



Using Earthmate® Blue Logger™ GPS as a Remote Station, Earthmate GPS as a Base Station, and GPS PostPro™ 2.0 to Post Process the Data

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Overview

Post processing your GPS data with the Post-Processing Wizard in GPS PostPro 2.0 ensures sub-meter accuracy with your GPS device when stationary logging. In order to post process data collected with a GPS device, you must have a base station (pre-determined position) and a remote station (where you are physically logging the data). If an Internet base station (such as CORS) is not available within 60 km of your remote station, you can use Blue Logger GPS along with the USB Earthmate GPS that came with GPS PostPro 2.0 to create the base and remote stations you need.

Glossary

The following are definitions for terms used in this document.

Term	Description
Carrier Phase Static Processing	When multiple satellites are used to calculate errors between the satellites and the receivers (processing is performed on the carrier signal).
Ephemeris	Data which indicates the position and status of satellites.
NAV file	A RINEX navigation file that contains GPS broadcast ephemeris information.
OBS file	A RINEX observation file that contains raw GPS measurements.
Post Processing	The processing of logged satellite data in order to achieve greater accuracy.
RINEX	Receiver INdependent EXchange; a file format used for creating GPS log files that is not proprietary to any particular GPS receiver. (For more information on RINEX, visit http://www.ngs.noaa.gov/CORS/instructions2/)
Single Difference Dynamic Processing	When one satellite is used to calculate the error between the satellite and the known receiver location. That error can then be subtracted from the solution at the unknown location.

Setting Up Your Stations

When setting up your stations, be sure to:

- Place your GPS receivers at the desired locations. For best results, place the GPS devices at least 2 meters (approximately 6.5 feet) from the ground. Securing the devices on tripods using Velcro, rubber bands, or other non-metallic straps is recommended.
- Ensure that both the USB Earthmate GPS and the Blue Logger GPS have a clear view of the sky and they are placed a sufficient distance from any object that might obstruct the GPS satellites. When logging stationary data, it is important to stand back from the receiver a few meters. Hovering with your body over or around the logging device(s) may introduce cycle slips which can degrade the final position accuracy.

- Keep the GPS devices away from large reflective objects and large obstructions (tall buildings, natural structures, bridges, heavy foliage, etc). These objects might obstruct the GPS antenna's view of the sky, preventing satellite signals from reaching the receiver and therefore decreasing the accuracy of your position.

To Set Up Your Base Station

When setting up your base station (known location) with the USB Earthmate GPS device, you will need a laptop with a USB port to connect the USB Earthmate GPS device to your system. The base station should be within 60 km of your remote station (the closer the receivers are to each other, the greater the accuracy).

Once you have placed the device at the base station within 60 km of where you want to log, use GPS PostPro 2.0 to activate logging. If you are using a handheld computer, activate the device using GPS PostPro 2.0 on the handheld computer. If you are using a laptop, activate the device using GPS PostPro 2.0 on the laptop.

Note: Be sure to note the latitude, longitude, and elevation for your base station location as you will need to enter the information in the Post-Processing Wizard later.

To Set Up Your Remote Station

Before you depart for your remote station (where you will physically log the data), use Blue Logger Manager (the software utility that accompanies the Blue Logger GPS device) to set your raw data logging preferences.

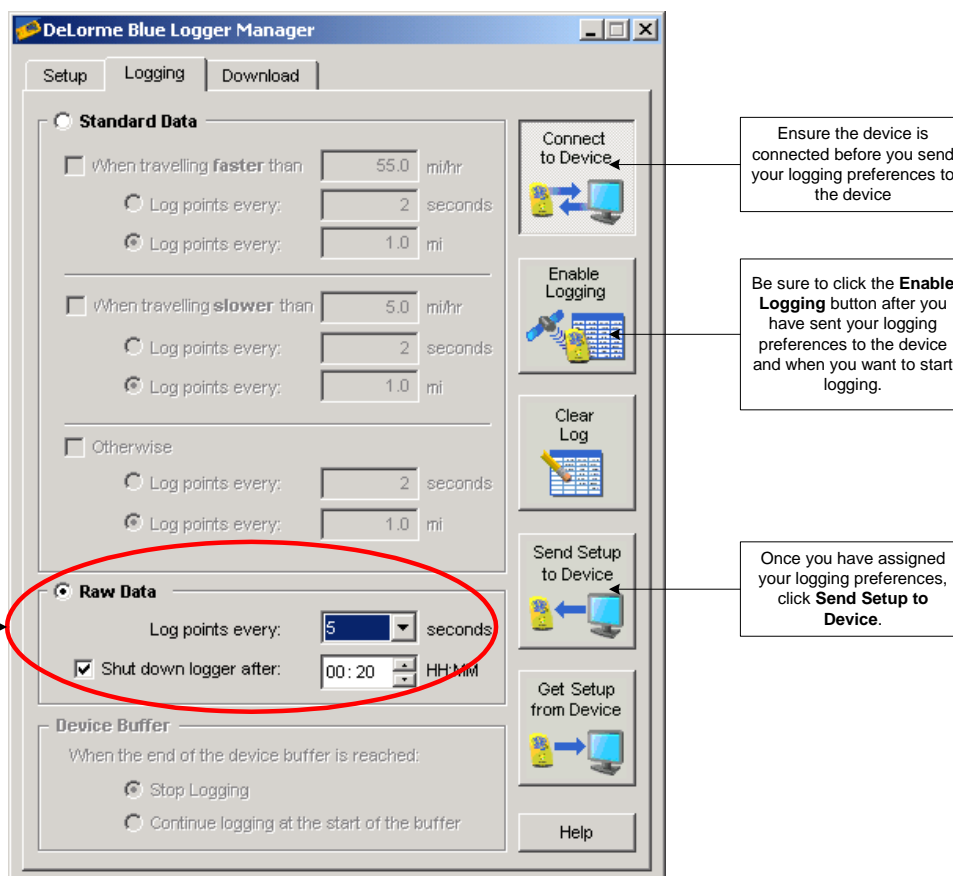


Figure 1: Using Blue Logger Manager to assign raw data logging preferences.

Once you have sent the setup to the device and enabled logging, you can position the Blue Logger GPS device at the remote station location. Be sure that the Blue Logger GPS is no further than 60 km from the base station.

Logging

Both the USB Earthmate GPS and the Blue Logger GPS should log points at the same time and at equal intervals (a log time of at least 20-45 minutes is recommended).

Downloading the GPS Points

Once you have reached the desired logging duration, you must download the Blue Logger GPS points as a Raw file using Blue Logger Manager and download the USB Earthmate GPS points as an .obs file using GPS PostPro 2.0.

To Download the Blue Logger GPS Points

With the Download tab in Blue Logger Manager, you can select to download all of the point in one file or download the points as separate files based on a specified pause time. Click Get Data from Device, select Raw File, assign a file name, and then click Save. The raw file is saved at *C:\DeLorme Docs\GPSLogs* by default.

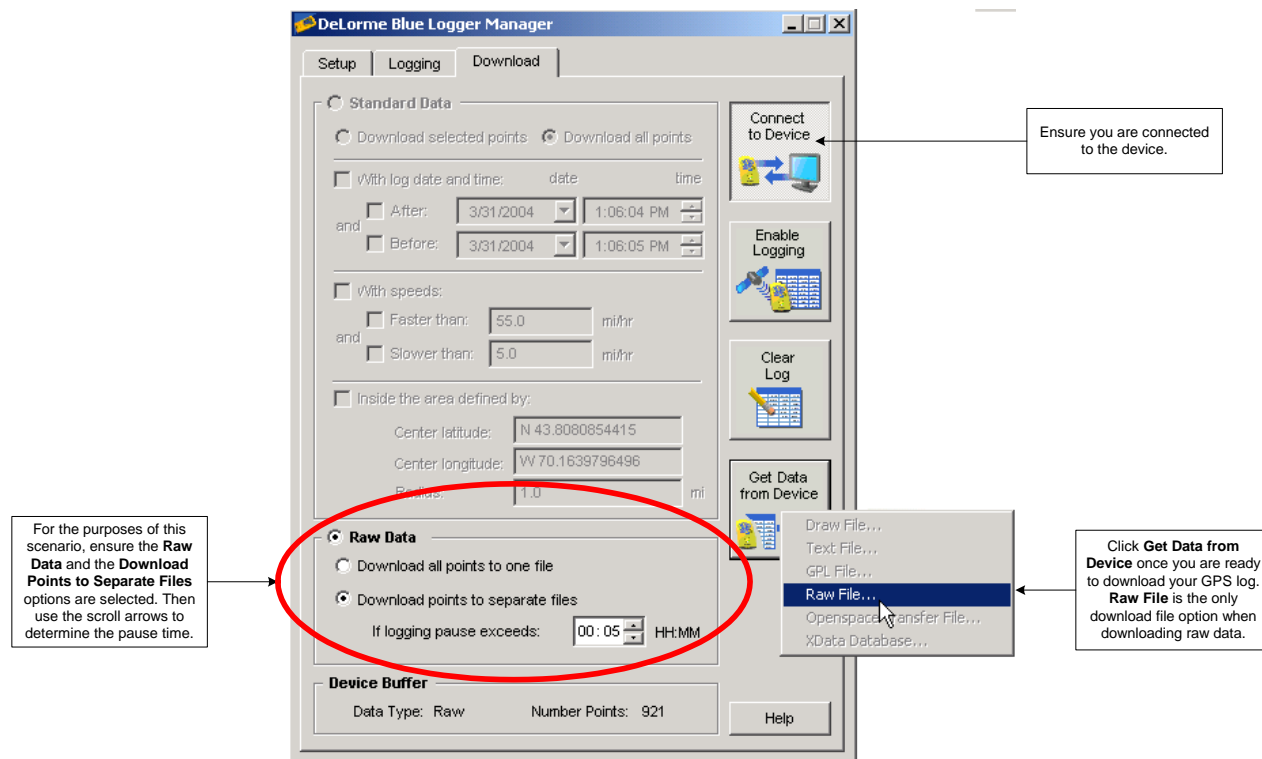


Figure 2: Using Blue Logger Manager to download the raw data from the device.

To Download the .obs File from GPS PostPro 2.0

Open GPS PostPro and click the Stop Logging button in the Logging tab. RINEX GPS log files (*.obs and *.nav) are saved in the *C:\DeLorme Docs\GPS PostPro* folder by default.

Post Processing the Remote Station Data Against the Base Station Data

Click the Post Process button in GPS PostPro 2.0 to post process the data using the Post-Processing Wizard. You will need the following files when using the Post-Processing Wizard:

- **Remote File**—The Raw data file you downloaded using Blue Logger Manager (saved in the *C:\DeLorme Docs\GPSLogs* folder by default).
- **Base File**—The .obs file the USB Earthmate GPS generated (saved in the *C:\DeLorme Docs\GPS PostPro* folder by default).
- **Ephemeris File**—The .nav file the USB Earthmate GPS generated (saved in the *C:\DeLorme Docs\GPS PostPro* folder by default). The USB Earthmate GPS only generates a .nav file when it logs with a laptop computer. If you need a .nav file, global ephemeris files are available online at www.cors.com.

Be sure to select **Carrier Phase Static Processing** when prompted. You can then decide to save the post processed results as a:

- **Report Text File**—This file contains such information as remote and reference station coordinates, standard deviation, horizontal position RMS, etc.

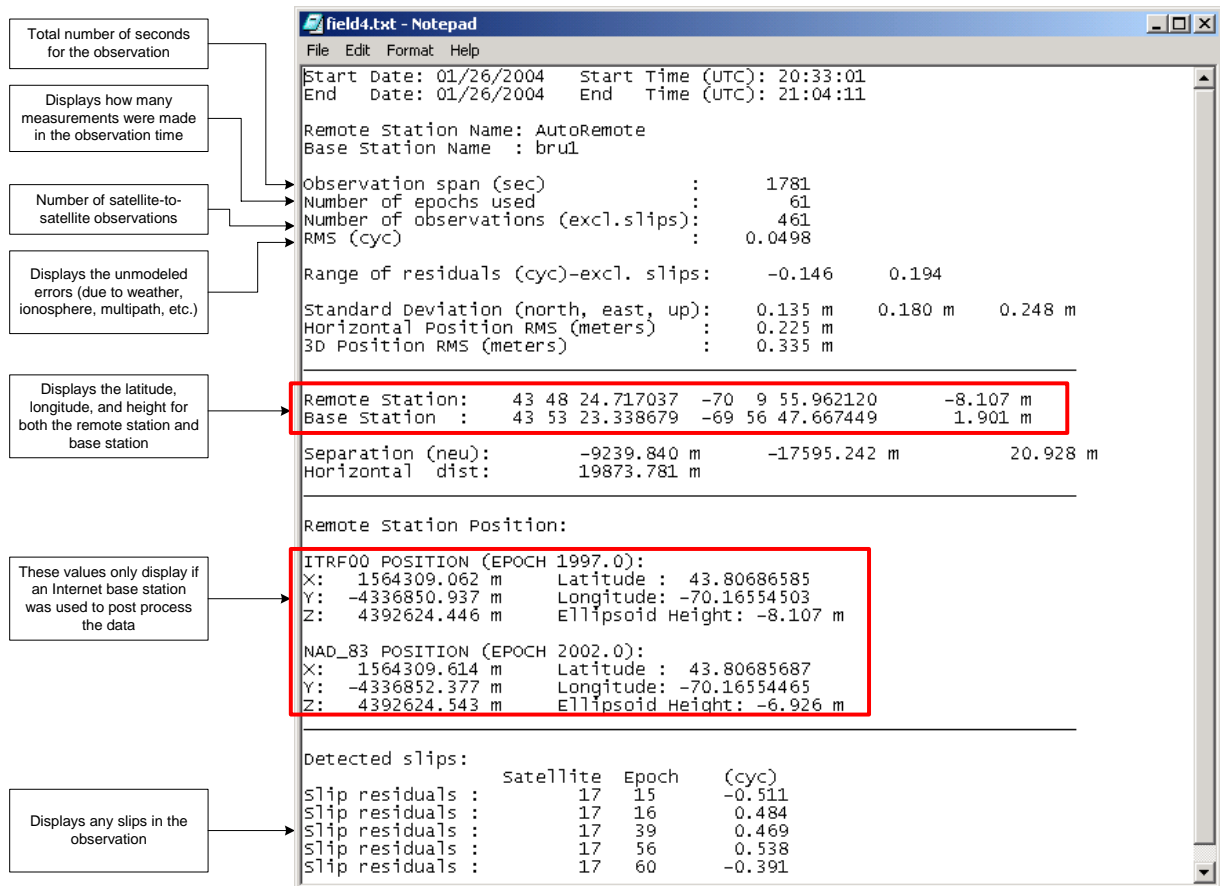


Figure 3: An example of a report text file.

- **DeLorme Lat/Lon File**—This file contains symbols and text (i.e., latitude/longitude coordinates), and can be imported into DeLorme Street Atlas USA®, Topo USA®, 3-D TopoQuads®, and XMap®. Green symbols indicate good data, yellow symbols indicate questionable data and red symbols indicate bad data. Select the **Append New Data to File** check box if you want to create a single file of all of the base station data (instead of one file for each base station).

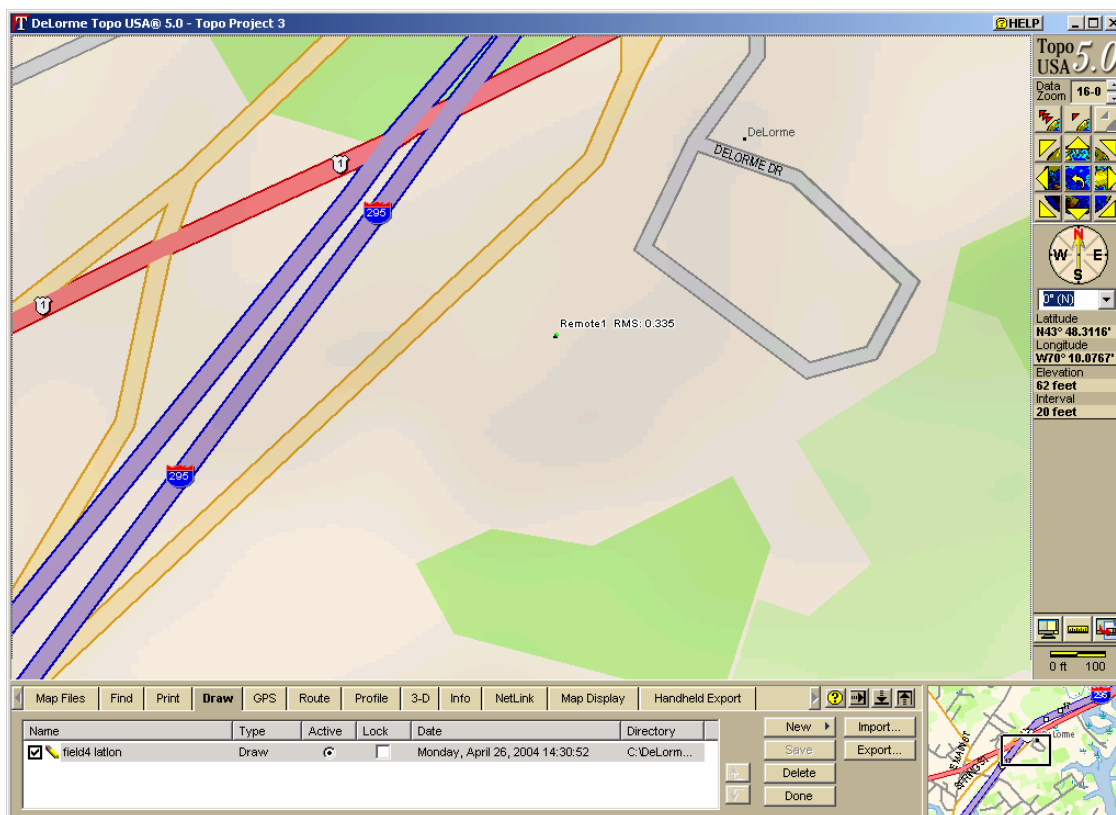


Figure 4: An example of a DeLorme Lat/Lon text file. The area within the red circle contains the point information.

- **DeLorme GeoSpider File**—This file contains station and GPS vector record information and can be imported into DeLorme GeoSpider™. Select the **Append New Data to File** check box if you want to create a single file of all of the base station data (instead of one file for each base station).
For more information on interpreting Geospider files, see the Help documentation that accompanies GeoSpider.