Transition of sedimentary provenance during early to middle Miocene, central Japan

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The lower to middle Miocene Uchimura Formation is distributed in the southern area of Fossa Magna, which divide into 8 members. The 5 members of the Uchimura Formation are sedimentary rocks, which indicate deep-sea environment. Chemical compositions of the detrital garnets containing in the sandstones of these formations indicate that the garnets belong to the pyralspite series originated from the granulite to amphibolite facies metamorphic rocks. The Chichibu and Mino belt contain the detrital garnets that belong to the granulite facies. And the Ryoke belt contains garnets that usually occur in the amphibolite facies. These facts suggest that clastics in the lower to middle Miocene formations were supplied from the Chichibu, Mino and Ryoke belts. On the other hand, it is significant that the detrital garnets of Yamada sandstone and conglomerate Member are characterized by relatively high calcium (Ca) content. The compositions of the detrital garnets suggest the greenschist facies, which correlate to the high-P/T rocks such as the Sanbagawa belt and it was consisted of the provenance area.

The rock fragments originated from the Chichibu, Mino and Ryoke belts were included in the sandstones, but the schistose rocks are not detected in the microscopes and the outcrops.

The chemical compositions of the detrital garnets reveal the existence of the Sanbagawa belt in the provenance area during sediment of Yamada sandstone and conglomerate Member.