

Consideration on the Median Tectonic Line of the northern Kanto Mountains

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It is highly probable that the Ryoke Belt, Mino-Tanba Belt and Hida Belt were distributed along the Chichibu-Sanbagawa Belt of the Kanto district. However, these geologic belts of Southwest Japan are not found in the Kanto district. Probably, they were separated from the Sanbagawa Belt and were transported to somewhere during the opening of the Japan Sea. Hence, the Sanbagawa Belt of approximately 220 km in length was directly in contact with geological units of Northeast Japan after its clockwise rotation. The boundary is the Kanto Tectonic Line. The tectonics suggests the absence of the Median Tectonic Line (MTL) in the Kanto district. Nevertheless, the MTL is mapped in many literatures.

The faults supposed to be the MTL are the Ohkitano-Iwayama fault, Ushibuseyama fault, Hirai fault and Naranashi fault which are located near northernmost parts of the Kanto Mountains. These faults are boundaries between Sanbagawa metamorphic rocks and Miocene sedimentary rocks. Basement rocks of the Miocene sediments are supposed to be rocks of the Ryoke Belt. Nevertheless, the assumption cannot be verified because of rare occurrence of basement rocks. Moreover, these faults are discontinuous with each other.

The fundamental geological structure of the region ranging from the Kanto Mountains to the Kanto Tectonic Line is a pile nappe structure consisting of the Atokura Nappe and Ryoke Nappe (Figure, A or B). The nappes were formed in late Paleogene, and they were deformed in early to middle Miocene. After the sedimentation of the Arakawa Formation at approximately 16Ma, Sanbagawa metamorphic rocks began to be uplifted to the Earth's surface. Subsequently, the formation of the Ushibuseyama Nappe took place in the Shimonita region at approximately 15Ma. Finally, the Ohkitano-Iwayama fault, Hirai fault and Naranashi fault were formed near the northern parts of the Kanto Mountains cutting the pile nappe structure.

On the basis of the pile nappe structural model, granitic rocks and gneisses of the Hiki Hills may be rocks of the Ryoke Nappe. Non-metamorphic rocks of the Yoshimi Hills may be Jurassic accretionary complex of the Atokura Nappe. Phyllitic slates of the Kasukabe well may be of the Atokura Nappe. The Atokura Nappe is considered to be a member of the Sanbagawa Belt. Hence, the geology of the Yoshimi Hills and the Kasukabe well suggests the subsurface existence of Sanbagawa metamorphic rocks near the Kanto Tectonic Line.

