

SCG062-15

Room:IC

Time:May 27 15:45-16:00

Tectonic structure and seismogenic faults in Kyushu

Satoshi Yamakita^{1*}

¹Fac. Educ. & Cult., Univ. Miyazaki

Most of in-land seismogenic faults in Japan are re-activated ones originated as older faults or some mechanically weak planes such as axial planes of kink folds. Seismogenic faults in Kyushu also can be interpreted in this concept. Here I discuss the relationship between tectonic structures and seismogenic faults in Kyushu.

NNW-trending faults in northern Kyushu

There are some NNW-trending seismogenic faults in northern Kyushu. Their strikes coincide with those of Chikuho-type faults forming half-graben-like structure of Paleogene strata. Chikuho-type faults are considered to have been formed in an ENE-extensional setting in the outer arc of the bends between the SW Japan Arc and the Ryukyu Arc in middle Miocene age when the SW Japan Arc clockwise rotated and the Japan Sea opened. The current faults are reactivated ones of these Chikuho-type faults in a different tectonic setting.

Southern marginal fault of the Beppu - Shimabara graben

The Southern marginal fault of the Beppu - Shimabara graben (Oita - Kumamoto Tectonic Line) is the western extension of the current Median Tectonic Line (MTL). The original MTL separating the Inner and Outer Zones in Kyushu is the Usuki - Yatsushiro Tectonic Line and differs from this current MTL. The original MTL, which had been dipping northward, was folded by the uplift of the Sambagawa Metamorphic Rocks and formed an antiform and a synform. The current MTL consists of the northward dipping part of the folded original MTL in the northern limb of the antiform and a short-cut fault to the surface. The current MTL was formed as the southern margin of the *Nagasaki Dreieche*, which was depressed in the middle Miocene extensional setting same as the Chikuho-type faults mentioned above.

Hinagu Fault

The Hinagu Fault counterclockwise diagonally intersects the Kurosegawa and Southern Chichibu Belts. Faults with similar strikes are recognized in the Kurosegawa and Southern Chichibu Belts from Kyushu to Kanto Mountains at intervals of several tens to a hundred kilometer. These faults show northwestern-side-down and left-lateral separations. They are considered to have been formed in a transtensional setting with Early Cretaceous left-lateral strike-slip movement along the northern margin of the Kurosegawa Belt. Some of these faults were reactivated later. The Gokasho-Arashima-Kamishima Fault in eastern Kii Peninsula was in activity in the middle Miocene as a left-lateral strike-slip fault, which extended the Outer Zone in NE-direction as a result, in the outer arc of the bends of the eastern terminal part of the SW Japan Arc caused by the collision against the Izu-Bonin Arc. The Hinagu fault may also have been reactivated in the middle Miocene between the clockwise rotated northern and central Kyushu and Amakusa area that still keeps the trend of the Ryukyu Arc. The current Hinagu Fault is reactivated again as a right-lateral strike slip fault with some northwestern-side-down component.

Akune Fault (tentatively named)

Akune Fault with WNW-strike caused the Northwestern Kagoshima Earthquake in 1997. Its position coincides with that of an axial plane of a Megakink formed in a compressional setting in the inner arc of the bending area between the SW Japan Arc and the Ryukyu Arc in the middle Miocene age. This fault is considered to have been formed along this mechanically weak plane.

Although the faults discussed here have various origins, each of them or their original structures played a role in the deformation of the SW Japan Arc crust in the middle Miocene age. This feature is also recognized in seismogenic faults in other areas in Japan. Faults activated or originated in the middle Miocene events may be reactivated in current settings.

Keywords: Kyushu, seismogenic fault, tectonic structure