# Kinki Triangle and the strain concentration zone

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The Kinki Triangle is characterized by one of the regions where active faults, especially reverse faults exist the most densely in Japan. In general, there are many reverse faults in NS direction which bound the basin and mountains or hilly terrain. In order to obtain the crust shortening, the vertical displacements of basement surface by reverse fault movement were determined using the reflection seismic profiles or the results of gravity analysis.

The total horizontal shortening of the crust can be obtained by summation of the individual horizontal projection of the reverse fault displacement. Ten or more reverse faults exist between the Kariya Fault system which locates near the NE-SW side of the Kinki triangle and Nara Toen Fault system. The distance between both fault systems is about 77km. The total E-W crust shortening was estimated at to be about 7.8km.

This means that above mentioned area has been compressed by right lateral slipping of the Awaji-Rokko rigid mass along the Arima-Takatsuki Tectonic Line and the Outer Zone-Kongo or -Yamato Highland rigid mass along the Median Tectonic Line.

When we apply this estimation to whole area of the Kinki Triangle, the shortening is calculated to about 23km. Therefore, by the assumption that the beginning of the tectonic activity is same as the age (3Ma) of the lower Osaka Group, the strain rate is estimated to about 0.033 ppm/year. However, if the general value of age (1Ma) which the tectonic activity become more active is adopted, the strain rate is estimated to about 0.1 ppm/year.

This value is consistent to that of the strain concentration belt called Niigata-Kobe Tectonic Belt (Sagiya et al., 2000). If the strain concentration belt in the Kinki Triangle is corresponds to Niigata-Kobe Tectonic Belt and those mean the plate boundary between the Eurasian Plate and North American Plate, the Outer Zone of the southwest Japan on the south of the Median Tectonic Line should result in a member of North American Plate.

Reference;

Sagiya,T., S. Miyazaki and T. Tada (2000): Continuous GPS array and present-day crustal deformation of Japan, PAGEOPH, 157, 2302-2322