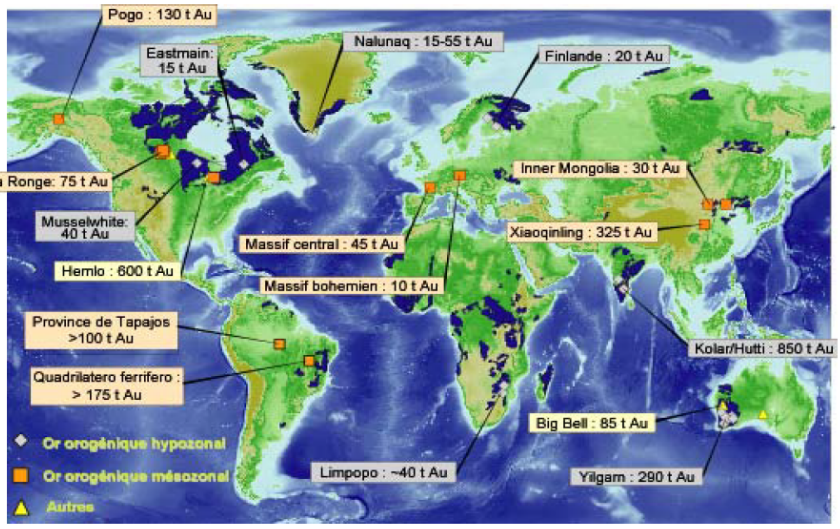
CONSOREM
Consortium de recherche en exploration minérale

2003-2A: Opportunities for gold mineralisation in high-grade metamorphic terrains

Different types of gold mineralisation which may be found in high-grade metamorphic terrains have been described from known examples around the world. We distinguish the hypozonal orogenic gold deposits which is formed under high metamorphic conditions (T> 475°C), which are often in equilibrium with the metamorphic conditions of the host rock or are slightly retrograde; the mesozonal orogenic gold deposits retrograde relative to their highly metamorphosed host rocks and some deposits that have very specific and atypical characteristics, or are still poorly understood (example: Hemlo, Big Bell, Puffy Lake, and Challenger).

An examination of these deposits yields three models that can be used as exploration tools in Quebec. These models are relevant in the following geological environments:

1. The highly metamorphosed Archean greenstone belts of northern Quebec;
2. The Proterozoic continental magmatic arcs;
3. Regions where major thrust fault fronts superimpose highly metamorphosed rocks over slightly metamorphosed rocks.



Location of selected gold deposits: the hypozonal orogenic gold deposits in gray, the mesozonal orogenic gold deposits in orange and the atypical or controversial gold deposits in yellow.

Summary: Project 2003-2A	
Objectives	• To determine the criteria for targeting gold mineralisation in high-grade metamorphic terrains. • To assess the opportunity in the province of Quebec and to propose favourable areas.
Results	• Analysis of published documents on 40 selected deposits from around the world for their high-grade metamorphic context. • Determining common features and extracting criteria. • 2 major divisions: - high temperature synmetamorphic deposits; - intermediate temperature retrograde deposits. • Conclusion: high-grade metamorphic rocks in Quebec have a high potential for containing significant gold deposits.
Tools and innovations	• New exploration concepts adaptable to Quebec in high-grade metamorphic terrains