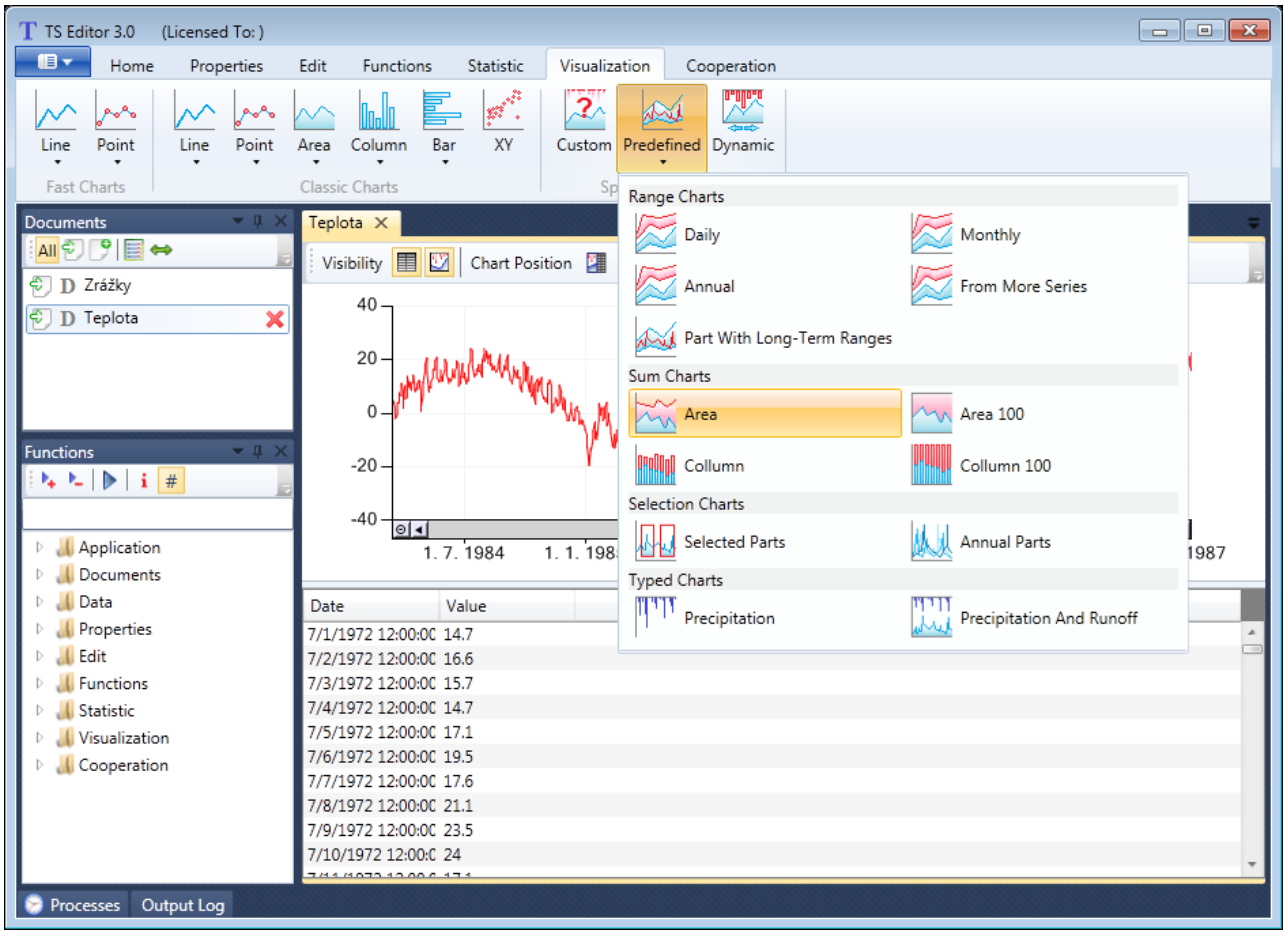
TS Editor 3.0

White paper



© Miloš Gregor, PhD. / milos.gregor@hydrooffice.org
HydroOffice.org – software for water science
This file is published under Creative Common License

What is HydroOffice

HydroOffice is a comprehensive software package designed for hydrology, hydrogeology, meteorology and for environmental engineers. The HydroOffice package contains a number of separate installable tools that are distributed as freeware or are priced. Each of these tools is designed for a specific purpose. These tools can be used for:

- recession curve analysis of springs or rivers
- evaluation and analysis of extreme water conditions (drought or flood)
- production of flow duration curves
- calculation of minimum or maximum N-daily values
- baseflow separation
- separation of runoff components using results of recession curve analysis
- calculation of long-term average groundwater runoff from a basin
- time series analysis, editing, processing, visualization, evaluation and export

What is TS Editor

TS Editor is the latest tool in HydroOffice software and is charged for. It is the flagship of HydroOffice tools and is created with the latest technology, which makes it significantly faster in import/export operations, in visualization and in function runtime. The GUI of the program can be freely customized according to user needs. The program is generally designed to work with data sets of time series; processing measured values over time. This is the most comprehensive tool in the HydroOffice package. Its structure was suggested by vast experience, therefore work with this program is very fast, easy and comfortable. Its usage and functionality is described in the following sections.

What can this program be used for ?

Because of the wide range of this program's capabilities, it can be used in many areas. In fact, it can be used wherever you need to process the time series of measured values. Due to the focus of HydroOffice software, its functionality is indispensible in the following areas:

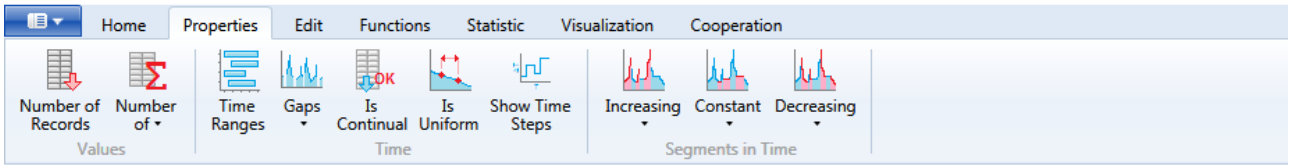
- hydrology and hydro-biology
- geology, geo-technical engineering and geo-informatics
- environmental science and engineering
- water and land use management
- meteorology and climatology

The program can be used in multiple phases of work. It can be used for input processing of raw data from databases and dataloggers, analysis of outputs and results of external programs or for intermediate and final processing, and for visualization and statistical evaluation of data. In addition, the program allows you to work with selected external software and files, so it can be used as a platform for cooperation. All data in the program can be analyzed in tabular and graphical form in various customizable visualizations. This TS Editor program will find application in the government sector, in academic and research institutions, NGOs and also in the commercial sector in solving theoretical and practical problems in the water sector. The following section deals with a brief description of the extensive functionality of this program.

Functionality

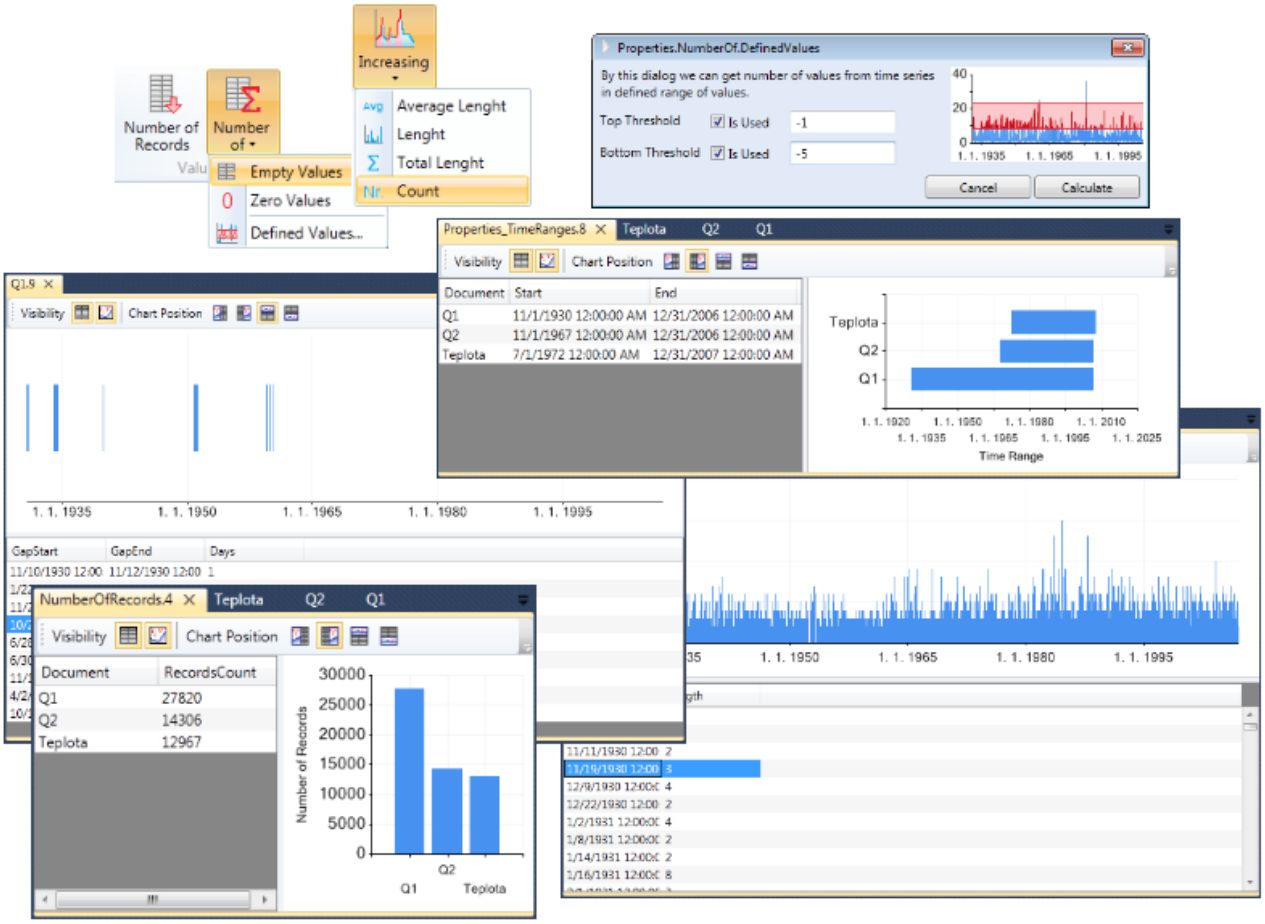
The core of each program is its functionality. TS Editor, version 3.0, contains more than 2,000 functions for managing time series. Most of these features can be found in the group of conversion commands. Comparing TS Editor functionality with other existing software, this program is situated on the border between spreadsheets, statistical tools, databases, visualization software and all various highly specialized professional tools. Development of this program involved the challenge to create a tool which could take the most important components of all the above methods of processing time series and to logically integrate them in all the program's individual features and tools. This resultant program has all these individual features incorporated according to the purpose of the six groups listed hereunder. The following subsections describe each group of commands. You can execute these features from the ribbon toolbar, using the functional tree in the side panel, or with the very simple and fast scripting language from the command line.

1 Properties

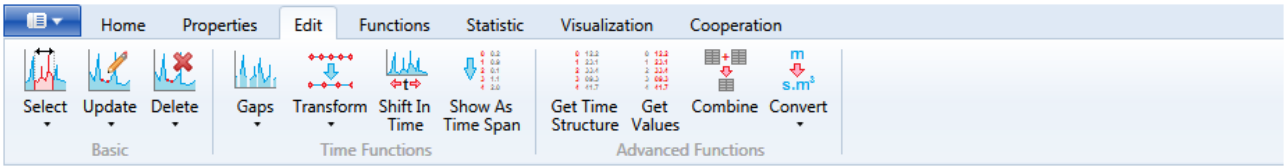


This properties group contains functions and commands to obtain information about the nature and structure of the time series. With these commands you can get metadata, such as:

- the number of values in the time series
- the number of zero values or values in a defined range
- time ranges of selected time series
- length, character and the number of gaps in the series
- information on the uniformity and continuance of the time series
- characteristics of sections in the series with increasing, decreasing or constant value trends

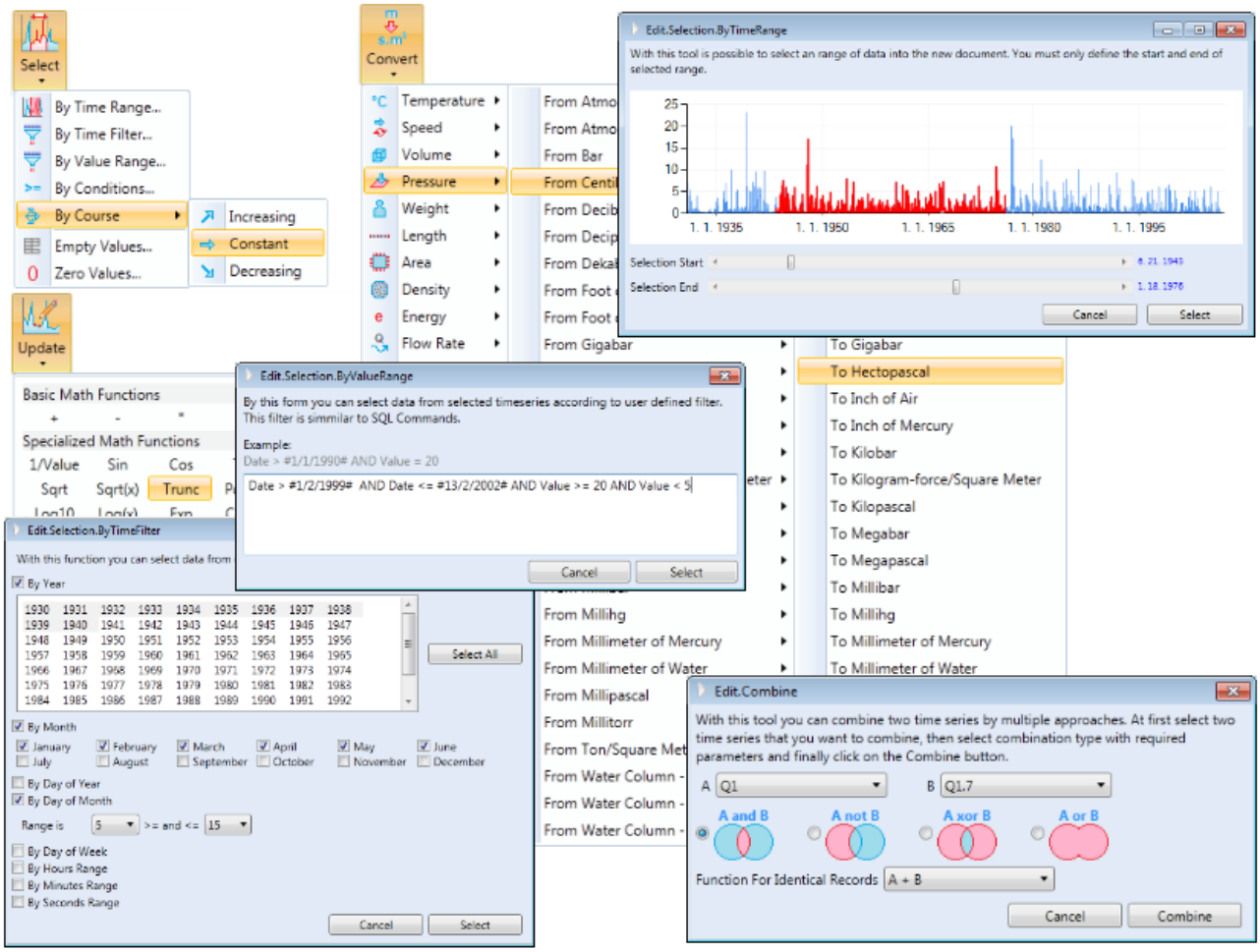


2 Edit

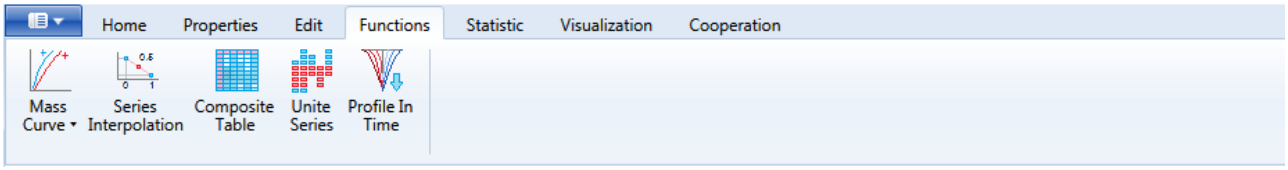


The Edit group contains functions and commands for editing the series. This group includes the most features. Using the commands in this group you can perform the following operations:

- select or delete data on the scope time range definition; using filters, user defined conditions, the nature of the values and other methods
- recalculate the values in a series using mathematical functions
- fill gaps using several methods
- transform the time series (for example; move from hourly to daily time series)
- shift values in the document on the timeline
- copy the temporal structure of series or values between documents
- combine and merge time series into a single document with variable and adjustable functions
- convert units

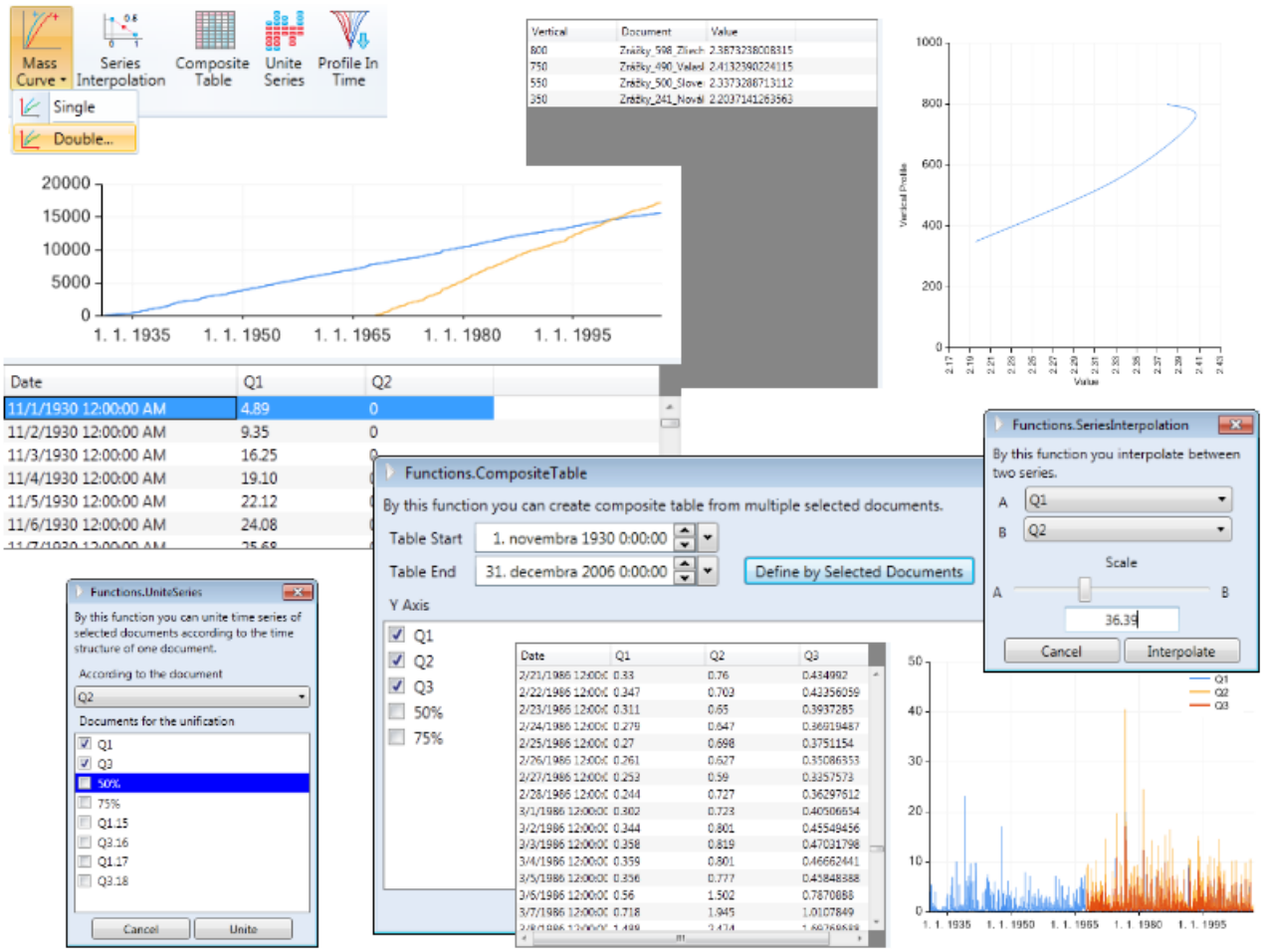


3 Functions

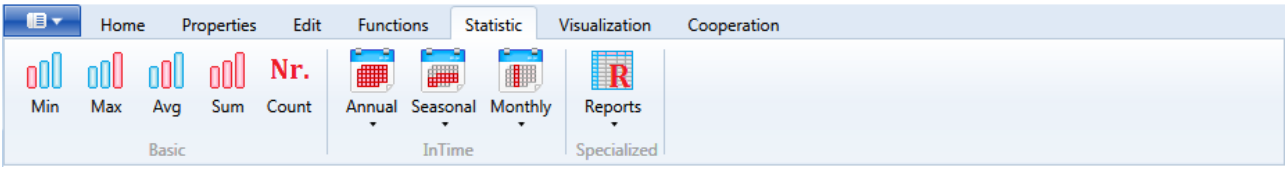


The Functions group includes specific features that cannot be assigned to other categories. Their use is widespread and they are particularly useful for:

- creation of single and double mass curves
- interpolation of values between two time series
- automatic merging of multiple documents into a single one
- unification of the temporal structure of multiple time series according to the one selected
- statistical analysis and visualization of multiple time series in the profile (for example; time series depending on depth below the surface, or altitude)

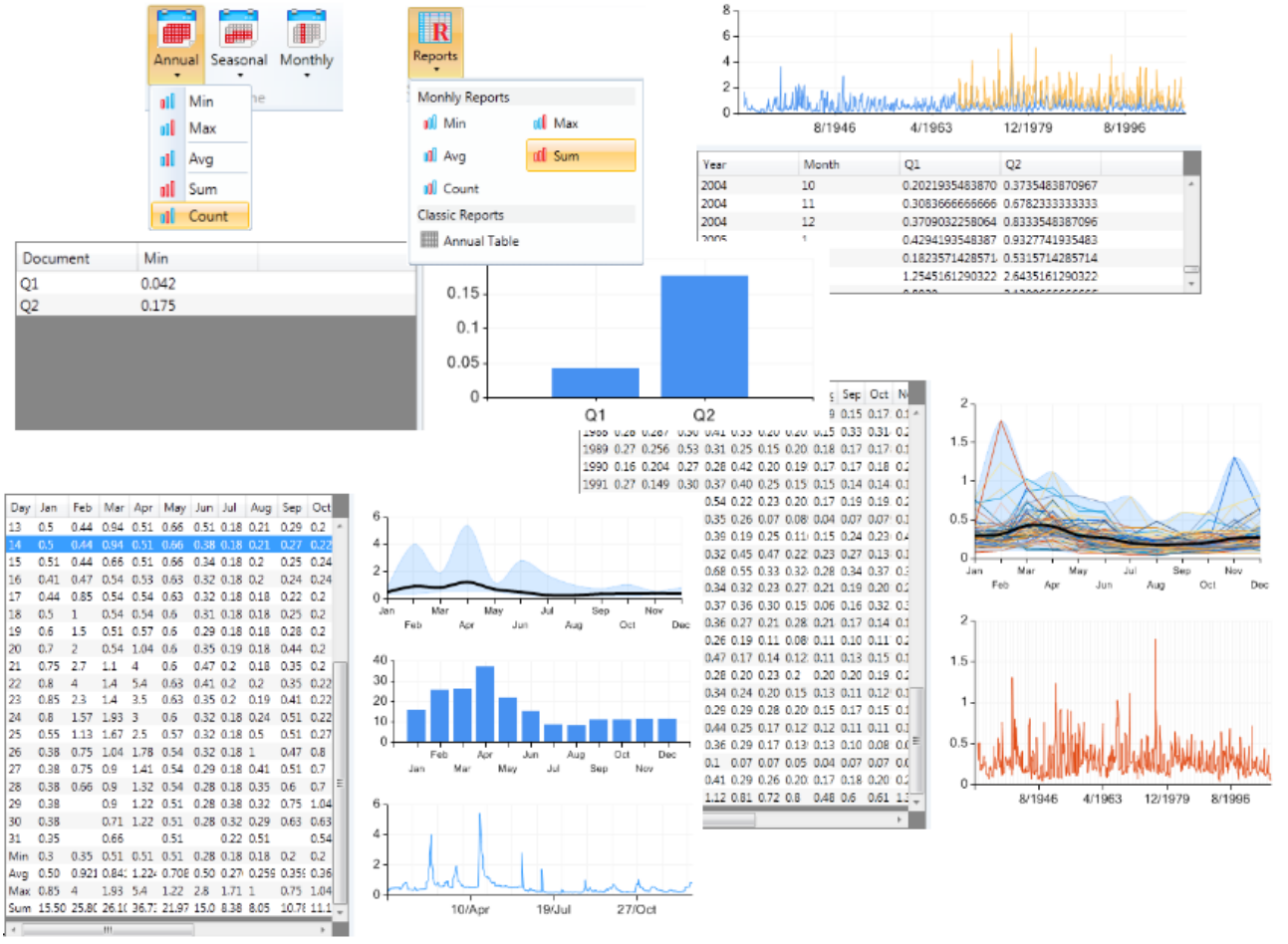


4 Statistics

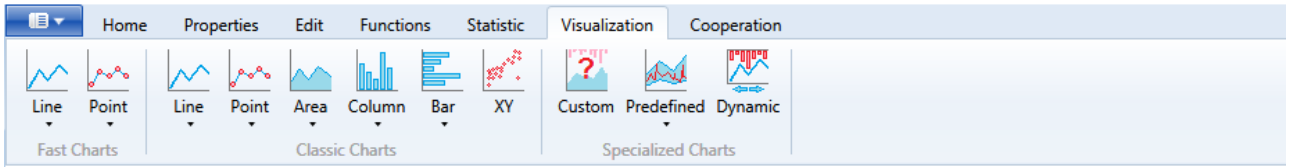


The focus of functions in this group is quite obvious. Statistical parameters for the selected series can be calculated using these commands. The current version of the program allows you to calculate the minimum, maximum, average and sum values and to obtain information on the number of values. This information can be obtained for the entire time series, for individual years, months, seasons and inter-annual periods.

In addition, the program allows you to create statistical reports which can be used directly in final reports or articles.



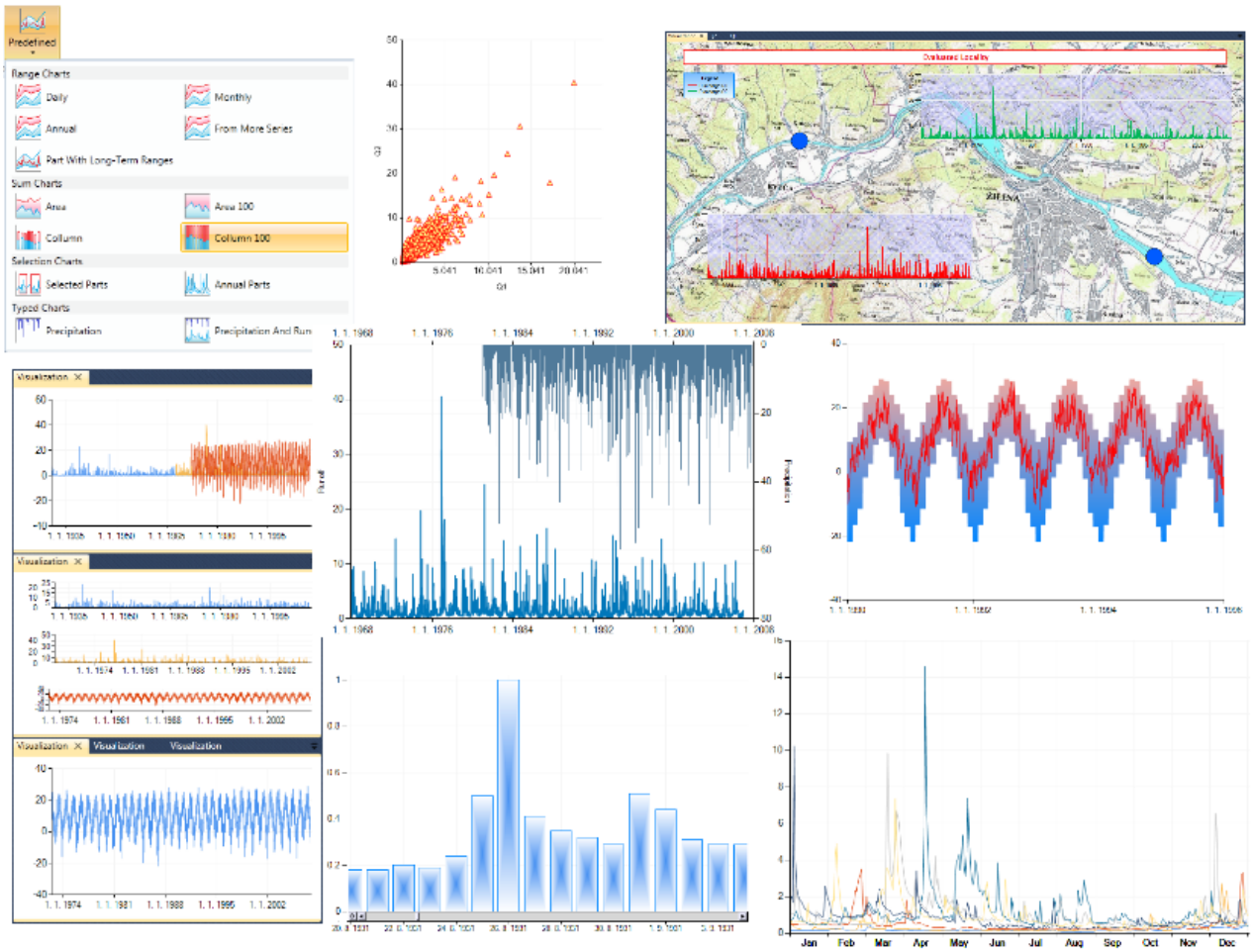
5 Visualization



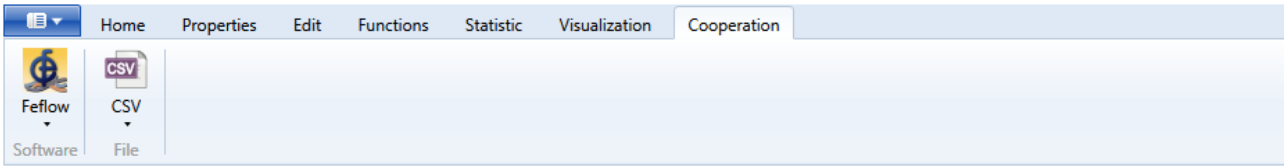
This program allows you to create many types of charts for visualization. The functions give you a fast view of large amounts of data which significantly improves rendering series in the chart. You can visualize all types of series, and their individual settings and parameters can be freely changed.

Many independent features have been created in the program for specific visualization types. For example, these functions allow you to show various graphs, such as range charts, summary charts, graphs of annual courses of values and graphs of rainfall-runoff relationships.

In addition to the functions described above, the program allows you to create visualization of sections of your time series which are mutually temporally synchronized.

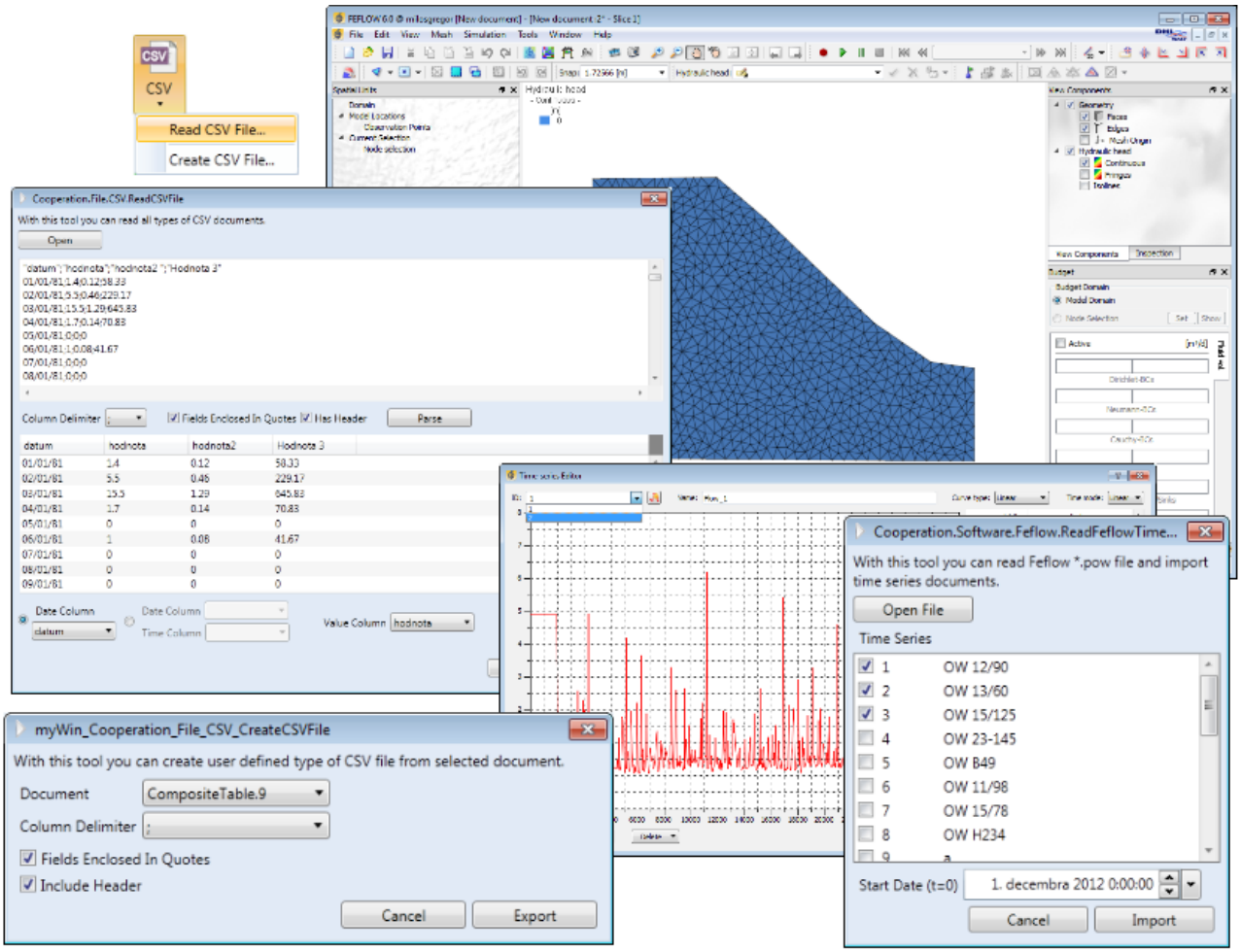


6 Cooperation



This last group of commands lets you work with external programs, databases and file structures. The current version of the program allows you to work with the Feflow program. This cooperation allows prepared time series to be exported from the program in a specific *.pow file, specific for this program. In addition, your results from Feflow can be directly opened and used in TS Editor.

In this section you can also work with CSV files with variable character. CSV files are frequently used by external programs and data-loggers.



Conclusion

The above text describes all options for using TS Editor 3.0. With more than 2,000 functions the program is multi-purpose and can be applied in many situations. This program provides everything you will ever need in handling your time series of measured values. The focus during development of this program was especially placed on its use in environmental, meteorological, engineering and in all water-based sciences.

The program can be purchased on the hydrooffice.org page after registration or through external distributors in your country.

A demonstration version can be tried directly after installing the software package HydroOffice 2012.

The complete user manual can be found on the web in the download section. To see the program in action, you can watch the Preview Video or individual tutorials on YouTube. If you are interested in this program, check our website (hydrooffice.org) where you will find information about discounts and other opportunities for obtaining a program licence.