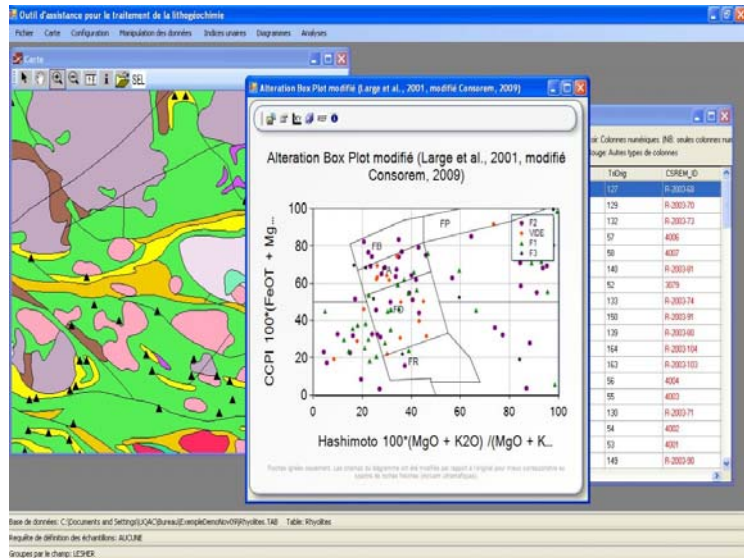


2009-01 : Software tool for processing lithogeochemical data

The project 2009-01 is the second phase of the project 2008-07, which took an interest at the processing of alteration data and evaluated the advantages and disadvantages of the main alteration processing methods. Several new alteration diagrams had been proposed to improve the alteration indices usually used. Also, altered rocks were processed using the newly-developed mass balance method. As the handling of the new diagrams, as well as the method developed to model the precursors, can be fastidious, CONSOREM is developing a software tool to facilitate the access to these new methods. The development of this software for the processing of lithogeochemical data had been the focus of the second phase of the project.



Following recommendations made by members of the CONSOREM, the capacity of the software has been extended by integrating several tools useful to litho-geochemical investigations in an exploration context, which necessitate petrogenetic and fertility investigations. The software delivered to the members in April 2012 thus contains many diagrams for petrogenetic, alteration and fertility investigations (binary, tertiary and arachnid diagrams). The software contains 70 diagrams as well as over 30 indices, and integrates several diagrams and indices developed by the CONSOREM these past years, including the PER-GH, carbonisation indices and the arachnid-PGE diagram. The software contains also a tool developed during project 2009-09, and that discriminates sedimentary from igneous protoliths, as well as the calculations for the CIPW normative minerals.

The software contains many functionalities such as: 1) geochemical re-calculations (cationic, to 100% , molar, anhydrous, ...); 2) integration of data in MapInfo windows; 3) simultaneous selections between graphics, maps and tables; 4) reference data such as the geochemical reservoirs (Bulk Earth, etc.) that can be displayed on the diagrams, etc.

The software contains also an activation key system based on the material characteristics of the computer on which it is installed, which enable the CONSOREM to keep the control of this new tool. This new software tool has become a very efficient product for many aspects of exploration, mostly thanks to its conviviality, its functionalities and to the many methods developed by the CONSOREM that it integrates.

Project 2009-01 : Summary notes	
Objectives	<ul style="list-style-type: none"> • Developing a software tool to efficiently process litho-geochemical data in exploration.
Innovation	<ul style="list-style-type: none"> • Software tool that processes and helps for the interpretation of litho-geochemical data for exploration; which is unique thanks to the any methods developed by the CONSOREM that it integrates.
Results	<ul style="list-style-type: none"> • Data interpretation assisting software incorporating existing and innovative technics to process litho-geochemical data, and that comprises functionalities such as: <ul style="list-style-type: none"> • About 70 binary, tertiary, arachnids diagrams of alteration, fertility and petrogenetic. • About 30 alteration indices for alteration, fertility and petrogenetic. • Back up, in the data base, of the location of samples in the fields of the diagrams (cf. field names such as alcalin granite, etc.). • Possibility, for the user, to had new indices and diagrams (and possibility tu o pload numerical images of existing diagrams). • Automatic re-calculation of geochemical analyses: at 100%, anhydrous, mole fraction, cationic. • Processing of absent data and of data beneath the detection limit. • Instantaneous display of diagrams. • Display, in MapInfo map, of the location of samples. • The table can be modified to facilitate the examination of data. • Simultaneous selections between diagrams, maps and tables. • Request on data, which can be displayed by categories on the diagrams. • Calculation of the CIPW normative minerals. • Calculation of the CONSOREM's mass balance by modelling the precursors. • Discrimination between igneous and sedimentary protoliths (project 2008-09). • Includes a data base of 300 reference samples (whole rock or minerals), that can be displayed on every diagram (examples: N-MORB, Archean basalts and shales, chlorite, etc.). • Activation key system that limits the access to CONSOREM members only.