

Deeply subducted Jurassic ridge hydrothermal ore deposit -case study from the Sanbagawa eclogite-amphibolite-blueschist-

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Subduction of cold oceanic plate transports water down to mantle although most amount of water is released by dehydration process. The dehydration reaction and fluid chemistry are fixed by P, T, and redox state. High P/T metamorphic rocks are exhumed from the paleo-subduction zone. Therefore, dehydration process was recorded in the high P/T rocks. The sanbagawa metamorphic rocks suffered high P/T metamorphism at Cretaceous. It is notice that the Besshi-type ore deposit (Volcanogenic massive sulfide) is included in the Sanbagawa metamorphic rocks. origin of the Besshi ore deposit was related to Jurassic global deep-sea hydrothermal activity. Presence of the Bessi-type ore deposit in subducting plate might have controlled the redox state of blueschist-eclogite transformation. Field observation and sample collection were done from eclogite, amphibolite and blueschist outcrops from the Besshi area. In the Besshi area, the metamorphic rocks dips northward in general. Therefore, from north to south, the structural succession is traceable. From the north, metabasite-metachert association overlies the Tonaru eclogite mass, and amphibolite-blueschist succession underlies. The origin of the metabasite-association is ascribed as MORB and deep-sea sediment. Protolith of the Tonaru eclogite is considered as subducted oceanic Island Arc (Aoki et al., 2019). Under the microscope observation these rocks never contain considerable amount of sulfides. Underlying amphibolite and blueschist have mine drifts in each lithologies with certain sulfides. Bulk chemistry suggests that the protoliths are MORB and OIB. It suggests that the Sanbagawa amphibolite-blueschist has brought the ridge hydrothermal material beneath the stacked oceanic Island arc material in deep subduction zone at Cretaceous. Thus, subducted Jurassic-deep-sea-hydrothermal material was stored beneath the stacked Oceanic Island Arc in Cretaceous mantle.

Keywords: Subduction, Sanbagawa