

# GPS Newsletter – SKI-Pro

A Newsletter On System 500 GPS, Vol. 03, No. 03.

## Introduction

With SKI-Pro v3.0 you profit from a lot of very attractive new features. Hidden at first sight but very powerful is the new GPS-processing kernel with enhanced performance and reliability. New processing parameters are tailored to steer the new kernel in an optimal way. The GPS-processing Analysis Tool assists you graphically in analysing post-processed results.

The new reporting concept allows you to produce high quality, visually attractive reports on GPS processing or mean coordinates and differences.

The Codelist Manager has been totally updated and new components have been introduced to make data transfer easier.

Read more about these enhancements and various other improvements in the following sections.

## GPS-Processing: New Kernel, New Parameters

The new GPS-processing kernel uses the same strategy that is implemented in System 500 RTK and which has proven to be extremely powerful. In order to ensure the highest possible reliability, the ambiguities are not only resolved once, but the search routine is continuously repeated for the entire observation interval.

As ambiguities are **continuously monitored** over the entire observation interval, this strategy results in the highest reliability possible for GPS-processing today.

The performance of SKI-Pro is greatly improved not only for typical rapid static observations but also for long baselines and kinematic data. When you post-process RTK data, identical results as in the field will be achieved.

Please refer to the following two newsletters for further details about the strategy of the kernel:

**Vol 01, No. 06 Sensor – RTK (1)**

**Vol 01, No. 07 Sensor – RTK (2)**

To support the new kernel in an optimal way the processing parameters have been updated as well.

The new GPS-processing Parameters dialog consists of two default pages, the **General** and the **Auto-Processing** page. Two additional pages, **Strategy** and **Extended Output**, can be switched on for advanced use. The parameters for SPP calculations are, included in the General and Strategy pages.

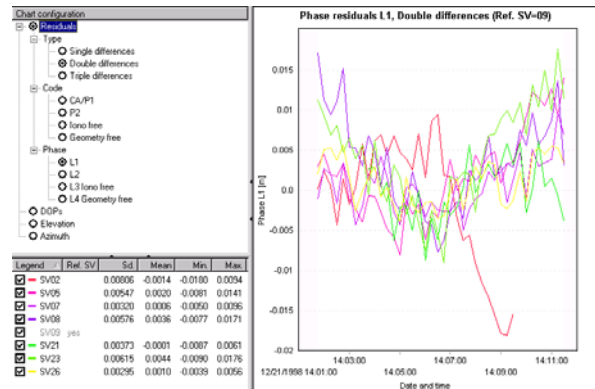
Thanks to the high performance of the new kernel the default maximum distance up to which ambiguities will be resolved has been increased to 80 km.

The new Extended Output page offers you the chance to select additional information to be processed and stored during the processing run. A graphical output of this additional information is available via the GPS-Processing **Analysis Tool**.

Future newsletters will inform you in detail about the new processing parameters. Further information is also available in the Online Help.

## GPS-Processing Analysis Tool

Use the **Analysis Tool** to comfortably and quickly get an overview on the results and important parameters of a processing run. In the Results Manager, select a baseline and choose **Analyse** from the context menu. The graphical tool opens in a stand-alone window and offers you the chart itself to the right and a **Chart content** pane and a **Legend** for satellites and DOP values to the left.



In the **Chart content** pane select which kind of information shall be displayed.

In the **Legend** select which satellites to be displayed. For **DOP value charts** select which type of DOP values shall be displayed in the chart.

Using the DOP chart you can quickly view which parts of the observation interval are affected by poor satellite geometry. The graphical display of phase residuals offers the ideal way to quickly and graphically estimate the measurement noise contained in the data.

The option to also view the geometric-free L4 residuals helps to estimate the activity of the ionosphere during the observation interval.

## New Reporting Concept

With SKI-Pro v3.0, a new concept for reporting has been introduced. Based on **HTML** and **XML technology**, high quality and visually attractive reports can be generated. All of the new reports can be saved directly as an HTML page or can be copied to a program that supports HTML files, e.g. Microsoft Word.

All of the reports are user configurable via **Report Templates**, which offer you complete flexibility concerning the definition of the contents as well as of the look and feel of the reports. Via the new **Report Template Management**, the existing pre-defined templates can be modified and new templates can be created. To quickly access the template properties make use of the new **Reporting toolbar**:



The new reporting concept is used for a series of new GPS-processing reports and for a new report on **Mean Coordinates and Differences** in a project.

The GPS-processing reports can either be displayed **embedded** in the Results Manager view or they can be opened in a **stand-alone** window. The Mean Coordinates and Differences Report is always displayed in a separate window.

Stand-alone windows are advantageous when you want to have other views open for comparison at the same time.

For quick and easy navigation, all open stand-alone reports, as well as the GPS-processing Analysis windows, are listed in the new **Open Reports List Bar**.

## New GPS-Processing Reports

For each GPS-processing run, a set of reports is created: a Summary report and individual reports for all baselines (and SPP computations).

By default the **Summary** report displays the following sections:

- Project Information
- Processing Parameters

- SPP Overview
- Baseline Overview
- Kinematic Overview.



The overview sections appear depending on whether the processing run contains static and/or kinematic baselines or SPP calculations. For kinematic baselines the information is split into track specific parameters and parameters specific for each static point within the track.

The individual reports contain more details about the processing run such as used processing parameters, satellite selection, observation statistics, ambiguity statistics and many more. For further information please refer to the Online Help.

All of the GPS-processing reports have been designed to provide a clear and easy to read layout, both on screen and on paper. Make use of the **Table of Contents** to navigate through the sections of your report.

## New Mean Coordinates and Differences Report

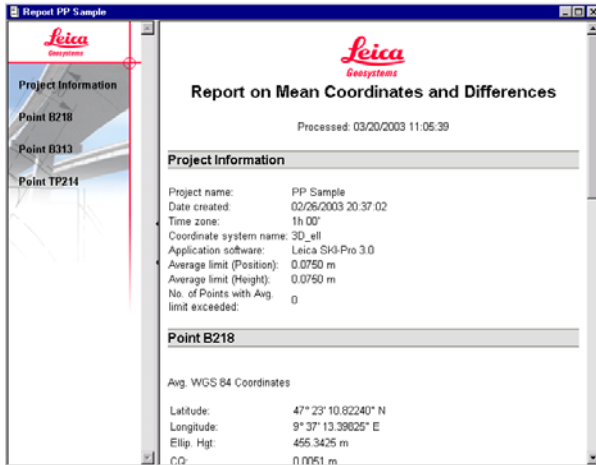
The **Mean Coordinates and Differences** Report provides an overview on the measured solutions used to determine the mean coordinates of a point as well as the differences between the single solutions and the averaged coordinates.

The report can be activated from the Tools main menu if a project is open. Since it is always opened in a stand-alone window multiple reports can be open at the same time.

Within the Points section you find the details of every solution that makes up a point with a mean value:

- The actually measured coordinates
- The difference of the measured coordinates to the mean coordinates

- The quality values for each measurement
- An indication whether a measurement has been included in the mean calculation and whether the averaging limit has been exceeded.



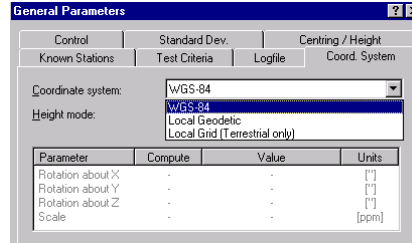
The coordinate representation can be changed to display all coordinate systems, all coordinate types and height modes.

## Adjustment

From v3.0 onwards the Adjustment component supports **Height Difference observations**. Level Setups can be created and height difference observations can be entered manually. The Adjustment can now be used to combine GPS observations, TPS observations and height difference observations from Level lines in one computation run.

Apart from network adjustments, the height difference observations are also included in Pre-analysis calculations and when all loops are computed in the adjustment view.

Furthermore, you can now adjust pure terrestrial observations in a local grid system. GPS observations are ignored when the new option **Local Grid (Terrestrial only)** has been selected in the **Coord. System** page of the **General Adjustment Parameters**.

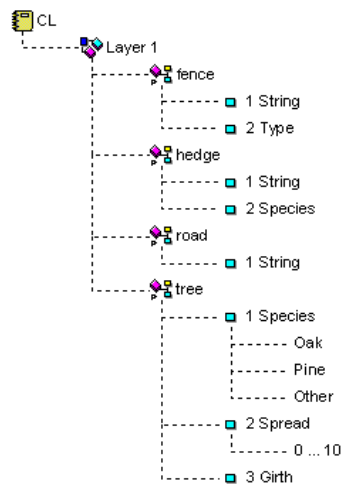


If you want to compute a combined adjustment of GPS and terrestrial measurements choose **Local Geodetic**. You need to have a local coordinate system attached to your project for this option to become available.

## New Components, New Tools

The **Codelist Management** component has been changed for SKI-Pro v3.0 and is now fully based on Explorer views, which you are used to throughout SKI-Pro. This new view has been introduced both in the **global Codelist Management** and in the project specific **Codelist view**. This brings not only a consistent look and feel with the other components, but also various improvements to the previous component of v2.5. Among these improvements is the option to **copy and paste** codes and attributes between codelists or between the global Codelist Management and the project specific Codelist view.

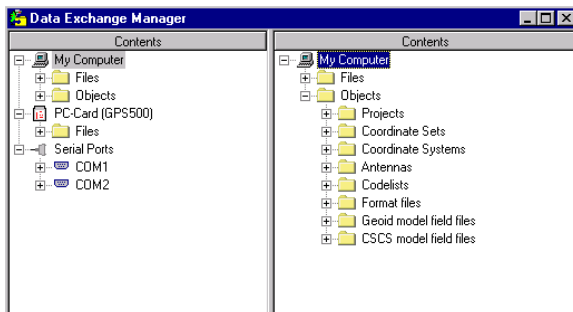
In addition an improved printout has been introduced. Apart from the standard printing of report views it is now also possible to create an **all-in-one graphical report style printing** showing Layers, Codes and Attributes in one printout.



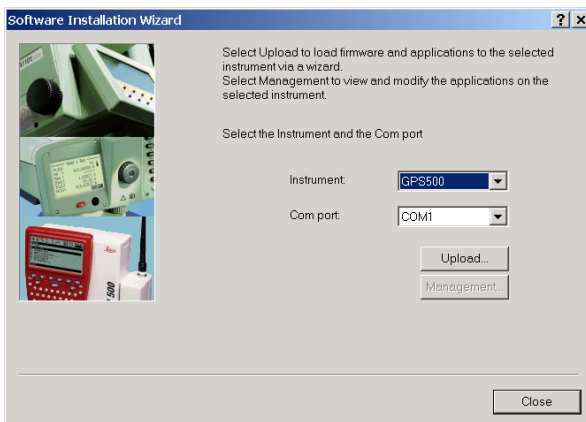
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The existing Sensor Transfer component of SKI-Pro v2.5 has been replaced by the new **Data Exchange Manager** and by the new **Software Upload** tool.

The **Data Exchange Manager** is a new component in SKI-Pro v3.0, which enables you to transfer data between an instrument connected to the serial port and your PC. Internal Memory, PC-Card Memory and Sensor System Memory of your System 500 instrument can be addressed using serial communication. If your PC has a PCMCIA card drive you can also transfer data directly from and to a PC-Card. The transfer is done conveniently using **drag and drop** or **copy and paste** between the two panes of the Data Exchange Manager view.



A new component called **Software Upload** is now available in SKI-Pro, which can be used to upload Sensor Firmware, Terminal Firmware, Language Files, Configuration Files or Character Sets to your GPS System 500 instrument using serial communication. A software installation wizard guides you through the necessary steps to upload sensor firmware or other software to your instrument.



## **More Improvements...**

There are a lot more improvements included in SKI-Pro v3.0. **Point annotations** can now be displayed in the points view, a convenient way to **copy and paste coordinate triplets** has been introduced and various enhancements during ASCII export are now available. Please, read the Release Notes for SKI-Pro v3.0 to get an overview on all of the new, exciting features.

Also, please note that the Online Help has been updated to cover all new features. The **Getting Started** manual and the **General Guide to Static and Rapid Static** processing are also updated and are available on the SKI-Pro v3.0 CD.

## **Remember...**

- SKI-Pro v3.0 includes a completely new processing kernel, which continuously monitors the ambiguity resolution. This results in the best reliability achievable for GPS-processing.
- The GPS-processing parameters have also been updated. They steer the kernel in an optimal way and are simplified wherever possible.
- A new GPS-Processing Analysis tool is available to graphically display residuals and DOP values.
- SKI-Pro v3.0 uses new XML/ HTML based technologies resulting in high quality and visually attractive reports. Report Templates allow full flexibility with respect to the contents and to the layout.
- Codelist Management, the Data Exchange Manager and Software Upload are new components in SKI-Pro v3.0.
- There are more new features than those described in this newsletter. Read the Release Notes for more details!