

ジルコン年代学によって明らかになった舞鶴構造帯 (MTZ) の形成と再編

The Maizuru tectonic zone (MTZ), its formation and rearrangement as revealed by new zircon chronology data

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In the Pre-Cretaceous terranes of Inner Zone of SW Japan showing low-angle piled nappe structure, only Maizuru zone shows a continuous narrow zonal arrangement. Therefore, the Pre-Cretaceous basement of the adjacent area is separated north and south by this zone. The Maizuru zone characterized by melange-like disrupted terrane with exotic blocks of plutonic complex called "Yakuno rocks" and has often been called Maizuru tectonic zone (MTZ) for that reason. MTZ is divided into three subzones, Northern, Central and Southern zones by their lithologies in its typical Maizuru area. The Southern Maizuru zone consists mainly of Yakuno ophiolite originated from the Permian intra-oceanic island arc and back-arc basin crust that occurred in the early Carboniferous oceanic crust, and the Central Maizuru zone consists of clastic rocks deposited in the back-arc basin.[1] In significant contrast with those two subzones, the Northern Maizuru zone is composed mainly of deformed granitic rocks with subordinate amount of pelitic gneiss, metagabbro and metadolerite indicating an affinity of a matured continental crust. [2] Zircon U-Pb ages of 441.9 ± 2.8 Ma, 424-405 Ma, 291.6 ± 4.3 Ma, and 249-243 Ma have been reported from granitic rocks of the Northern Maizuru zone of Type area so far. [3] [4] After that, granite mylonites of 488.7 ± 0.9 Ma, 449.3 ± 3.6 Ma, 323-301 Ma were also found in the Kume area of Okayama Prefecture 120 km west of the Type area. According to the age of intrusion, inherited ages, mode of occurrence and their similar geological setting, the Siluro-Devonian granites of the Northern zone can be correlated with the Khanka massif, southern Primorye, Russia.

Recently, we found granitic rocks showing zircon U-Pb ages of the Paleoproterozoic Era from the western end of MTZ in the Tsumano area of Shimane Prefecture. [5] These granitic rocks exist as lenticular blocks in a narrow zone of 150 to 300 m in width. Zircon U-Pb ages are 1836 ± 17 Ma for orthogneiss and 1853 ± 14 Ma for tonalite, while that of granodiorite is 415.2 ± 2.5 Ma. Paleoproterozoic zircon grains often contain inherited 2800-2100 Ma core. Furthermore, these rocks are accompanied by meta-quartzite blocks containing detrital zircon with two age clusters at around 2500 Ma and 2700 Ma. These Paleoproterozoic rocks are considered to be the exotic blocks originated from the North China Craton on the basis of their age affinity. In Tsumano area, this narrow zone is embedded in the Permian strata and Jurassic accretionary complex and its metamorphic equivalents. Such a structure is anomalous to the piled nappe structure of the Pre-Cretaceous Terranes of SW Japan. As in response to the east-west change of dominant age of the Northern Maizuru zone, the age spectra of the detrital zircon of the adjacent Permo-Triassic strata in the MTZ also dominates the ages of 500-400 Ma in the eastern part, and the ages at around 1800 Ma dominates in the west. We consider that these blocks in the Northern Maizuru zone were displaced by the lateral fault movement along the northern boundary of MTZ.

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