APLICATION OF AQUACHEM AND PHREEQC PROGRAMS IN GROUNDWATER CHEMICAL DATA ELABORATION OF TIRANE-ISHEM BASIN

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Abstract

AquaChem is a software package developed specifically for graphical and numerical analysis and modeling of aqueous geochemical data sets. It features a database of geochemical parameters and provides many analysis tools and graphical techniques commonly used for interpreting and plotting aqueous geochemical data. The analytical capabilities are complemented by a comprehensive selection of commonly used graphical techniques to represent the chemical characteristics of aqueous geochemical and water quality data. Aquachem allow us to create different types of graph types commonly used for aqueous geochemical data analyses and interpretation such as Piper, Schoeller, Ludvig-Langelier, Scatter, Ternary and Durov which help us to give a general overview about groundwater of the basin. While Radial, Stiff, Pie help us to see a chemicall analyse only. Statistical elaboration is an advantage of the software. Also it is given statistically report which provides a statistical summary of selected parameters and in selected measured unit for chemical concentrations for all active records of statistical indices of water samples. This report contains corelation coeficients of selected parameters and the values of statistical indices with interest such as maximum and minimum values of the parameters, Average, Standard deviation, Variance coefficient and Variability. AquaChem features a built-in graphical interface to the popular geochemical modeling program PHREEQC. Direct link of database in AquaChem programm with PHREEQC allow us to read the information about water samples, avoiding so the tedious work of retyping of the information. For simple problem such as finding of water species and calculation of saturation or dissolving and precipitation of minerals, and mixing solutions we do not need special knowledge of PHREEQC. Through hydrochemical simulation enables the calculation of equilibrium concentration or ionic activities of chemical species in the solution as well as saturation indices of solid phases in equilibrium with a solution. It serves powerfully for interpretation of one geochemical data or for a geochemical data group. We can derive these through relevant commands of AquaChem program. It is possible the processing of a unlimited number of simulations and as a result we calculate the saturation indices for all database in only a couple of minutes.