

Geomorphology and geology along the eastern Ushikubi fault of the Atotsugawa fault system, Central Japan

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We performed geomorphological and geological survey in the eastern Ushikubi fault which located northern part of Central Japan. As a result of the survey, we found a new outcrop of active fault in a branch of the Kurokawa River. This outcrop is on important key to clarify the activity of the Ushikubi fault.

The Ushikubi fault, 60 km long in a NE-SW trend is the northernmost member of the Atotsugawa right-lateral strike-slip fault system in the northern margin of the Hida Highland, central Japan. Based on the trench surveys at the middle and western segments of the Ushikubi fault performed by Active Fault Research Center, AIST, Japan, Miyashita et al. (2004) indicated the most recent event occurred about 1000 years ago.

In order to make clear the neotectonic history of Hida Highland and characteristics of the Ushikubi fault, the purpose of this paper is to elucidate the geometry and activity of the eastern Ushikubi fault.

Geologic basement in the survey area is composed of the Hida metamorphic rocks, the Jurassic Funatsu Granite and the overlying Tetori Group. On the major part of the eastern Ushikubi fault, the south-eastern side of the fault consists of the Granite or metamorphic rocks forms higher and steeper landform than opposite side of the Tetori Group and Tertiary system.

Along the Ushikubi fault and the Saotomedake fault (north-eastern extension of the Ushikubi fault), fault lineament and right-lateral stream off-sets are observable, although fault lineament become indistinct in the valley of the Joganji River which located between the Ushikubi fault and the Saotomedake fault. Highest terraces of the Joganji River have about 60 m vertical or about 500 m horizontal off-sets. This offset indicates the existence of the concealed fault in the valley of the Joganji River.

In a branch of the Kurokawa River, Osorei River, we found a new outcrop of active fault. On this outcrop, basement sandstone (Tetori Group) and unconsolidated sand layer is exposed where the northern side of the fault plane is uplifted by about 40 cm (on the sand layer) with an attitude of N55E / 65S. On the north side of the basement rock, fault gouges are observable. And the sand layer consists of clastics of the Funatsu Granite.

Around the outcrop (the drainage of the Kurokawa River), boundary fault among the Funatsu Granite and the Tetori Group corresponds to the lineament of the Ushikubi fault which is traceable more than 2000 m in length.

Reference

Yukari Miyashita, Toshikazu Yoshioka, Takuichiro Kuwabara, Yoshihiko Kariya, Masaru Saito, Manabu Nikaido, Nobukazu Takase, Toru Tachibana, Koji Fujita, Tatsuro Chiba (2004) The most recent surface-rupturing event of the Ushikubi fault, Toyama/Gifu prefectural border area. Abstracts 2004 Japan Earth and Planetary Science Joint Meeting, J027-P013.