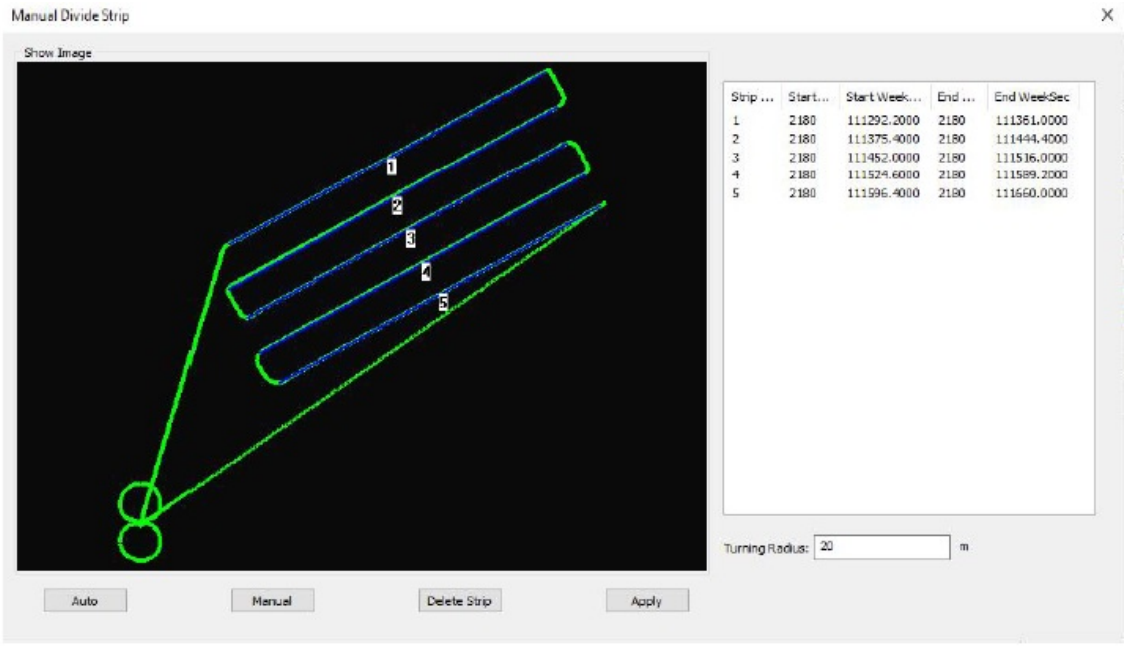
If select Output mode By strip, the data processing starts automatically (File partition, Kinematic Differential GNSS), as follows



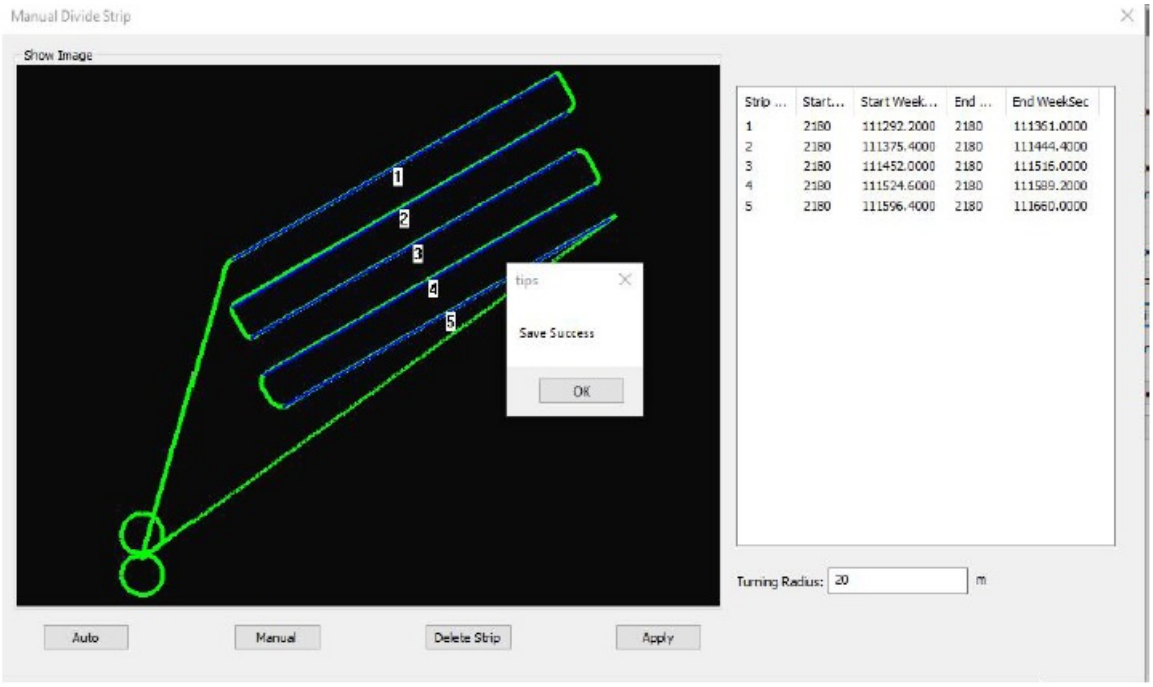
Then the trajectory dialogue pop up(Or Click the Divide StripBar), as follows



Enter into Manual Divide Strip interface, click the Manual bar to choose the strips(the client could choose the strips according to requirements,and only straight strips are chosen, removed radius parts) Click the strip from the start to the end with left click (Mouse, not holding the mouse) to finish selecting one strip, repeat this step to select all the strips you required. As following

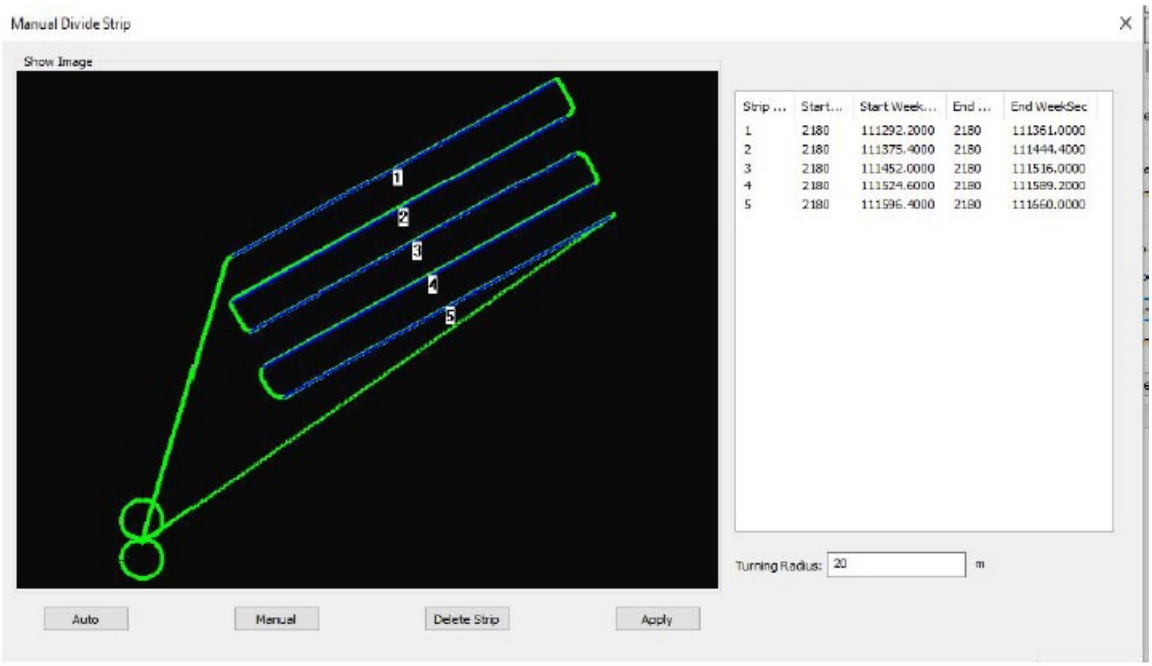


Click the Apply bar, to Save success.Then select OK bar to finish Manual Divide Strip,as following

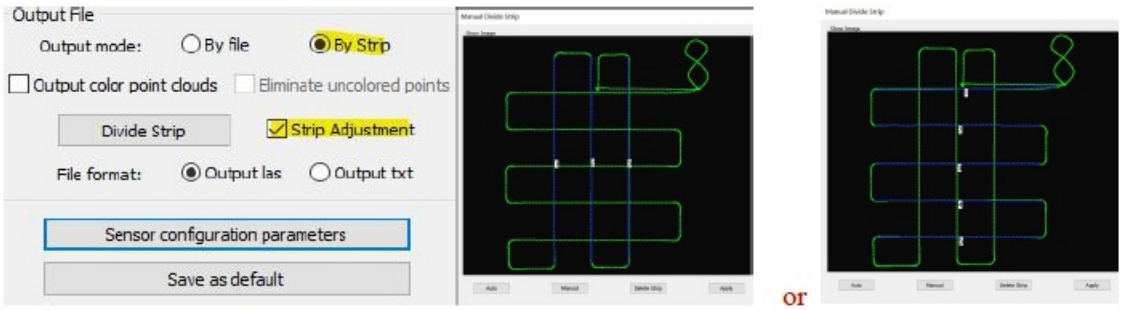


- If you want to delete the strips or re-select the strips, just select the strips on right (strip 1,2,3,4,5)

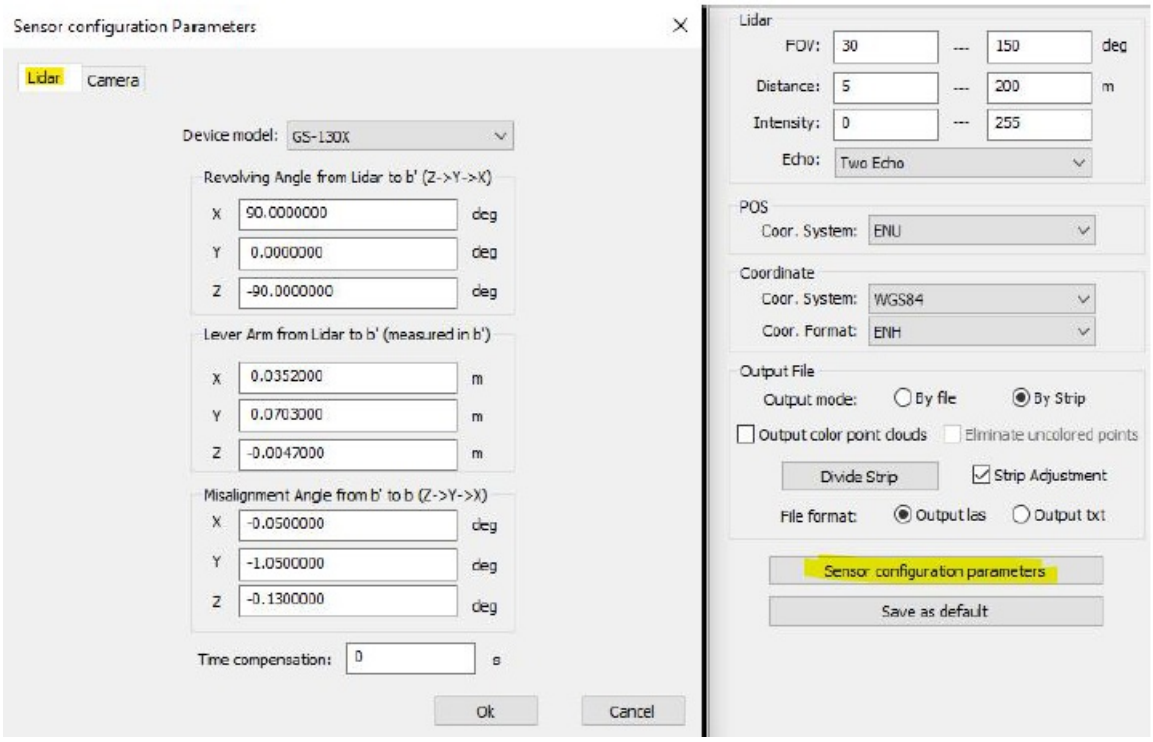
Then click the Delete Strip bar, it is done as following

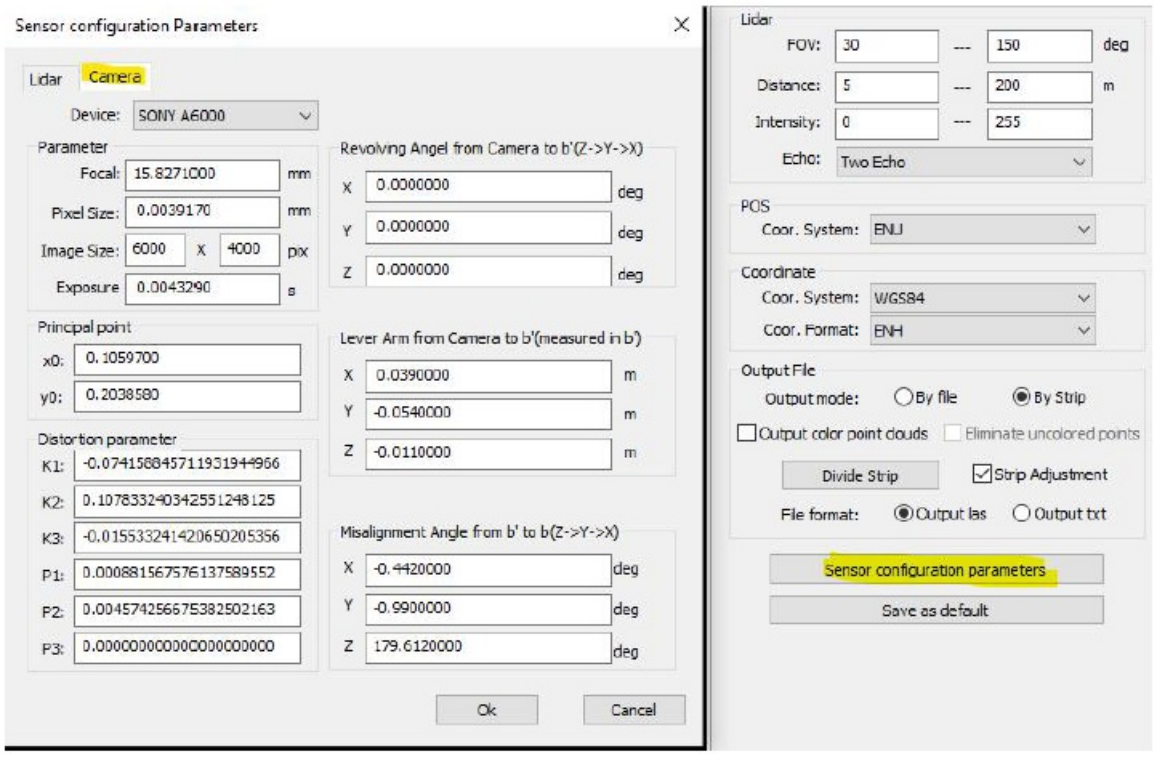


- When select Strip Adjustment function, the strips are only selected from North to South (South to North) or from East to West(West to East), but not full strips.



- Click the Sensor Configuration Parameter bar to view the parameter(When add the lidar and camera files), the system will read this parameter automatically. As following

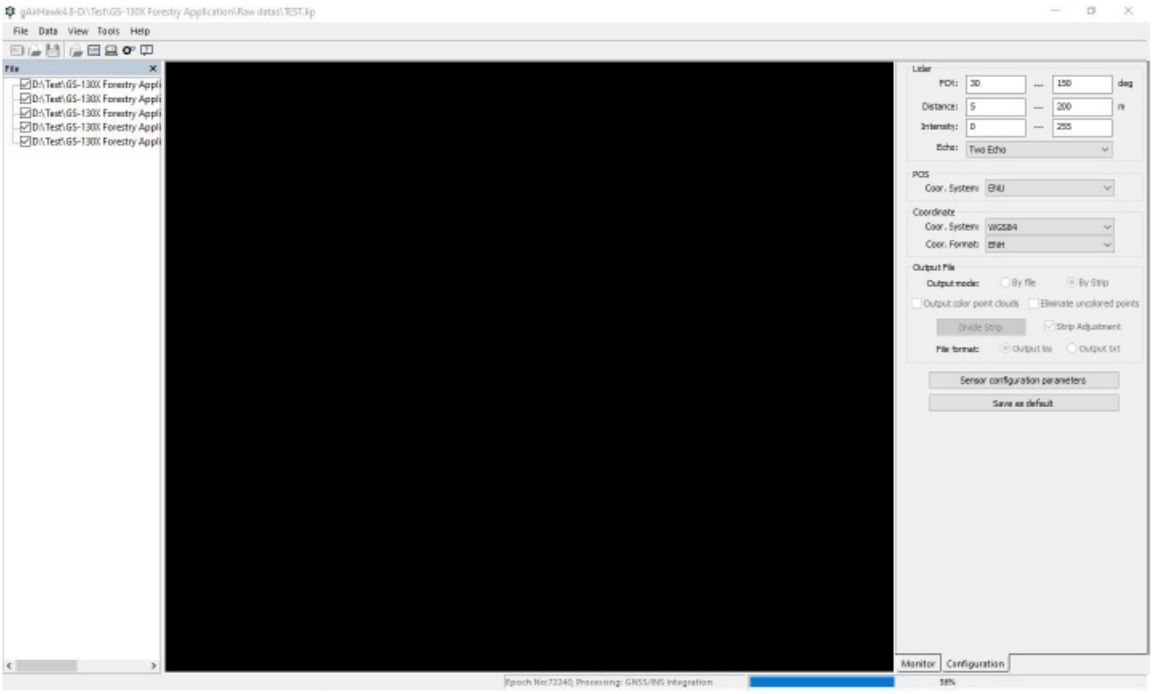




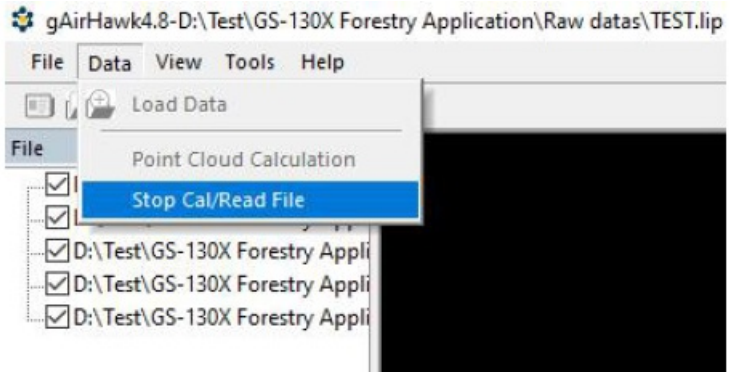
Point Cloud Calculation

- Click the Data Bar, select Point Cloud Calculation to start to process the data. The progress bar is moving. As following

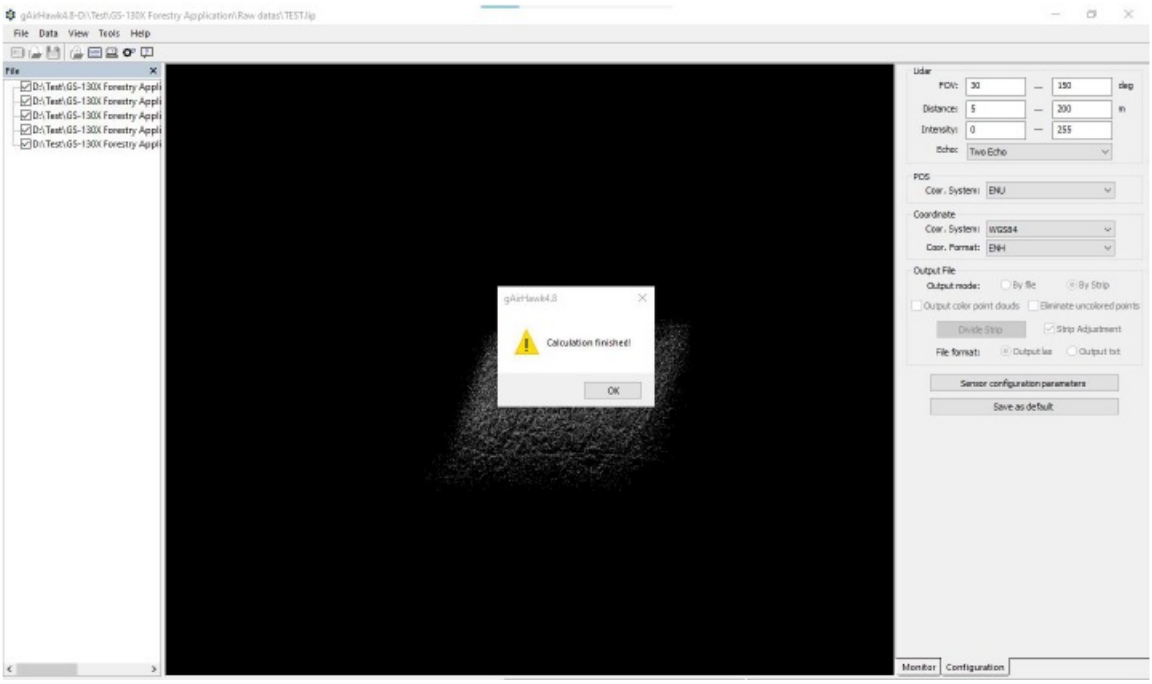
- Firstly it does the GNSS/INS integration process, then process the LiDAR data.



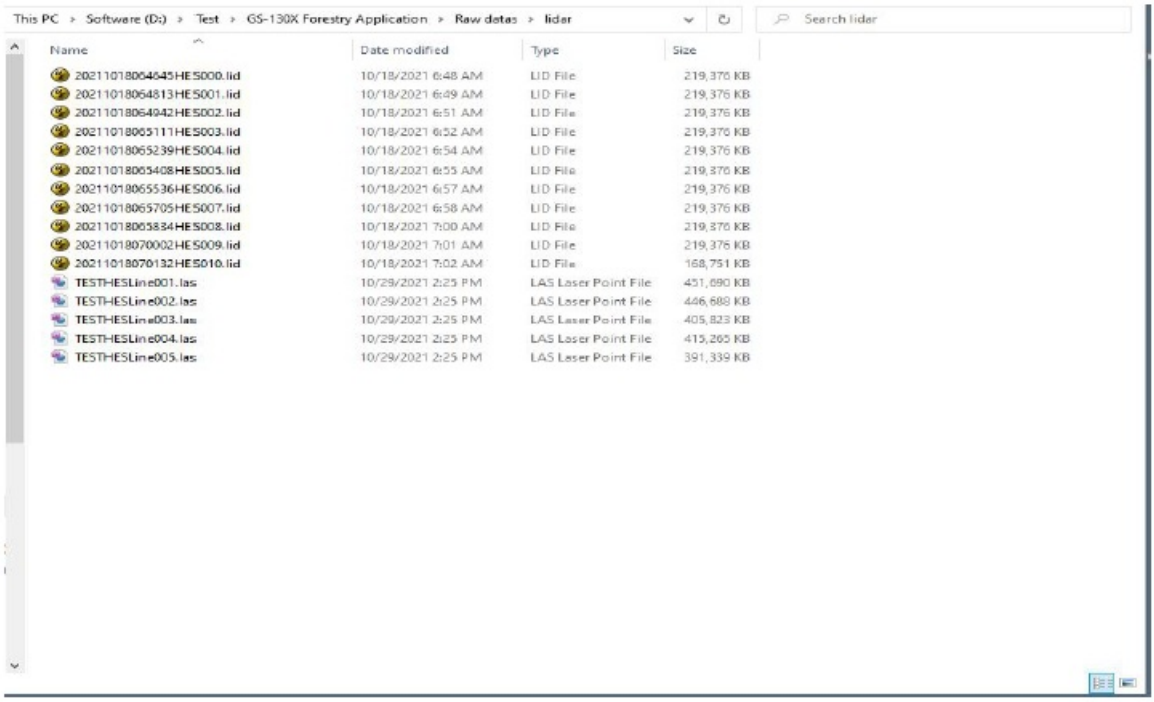
- During processing, forward & backward the roller of mouse to zoom in/out, the point clouds display strip by strip.
- It could stop when vou click the Stop Cal/Read File bar if required.



- After processing, the progress bar stops and display Calculation finished! As follows (12-1)



- Click the OK.
- Check the LAS files in original files.



- Click the Save bar to save this project.

Note: The data displayed in gAirhawk is 0.1% of total number of point clouds. Please review the LAS files and do the next procedure by 3rd party software (Cloudcompare, Terrasolid and QTM).

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