

Structural trends and tectonic inversion in Miocene sedimentary basins in the Tsugawa-Aizu province, Niigata prefecture

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The Tsugawa and Mikawa Sedimentary Basins in the northeastern part of Niigata are composed mainly of Early to Middle Miocene formations that contain so-called "Green Tuff" volcanic sediments. Previous studies emphasized the NW-SE trend in the basement during the genesis of the Tsugawa basin. This outcrop-based study intends to discuss structural trends in the development of the Miocene sedimentary basin in the Mikawa area, Aga Town, Niigata.

The Miocene in this study area are divided into the Kanose, Tsugawa, and Araya/Igashima Formations in ascending order. Sedimentary facies analysis showed that the Kanose and Tsugawa formations filled half graben or graben. N-S to NNE-SSW trending faults of a map-scale limited the extent of the formations. NW-SE trending faults formed minor steps on the basement as well as minor, syn-sedimentary faults in the Miocene. They also affected the dyke intrusion trend. In short, the genesis of the Tsugawa basin involved 2 structural trends in this study area, while more significant is the N-S to NNE-SSW trend.

At present, the extent of the Miocene in this study area is, in many places, limited by thrust faults. Thrust faults locate at the position where rift-border faults are suggested. This indicates that tectonic inversion occurred with reactivation of N-S to NNE-SSW trending faults of the two. The trend of fault reactivation suggests that development of the basin in this study area is influenced by the Shibata-Koide tectonic line.

Keywords: Niigata sedimentary basin, Miocene, rift, structural trend, inversion