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Tectonic geomorphology in the vicinity of Iizaka, the western marginal fault zone of Fukushima basin, Northeast Japan

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Active fault zones are commonly composed of several segments that are separated by steps in their traces. We mapped the surface traces of the western marginal fault zone of Fukushima basin distributed along the piedmont line of the Ou Backbone Range, Northeast Japan, using ALOS images and aerial photographs. In the western margin of the Fukushima basin, several active faults are distributed along the boundary between the Ou backbone range and the basin area extends in length about 57 km. The Fukushima basin can be subdivided into a northern and southern part based on the differences in geomorphic settings, fault pattern and the subsurface structure (Watanabe, 1985). We focus on the surface traces and their discontinuity in the vicinity of Iizaka town located between the northern and southern half of the basin, where fault traces are bending. In the northern part of the basin, the Kori fault trending NE to SW defines the western margin of the basin. In the southern end of the fault, it extends 2 km further south in the basin. The fault is expressed by a fault scarp on the Pleistocene to Holocene terrace surfaces. The Daiyama fault also extends in the western margin of the southern part of the basin. The northern end of the Daiyama fault is composed of several en-echelon faults trending the same as the fault zone. Between the two faults, inferred fault traces (Iizaka fault) trending E to W are mapped by previous works. Many landslides are distributed in the mountains north of Iizaka town. In the mountains area to the north of the Iizaka fault, we inferred existence of an old large-scale landslide. This landslide is eroded by small streams flowing to the south to form fluvial terraces, and is partly covered by recent landslide deposits. Fault scarps and tilting of fluvial terraces which are mapped as tectonic landforms in this area by previous works are possibly formed due to gravitational movement (slumping) of this old landslide. Thus, the western marginal faults of Fukushima basin are probably segmented by a 3 to 4 km step at the middle of the basin. This research was funded by grants from the Ministry of Education, Culture, Sports, Science and Technology.

Keywords: Active fault, Fukushima basin, Iizaka town, Land slide, Tectonic geomorphology