

Deformation history of Sanbagawa eclogites and their relation to Higash-Akaishi garnet peridotites

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We present Electron Back Scattered Diffraction (EBSD) maps and crystal preferred orientations (CPO) of the eclogites in the subduction-related high-pressure/low-temperature type Sanbagawa metamorphic belt, central Shikoku, Japan. The Sanbagawa metamorphic belt, extends over >800 km along the southwest Japan, bounded to the north by the Ryoke belt (a Cretaceous high-temperature and low-pressure regional metamorphic belt) along the Median Tectonic Line and to the south by the Chichibu and Shimanto belts, forming the well-known paired metamorphic belts of Miyashiro (1961).

Eclogites investigated in this study were collected from the Iratsu body in the Besshi area.

Our EBSD data reveal mainly L-type fabric (strongest CPO along [001]-axes and {011}-poles, suggesting intra-crystalline flow along [001]{110} and $\langle 110 \rangle$ {110} slip systems) in omphacite, random or weak fabric in garnet, and almost an identical CPO to that of omphacite was observed in hornblende. In addition, actinolite shows irregular CPO pattern. The L-type fabric in omphacite and weak or irregular fabric of garnet indicate constrictive deformation under the eclogite facies stage. Hornblende was formed around omphacite however retained the original fabric from that of omphacite. Our results are consistent with the garnet and omphacite presented by Muramoto et al. (2011) for the garnet-peridotite from the Higashi-akaishi ultramafic body. Our results suggest that the ultramafics and eclogites experienced similar deformation regime therefore considering eclogites and garnet peridotites as separate tectonic blocks needs reappraisal.

References

Reference

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