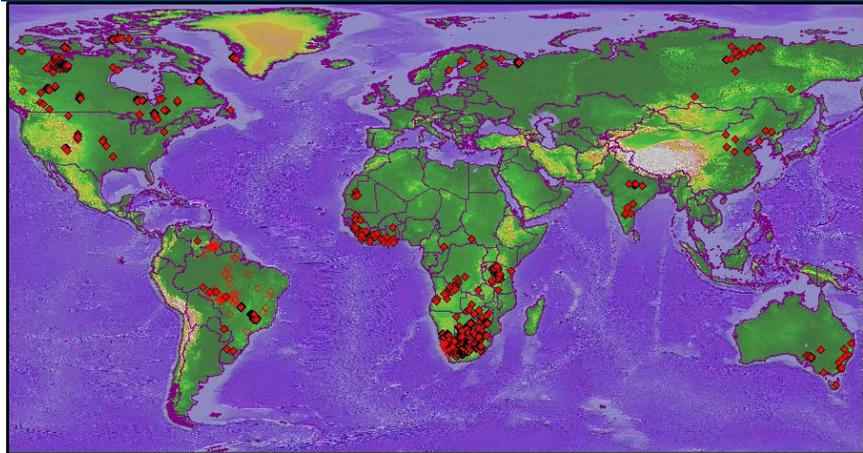


Projet 2002-9 : Tools for diamond exploration in Québec – Spatial analysis of kimberlite fields

This project investigates parts of cratons that may have a potential for diamond, and at areas that may be targeted at a stage of continental exploration. Kimberlite and lamproïte rocks are the main targets for diamond exploration. The aim of this project is to develop tools to evaluate the fertility of a territory for diamond ore.

During this project, kimberlite fields of the World have been documented, and the following data have been compiled: characteristics of type localities, geophysical signatures, geochemical characteristics and geological contexts.



Location of kimberlites compiled during project 2002-09

This documentation led to the establishment of a data base that comprises data that were available in 2002. This data base includes 2071 kimberlites. Also, an

atlas of the geophysical signature of these rocks has been developed. These data have also been recently updated and are available online (<http://www.consorem.ca/kimberlite/kimberlites.html>). The online version currently contains 4073 kimberlite complexes.

The compiled data have been analysed using the Fry correlation method. This analysis indicates, for example, that kimberlite tend to be oriented parallel to regional fault zones. In addition, the correlation method used is simple, and may be applied to other type of substances (cf. gold in particular).

The analysis carried on the data base has also provided the following results: 1) a correlation is observed between kimberlites and dyke swarms (density and dyke intersection); 2) diamond mines are usually located where two dyke swarms with contrasting orientations intersect; 3) the amount of kimberlite decreases in a logarithmic way away from the dykes of the McKenzie swarm (e.g. 2 km from the swarm, kimberlite's distribution is random); 4) the amount of kimberlite decreases linearly away from dykes intersections.

Summary notes : Project 2002-9	
Objectives	<ul style="list-style-type: none"> • Developing a tool to evaluate the fertility of a territory for diamond deposits.
Résultats	<ul style="list-style-type: none"> • Documentation of the geophysical and geological characteristics of kimberlite fields; • Analysis of the spatial relationships between kimberlite fields.
Tools and Innovations	<ul style="list-style-type: none"> • A data base of the World kimberlites and lamproïtes has been compiled. • An Atlas of the geophysical signatures of kimberlites has been created.
Note	<ul style="list-style-type: none"> • The fertility of kimberlite fields has also been investigated by projects 2003-7, 2004-7 and 2006-3.