学位論文要旨

Tectonic evolution of the Paleo-Median Tectonic Line and the Kurosegawa tectonic zone inferred from zircon U-Pb geochronology
（ジルコン U-Pb 年代学に基づく古中央構造線と黒瀬川構造帯の形成テクトニクス）

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Ordovician granitoid (*Saganoseki quartz diorite*) was discovered at the northern margin of Sambagawa metamorphic terrane, eastern Kyushu. LA-ICP-MS zircon U-Pb dating reveals its intrusion age of 473.3 ± 3.6 Ma with a geochemical affinity of the volcanic arc setting. On the basis of these results, *Saganoseki quartz diorite* is explained as a member of the Early Paleozoic plutonic rocks in the Kurosegawa tectonic zone. *Saganoseki quartz diorite* is lying structurally above the early Late Cretaceous Sambagawa pelitic-psammitic schists as revealed from the detrital zircon spectra and the mode of occurrences. Therefore, the rocks of the Kurosegawa tectonic zone were widely distributed at the Outer zone of Southwest Japan before the exhumation of Sambagawa metamorphic rocks.

Based on the zircon U-Pb age and geochemical character of the restricted body of the plutono-metamorphic complex, named *Sashu complex* at the eastern edge of Kyushu Island, it can be considered as an eastern extension of the Higo plutono-metamorphic complex. The intrusion age of the gabbro-diorite mylonite in *Sashu complex* shows 114.0 ± 1.7 Ma. Furthermore, thin layer of metatonalite embedded in the Permian fine-grained mafic mylonite yield the zircon U-Pb ages of 113.7 ± 2.3 Ma and 116.9 ± 1.3 Ma. These age values are considered as that of a metamorphic event based on their extremely low Th/U ratio of the zircon and the mode of occurrences. These ages are consistent with the Higo plutono-metamorphic complex. *Sashu complex* occurs as an upper structural unit of the Sambagawa metamorphic terrane. The boundary is thought to be Paleo-Median Tectonic Line (Paleo-MTL) as a Fitch-type lateral-slip fault system which divide the Southwest Japan into the Inner zone and the Outer zone.

Metagabbroic bodies appeared within the Sambagawa schist, at the Iyo-nada Sea area, western Shikoku yield the crystallization ages ranging from 134.5 ± 2.0 to 138.8 ± 1.4 Ma. Geochemically these metagabbroic bodies show the volcanic arc affinity. Based on the minor element composition of the zircon grains, metagabbro shows the feature of continental or the transitional field between the continental to oceanic settings. These features support the metagabbroic bodies in the Iyo-nada Sea area were originally

formed at the continental or island arc setting, and constitute the hanging wall of the Sambagawa subduction zone.

Maana belt only occurred at the western edge of the Shikoku Island, south of the Sambagawa terrane. Based on the geochemical and geochronological studies, most parts of the Maana belt can be considered as a member of the Kurosegawa tectonic zone and the Northern Chichibu terrane. According to the previous studies, only the Oshima metamorphic rocks, one of the members of the Maana belt, can be considered as a member of the Cretaceous Higo plutono-metamorphic complex. Before the exhumation of the Sambagawa metamorphic rocks, boundary between the Cretaceous plutono-metamorphic complex, and the Kurosegawa tectonic zone was thought to be a Paleo-MTL as evidenced by the discovery of *Saganoseki quartz diorite*.

The origin of Karasaki mylonite, western Shikoku thought to be extremely important due to its tectonic position. From the previous studies, Karasaki mylonite consists of the low *P*/*T* type metamorphic rocks and form the klippe onto the high *P*/*T* Sambagawa metamorphic rocks. Based on the LA-ICP-MS zircon U-Pb analysis, 114.3 ± 3.5 Ma as an igneous age and 105.7 ± 0.9 Ma and 102.6 ± 1.0 Ma as metamorphic ages were obtained from the Karasaki mylonite. Coeval igneous ages were found on Higo plutono-metamorphic complex and the *Sashu complex* proposed in this study. However, the contemporary metamorphic ages of Karasaki mylonite are not yet known from the Higo plutono-metamorphic complex. These metamorphic ages can be found at the Ryoke plutono-metamorphic complex. Although the relationship between the Higo plutono-metamorphic complex and the Ryoke plutono-metamorphic complex is still unclear, Karasaki mylonite is considered as one of the members of the Cretaceous plutono-metamorphic complex.

Fitch-type lateral slip fault system along the continental arc parallel to the subduction zone play an important role in rearranging the terrane distribution along the continental margin. Paleo-MTL is considered as a major lateral slip fault system along the eastern margin of the Asian continent. However, the tectonic evolution of the Paleo-MTL is still controversial because of the overprinting by the later tectonics, particularly due to the exhumation of the Cretaceous Sambagawa metamorphic rocks. In this study, the terrane distribution before the exhumation of the Cretaceous Sambagawa metamorphic rocks was revealed from the discovery of the *Saganoseki quartz diorite*. Before the exhumation of the Sambagawa metamorphic rocks, Paleo-MTL was occurs as a boundary fault between the Cretaceous plutono-metamprohic complex and the Kurosegawa tectonic zone with the Northern Chichibu terrane. After the exhumation of the Sambagawa metamorphic rocks, most part of the Paleo-MTL was eroded, and only a few portions were escaped from the erosion.