



EZSurv[®] Getting Started for GIS data

Version 2.94

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Summary

Information

- Why post-processing ?
- Compatible data collection software
- Basic post-processing concepts

Actions **TO DO ONCE**

- Install and license
- Default settings
- Configure Mapping System
- Configure Options

Actions **TO DO AT EVERY JOB**

- Post-process data
- Analyze data
- Export GIS Features

For detailed information, refer to the User Guide under **Start > All Programs > Effigis > EZSurv Documentation.**



Why post-processing ?

- To improve the GNSS receiver accuracy.
- To obtain reliable results.
- To easily resolve the reference system alignment. By referencing your survey to a known Base Station (accurate coordinates), all your collected GIS features will automatically be referenced to the Base Station Geodetic Reference System. There is no other transformation to perform.

Compatible data collection software


GIS data, properly recorded using the following field software can be post-processed with **EZSurv**®.





Basic post-processing concepts

In order to improve the accuracy and reliability of your GIS data with post-processing, GNSS data recorded at a reference point called **Base Station** is required. The accuracy of the positioning depends on the distance Rover-Base and the quality of the field data.

Many Base Stations are available on the Internet. **EZSurv**[®] finds automatically the closest base station for your field data and transfers the required files on your PC (some providers require a subscription). The base station providers list is available under the icon . If you have access to an unlisted Provider, let us know: onpozsupport@effigis.com

EZSurv[®] post-processes **trajectories**.

A **Trajectory** is created when a rover file (with raw GNSS data) is combined with a Base Station file (covering the rover file time span). GIS points, lines and polygons are automatically extracted from the trajectory positions.





Install and license

Prior to install **EZSurv**[®], remove the previous version of all Effigis products. Two different versions cannot be installed on a same computer.

- Download **EZSurv**[®] installation package, unzip it and run **Setup.exe** to install. Follow the instructions and, if necessary, refer to the User Guide delivered with the install.
- Start **EZSurv**[®] application from the Windows **Start** menu, select **All Programs**, then **Effigis > EZSurv**.
- When starting the application for the first time, your license file will be updated directly from Internet. If you are not connected to Internet, you will be asked to load your license file at data import (ask your vendor to get it).

Download Center



If required, set the language under **Start > All Programs > Effigis > EZSurv Language Selector**.

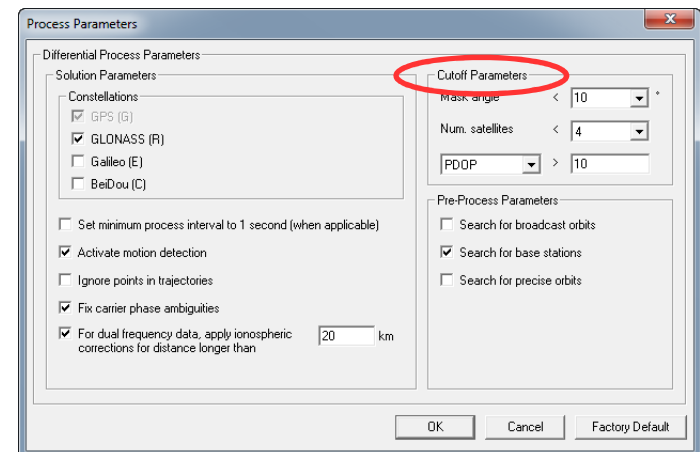


Default settings

When projects are closed, you can set defaults for all future projects.

- **Close** the current project from the **File** main menu.
- From the **Edit Default** main menu, make sure to leave the **Processing Mode** at **Differential Positioning**. It is the most accurate mode if you have access to base station data.
- From the **Edit Default** main menu, set the default **Process Parameters**. According to your specifications, set your own process parameters (**Cutoff Parameters**) and click **OK** to save your settings.

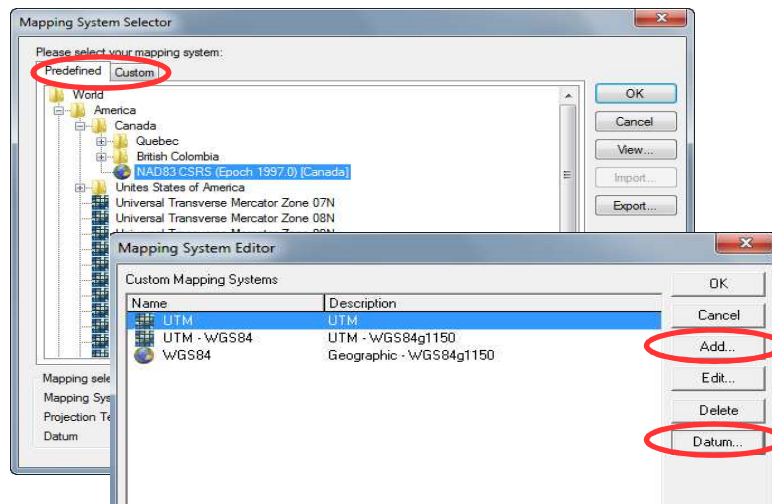
Typically, the Factory Default values are correct for your needs.





Configure Mapping System

Users of **GNSS Driver** for ArcPad can use ESRI map projection kit instead of **EZSurv**® projection kit. **EZSurv**® will automatically use ESRI projection kit if ArcGIS is installed on the PC. Otherwise, users must configure the Mapping System.



- Select a mapping system to display your results. You can select it from a list of **Predefined** mapping systems found under **Tools > Mapping Systems > Selector...**
- If your mapping system is not in the list, you can create a **Custom** one using **Tools > Mapping Systems > Editor...** You may need to create a **Datum** prior to **Add** a mapping system. Once your mapping system is created, you can select it with **Tools > Mapping Systems > Selector...** use the **Custom** tab.



Configure Options

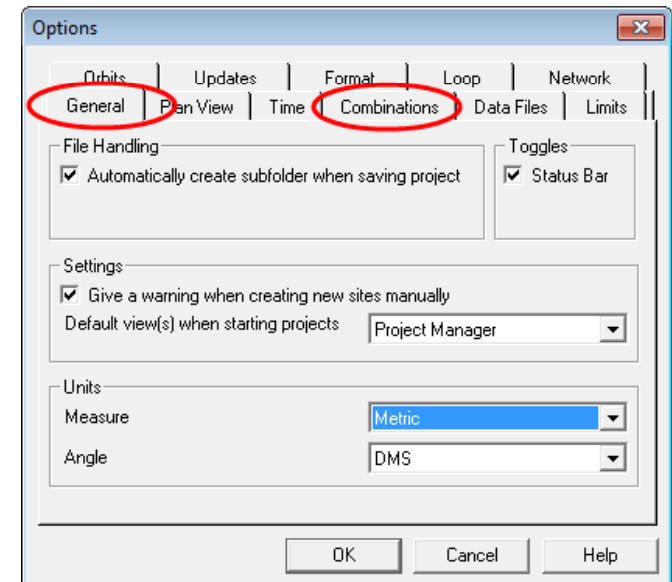
The options are kept from one project to another based on your last modifications. You access the Options through **Tools > Options**.

You must visit the following tabs to better control your process:

- **General** to set unit of measure (Feet or metric).
- **Combination** (explained page 9).

Moreover, you can visit the tabs:

- **Updates** to check or uncheck the Automatic updates (download mapping systems and Base providers upgrades).
- **Plan View** to customize its layout.
- **Time** to set the time scale.



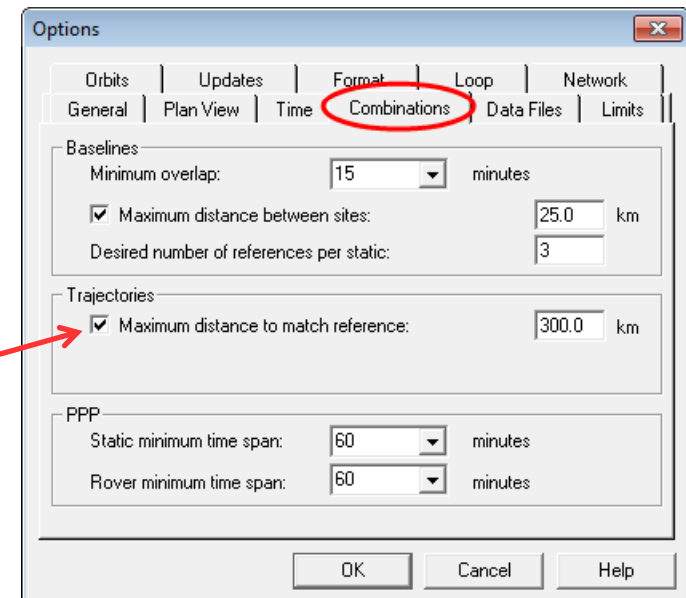


Configure Options – Combination Tab

The accuracy of the positioning depends on the distance between the Base Station (reference) and the survey area (Rover). Using your field data, the processor generates automatically a trajectory (Base-Rover) for each rover file imported in the project. The Base Station are selected according to the distance threshold set under **Tools > Options... > Combinations**.

Input a maximum Base-Rover distance to create Trajectories.

For GIS, typical distance threshold should be set between 100-300 km.



The screenshot shows the 'Options' dialog box with the 'Combinations' tab selected. The 'Baselines' section includes 'Minimum overlap' set to 15 minutes, 'Maximum distance between sites' set to 25.0 km, and 'Desired number of references per static' set to 3. The 'Trajectories' section has 'Maximum distance to match reference' checked and set to 300.0 km. The 'PPP' section has 'Static minimum time span' and 'Rover minimum time span' both set to 60 minutes. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom.




Post-process data (using a Base Provider)

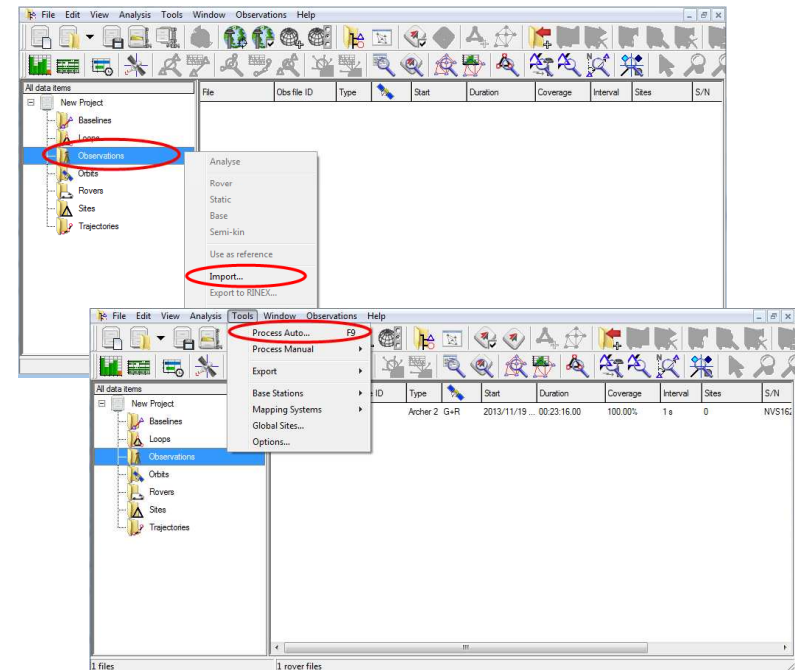
1 – IMPORT YOUR DATA

- Transfer your data files to the PC.
- Start **EZSurv**®, highlight the **Observations** folder, right click and **Import** your *.GPS files.

The original files are kept and copied under *_RT1.*

2 – POST-PROCESS YOUR DATA

- Select **Process Auto...** from the **Tools** menu. The following tasks are performed:
 - ✓ Pre-Process
 - Download and merge Base data (if required)
 - Define Combinations (trajectories)
 - ✓ Process All Data
 - ✓ Display the Process Summary (to close it )




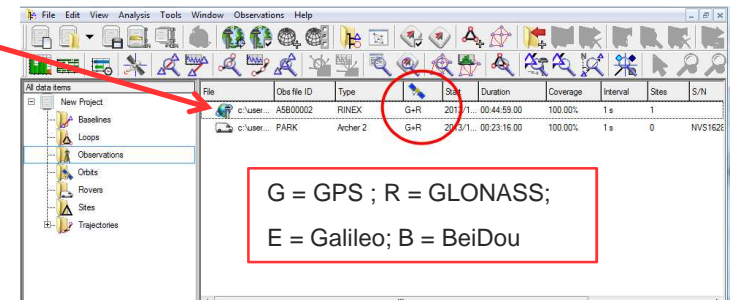


Post-process data (using a Base Provider)

3 – VERIFY THAT THE BASE AND ROVER HAVE THE SAME CONSTELLATIONS

If you use a GNSS receiver (rather than GPS only), then you should use a base with the same constellations. If the base used does not have the same constellations:

- Delete the base file (select it  and delete it).
- Select **Tools > Base Stations > Finder** (main menu) to find the closest base with same constellations.
- Select **Tools > Base Stations > Providers Manager** to set your favorite provider (**Set Favorite**) and to select some specific base(s) from that provider (with **Get Station Coordinate List**).



4 – SAVE YOUR RESULTS

- Select **Save** from the **File** menu to update your files with post-processed positions.



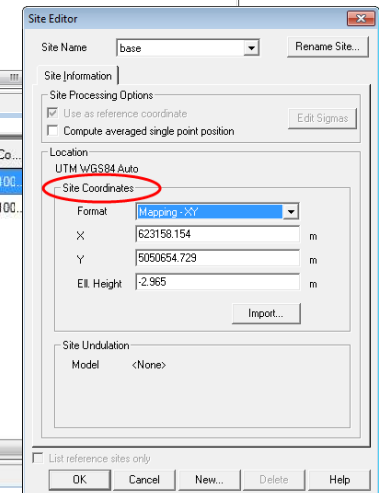
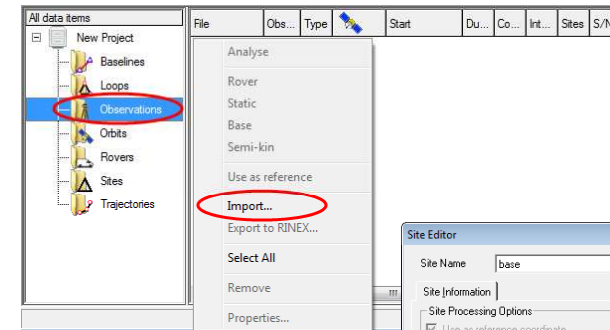
Post-process data (using your own Base)

1 – IMPORT YOUR DATA

- Transfer your data files to the PC.
- Start **EZSurv**[®], highlight the **Observations** folder, right click and **Import** your rover files (*.GPS) and Base files (could be RINEX).

2 – CONFIGURE YOUR BASE (reference)

- From **Observations** folder, highlight your Base file and right click to make sure it is set to **Static** and check **Use as reference**.
- The **Site Editor** opens: input your reference **Site Coordinates** in the proper mapping system.





Post-process data (using your own Base)

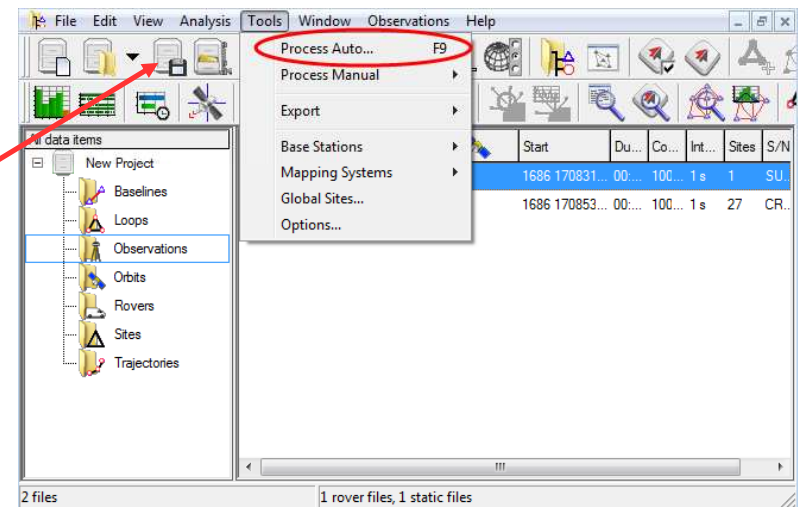
3 – POST-PROCESS YOUR DATA

- Select **Process Auto...** from the **Tools** menu. The following tasks are performed:
 - ✓ Pre-Process
 - Merge Base data (if required)
 - Define Combinations (trajectories)
 - ✓ Process All Data
 - ✓ Display the Process Summary

4 – SAVE YOUR RESULTS

- Select **Save** from the **File** menu to update your files with post-processed positions.

The original files are kept and copied under *_RT1.*





Analyze data

Analysis > Process Summary

The **Process Summary** is automatically displayed after post-processing. It provides the following information:

- Information on the project
- Information on the Base Station used
- List of rover files processed
- Features available in the data

Last Process Summary					
Last Processed					
Project	New Project				
Processing Date	2014/11/06 10:54:51.50 (LOCAL)				
Mapping System	UTM NAD83eters Automatic				
Projection Template	Universal Transverse Mercator, Automatic (UTM-A)				
Datum	NAD83 - Canadian Spatial Reference System				
Geoid Model	<None>				

TRAJECTORIES					

Base Station	drao				
Constellations	GPS, GLONASS				
X	309256.478 m				
Y	5466635.031 m				
Ellipsoid Height	542.230 m				
Undulation	0.000 m				
Mean Sea Level	542.230 m				
Scale Factor	1.0000469				
Central Meridian	W117°				

Rover	Distance (km)	Number of epochs			Constellations Used
		Total	Solved	% Solved	
A92206_4WHIS	203.4	102	102	100.00	GPS, GLONASS

[Points]				Number of points	
Type	Feature	Total	Solved	% Solved	
Point	Stations	1	1	100.00	

[Continuous lines/polygons]				Count	
Type	Feature				
Line	Road	1			

Select **Archive project** from the **File** menu to save your post-processing project into one file.



Analyze data

Analysis > GIS Feature Summary

You can view the features position along with their post-processed accuracy.

The solution types **Pseudo-ranges (raw)**, **L1 (float)** and **L1 (fixed)** indicate post-processed positions.

[Points]	Label	Start time	Duration	Solution	Position			Standard deviation		
Feature					X (m)	Y (m)	EllHgt (m)	X (m)	Y (m)	Hgt (m)
Point Average 0		2011/09/20 15:48:17	00:04:58	L1 (float)	918735.194	5698402.083	1009.143	0.241	0.091	0.119
Point Average 1		2011/09/20 15:53:59	00:04:58	L1 (float)	918718.573	5698425.734	1010.522	0.245	0.097	0.131
Point Average 2		2011/09/20 16:00:03	00:04:58	L1 (float)	918699.178	5698438.881	1008.306	0.248	0.107	0.141
Point Average 3		2011/09/20 16:05:41	00:04:58	L1 (float)	918687.362	5698431.647	1009.361	0.230	0.107	0.134
Point Average 4		2011/09/20 16:11:45	00:04:58	L1 (float)	918692.637	5698420.866	1009.696	0.213	0.094	0.127
Point Average 5		2011/09/20 16:18:05	00:04:58	L1 (float)	918710.396	5698402.556	1008.854	0.144	0.060	0.083
Point Average 6		2011/09/20 16:30:37	00:04:58	L1 (float)	918725.707	5698377.100	1007.781	0.235	0.093	0.142
Point Average 7		2011/09/20 16:36:33	00:04:58	L1 (float)	918745.701	5698355.015	1009.939	0.234	0.102	0.098
Point Average 8		2011/09/20 16:42:13	00:04:58	L1 (float)	918764.622	5698329.460	1008.535	0.187	0.077	0.099
Point Average 9		2011/09/20 16:48:27	00:04:58	L1 (float)	918788.116	5698293.022	1009.826	0.203	0.074	0.118
Point Average 10		2011/09/20 16:54:27	00:04:58	L1 (float)	918805.789	5698260.260	1009.258	0.152	0.050	0.073
Point Average 11		2011/09/20 17:01:37	00:05:00	L1 (float)	918814.684	5698257.834	1009.794	0.242	0.074	0.110
Point Average 12		2011/09/20 17:07:15	00:04:58	L1 (float)	918819.801	5698278.129	1008.034	0.454	0.205	0.199
Point Average 13		2011/09/20 17:13:17	00:04:58	L1 (float)	918811.234	5698290.995	1008.587	0.244	0.074	0.094
Point Average 14		2011/09/20 17:18:53	00:04:58	L1 (float)	918800.224	5698305.716	1008.338	0.387	0.179	0.144
Point Average 15		2011/09/20 17:25:07	00:04:58	L1 (float)	918773.111	5698341.578	1008.732	0.388	0.124	0.118
Point Average 16		2011/09/20 17:30:43	00:04:58	L1 (float)	918760.888	5698358.433	1008.911	0.383	0.113	0.100
Point Average 17		2011/09/20 17:36:19	00:04:58	L1 (float)	918750.681	5698375.470	1009.740	0.379	0.106	0.099
Point Average 18		2011/09/20 17:41:57	00:04:58	L1 (float)	918740.255	5698392.743	1008.998	0.440	0.251	0.319
Point Average 19		2011/09/20 17:48:13	00:04:58	L1 (float)	918716.163	5698412.248	1009.098	0.431	0.100	0.119
Point Average 20		2011/09/20 17:53:59	00:04:58	L1 (float)	918737.375	5698378.584	1009.392	0.423	0.091	0.106
Point Average 21		2011/09/20 17:59:43	00:04:58	L1 (float)	918758.986	5698346.004	1008.616	0.426	0.090	0.423
Point Average 22		2011/09/20 18:05:25	00:04:58	L1 (float)	918779.085	5698315.566	1009.748	0.389	0.087	0.254
Point Average 23		2011/09/20 18:11:15	00:04:58	L1 (float)	918804.052	5698282.323	1009.170	0.375	0.087	0.221

Total: 24 point feature(s) (24 processed)



Export GIS data

- If you used **GNSS Driver** for ArcPad, after processing, **EZSurv**® updates your SHP files when you save the project (as explained on page 11 and 13). Therefore, you can now use your SHP files directly in your GIS software.
- If you used **EZTag CE**™, export your post-processed features using a specific GIS format with **Tools > Export > Features...**

Select the **Output folder**.

Configure the export (**Format**, **Spatial Reference**, apply **Filters and Offsets** to the output, set some output metadata according to your **Preferences**). Your export configurations can be saved in a **Profile** for future exports.

Click **Export** to export your files.



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