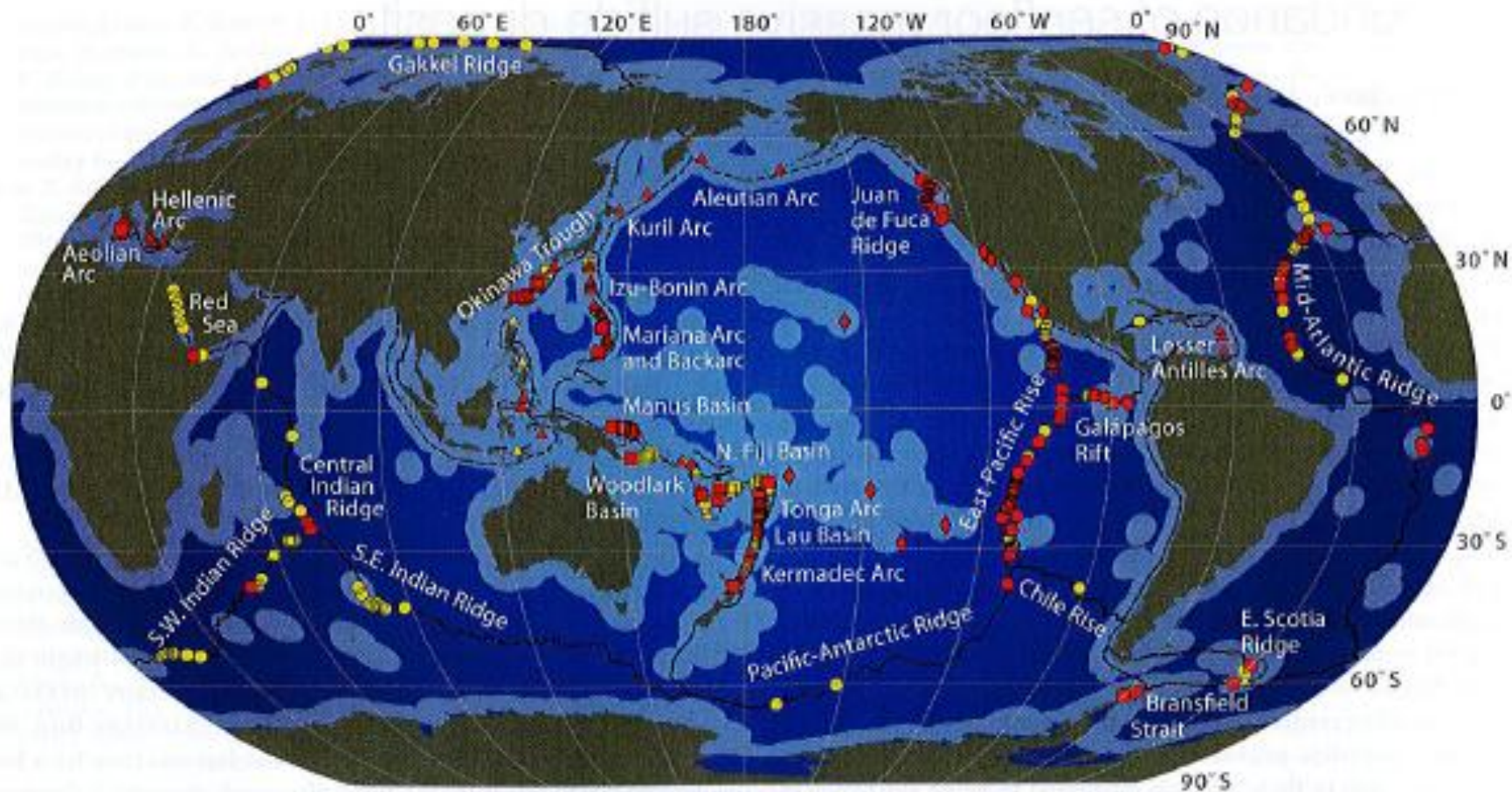


OCEANIC CORE COMPLEXES AS SITES
OF HYDROTHERMAL DISCHARGE:
APPLICATIONS TO THE GEOLOGICAL
RECORD

Norman Duke
University of Western Ontario

OCEANIC vs OROGENIC
MANTLE vs METAMORPHIC
CORE COMPLEXES

DETACHMENT-RELATED
VMS/SEDEX vs Lode Au/IOCG/Unc U



Mid-ocean ridge	Arc volcano	Backarc spreading center	Intraplate volcano and other	— Ridge and transform
● Active	▲ Active	■ Active	◆ Active	- - - Trench
○ Unconfirmed	△ Unconfirmed	□ Unconfirmed		⊕ Exclusive economic zones

Western
Libraries

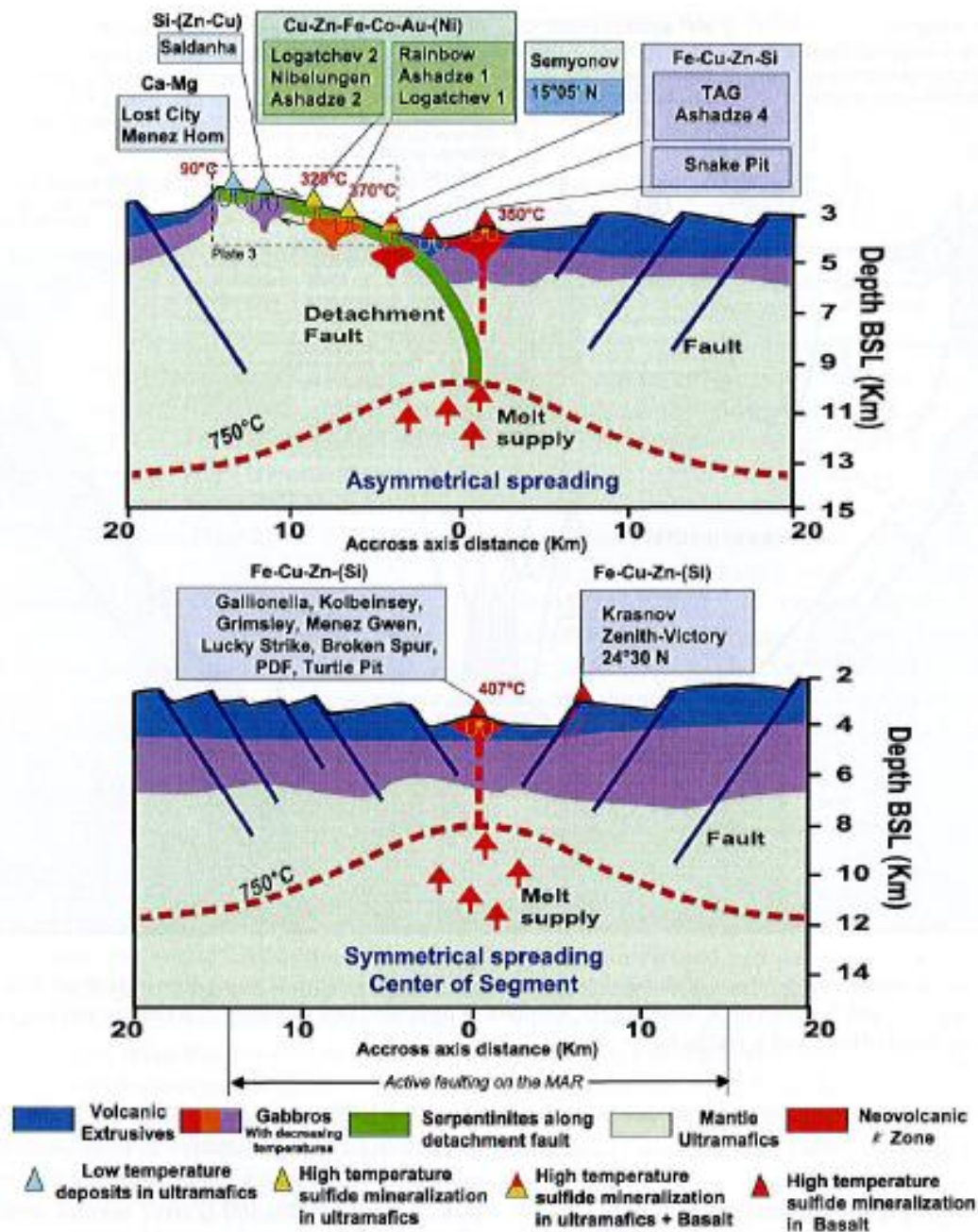
Western Libraries U.W.O

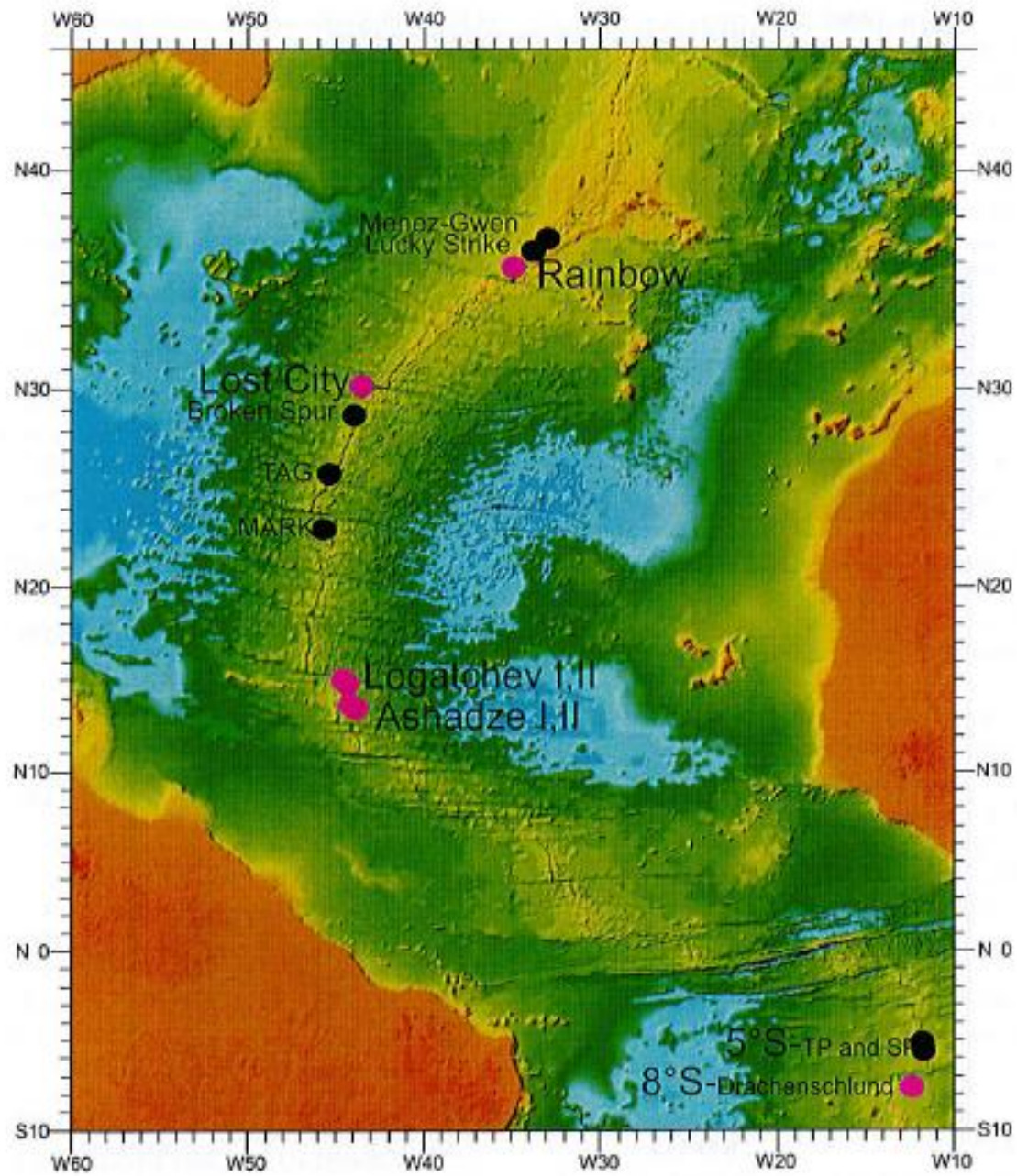


Hydrothermal Systems on Slow Spreading Ocean Ridges



Peter A. Rona, Colin W. Devey,
Jérôme Dymont, and Bramley J. Murton
Editors





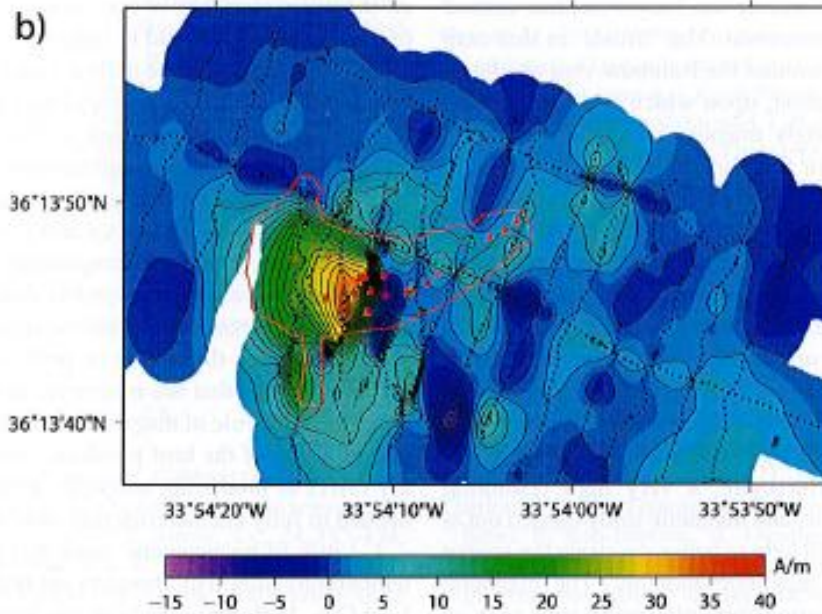
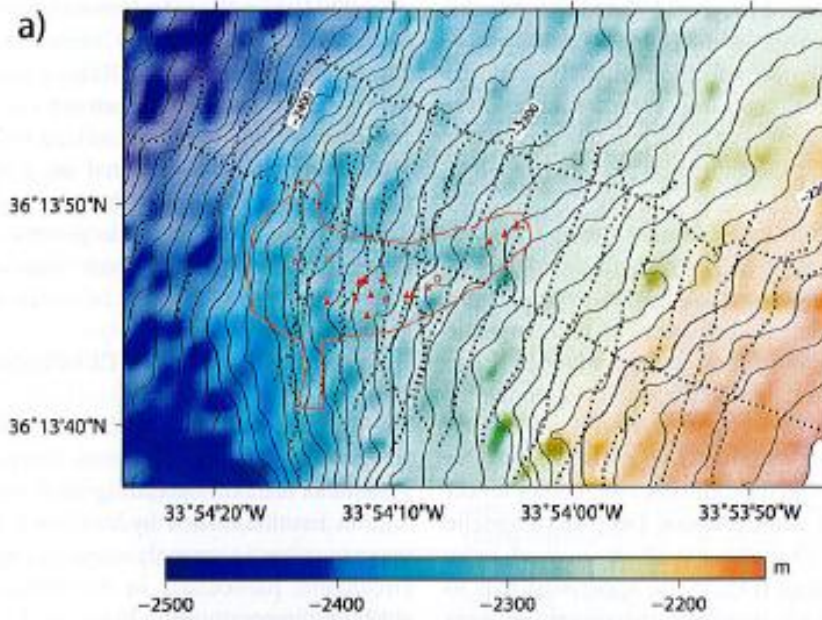
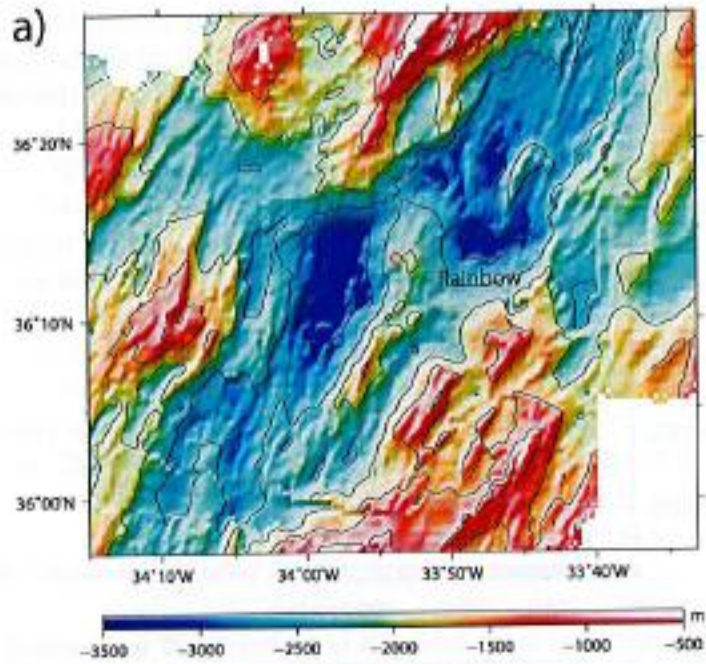
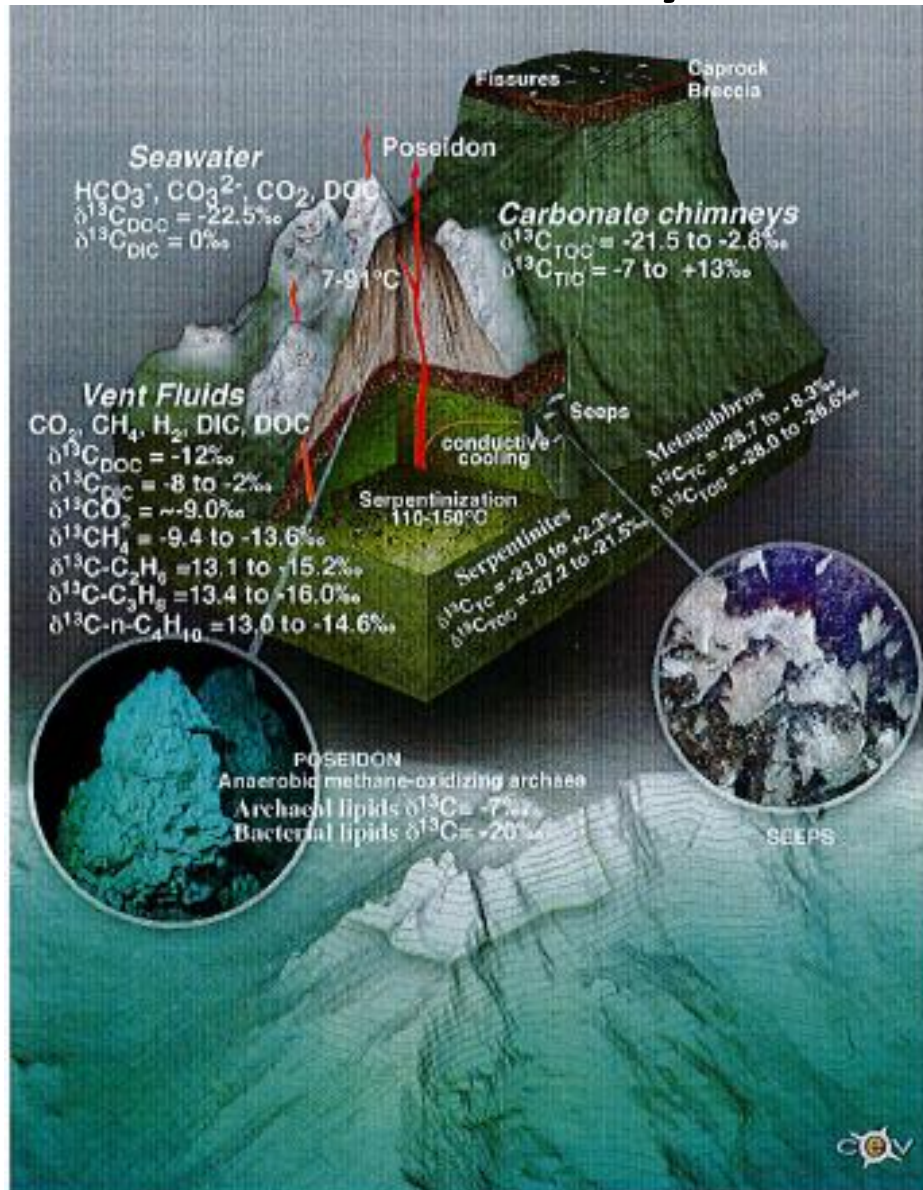


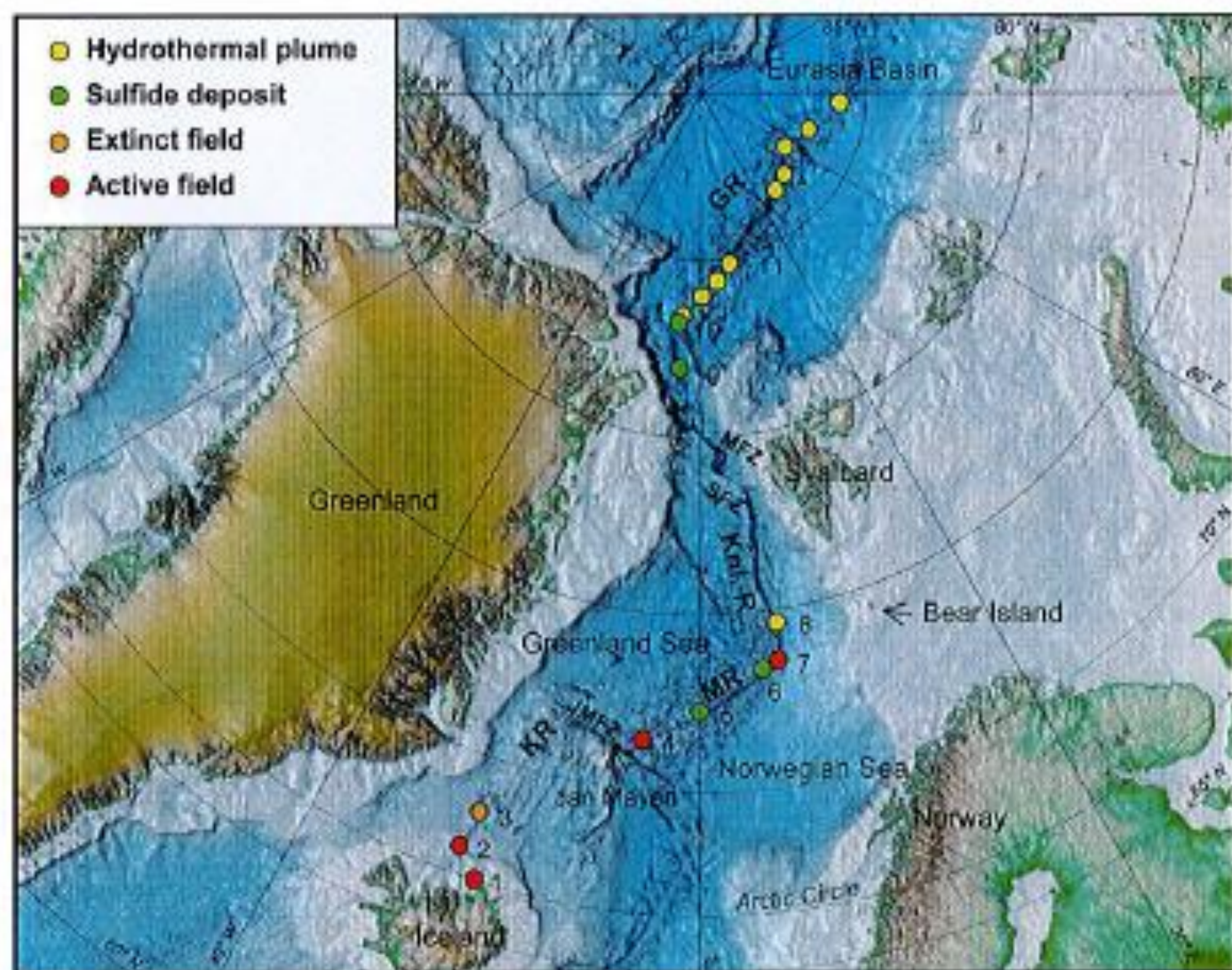
Figure 1. (a) Regional bathymetric map of the Rainbow hydrothermal field. (b) Bathymetry of the Rainbow field with the extent of mineralization.

Lost City



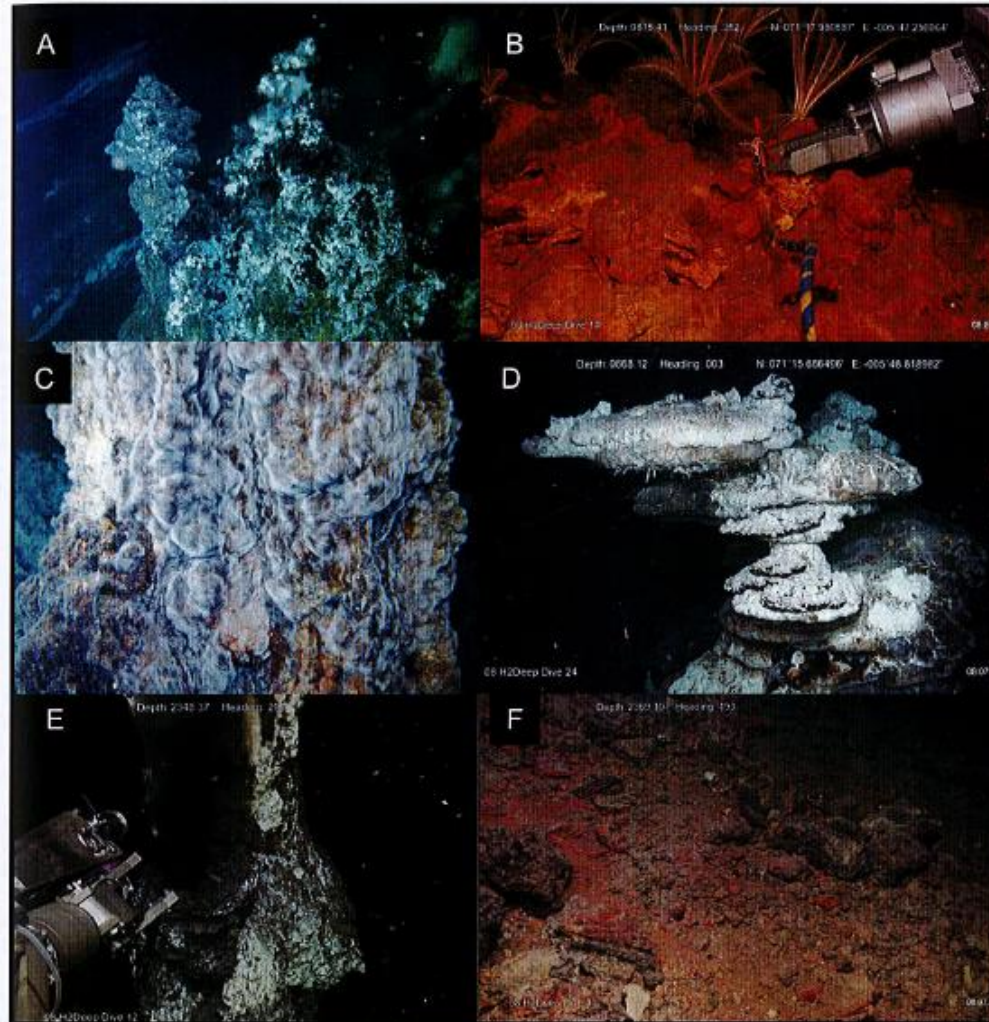
Lost City Carbonate Mounds



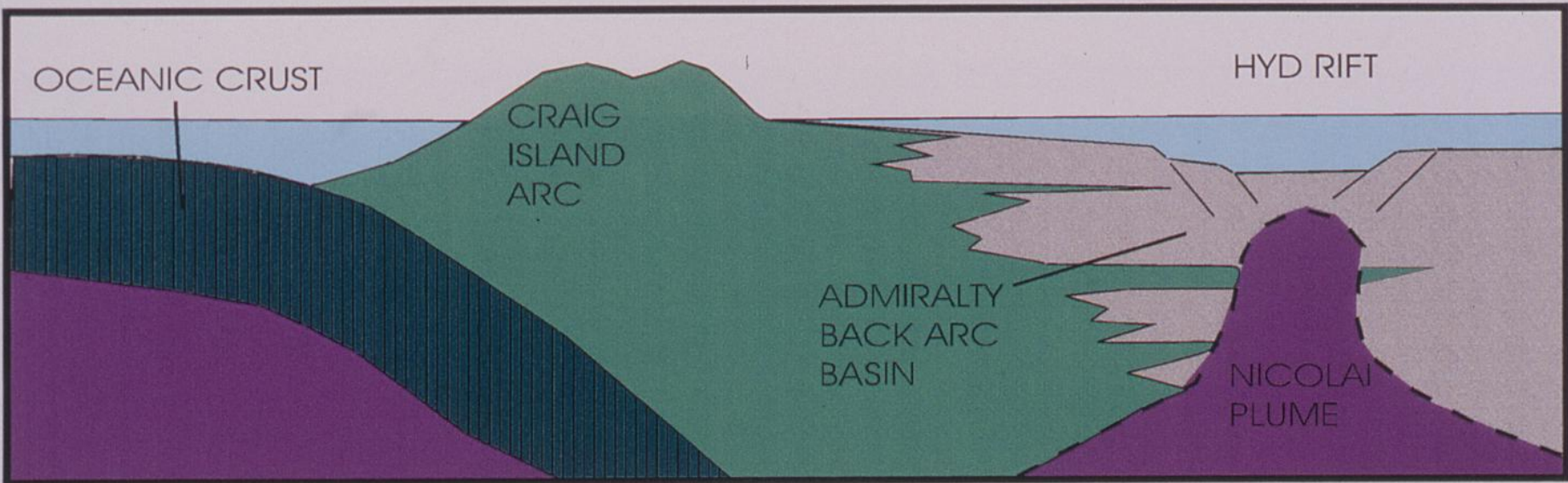


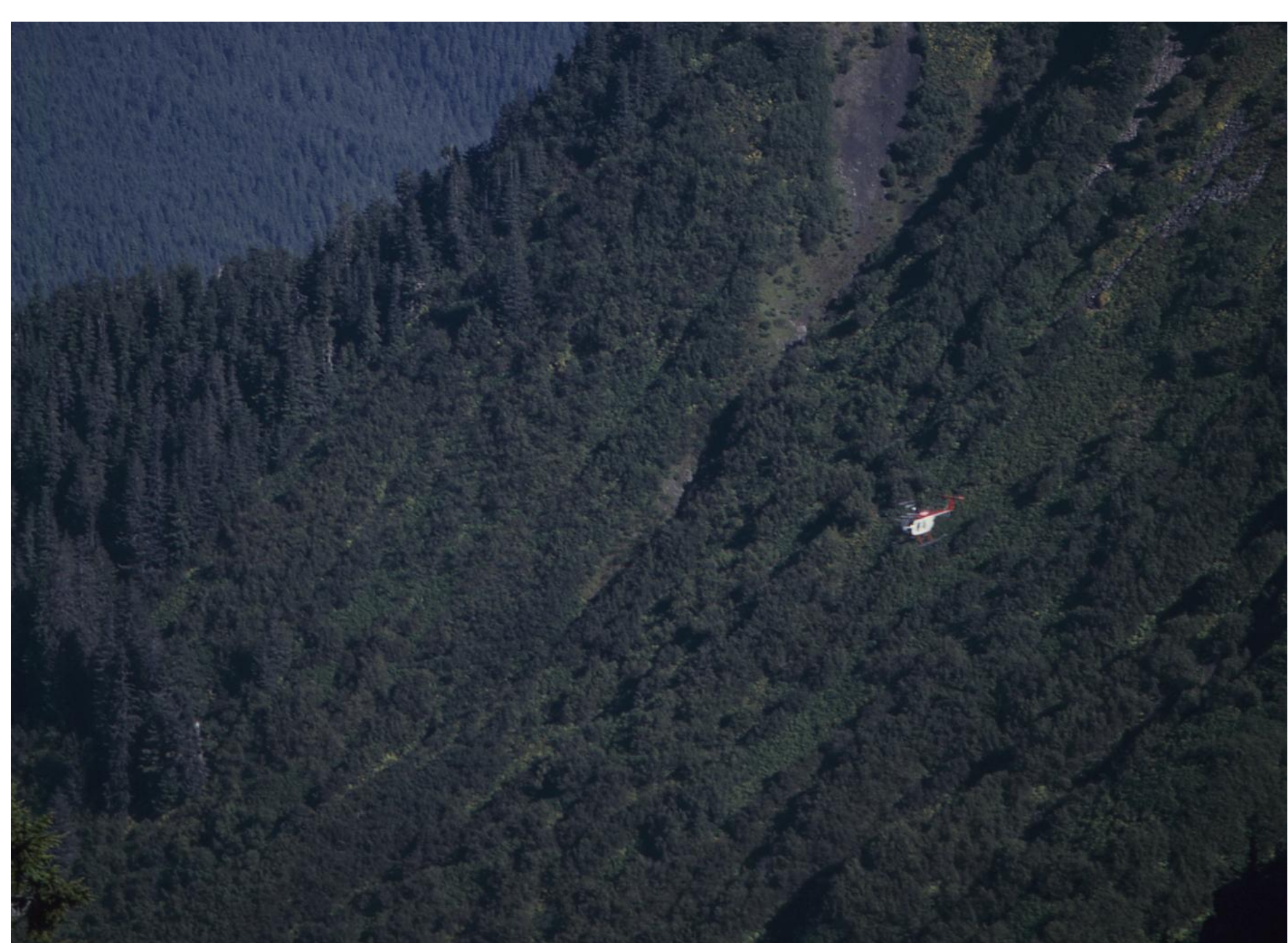
Active Vent Field Along the AMOR

PEDERSEN ET AL. 75



B. ALEXANDER ISLAND ARC SETTING:





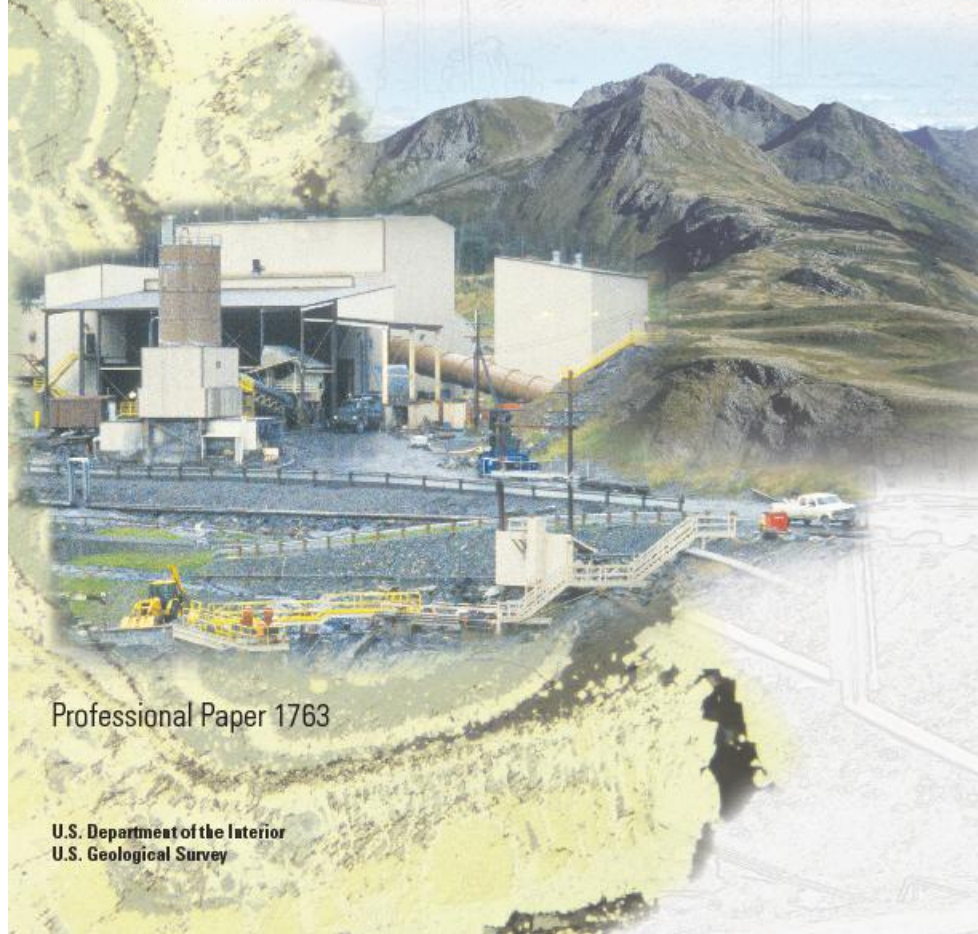






Prepared in cooperation with Kennecott Greens Creek Mining Company

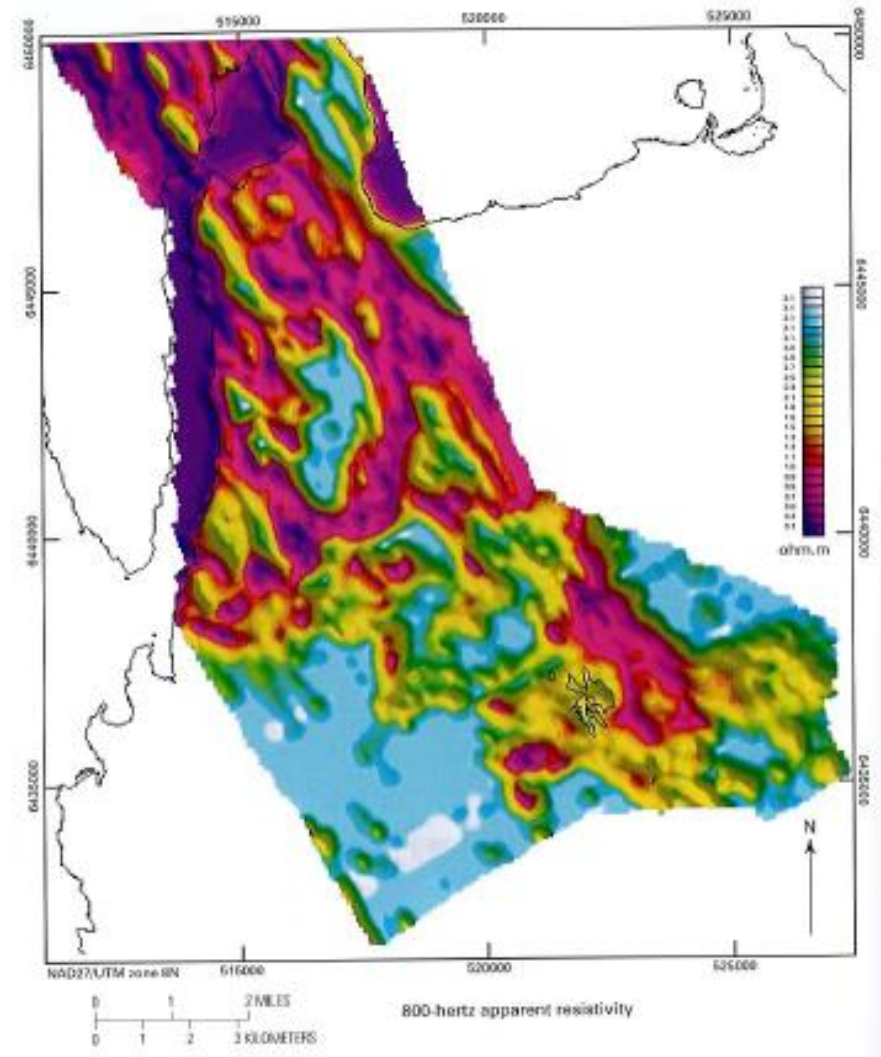
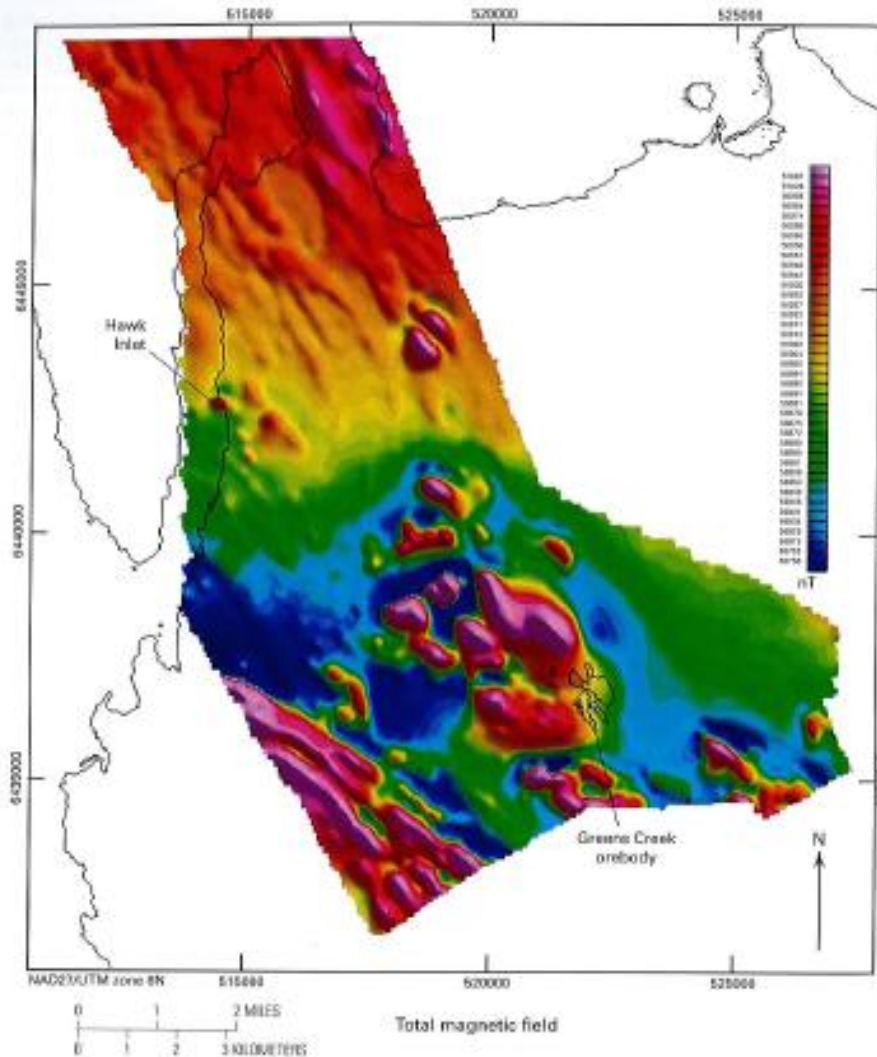
Geology, Geochemistry, and Genesis of the Greens Creek Massive Sulfide Deposit, Admiralty Island, Southeastern Alaska



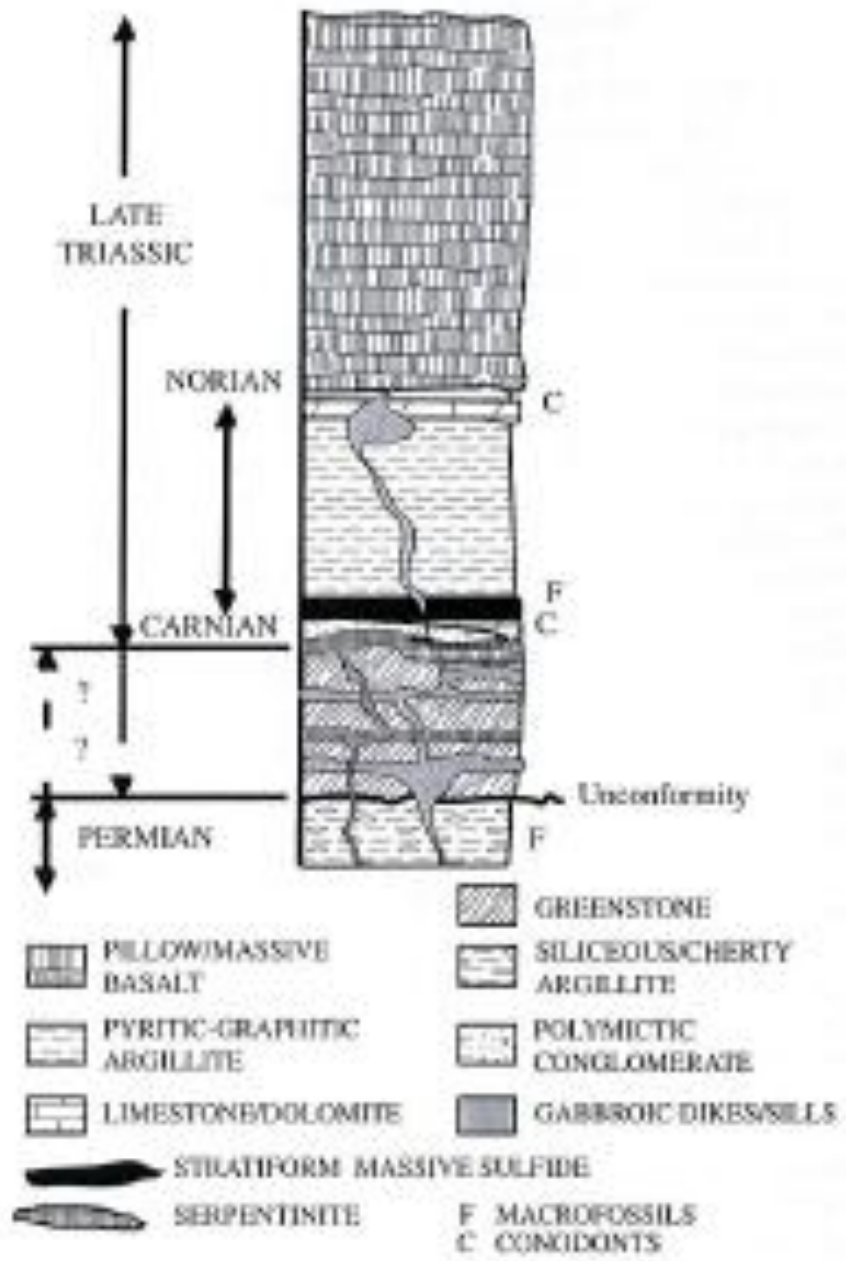
Professional Paper 1763

U.S. Department of the Interior
U.S. Geological Survey

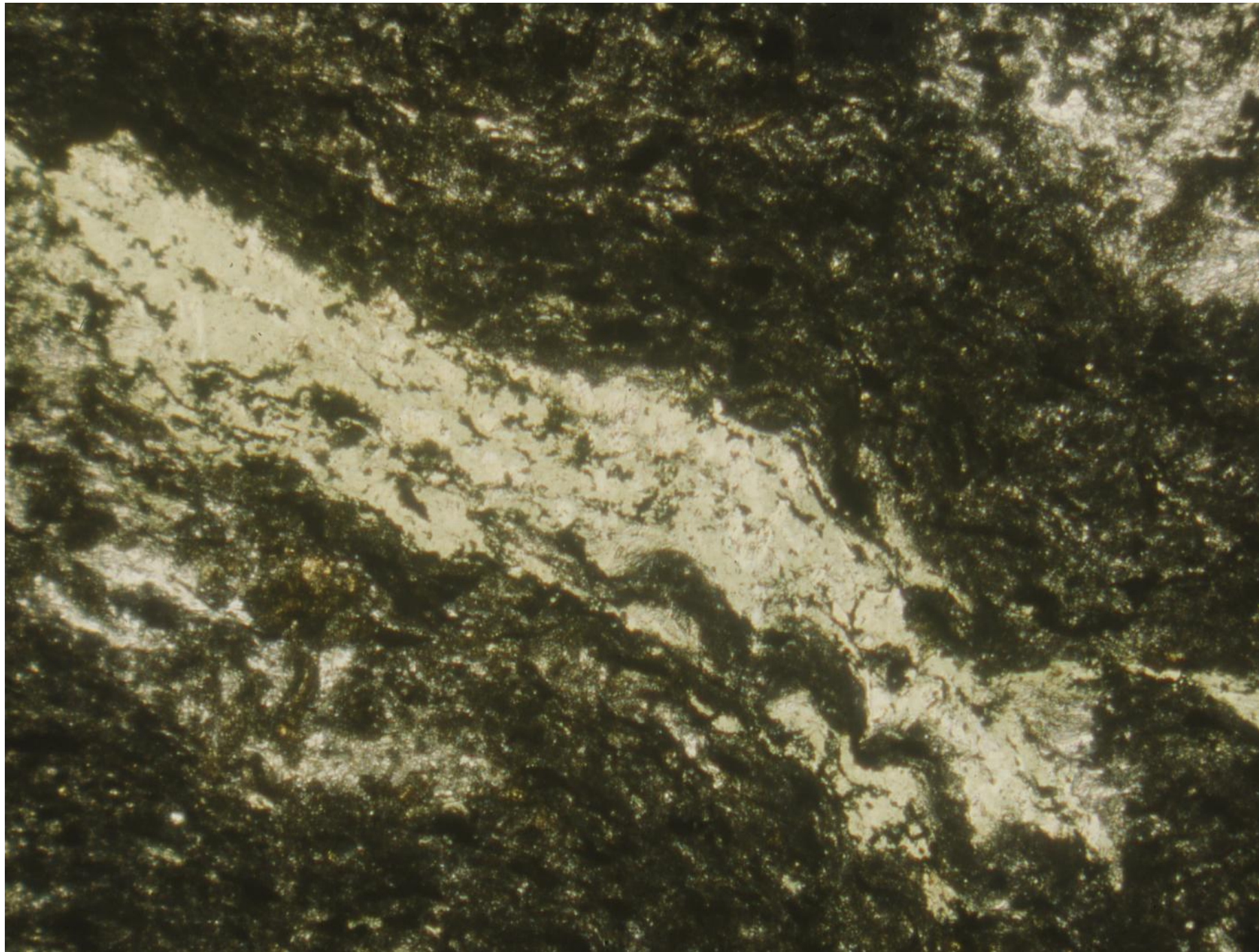
Magnetics & Resistivity

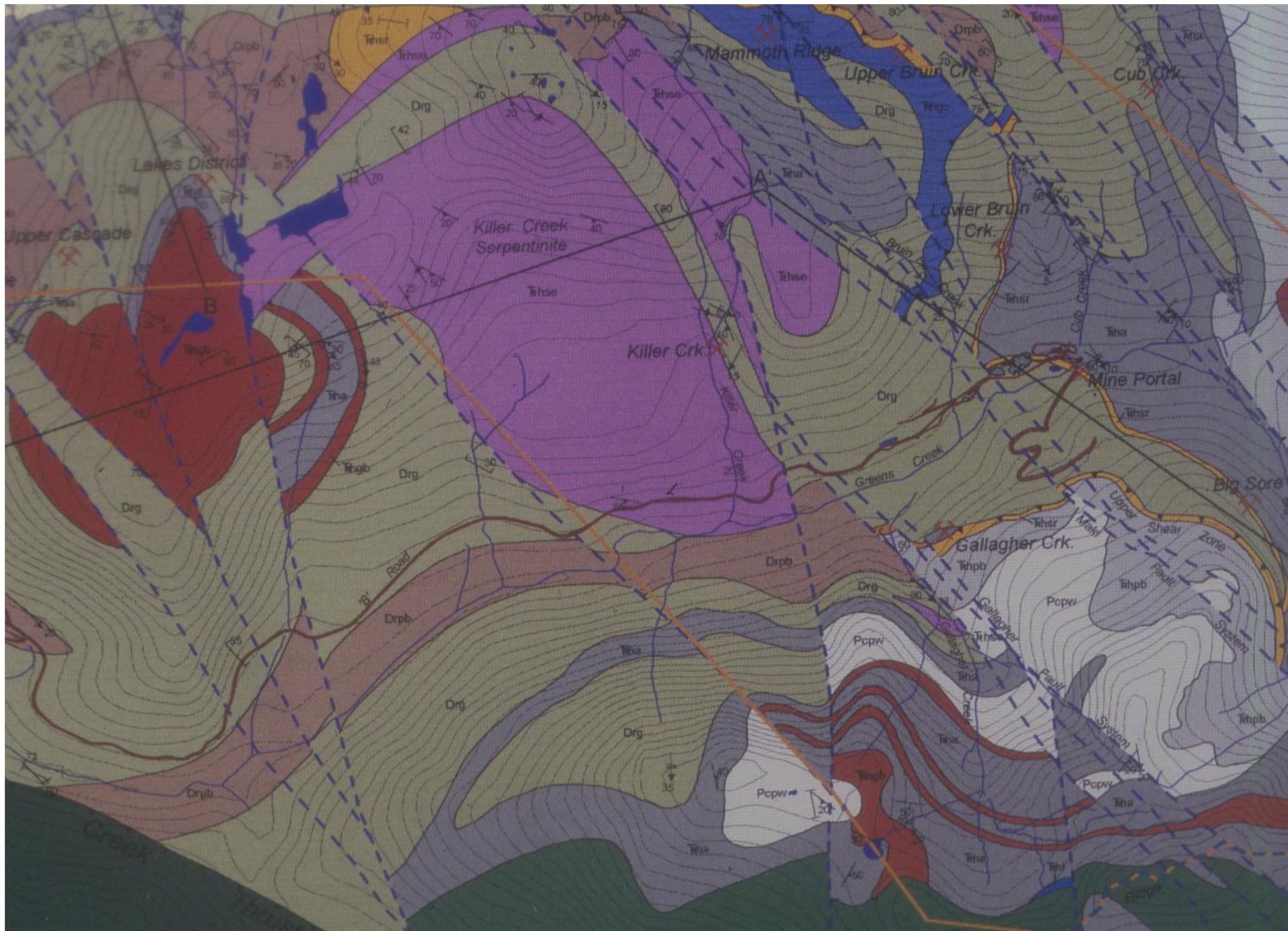


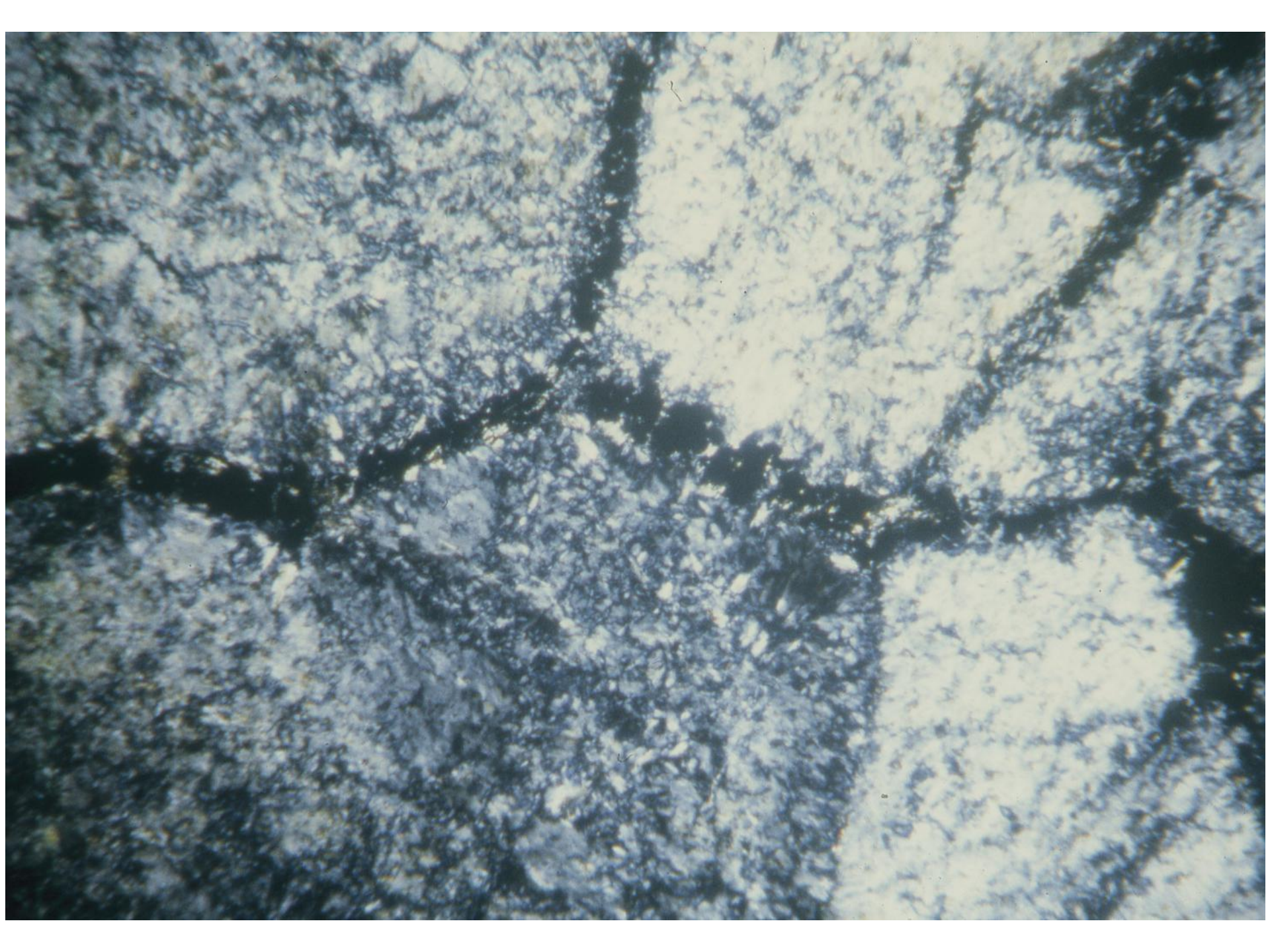
GREENS CREEK MINE





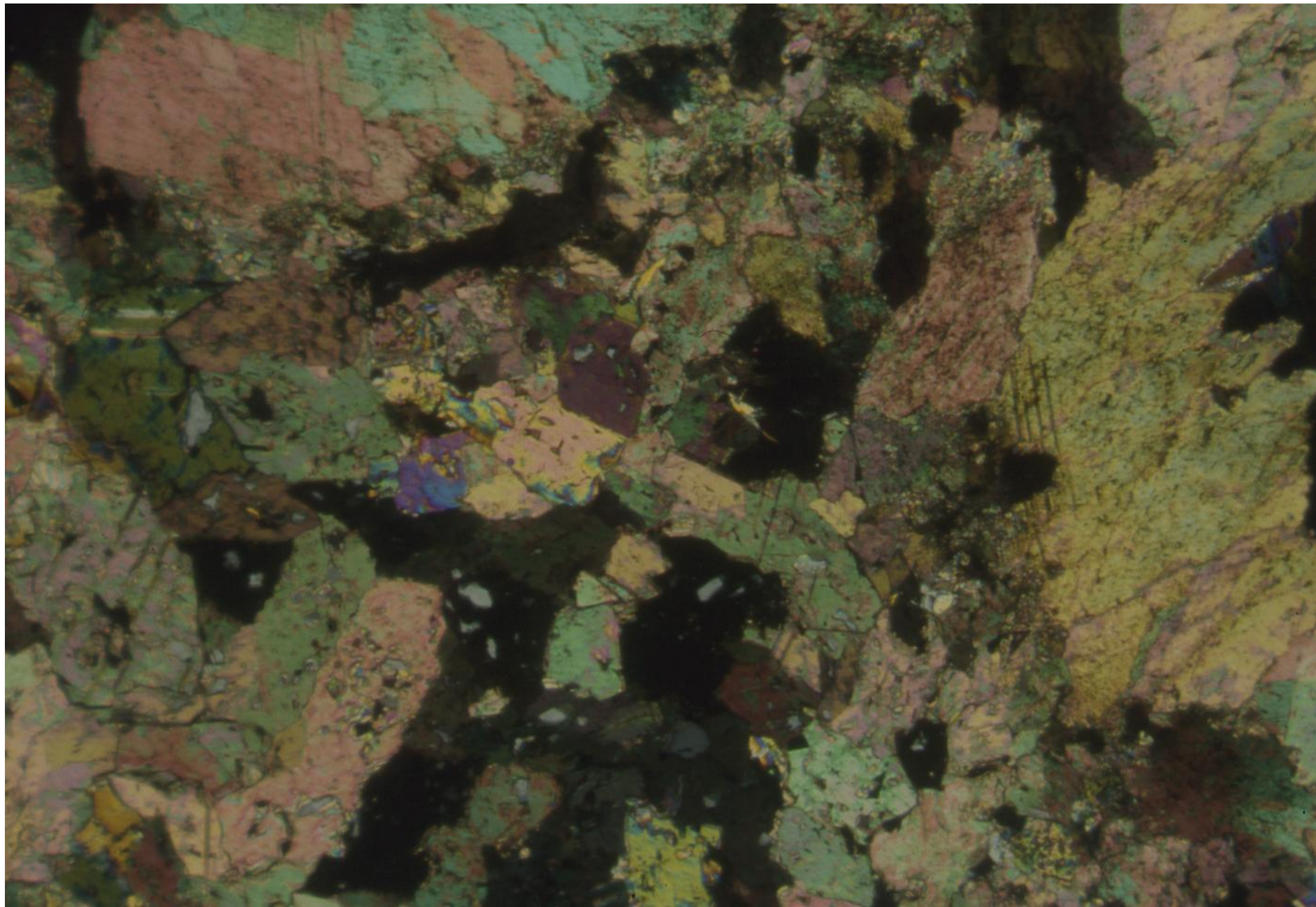




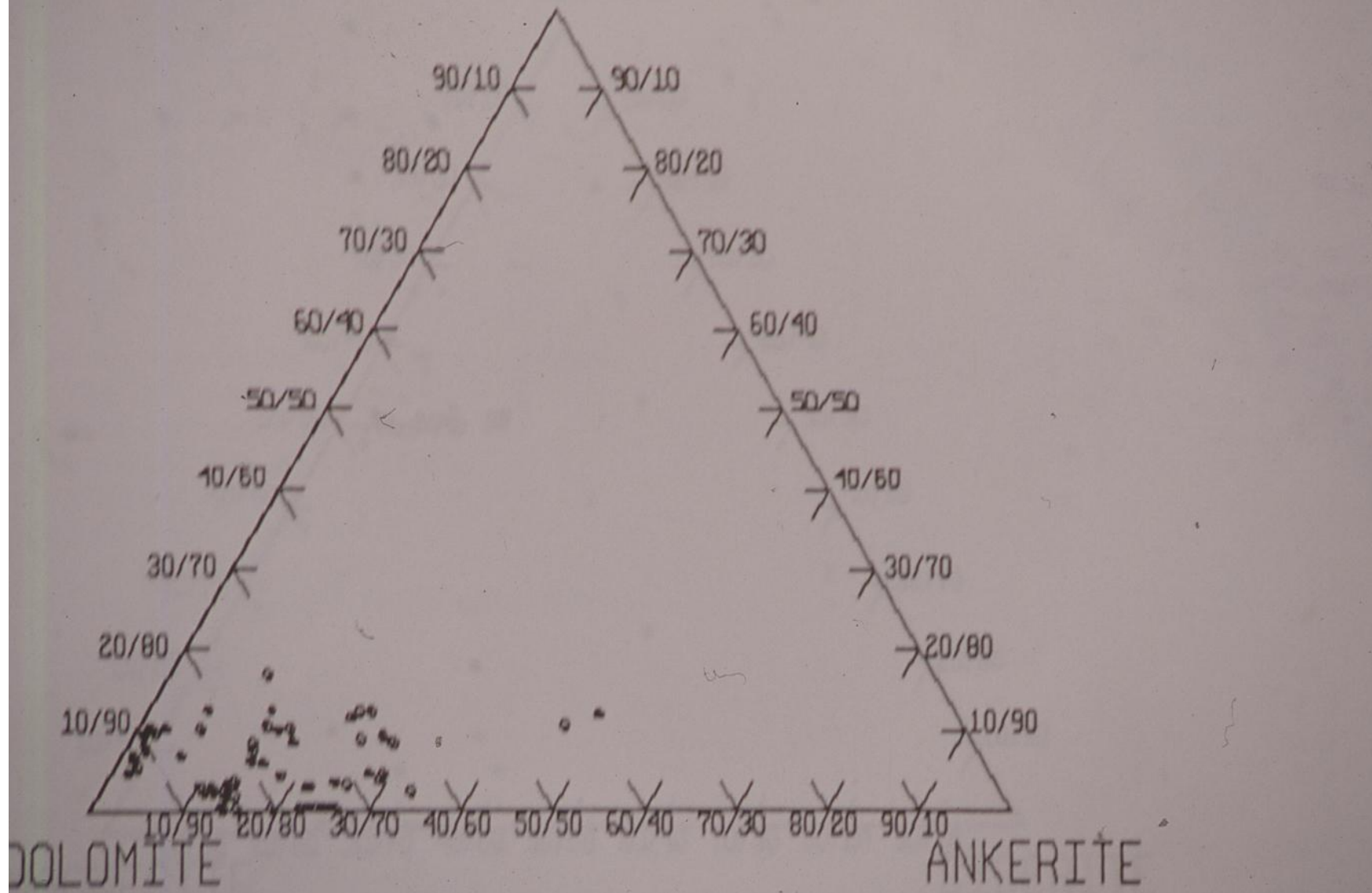




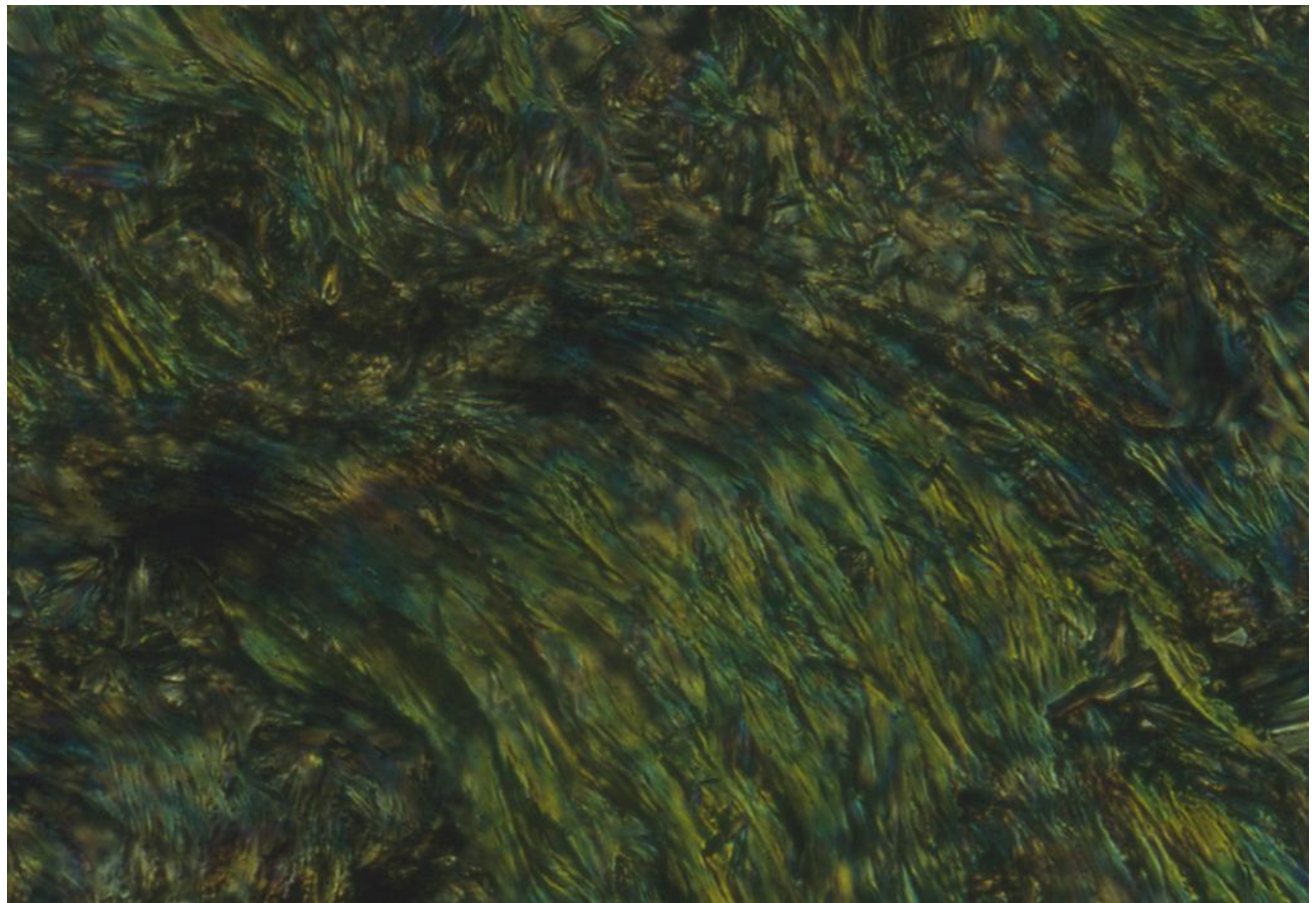




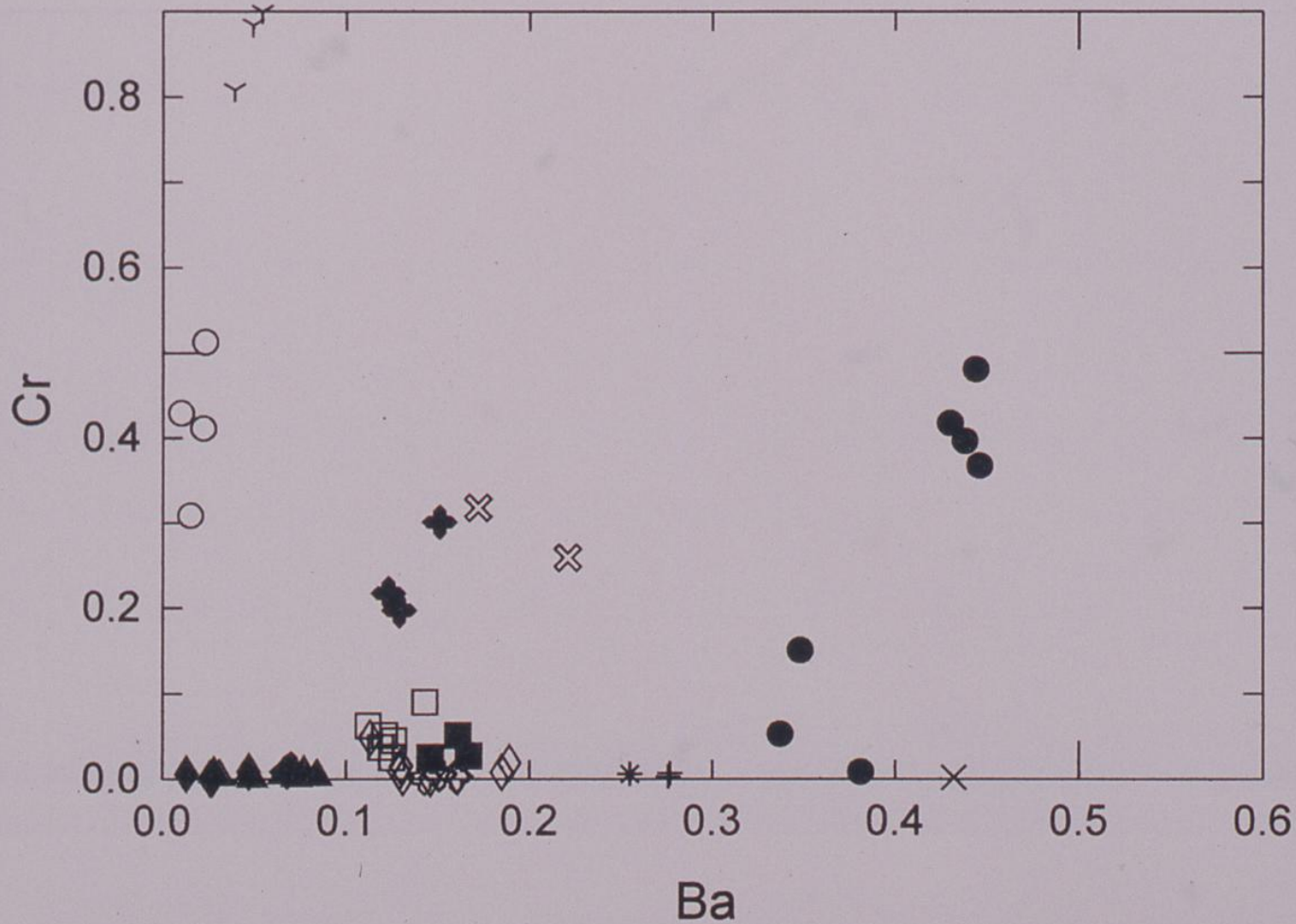
KUTNAHORITE



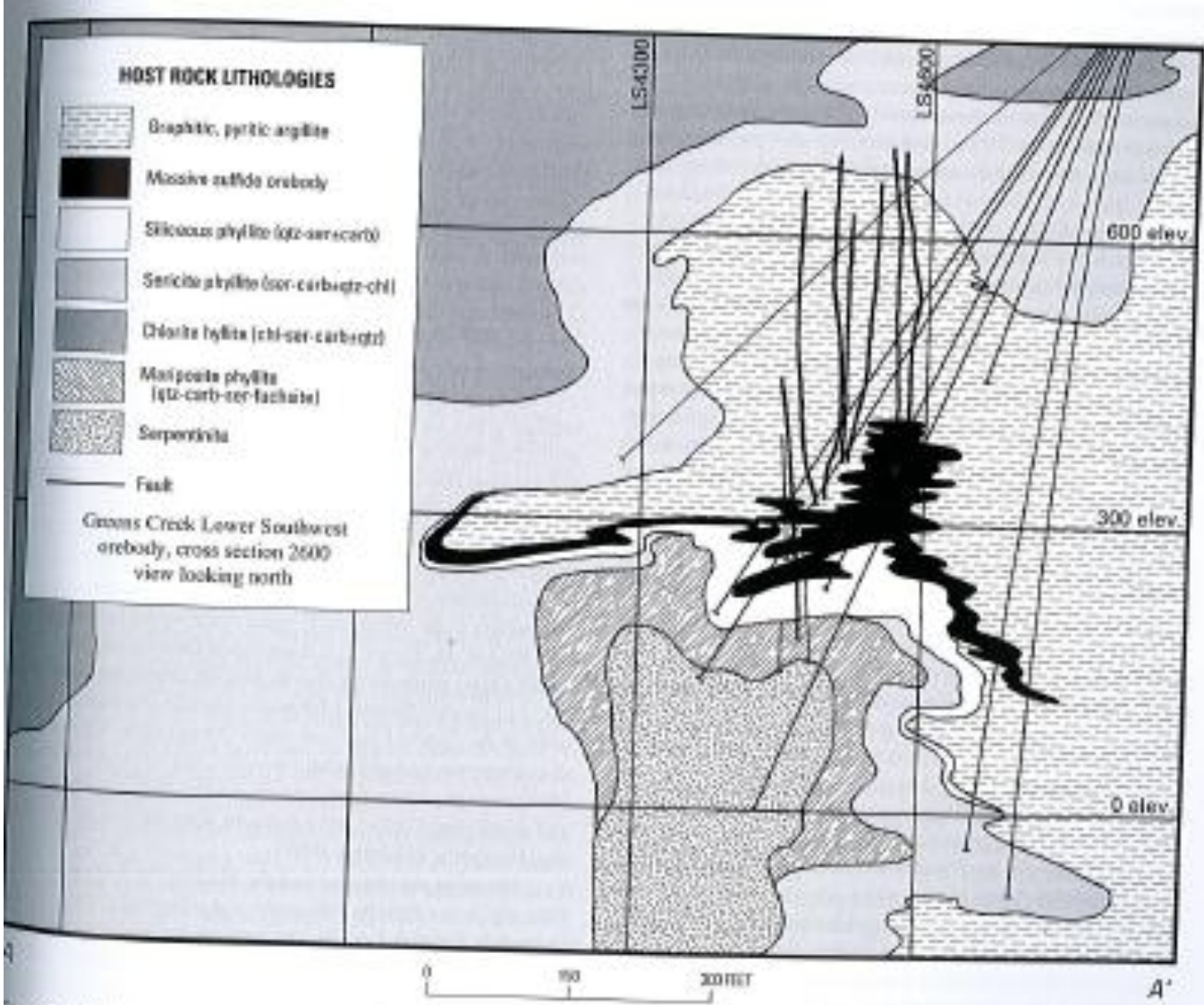




Barian Mariposite Greens Creek Mine



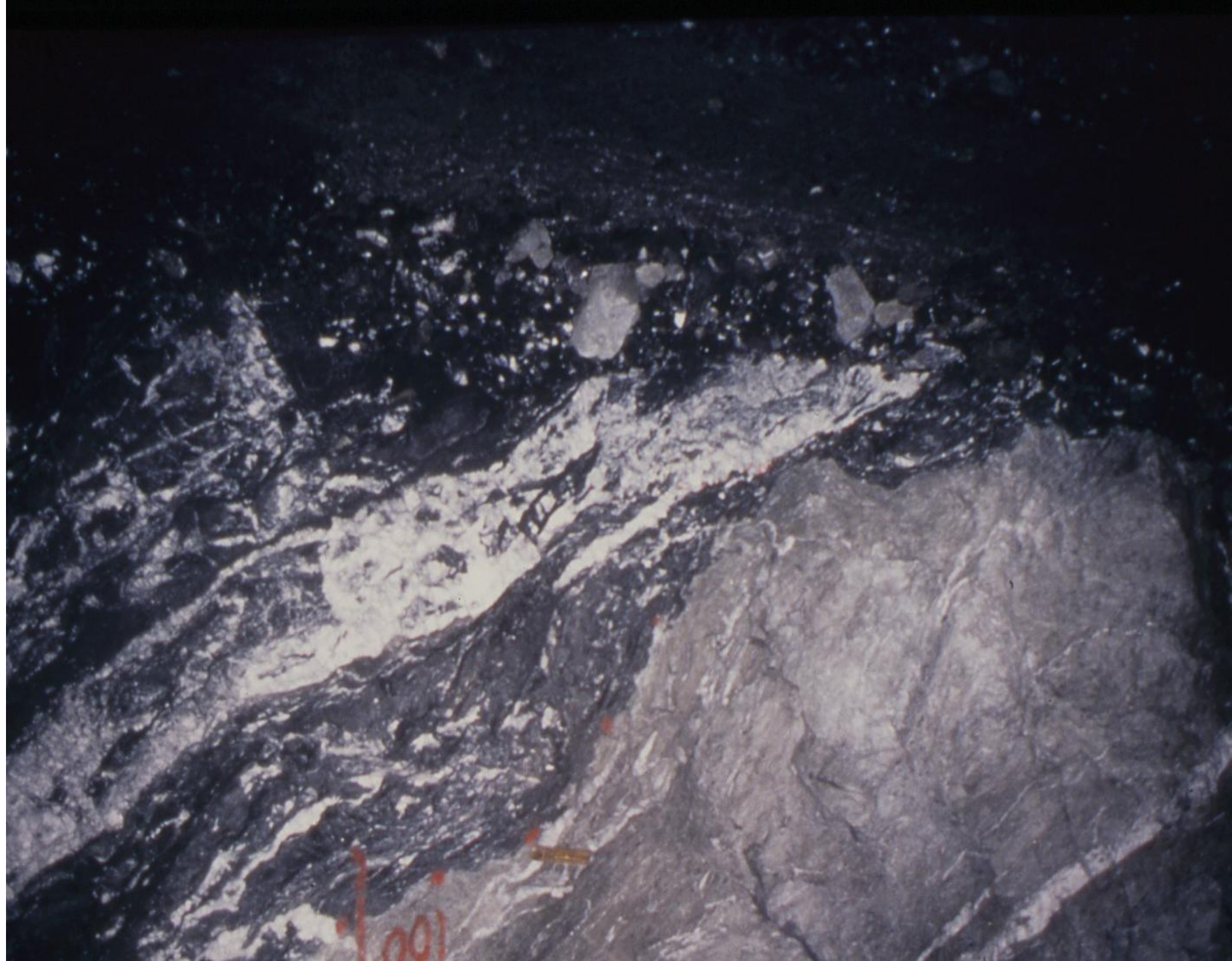
Greens Creek Geology



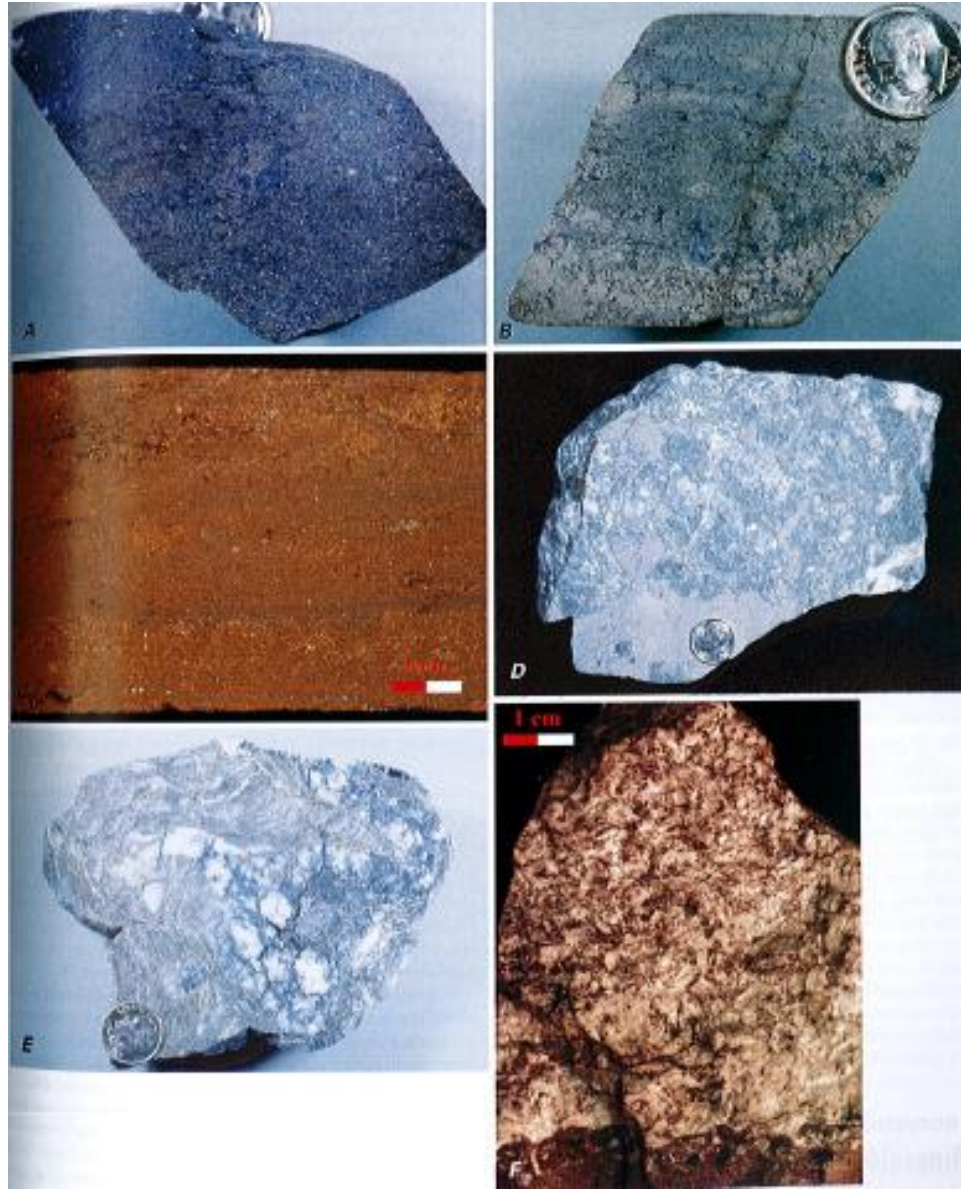




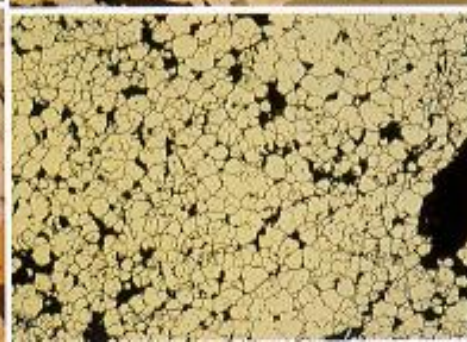
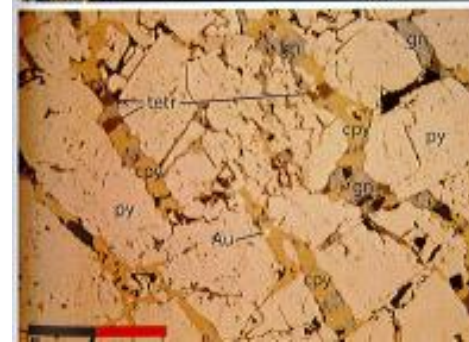
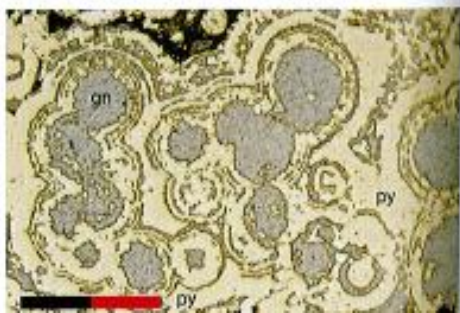
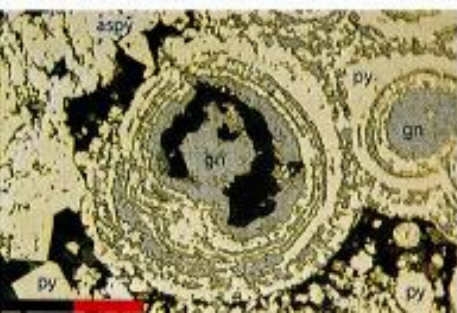
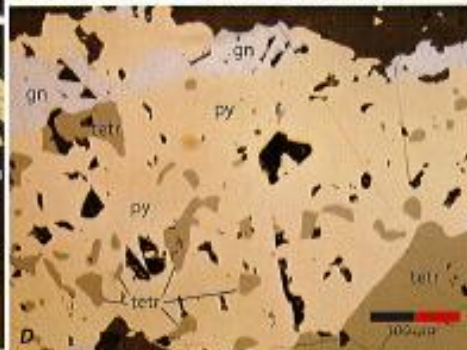
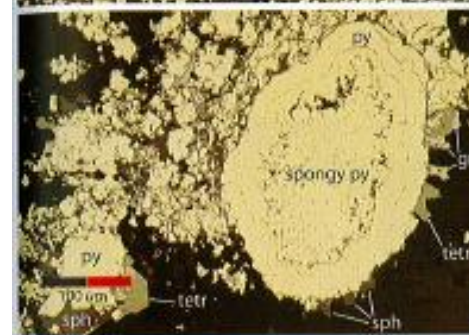
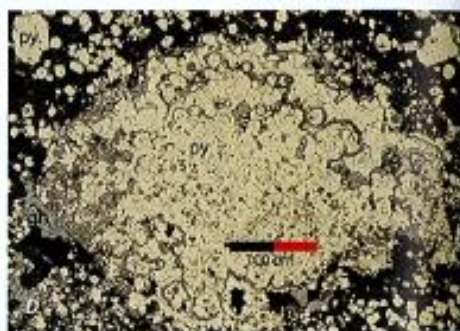
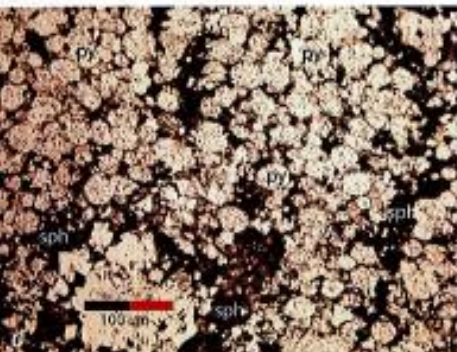
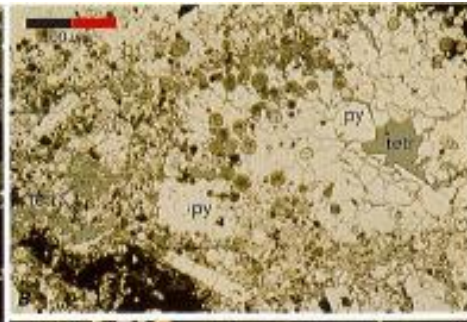
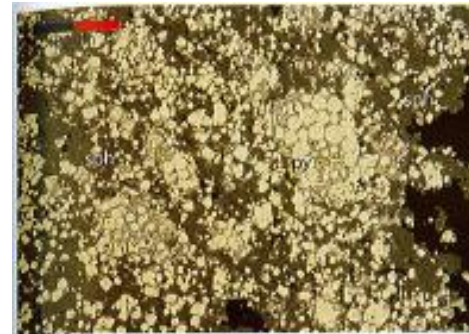
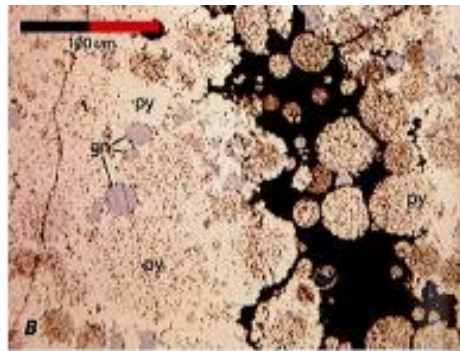
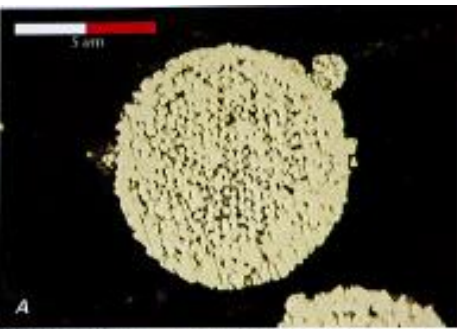




Greens Creek Ores



Primary & Secondary Textures



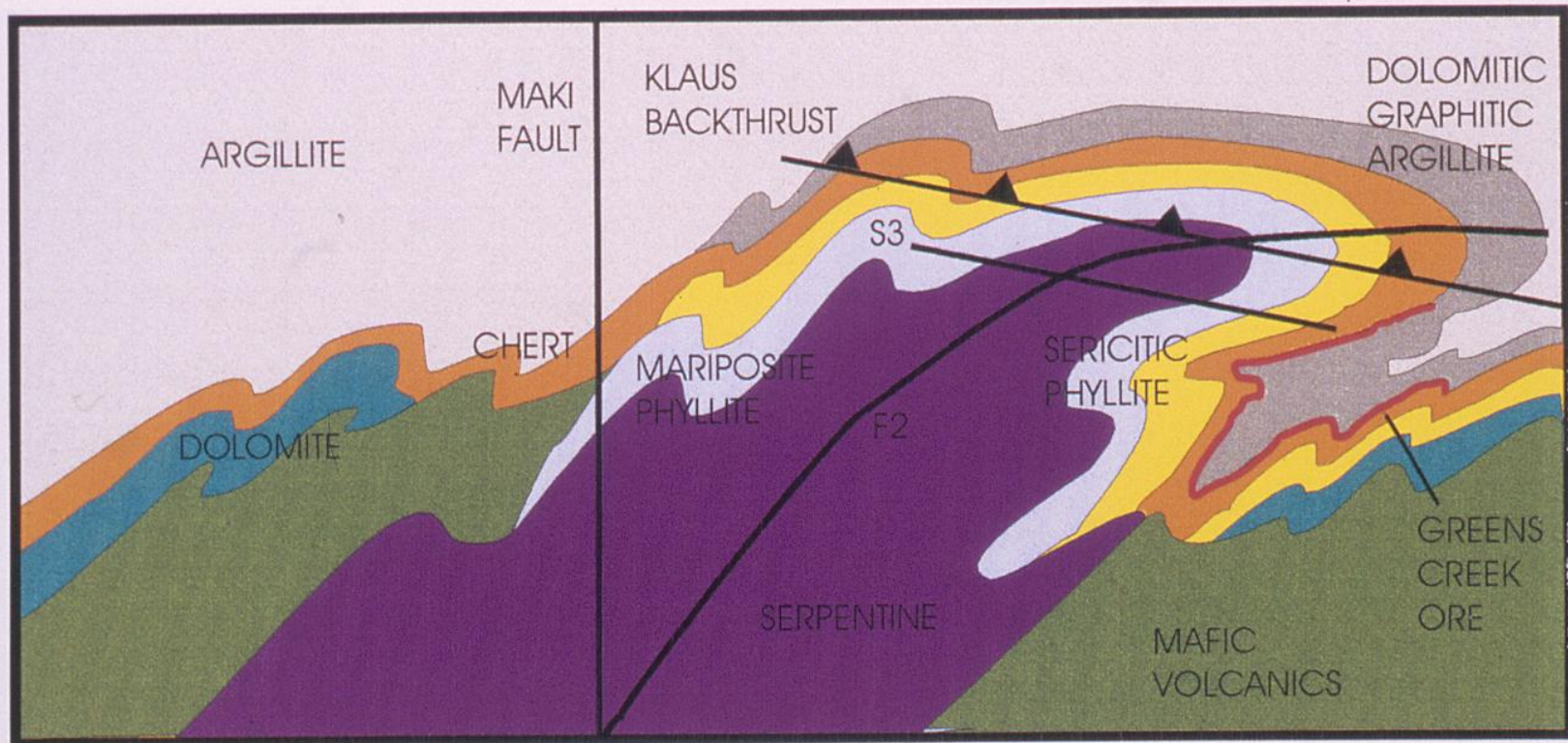




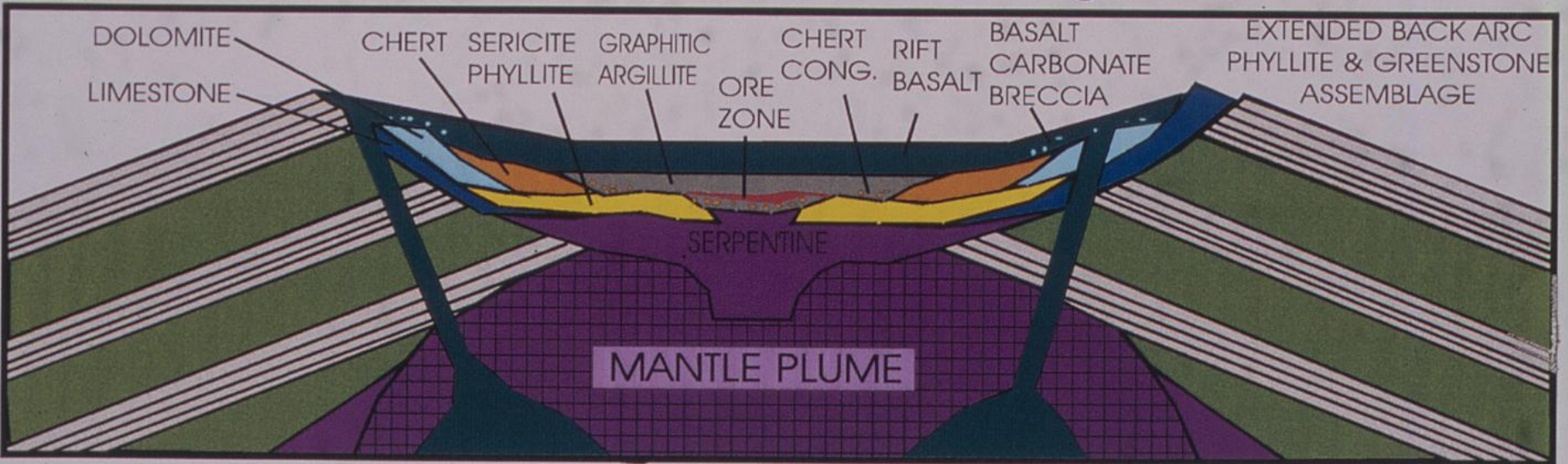




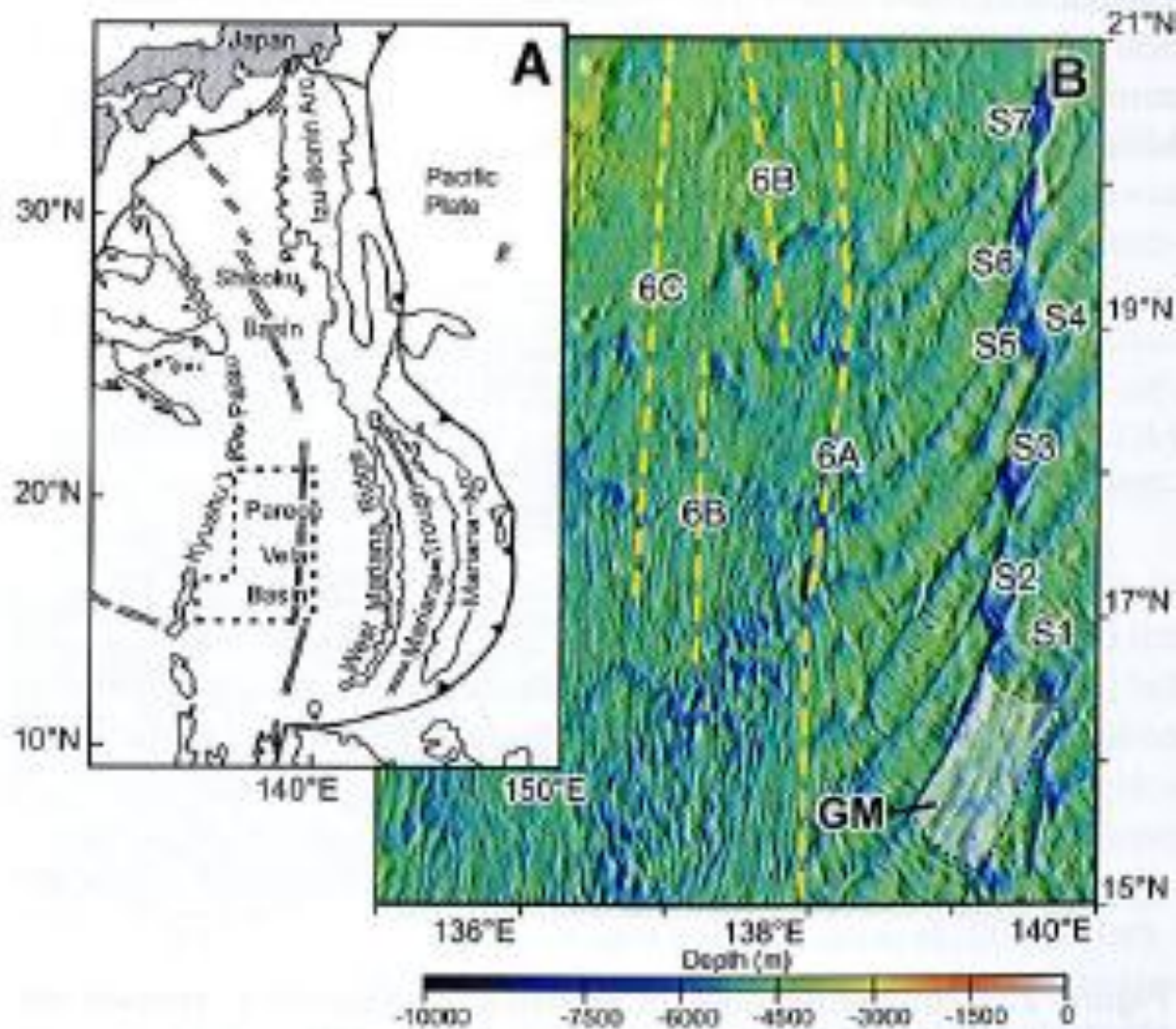
GREENS CREEK STRUCTURAL SETTING



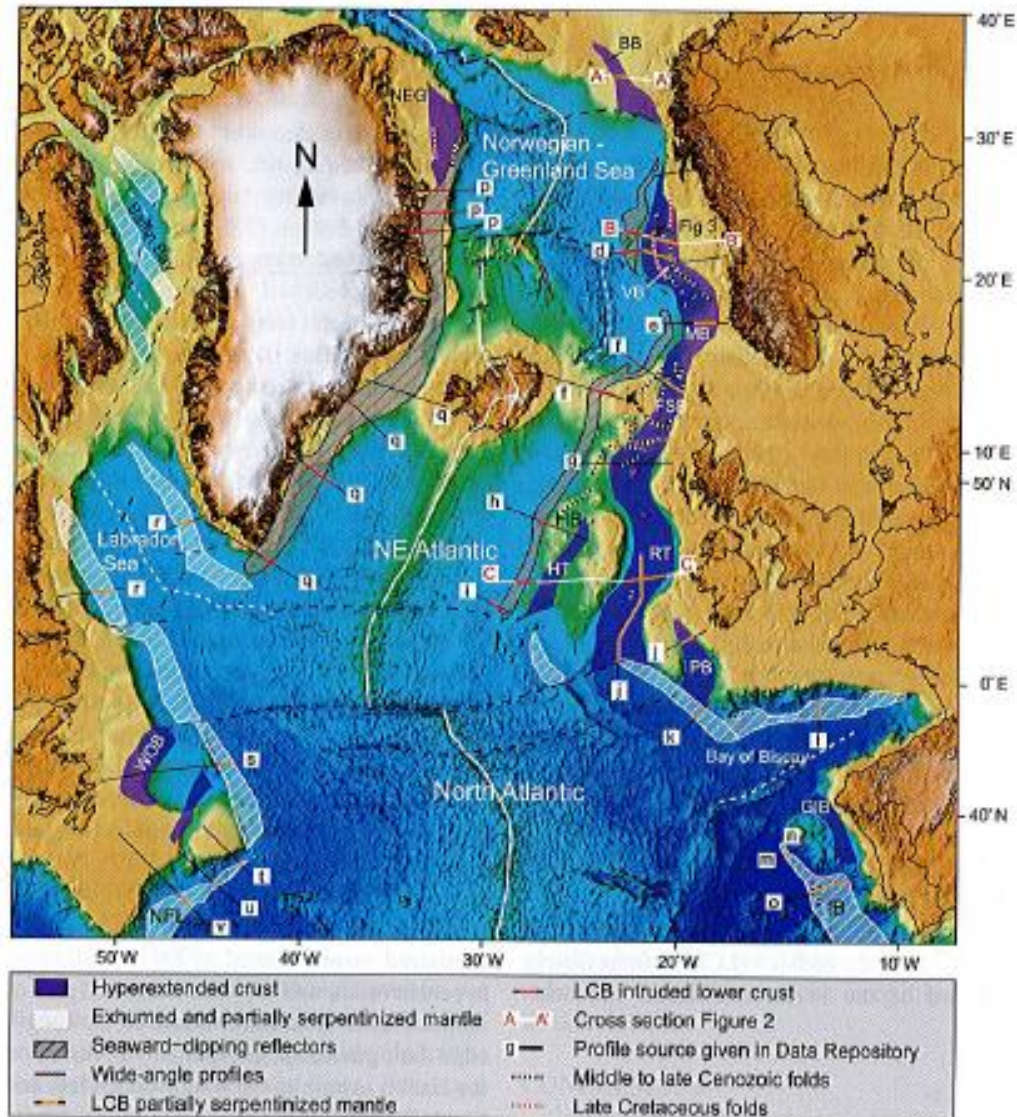
MODEL FOR GREENS CREEK Zn-Pb-Ag-Au ORES:

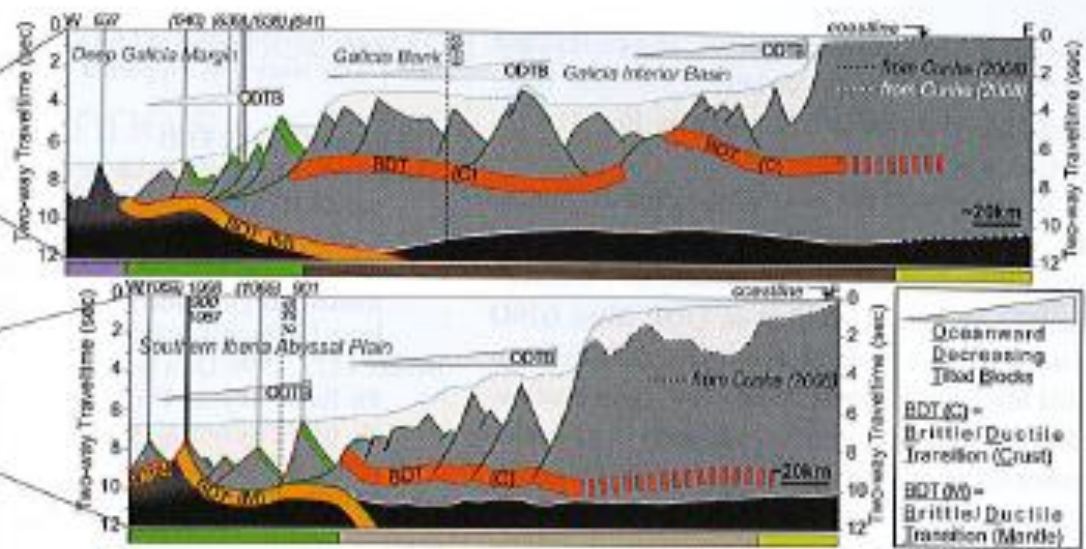
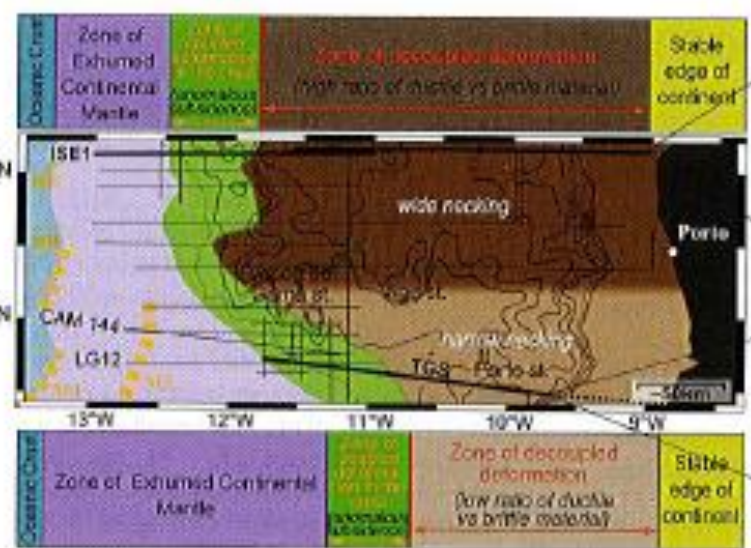
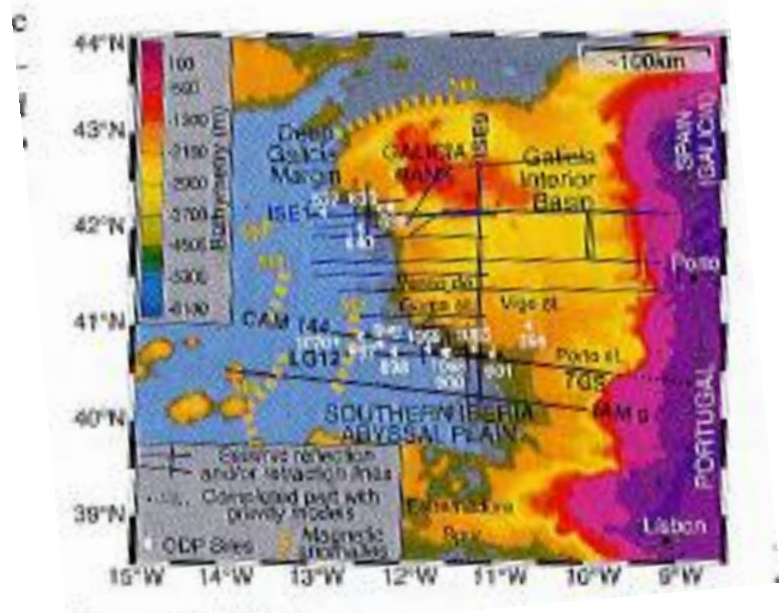


The Godzilla Megamullion



Serpentinite in North Atlantic Rift Margins





CONCLUSIONS

- 1) Serpentinized Mantle Exposed in Rift Settings
- 2) Detachment Fault Control of Hydrothermal Discharge
- 3) Applications to Diverse SEDEX/VMS Settings
- 4) Overlapping Gabbro Sill Emplacement Provides Heat

keep your eyes on the seafloor!

