**CONSORTIUM RESEARCH: DEVELOPING EXPLORATION TOOLS**

**METHODOLOGICAL TOOLS**

New methods developed or modified by CONSOREM. They are used in data treatments independently of the territory.

**Examples are:**

1. **The PER-GH classification:** A new tool to evaluate the fertility of felsic volcanic rocks.

   ![PER-GH classification diagram](image)

   The PER-GH classification is an empirical method to identify the fertility of volcanic rocks. This classification has been developed to evaluate the fertility of volcanic rocks, taking into account the elemental ratios of essential elements. The PER-GH classification is based on the ratios of specific elements, such as Si/Ti, Al2O3/TiO2, and others, which reflect the fertility potential of the rocks.

2. **The relative mass balance calculation:** An approach in the treatment of hydrothermal alteration.

   ![Relative mass balance calculation diagram](image)

   The relative mass balance calculation is an approach to quantify the gains and losses of specific elements during hydrothermal alteration. This method helps to identify the main processes and elements involved in the alteration process, providing insights into the alteration mechanisms.

**DECISION TOOLS**

Allow more easily the integration, comparison and analysis of data to evaluate the mineral potential of a specified region.

**Examples are:**

1. **Spatial Signal Analysis Software (SSAS):**

   ![Spatial Signal Analysis Software](image)

   The Spatial Signal Analysis Software (SSAS) is a new tool developed by CONSOREM to analyze the spatial distribution of elements and their signatures. SSAS helps to identify the spatial patterns of element distribution and their relationships in geological samples, aiding in the evaluation of mineral potential.

2. **Interpretation of PGE fertile environments:**

   ![Interpretation of PGE fertile environments diagram](image)

   The interpretation of PGE fertile environments involves analyzing the distribution and concentration of platinum group elements (PGE) in geological samples. This method helps to identify the areas with a high potential for mineralization, guiding exploration efforts.

**TARGETING TOOLS**

Result from the integration of different databases, and/or the acquisition of knowledge, which allow pre-competitive targeting on promising areas.

**Examples are:**

1. **Mineral prospectivity mapping using artificial neural networks for Au in the Val d’Or – Malartic area:**

   ![Mineral prospectivity mapping diagram](image)

   Artificial neural networks (ANN) are used to model and predict mineral potential based on historical data. In this example, ANN was applied to a dataset from the Val d’Or – Malartic area to map potential Au prospects, providing valuable insights for exploration planning.

2. **Paleostress mapping to target orogenic gold deposits:**

   ![Paleostress mapping diagram](image)

   Paleostress analysis is a valuable tool for identifying potential gold deposits. By analyzing the orientation and magnitude of stress fields, paleostress mapping can help to locate areas with favorable geological conditions for gold mineralization.