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SMP046-P10 Room:Convention Hall Time:May 27 14:00-16:30

Metamorphic and granitic tectonic blocks of the Atokura Nappe in the Yorii-Ogawa district, central Japan

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The Atokura Nappe in the northeastern Kanto Mountains is composed of Yorii pyroclastic rocks, Yorii Formation, Atokura Formation, Kinshozan Quartzdiorite, Greenstone Merange and various small tectonic blocks (Figure 1). The geological bodies are usually in contact with each other by high-angle faults. Metamorphic and granitic rocks often occur as small tectonic blocks. The representative ones are (a) mid-Cretaceous metamorphic and granitic rocks, (b) early Paleogene Kiroko metamorphic rocks within the Greenstone merange (Ono, JpGU Meeting 2008, G122- P002), (c) late Cretaceous Yorii Granitoids in the Mure.

mid-Cretaceous metamorphic rocks

A small tectonic block of mid-Cretaceous metamorphic and granitic rocks is exposed between the early Paleogene Yorii Formation and the late-Permian Kinshozan Quartzdiorite near Mt. Kinshozan (Figure 1). Coarse-grained garnet-bearing gneisses are found in the southern part of the tectonic block. Fine-grained chlorite-muscovite schists and chlorite-amphibole schists are exposed in the northern part. Calcareous rocks of approximately 20m thick are exposed in the easternmost part of the block. The calcareous rocks show various rock textures. A few pelitic and tuffaceous thin layers are intercalated. Fusulinacean fossils are found in the calcareous rocks and pelitic rocks. Hence, the low-grade metamorphic rocks are metamorphosed Paleozoic formations. This fact suggests that highly metamorphosed calcareous rocks of the Atokura Nappe are also metamorphosed Paleozoic rocks. The mid-Cretaceous metamorphic rocks have properties similar with those of the Hitachi metamorphic rocks in the Abukuma belt.

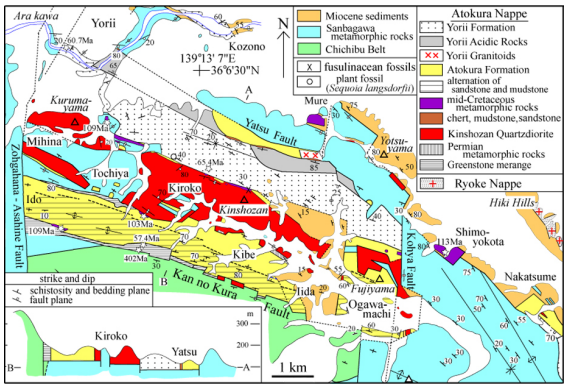
early Paleogene Kiroko metamorphic rocks

The Greenstone Merange which is exposed in the southernmost part of the Atokura Nappe (Figure 1) is mainly composed of the Kiroko metamorphic rocks, serpentinite, actinolite-rocks and various metamorphic and granitic rocks. Serpentinites are poor and granitic rocks are common in the eastern part of the Greenstone Melange. The Kiroko metamorphic rocks mainly consist of mafic rocks, pelitic rocks and psammitic rocks. They are well-recrystallized low-grade metamorphic rocks. There is no evidence for recrystallization and alteration after the main phase of the regional metamorphism.

The Greenstone Melange is in contact with the Atokura Formation by high-angle faults. Serpentinite is common adjacent to the Atokura Formation although serpentinite is rare in the eastern part of the Greenstone Melange. The common occurrence of serpentinite near the high-angle faults suggests that serpentinites played important roles in the formation of the high-angle faults in the root zone of the Atokura Nappe.

late Cretaceous Yorii Granitoids

The Yorii Granitoids consist of aplite and biotite tonalite which are exposed in the Mure. Biotite tonalite is massive and medium in grain sizes. Biotite is partly altered to chlorite. Magnetite is not observed. The biotite tonalite is in contact with a small tectonic block of chert, slate and sandstone by a high-angle fault. The biotite tonalite may be one of the late Cretaceous granitoids of the Southwest Japan judging from the lack of similar granitic rocks in the Atokura Nappe.



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