

**CONSTRAINING THE P–T PATH OF A MORB-TYPE ECLOGITE
USING PSEUDOSECTIONS AND GARNET ZONING:
AN EXAMPLE FROM THE BOHEMIAN MASSIF**

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A MORB-type eclogite from the Moldanubian domain in the Bohemian Massif retains evidence of its prograde path in the form of inclusions of hornblende, plagioclase, clinopyroxene, titanite, ilmenite and rutile preserved in zoned garnet. Prograde zoning involves a flat grossular core followed by a grossular spike and decrease at the rim, while Fe/(Fe+Mg) is also flat in the core and then decreases at the rim. In a pseudosection for H₂O-saturated conditions, garnet with such a zoning grows along an isothermal burial path at ca. 750 °C from 10 kbar in the assemblage plagioclase-hornblende-diopsidic clinopyroxene-quartz, then in hornblende-diopsidic clinopyroxene-quartz, and ends its growth at ca. 17 - 18 kbar. From this point there is no pseudosection-based information on further increase in pressure or temperature. Then with garnet-clinopyroxene thermometry the focus is on the dependence on, and the uncertainties stemming from the unknown Fe³⁺ content in clinopyroxene. A Fe³⁺-contributed uncertainty of ± 40 °C combined with a calibration and other uncertainties gives a likely result of 770 ± 90 °C at 18 kbar. The implication from this prograde path is that the rock started burial to eclogite conditions at an elevated temperature at lower crustal conditions.

Pseudosection-modelling suggests that decompression to ca. 12 kbar occurred under H₂O-undersaturated conditions (ca. 1.3 modal% H₂O) that allowed the preservation of the majority of garnet with symplectitic as well as relict clinopyroxene. The modelling also shows that a MORB-type eclogite decompressed to ca. 8 kbar ends as an amphibolite if it is H₂O-saturated, but if it is H₂O-undersaturated it contains assemblages with orthopyroxene. Increasing H₂O-undersaturation causes an earlier transition to SiO₂-undersaturation on decompression, leading to the appearance of spinel-bearing assemblages. Granulite-facies-looking overprints of eclogites may develop at amphibolite-facies conditions.