

# Setting Up a 6000 Series GeoExplorer® As a Temporary Base Station

January 17, 2014

**Purpose:** This support note describes the process of setting up a Trimble® 6000 Series GeoExplorer® as a base station, logging a base file, and differentially correcting rover data against the base file. For this support note, a 6000 Series GeoExplorer XH™ was used with a tripod and a Trimble Zephyr™ Model 2 Antenna to log base data, and a 6000 Series GeoExplorer XH with a range pole and Zephyr Model 2 Antenna to log rover data. TerraSync™ Professional v5.30 was used to collect both the base and rover data, and GPS Pathfinder® Office v5.30 was used for post-processing. It is strongly recommended to use a tripod and an external antenna with the device that will be logging the base data to position the antenna directly over the reference position and to ensure a consistent antenna height throughout base data logging.

**This will work the same way for the Geo 7x.**

**Note:** When creating a base file using TerraSync professional, the user will be prompted to input a reference position that you will be setting the device at while logging the base file data. Trimble recommends that the base station be set up over a known, surveyed point, and that you enter the exact reference position.

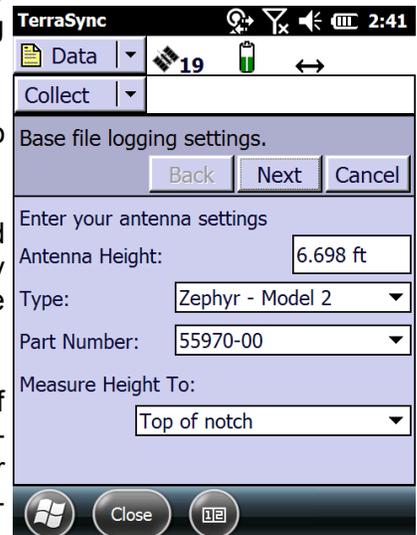
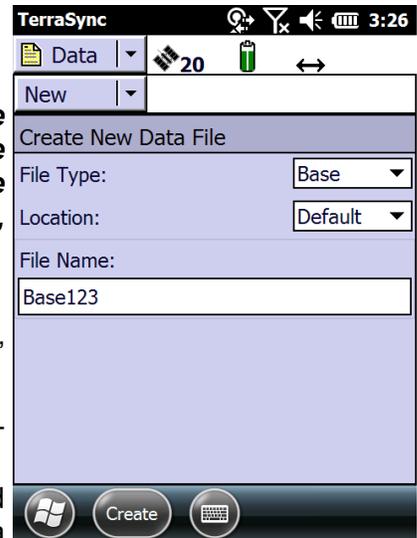
## Step 1: Configuring TerraSync to log a base file

- Open TerraSync, connect to the GNSS receiver, choose the “Data” section and then select “New” in the subsection.
- Under File Type select Base. Save the base file to the desired location, enter a file name, and tap create.
- On the next screen, enter the antenna height, type, part number, and “measure height to” settings properly. If using an external antenna be sure to measure the antenna height accurately and properly based on your “measure height to” selection. Tap next after having accurately entered the appropriate information.

**Antenna Height** - The height of the GNSS antenna that is connected to the GNSS receiver. This is used as a vertical offset on each position.

**Measure Height To** - The point on the antenna that you have measured to. The TerraSync software automatically adjusts the antenna height by the distance between the measurement location and the Antenna Phase Center (APC).

The options in this field vary depending on the selected antenna type. If the selected antenna type does not allow alternative measurement locations (for example, if you are using the internal antenna in a GeoExplorer series handheld), this field does not appear. Please reference your antenna documentation for further help.



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- Enter the desired logging settings for the base file. Tap next when finished. (The adjacent screen shot reflects the defaults.)

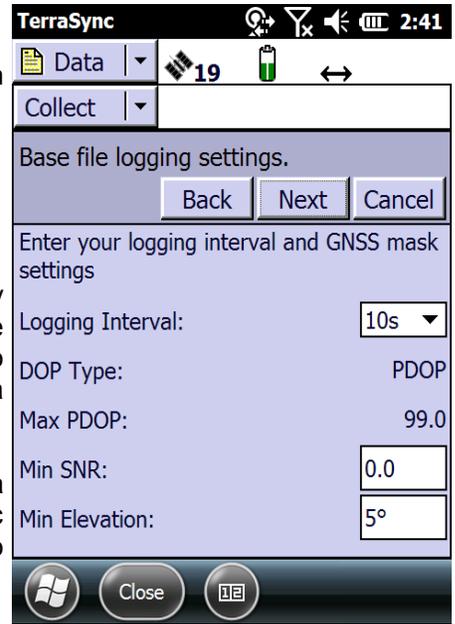
Logging interval - The logging interval, in seconds, for the base station data. Select an option from the drop-down list or input a value.

DOP Type - The type of DOP value to use. This field is read-only.

Max PDOP - The maximum PDOP value. This field is read-only.

Min SNR - The minimum SNR value. The SNR is a measure of the quality of the signal from a satellite. When the SNR of a satellite falls below the minimum value, the TerraSync software stops using that satellite to calculate the GNSS position of the base station. If the GNSS receiver is a survey receiver, this field shows N/A.

Min Elevation - The minimum elevation. Signals from satellites that have a low elevation from the horizon can be of poor quality. The TerraSync software does not use any satellite that is below the minimum value to calculate the GNSS position of the base station.



- On the next screen, you will enter the coordinates and altitude for the known reference position where the GeoExplorer logging the base file will be set up. The coordinate system and altitude system fields are based on how TerraSync is configured under “Coordinate System” in the “Setup” section . Be sure to enter the proper coordinates and altitude to avoid shifts in data and inaccurate altitude values. Once you have the proper values input, hit “OK”. This will start the logging for the base file. Be sure the GeoExplorer is connected to the external antenna and seated in the tripod bracket prior to logging base data.

Latitude - The latitude of the reference position.

Longitude - The longitude of the reference position.

These fields only appears if the current coordinate system is Lat/Long. The value entered is displayed in the units specified in the Coordinate System form under the Setup section of TerraSync.

**Note – To indicate a Southern hemisphere latitude or Western hemisphere longitude, you must include the hemisphere letter (S or W) or a minus sign (-). The hemisphere letter or plus sign is optional for Northern or Eastern hemisphere positions.**

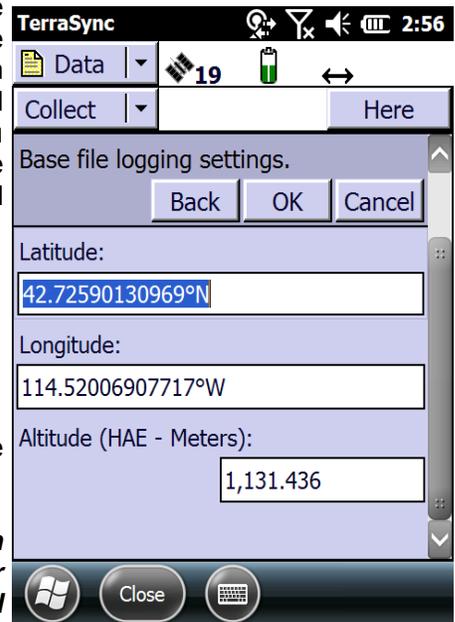
**Tip –** The symbols for degrees (°), minutes ('), and seconds (") can be omitted or replaced with a space, but you must include the decimal point (.).

North – The northing of the reference position.

East – The easting of the reference position.

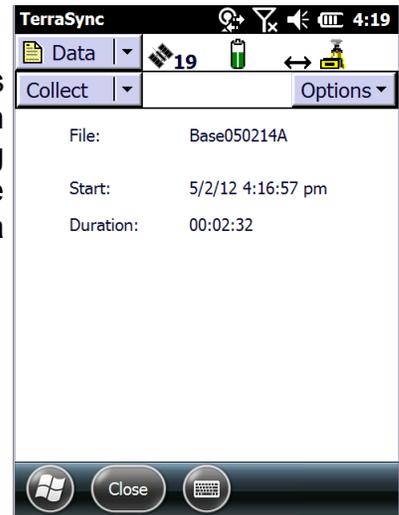
These fields only appear if the current coordinate system uses North/East. The value entered is displayed in the units specified in the Coordinate System form under the Setup section of TerraSync.

Altitude – The altitude of the reference position. The altitude is expressed as a Height Above Ellipsoid or Mean Sea Level and is in the altitude units configured in the Coordinate System section. (See TerraSync “Appendix B: Coordinate System” for more information.)



## Step 2: Collecting your rover and base files

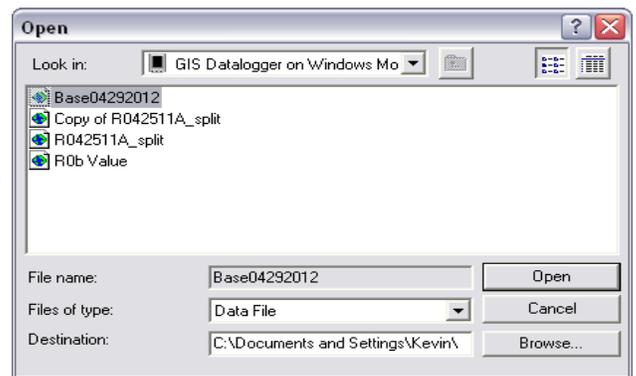
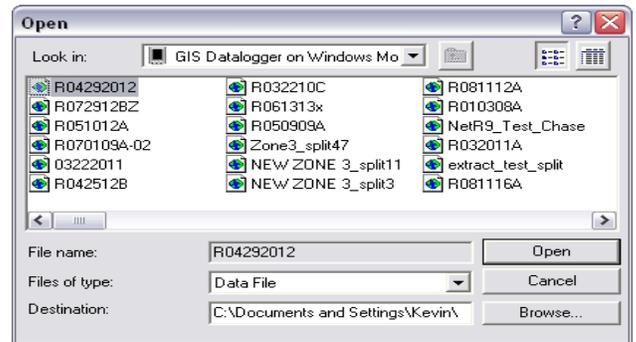
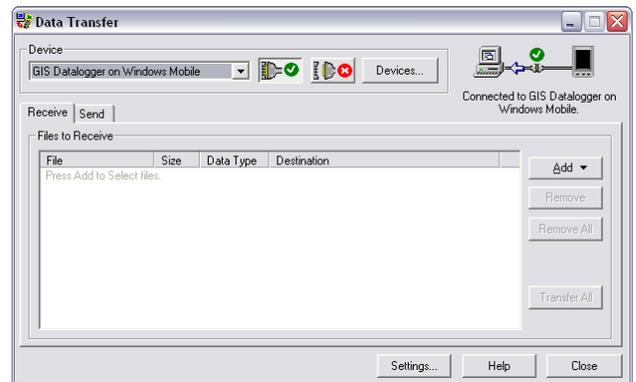
- Once the GeoExplorer designated and set up for base data is logging data in TerraSync, you should see the adjacent screen and rover data logging can begin. Once the rover data logging has been completed, close the rover data file and then close TerraSync. Close the base data file after completing rover data logging.



## Step 3: Transferring the data and rover files into GPS Pathfinder Office

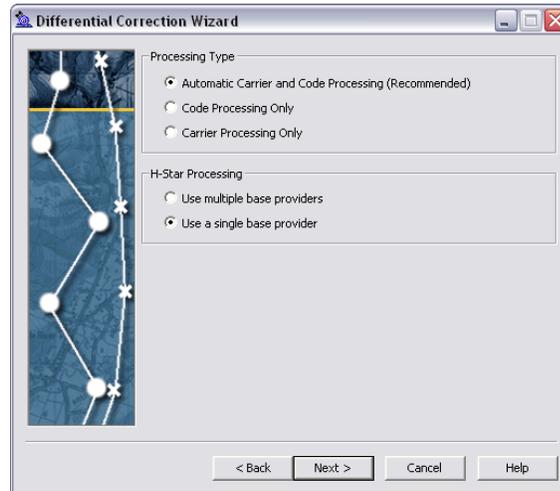
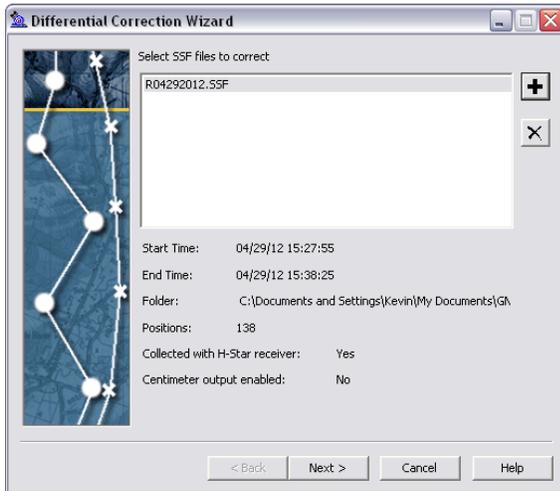
Once the rover data file(s) and base data file(s) have been collected, they can now be transferred back to GPS Pathfinder Office for post-processing.

- Connect up the GeoExplorer that was logging the rover data with the USB cable and ActiveSync or Windows Mobile Device Center.
- Open GPS Pathfinder Office and then the Data Transfer Utility.
- Connect to the device "GIS Datalogger on Windows Mobile"
- Make sure the "Receive" tab is selected and click "Add" and then "Data File".
- Choose the rover data files that need to be transferred to GPS Pathfinder Office and hit "Open".
- Once all the rover files have been selected, click "Transfer All".
- Next, connect the GeoExplorer that was logging the base file data with the USB cable and ActiveSync or Windows Mobile Device Center.
- Open the Data Transfer utility in GPS Pathfinder Office and connect to the device "GIS Datalogger on Windows Mobile".
- Make sure the "Receive" tab is selected again and then click "Add" and then "Data File".
- Choose the base files that need to be transferred, select "Open" and then click "Transfer All".



#### Step 4: Differentially correcting the rover files using the base files

- Open the Differential Correction utility in GPS Pathfinder Office
- Click the + icon, select the rover file(s) you want to differentially correct and then click “Open”. Verify the correct rover file(s) have been selected and click “Next”.
- Select the desired processing type and “Use a single base provider” and click “Next”.



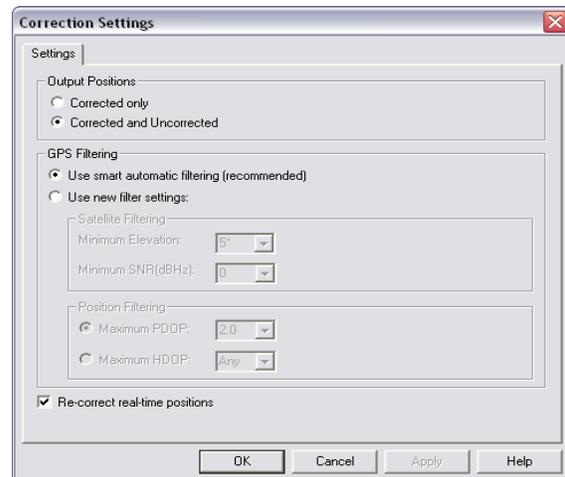
- Verify the desired “Correct Settings” on the next screen and tap Next. Tap Change if you want to change the settings.

#### Output Positions:

Corrected only: Only corrected GNSS positions are output after post-processing.

Corrected and Uncorrected: Corrected and uncorrected GNSS positions, and digitized positions are output after post-processing.

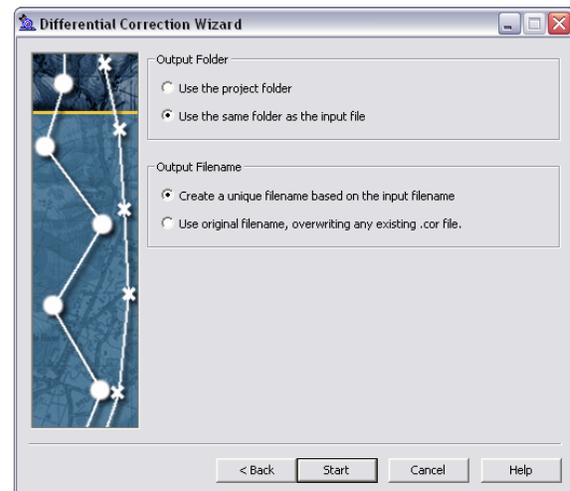
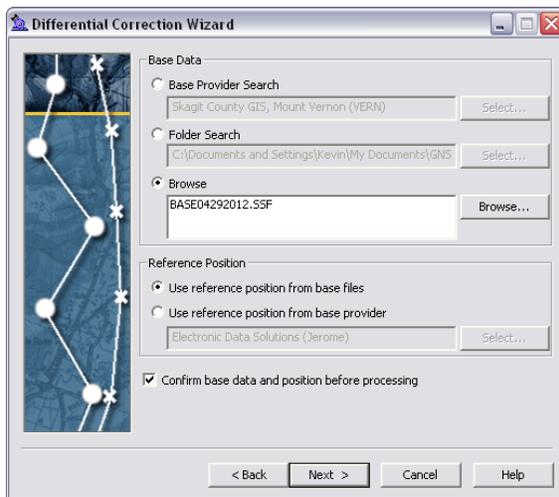
GPS Filtering: You can use the GNSS Filtering options to improve results when the base station data is noisy or of unusually low quality. However, it is unlikely that you will need to alter the default setting (Use Smart Automatic Filtering) if your base station receiver is a recommended Trimble receiver.



Re-correct real-time positions – Select this check box to improve the accuracy of real-time corrected positions. The accuracy of the real-time positions is improved to the same quality as post-processed positions. This option has no effect if there are no real-time positions present in any of the selected rover files.

- Under Base Data, select the radio button for “Browse”, click the Browse button to the right, select the Base data file collected and click Open.
- Under Reference Position, select “Use reference position from base files”.
- Check or uncheck the box for “confirm base data and position before processing” as desired and tap “Next”.

**Note:** Select this check box to confirm the coordinates of the reference position and the availability of the base files to be used. This information appears in the Differential Correction Processing window on the last page of the wizard before you start the correction process.



- Chose the desired Output Folder location and Output Filename and tap “Start” to begin the differential correction.

Differential correction will now begin. You will need to confirm the coordinate of the reference positions and the base files that will be used if you checked the box to “Confirm base data and position before processing”. The differential correction will now attempt to correct the rover file using the base file. A text file will be generated and stored in the output folder location. The correct.txt logs the details of the differential correction session.