



Support Document

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Post-Processing with GLONASS Base Station Data - for GeoExplorer 6000 and Pro6 units with FloodLight activated.

Currently, GLONASS data is not stored in the standard location on the National Geodetic Survey's (NGS) web site. This means that when Pathfinder Office, Positions Desktop or GPSAnalyst download data for post-processing from a CORS station it will not differentially correct the GLONASS data in the data file. The differential process will run correctly but the .COR file will not have any GLONASS data in it, thus reducing the productivity of the unit.

However, NGS is currently storing GPS and GLONASS data in a temporary location on their FTP site. This temporary location can be accessed by Pathfinder Office or Positions Desktop (unfortunately this is not accessible with GPS Analyst) with some minor modifications by the user. Please note that part of the problem is that not all CORS Reference Stations are able to process GLONASS data. Thus, even by following this Support Note, there will be some CORS stations that do not have GLONASS data because the actual GNSS receiver used does not support GLONASS.

The following instructions will guide you through how to add a GPS&GLONASS base station manually to your list in Pathfinder Office.

1. Proceed through differential correction as normal until reaching the Select Base Provider window. Identify the CORS ID of the base station you wish to use, which is the four letter identifier in parentheses.

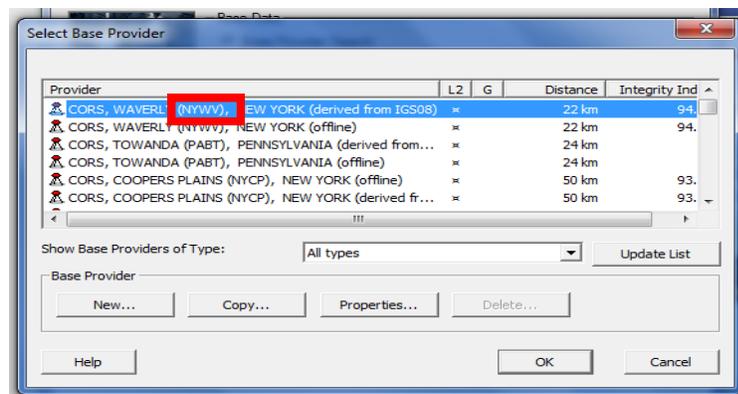


Image 1.1 CORS Base ID

2. Proceed to the CORS NGS Website <http://geodesy.noaa.gov/CORS/> to confirm the desired base station is a GLONASS capable receiver. See Image 2.1 below. Enter the SiteID in top left text box and click EnterSiteID.



Image 2.1 CORS NGS Website Enter Site ID

3. Click SiteLog on top left to open page with station information. Scroll down page to section “3. GNSS Information” and scroll through to identify the current receiver installed and confirm satellite system type is GPS + GLONASS. If the base is GLONASS capable proceed to step 4 to add this base station to your Differential Correction base station list. If this is a GPS only base station proceed through steps 1-3 above until finding a nearby base station with both GPS + GLONASS base data.

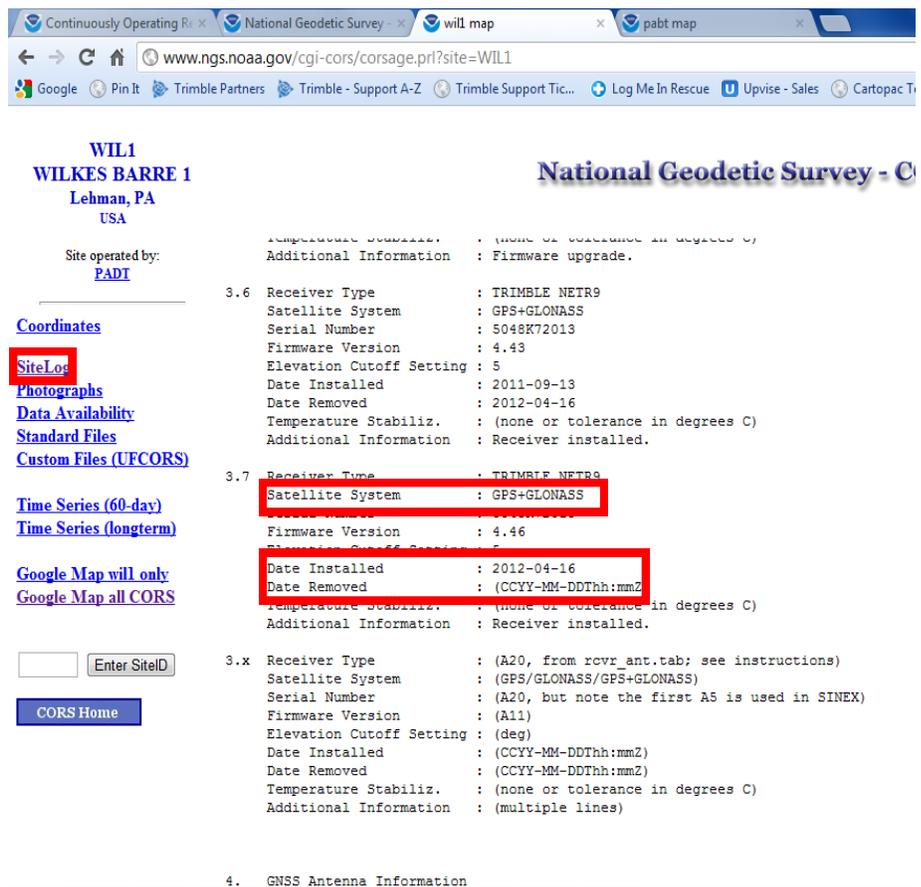


Image 3.1 ID GLONASS Capable

4. Return the Differential Correction wizard and select the base station confirmed to have GPS + GLONASS data. Then select the Copy... button.

A window with Base Provider Properties appears. Rename the base station under the General tab and Organization text box. It is best to name this something that keeps the base ID and identifies this as GLONASS. See Image 4.2 below.

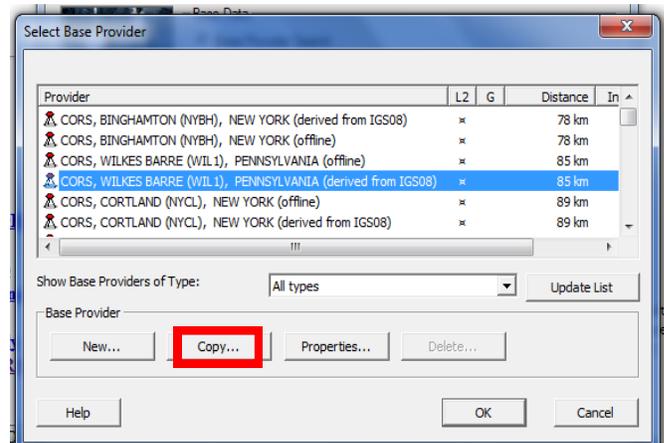


Image 4.1 Copy Base Properties

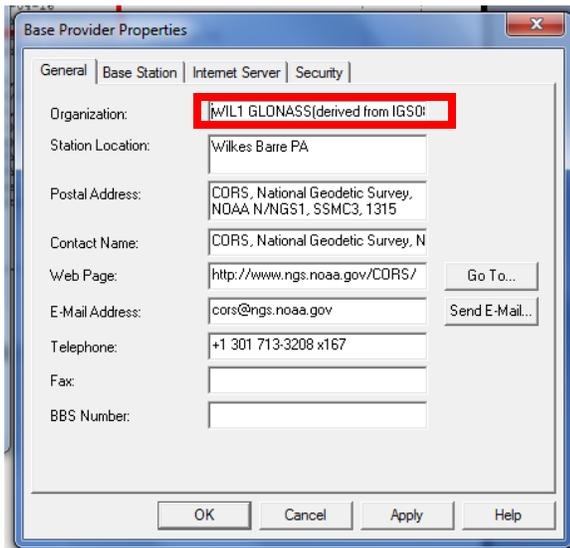
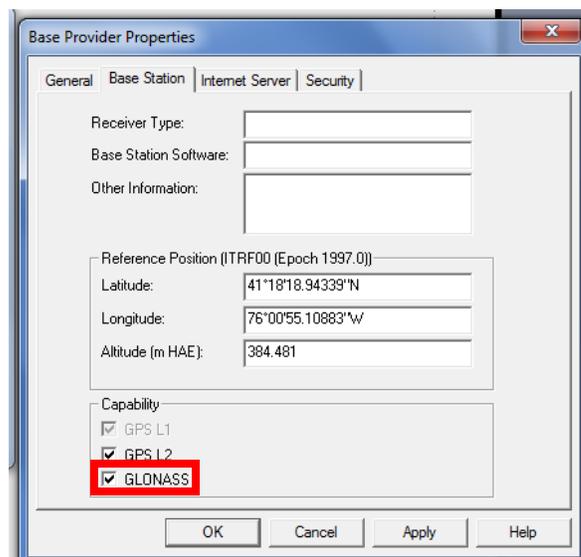


Image 4.2 Rename Copied Base

5. Turn on checkbox for GLONASS Capability under Base Station Tab

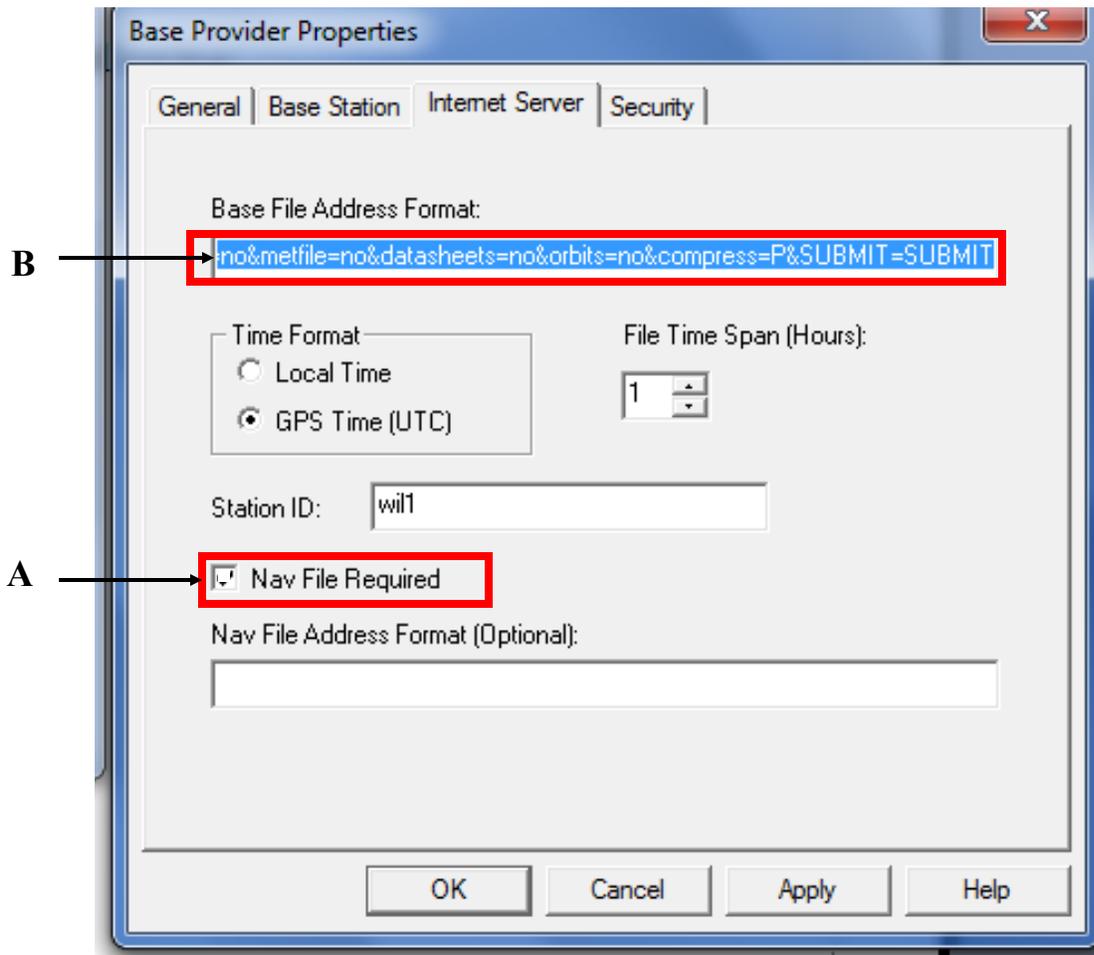


6. Go to the Internet Server Tab

A. UNcheck the Nav File required.

B. Replace the Base File Address Format string with the following;

<ftp://www.ngs.noaa.gov/cors/rinex/%YYYY%/%DDDDD%/%cccc%/%cccc%%DDDDD%0.%yy%d.Z>

**Image 6.1 Internet Server Tab**

7. The Base Station will now appear in your Base Provider List with a blue icon, this identifies it as a manually added base station. Select this new base station and continuing post-processing your data as you normally would.

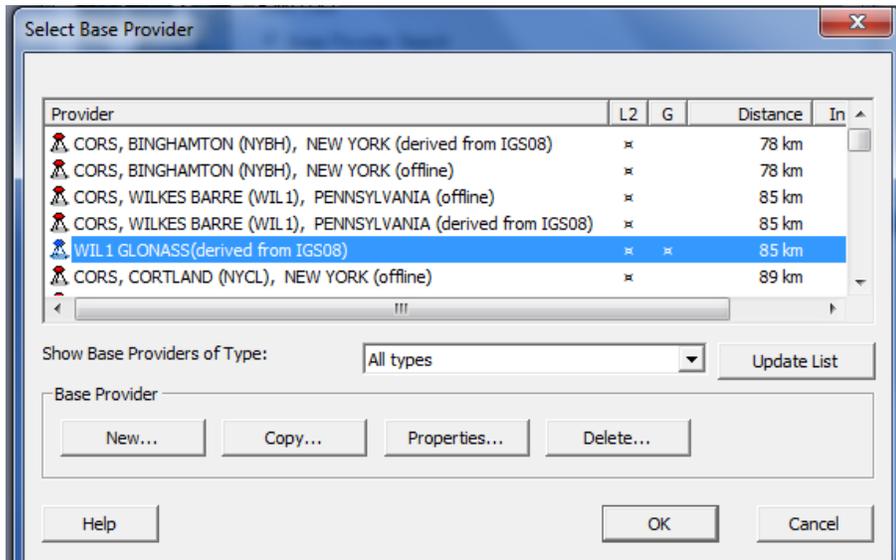
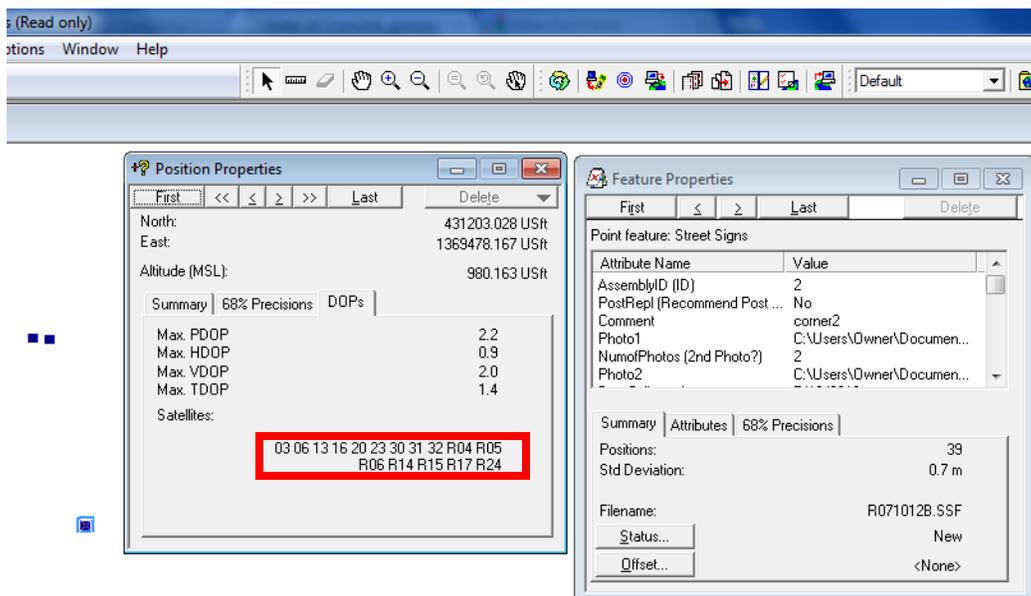


Image 8.1 Blue Icon Base Provider

Understanding Floodlight and Post-Processing with GLONASS in More Detail

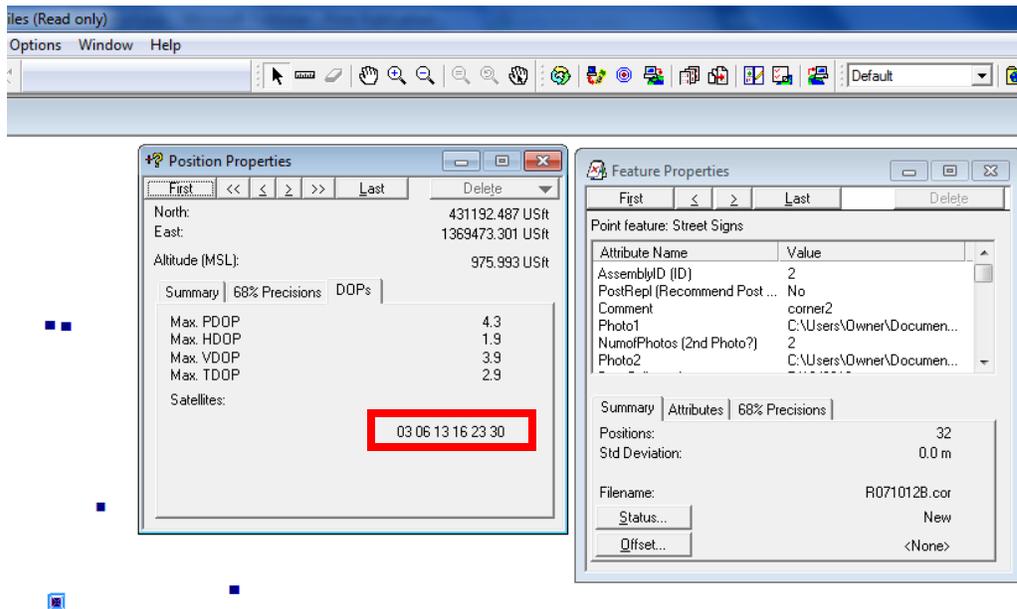
Understanding how the Trimble post-processing engine handles GLONASS data is important to generating accurate data. Below is an image of the position properties from an uncorrected .ssf file where there were GLONASS satellites tracked in the field. Note that under the DOP's for this position the satellites with an R indicating the 7 GLONASS satellites acquired in the field (see image 9.1 below.)

Image 9.1



When post-processing a GPS and GLONASS data file with GPS only base data, GLONASS records will be removed from the corrected file (see image 9.2 below). This will negatively impact the post-processed accuracy and in some cases can remove entire features from the corrected file.

Image 9.2 - NO GLONASS Base Corrected File



In the case that there are no GPS and GLONASS base stations within 75 miles of the project site, Floodlight may need to be turned off prior to field collection. If unsure, use step 2 (page 2) to verify if a GPS and GLONASS base station is available within 75 miles prior to collecting data in the field. Some states may have a GPS only base network and others may have a combination of GPS only and GPS + GLONASS base stations.

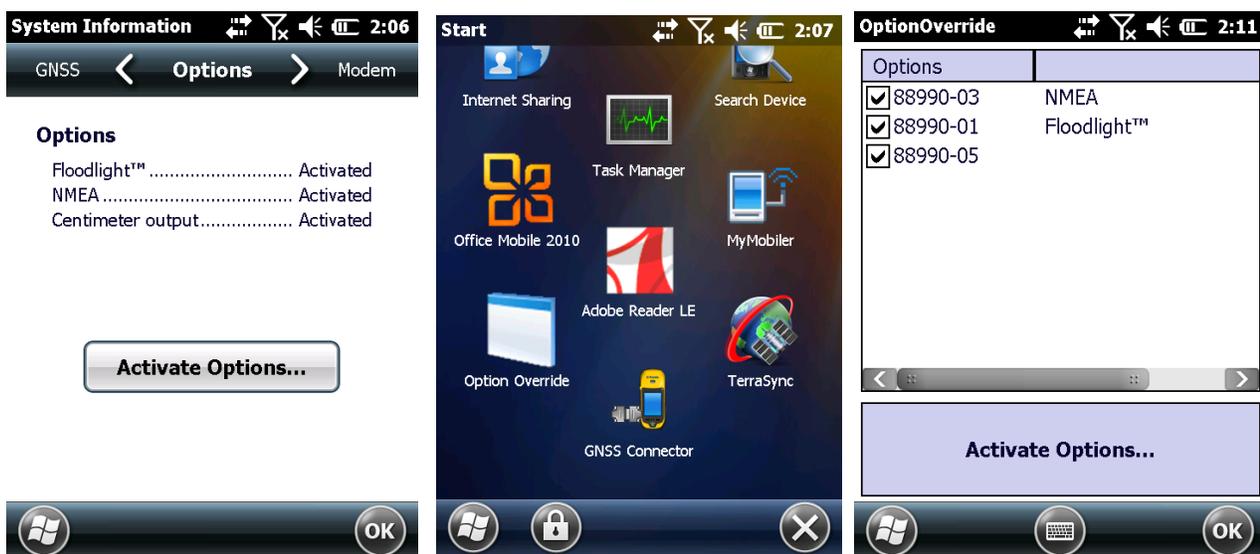
Customers using the Geo6000, Geo7x, or the Pro6 receivers will achieve the best data collection results with the Floodlight technology activated, ON, and with WAAS disabled (Use the “Uncorrected GNSS” option in Setup -> Realtime Settings). A WAAS (SBAS) correction can still be used to increase in the field accuracy for navigating or staking out in the field (use the “SBAS” option in Setup -> Realtime Settings), but is a GPS only correction. When WAAS is being used, GLONASS satellites will not be tracked by the receiver.

Other Useful Information GLONASS / Floodlight Information

It is important to verify when renting a Geo6000 or using newly purchased equipment that Floodlight has been activated. This information is available under the Settings/System/System Information/Options tab, see image 10a. It is only necessary to Activate Floodlight once.

It is also beneficial to know how to turn ON and OFF Floodlight if so desired. By clicking on the Windows icon in the bottom left hand corner scroll to the bottom and select the program, Option Override, see image 10b.

The Option Override app allows the user to turn ON/OFF the various options available on a Geo6000 or Geo7x. The Pro6 receiver will require a connection to a PC running the Option Activation Manager to change these settings. The unit listed below (10c) has Floodlight, NMEA, and centimeter Edition activated displaying all 3 options as ON with the checkmark displayed.



Images 10a, 10b, 10c - Activating & Overriding FloodLight

Other Sources of GLONASS Corrections

Other resources for GPS and GLONASS base stations are available beyond the NGS ftp site. A Virtual Reference System (VRS) can be used for real-time corrections in the field. These networks use an internet connection in the field via cell phone Bluetooth tethering, Wifi hotspot, or Mifi to apply a real-time correction to the data being collected. The availability of this correction may vary from state to state and may provide GPS only corrections depending on the base stations available. A list of the VRS networks can be viewed from the USGS real-time network page http://water.usgs.gov/osw/gps/real-time_network.html. Each network will require a username and password to access the correction and some may require a yearly subscription fee.

Lastly, with the release of the Geo7x and Geo6000 centimeter Editions a correction can be broadcast from a survey receiver to achieve centimeter level accuracy on a Geo6000 or Geo7x. A Pacific Crest XDL radio (see image below) can be used to broadcast the correction from the survey base to the Geo handheld to achieve these accuracies even when cell coverage is limited.

If you have more questions on this support document or how best to handle GLONASS corrections please contact your local Precision Laser & Instrument Inc sales or support representative.

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Pacific Crest XDL radio

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