Fault topography and geomorphic development along the Yanagase-Sekigahara fault zone, southwest Japan

Daisuke Ishimura[1]

[1] Dept. Geophysics, Kyoto Univ.

The Yanagase - Sekigahara fault zone is situated on the northeastern margin of the Kinki Triangle (Huzita, 1962) and extends from the Sekigahara-cho, Fuwa-gun, Gifu prefecture to Tsuruga Bay, Fukui prefecture. The ˜100-km long fault zone consists of the Kaburagi fault, Yamanaka fault, Yanagase fault, Urazoko fault, Urotsugi-touge fault, Ikenogouchi fault, Yanagase-yama fault, Kaziya fault, Daigo fault, Oshimizu fault, Sekigahara fault, Monzen fault and Miyashiro fault. Faults observed further north and south of the Yanagase fault strike NNW-SSE and NW-SE, respectively. The NW-SE-striking faults are mainly left-lateral with eastside uplift, while fewer N-S-striking thrust faults are also observed. This study aims to characterize their structures in the fault zone, except for the Kaburagi fault reported to be submarine in nature.

Data from earlier paleoseismic investigations in the fault zone show that active tectonic history and displacement are only represented in the Yanagase fault (Sugiyama et al., 1993; Yoshioka et al., 1998). Okada and Togo ed. (2000) classified almost all of these faults as class B based on geomorphological expression. In terms of average slip rate, quantitative discussions only on the Miyashiro fault were done by Sugito et al., (2003). And chronology of terraces is not pursued fully in the study area due to the rarity of key tephra, and the evolution of landforms is not clearly shown along the Yanagase fault. Thus, further investigations are necessary to fully understand the activity of this fault zone.

In this study, air-photograph analysis, field surveys and laboratory methods are carried out to describe fault topographies and interpret geomorphic development. Analysis of aerial photos reveals fault topographies and geomorphic distribution. On field surveys, observations of shear zone in bedrock, and measurements of displacement topography are being done. In the Utsurogi-touge fault, a new active fault outcrop was observed between a Quaternary gravel bed and a Paleozoic-Mesozoic bed. Displacements related to some thrust faults were also measured. Tephra analysis of terrace deposit and loam are conducted in the laboratory and key tephra, K-Ah (7.3 ka), AT (26-29 ka), and K-Tz (95 ka) (Machida and Arai, 2003), were detected.

Because this study is ongoing, I will discuss with new date on the day.