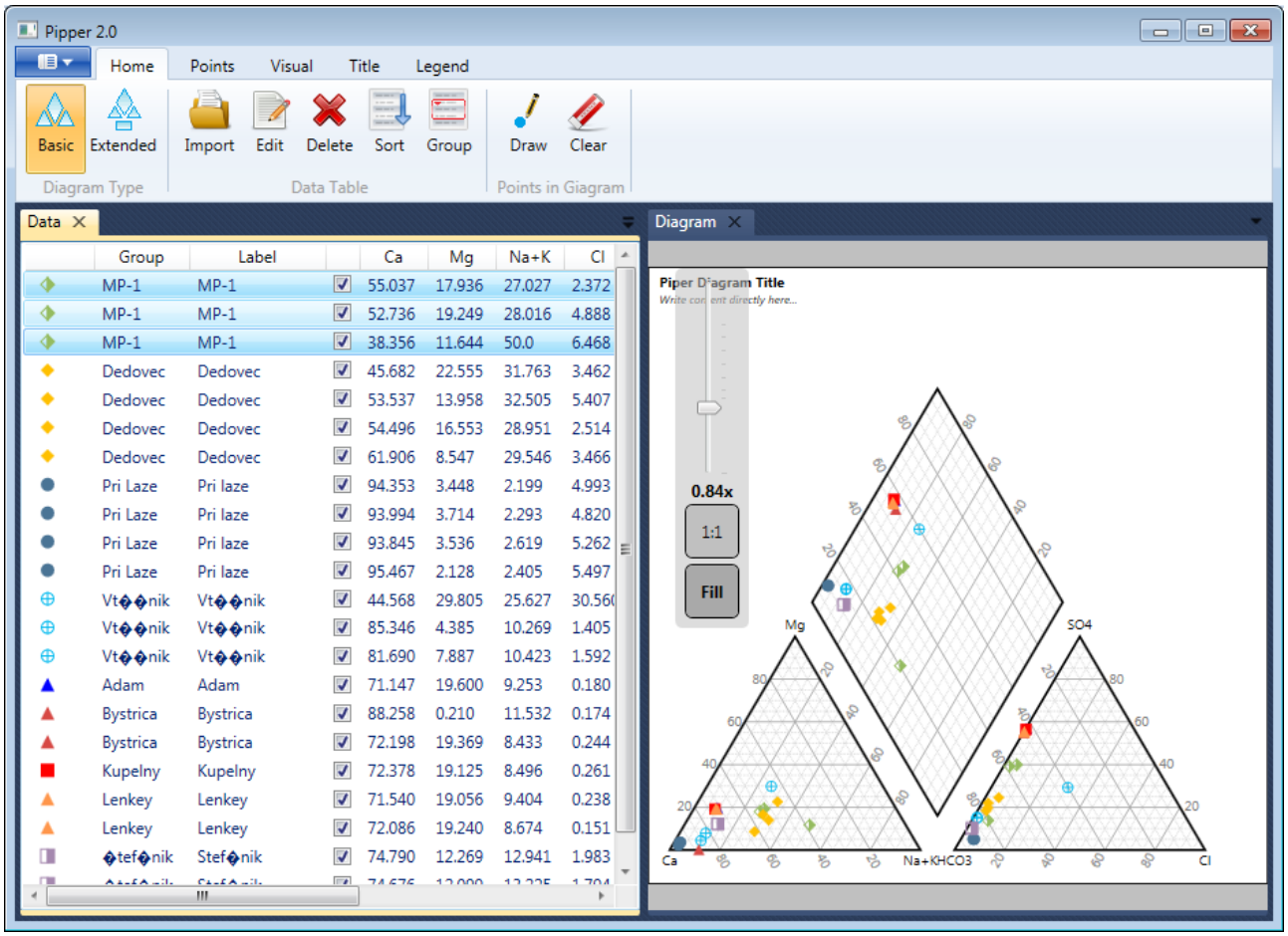
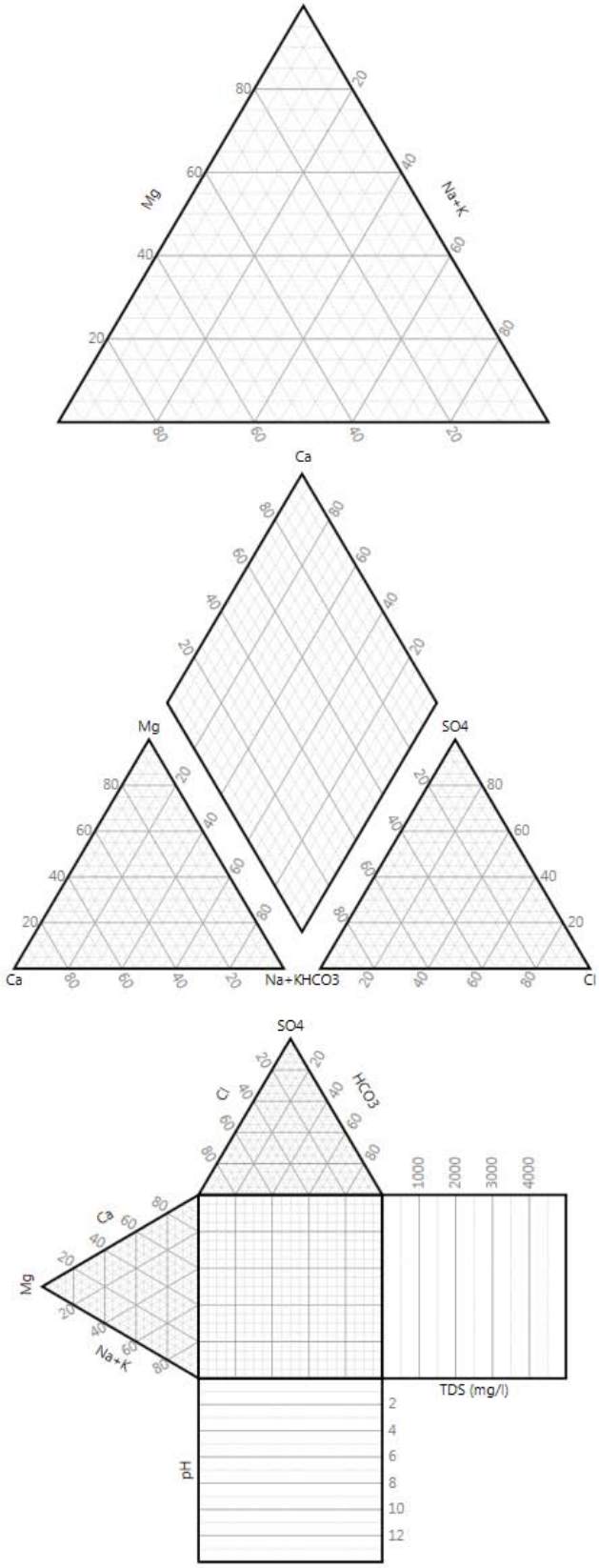
HydroOffice Diagrams

White paper
(For Ternary 1.0, Piper 2.0 and Durov 1.0)





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1 What is HydroOffice

HydroOffice is a comprehensive software package designed for hydrology, hydro-geology, 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:

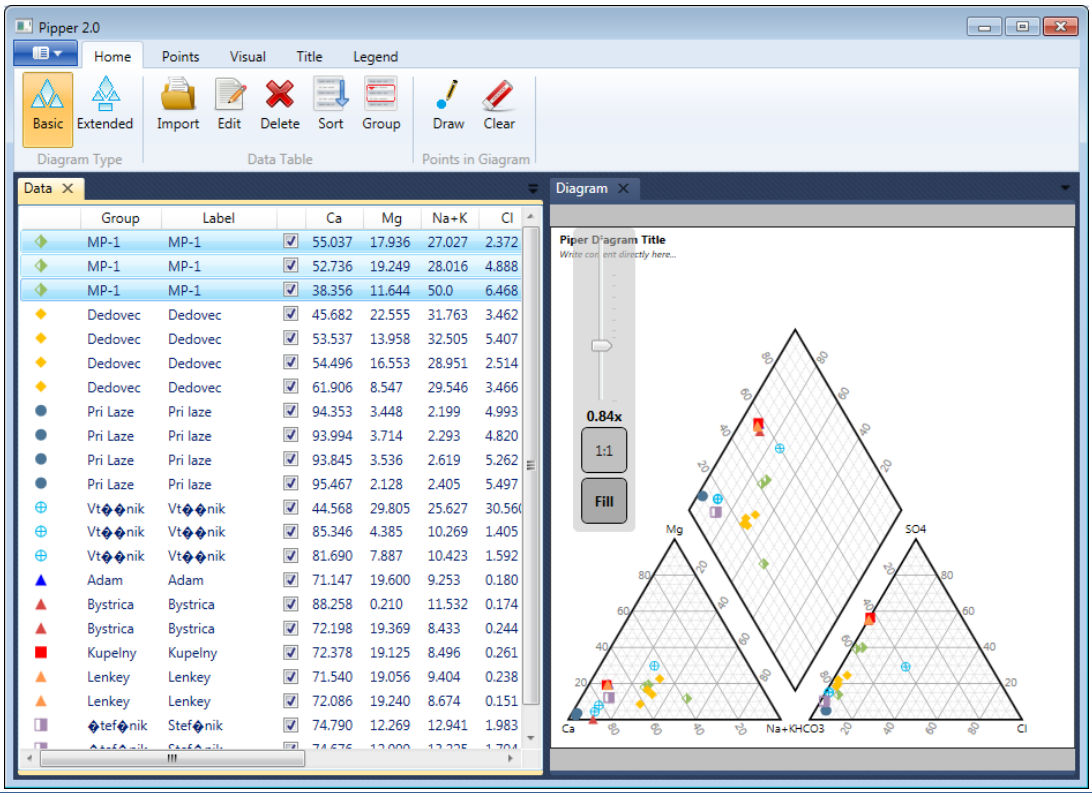
- recession curve analysis of springs or rivers
- evaluation and analysis of extreme water conditions (drought or flood)
- production of flow duration curves
- calculation of minimum or maximum N-daily values
- baseflow separation
- separation of runoff components using results of recession curve analysis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

2 What are HydroOffice Diagram Tools

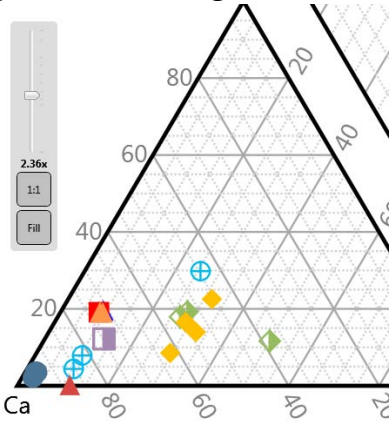
The diagram tools are three specific programs which are “stand-alone” installable HydroOffice tools. These tools are used for visualization of chemical composition of surface water and groundwater in specialized diagrams. These diagrams can not be created in conventional programs and must be used specialized tools. Three independent programs have been created solely for rendering the following three diagrams: The Ternary diagram, the Durov diagram and the Piper diagram. These all allow you to create very specific visualization, which is not currently possible in any other program, and the following text describes some specific features of these programs.

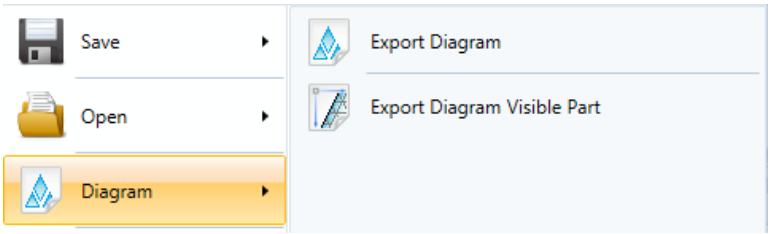
3 User Interface of Tools

All three diagram-creation programs have the same user interface. Therefore, when you master one tool, you can automatically use the other two. The interface is very simple and logically structured so that all features are quickly accessible, and each program consists of a ribbon toolbar and two documents.

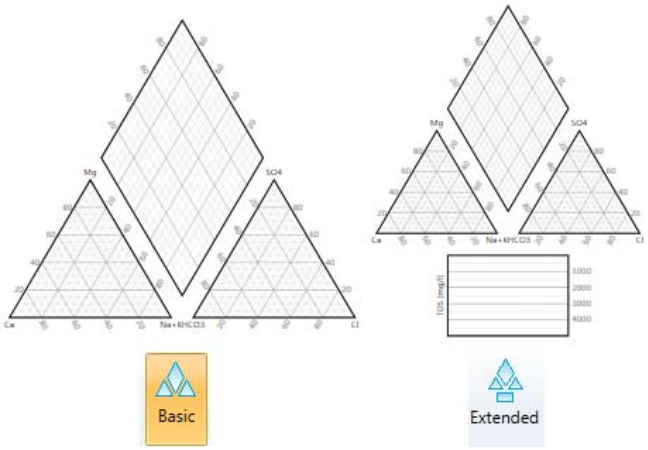


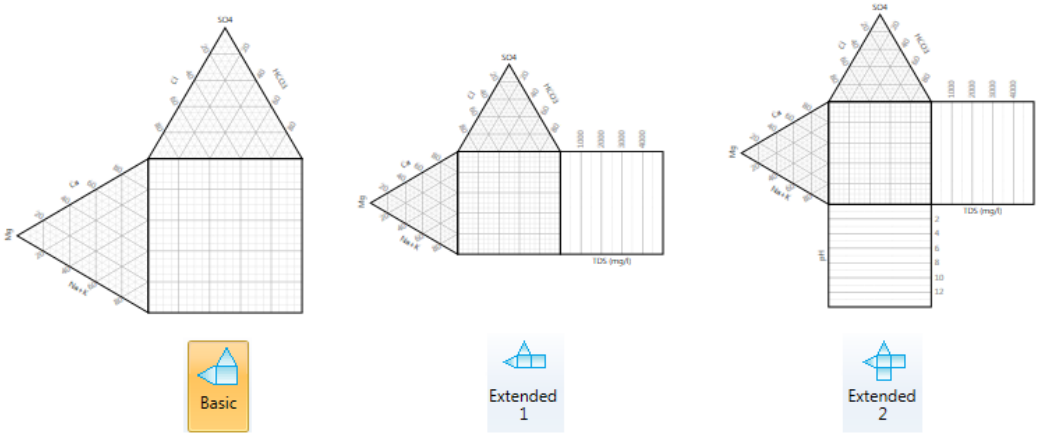
The first document tab contains the input data and all visual settings for individual diagram points, while the second presents the actual diagram. All settings can be freely adjusted, automatically or manually, depending on your requirements, and the diagram in the document can be zoomed, scrolled and visually edited.





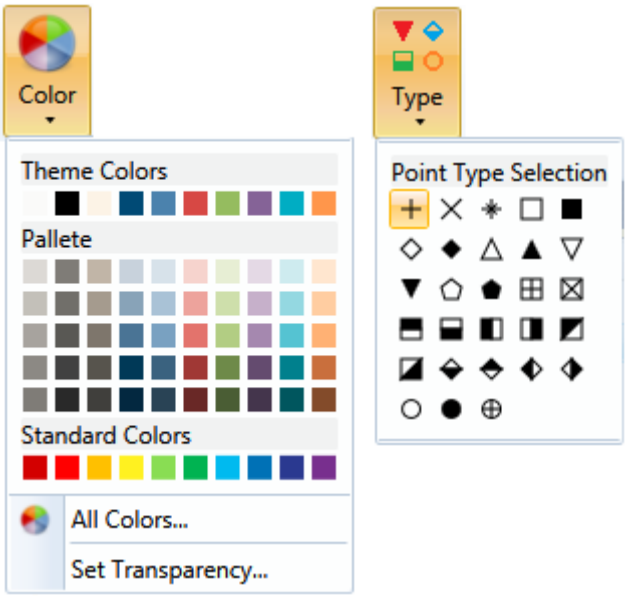
The diagram can be exported from the program as an image in six formats, and it can be exported in the complete defined size (resolution) or you can export only the part currently visible in the document area. All visual settings and imported data with defined point presentation can be exported to a specialized file, and this can then be re-imported into the program at a later stage. Diagrams can be displayed in a basic form or they can be extended by other diagram segments; as seen below.

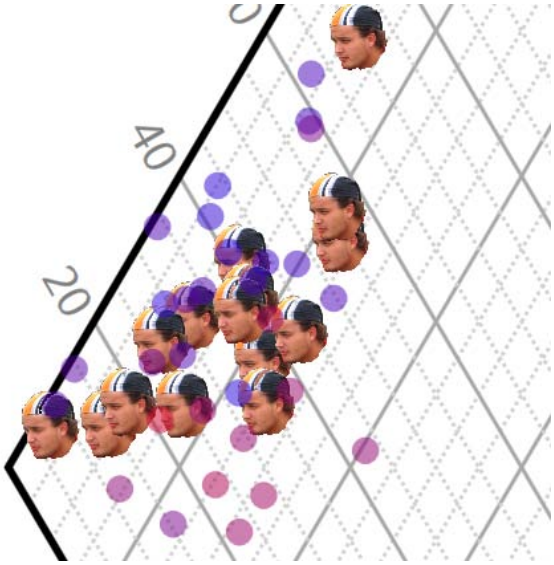




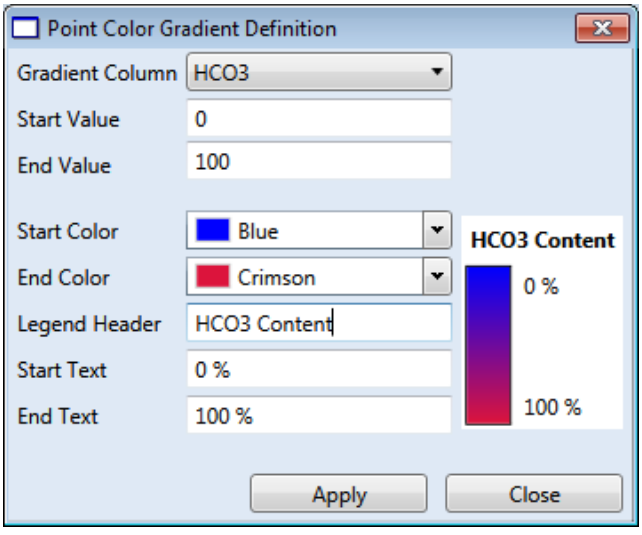
The input data can be manually entered in the program, or it can be imported in a simple CSV file (columns separated by tabs). When the data is in the program, you can define the visual presentation of every record in the table. Overall, you can choose between 28 types of point presentation when defining your preferred colour, transparency, size and type of display. In

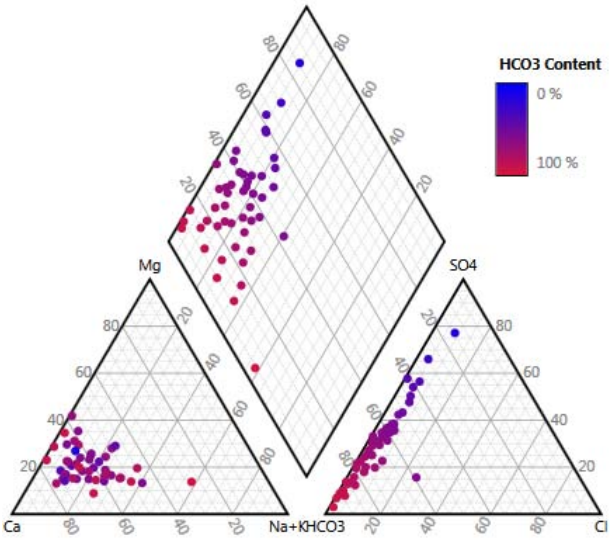
addition, as shown below, the program allows you to view the image you choose from the disk exactly the way you want it, before you use it.





An additional interesting feature is that you can incorporate extra information in your diagram by selecting requirements and choices from the table below. The final diagrammatic result is pictured on the right-hand side



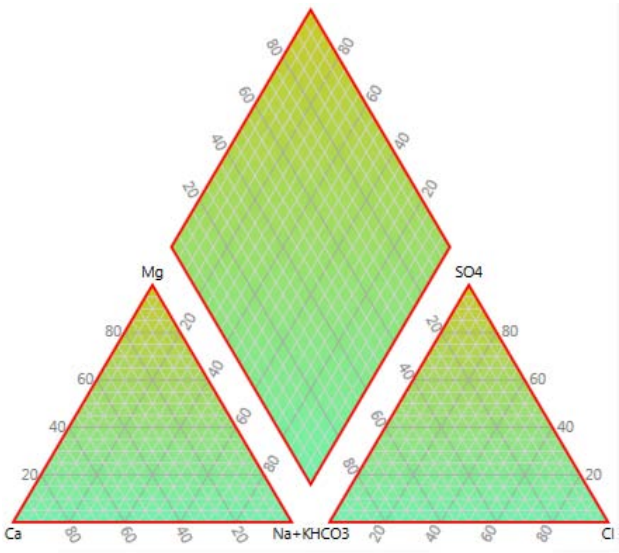


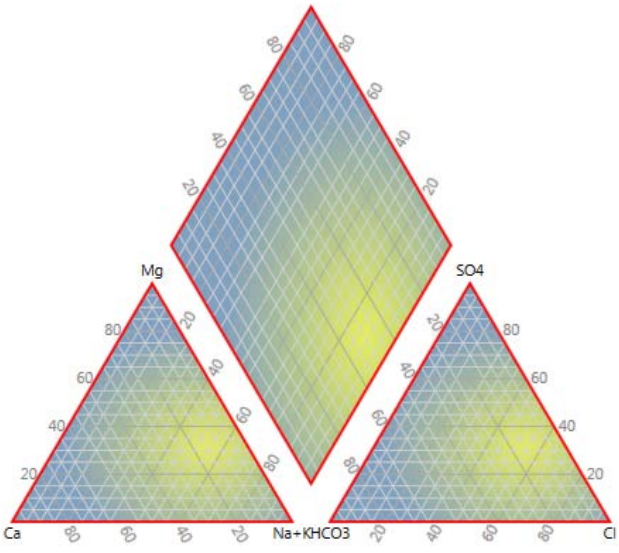
Since the diagrams were programmed as vector graphics, it is possible to visually configure all the diagram objects. You can set the background colour of all the objects as solid colour or can use dynamic linear and radial gradients of two colours. It is also possible to set the external boundary line colours, the legend, title, fonts, font sizes, the visibility of numeric labels and the steps in your grid lines. You can also adjust the diagram title and legend's visual presentation.

4 Licences

Individual programs for creating diagrams are licensed differently. The Ternary 1.0 program is distributed free of charge and without restrictions for all purposes. Although the Piper 2.0 and Durov 1.0 programs are distributed as charged commercial tools, Demo Versions of

these two tools have been developed for you to try before you buy. All program features can be used in these demo versions, and the restriction is that you can plot only 5 points. So if 5 points is sufficient for your purpose, you can use the demo version; but if you want to plot an unlimited number of points, you need to purchase a licence for these two programs.





Conclusion

The above text describes all options when you are using the HydroOffice tools for preparing specialized geochemical diagrams. All program features and utilities can be applied in all areas. Using these tools you can prepare three types of diagrams; the Ternary diagram, the Piper diagram and the Durov diagram.

These programs can be purchased on the hydrooffice.org page after registration, or through external distributors in your country, and a demonstration version can be tried immediately after installing the HydroOffice 2012 software package. The complete user manual can be found on the web in the download section. To see the programs in action, you can watch the Preview Videos or the individual tutorials on **YouTube**. If you are interested in these programs, check our website (**hydrooffice.org**) where you will find all information about discounts and other opportunities for obtaining a program licence. The next two pages present diagrams which illustrate the programs' perfect utility for visualization of groundwater chemical composition.

Cations Concentration

- *prepared in **Ternary** tool of **HydroOffice 2012** software*
- *groundwater samples from 2011*

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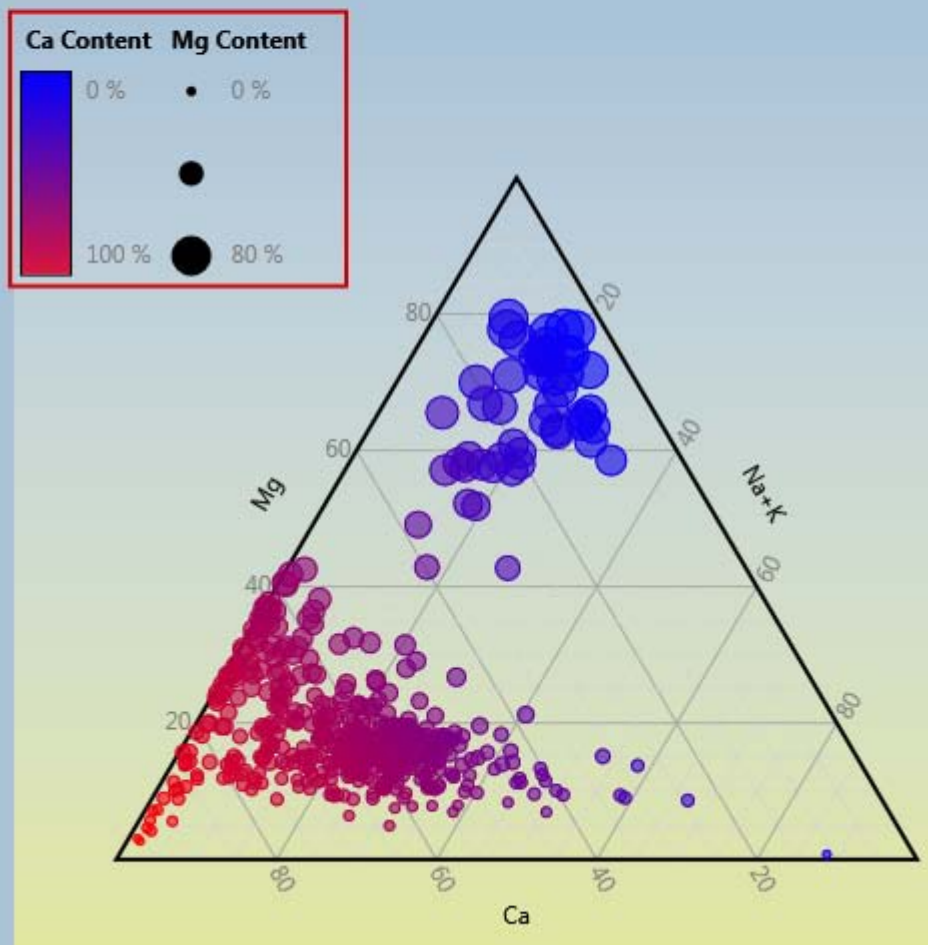
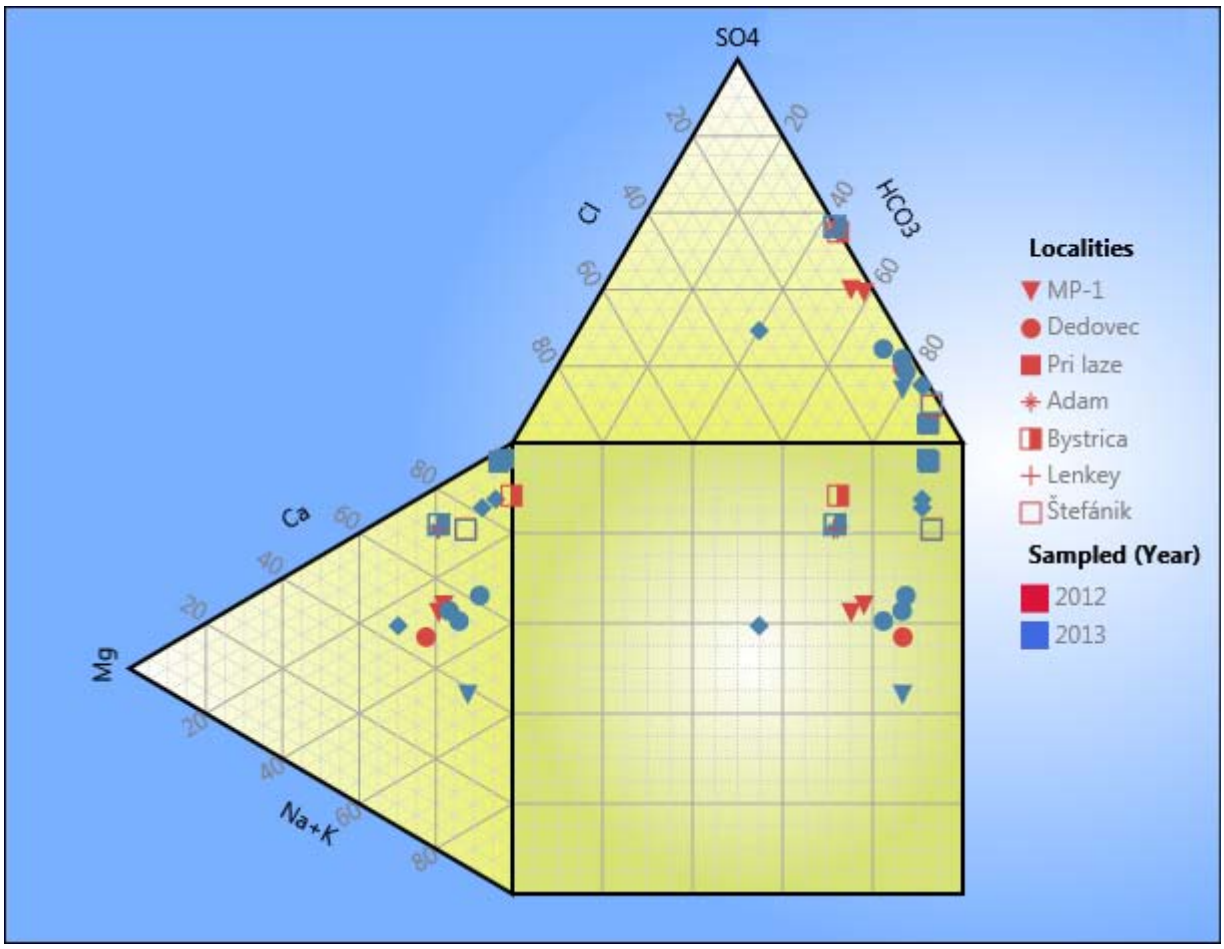
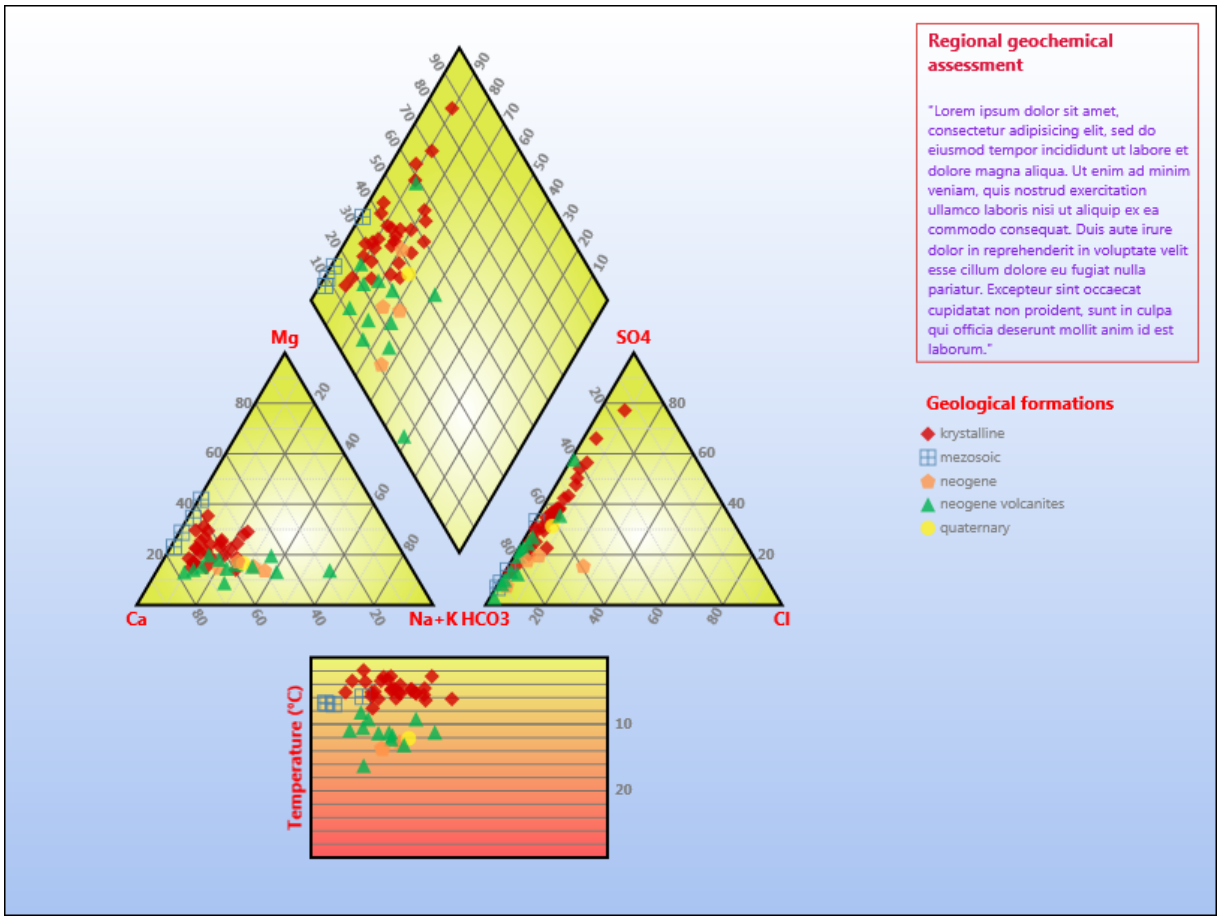



SO4
Cl
HCO3
Ca
Mg
Na+K
Localities
MP-1
Dedovec
Pri laze
Adam
Bystrica
Lenkey
Štefánik
Sampled (Year)
2012
2013


Mg
SO4
Ca
Na+K
HCO3
Cl
Temperature (°C)
Regional geochemical assessment
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Geological formations
krystalline
mezosoic
neogene
neogene volcanites
quaternary