Middle Miocene to Pliocene of sedimentary province in the Neogene of Hokkaido, Japan

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Neogene Tertiary develops over the Japanese Islands most wide in the circum-Pacific. Both marine and continental sediments of Neogene Tertiary are distributed wide in Hokkaido, the northernmost part of Japanese Island. It is necessary for correlation with Tertiary in the Honshu and Sakhalin to Kamtschatka to establish a detailed stratigraphy for Neogene Tertiary in this area.

Paleo-sea level in the studied region was reconstructed based on four sedimentary facies observed in the geological columnar section sampled from each basin; conglomerate, sandstone, siltstone, and mudstone, in ascending order according to coarseness of sediment, on the assumption that these four facies represent four paleo-sea levels. Comparison with the curve by Haq et al. (1988) shows that boundary of formation, or the transition of sedimentary facies, corresponds to the stage of lower sea level, and formation corresponds to the higher stage of sea level.

Unconformity and hiatus indicate that surface of the sedimentary basin was higher than sea surface at that time, while successive strata suggests that sedimentation was made in the sea. Investigation led to discriminating nine types of vertical movements.

Subsiding rate for the Late Miocene (10.5～5.5 Ma), early Early Pliocene (5.5～3.8 Ma) and late Early Pliocene (3.8～2.9-3.0 Ma) was calculated in the sedimentary basin of 25 areas. Subsiding rate show a tendency to become faster as geologic ages become younger. The Late Miocene was relatively a calm stage nearly without regional differences in the subsiding movement. The next stage, early Early Pliocene, has more active movement, and subsiding rates in the area west to the axial zone of the Hokkaido shows more rapid subsiding rate than eastern area. The late Early Pliocene was the most active of the above three stages.