

## Tectonic process of the Sanbagawa eclogite: zircon U–Pb and REE composition analyses

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High-pressure and low-temperature (HP) metamorphic rocks in the Pacific-type orogeny are relicts of deeply-subducted accretionary prisms along the past subduction zones. The geochronological data of the HP rocks provide us with the time-scale information involved in material cycle from surface to deep mantle.

The Sanbagawa metamorphic belt in SW Japan is one of well-studied HP metamorphic belts in the world. However, the timing of the prograde metamorphism, especially of the eclogite-facies metamorphism has been controversial (e.g. Okamoto et al., 2004; Wallis et al., 2009). In order to solve this issue, we applied in-situ zircon U–Pb age and rare earth element (REE) composition analyses to the Sanbagawa eclogite in central Shikoku.

Igneous core and metamorphic rim domains of the separated zircons can be recognized, based on their cathodoluminescence images and Th/U ratios. The U–Pb datings of those domains clearly show existence of two different metamorphic units in the Sanbagawa metamorphic belt; i.e., one is ca. 120-100 Ma older metamorphic unit and the other is ca. 90 Ma younger one. Chondrite-normalized REE patterns obtained from the metamorphic rims in both units show no Eu anomaly and HREE depletion. These characteristics suggest that each unit suffered the eclogite-facies metamorphism at ca. 120-100 Ma and ca. 90 Ma, respectively.

Our new data combined with the mode of occurrence of the Sanbagawa eclogite in Shikoku are suggestive of the following tectonic scenario:

1. The highest-grade part of the older unit was subducted to the depth over 15 kbar at ca. 120 Ma, and stagnated there until ca. 90Ma.
2. The highest-grade part of the younger unit underwent the eclogite-facies metamorphism at ca. 90 Ma, and was juxtaposed with the eclogite of the older unit at the depth.
3. Both units were exhumed at the same time after the juxtaposition.

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