Temporal geochemical changes of the Permo-Triassic greenstones in the Jurassic accretionary complexes of Japan

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Thick chert-limestone-greenstone (metabasalt) sequences of the Late Paleozoic-Early Mesozoic ages occur in the Jurassic accretionary complexes in Japan, and provide evidences for temporal geological and geochemical changes of paleo-oceanic magmatism. The Mino-Tamba-Ashio Belt in Southwest Japan is characterized by occurrence of large limestone and/or chert beds that cover greenstone bodies (up to 2 km in thick), which are composed of massive lava, pillow lava, intrusive rocks and volcaniclastic rocks. They are believed to form a part of the Paleozoic oceanic plateau (Koizumi & Ishiwatari, 2006: Isl. Arc, 15, 58-; Ichiyama et al., 2007: Lithos, in press). Formation ages of the greenstones are examined on the basis of fossils from the oceanic sediments overlying greenstones. Two major magmatic episodes are identified in Early Permian and late Middle Permian and a subordinate episode in Middle to Late Triassic. Their geochemical characteristics provide a record of Permo-Triassic plume magmatism, in which is a systematic temporal trend showing more alkalic and higher in Nb/Zr and La/Yb ratios and decreasing magmatic production rate with time. The greenstones of later two stages are characterized by the occurrences of HFSE-rich ultramafic volcanic rocks and HIMU basalt (Ichiyama & Ishiwatari, 2005: CMP, 149, 373-; Ichiyama et al., 2006: Lithos, Lithos, 89, 47-). The three separate eruption episodes, wide spatial distribution, and these temporal trends of the greenstones in the Mino-Tamba-Ashio Belt are consistent with those of main oceanic plateau and subsequent seamounts reported from the Cretaceous oceanic plateaux (e.g. Ontong Java and Kerguelen), suggesting that they are fragments of an accreted oceanic plateau originated in the Permo-Triassic superplume activity which developed in center of the paleo ocean far from the continental margin.