

## Exhumation of eclogite, western Bale Verte Peninsula: microprobe meets lithoprobe

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Eclogite within rocks now referred to as the East Pond Metamorphic Suite was first recognized by Church (1969). It is generally regarded as the result of high-pressure/low-temperature metamorphism associated with closure of Iapetus and consequent crustal-scale overthrusting. However, little attention has been paid to the questions of why the eclogites were preserved and when and how they were exhumed. Eclogite petrology indicates metamorphism at pressures of >12 kbar and temperatures of ~500 to 600°C. Garnet zoning and symplectite assemblages suggest decompression accompanied thermal relaxation over the P-T range 7 to 9 kbar and 700 to 750°C. Simple 1DT models of petrological P-T-t paths based on these data suggest that the eclogites must have been exhumed rapidly, before thermal relaxation effects

could completely obliterate the eclogite assemblage. Mechanisms for rapid exhumation include syn-tectonic erosion associated with convergence and gravity-driven extension post-dating the main stage of convergence. Although most regional tectonic interpretations focus on thrusting, indirect geological evidence, including the common preservation in central Newfoundland of low-grade metamorphic rocks juxtaposed over short distances with high-grade rocks, suggests that extension should also be considered. The Lithoprobe East L-13 seismic reflection profile (Baie Verte Peninsula) and others crossing central Newfoundland offer the possibility of distinguishing crustal-scale normal and/or reverse structures, and thus distinguishing between alternative mechanisms for eclogite exhumation.