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Extension position and continuity of the Nishiyama fault in Chikuzen-Oshima Island, Fukuoka Prefecture

Tatsuya Sugiyama^{1*}, Shoichi Shimoyama², Hiroyuki Tsutsumi¹, Daisuke Ishimura¹

¹Dept. Geophysics, Kyoto Univ., ²Earth and Planetary Sci., Kyushu Univ.

The Nishiyama fault, a left-lateral strike-slip fault, locates from Fukutsu City to Iizuka City (Pref. Fukuoka, 1996). In the nearby Genkainada Sea, the 10-km long Off Oshima fault, was identified in Genkainada Sea, where is the offshore northwestern extension of the Nishiyama fault (e.g. Iwabuchi, 1996). Tsutsumi et al. (2008) suggested, on the basis of geomorphology, that the Off Oshima fault belonged to the Nishiyama fault zone. In August 2010 the Japan Coast Guard re-surveyed the Off Oshima fault and identified a 30-km long northwesterly extension.

However, there is a gap of longer than 10 km between the northern end of the Nishiyama fault and the southern end of the Off Oshima fault. Chikuzen-Oshima Island locates between these faults. The aims of this study are to identify the position of an active fault in Chikuzen-Oshima Island and the continuity of the Nishiyama fault and the Off Oshima fault.

Aerial photograph interpretation was carried out to identify tectonic geomorphology such as fault scarps or the displacement of valleys or mountain ridges. Geological and topographical field surveys were conducted.

The results were as follows. We revealed topographical features of recent fault activity in the central part of the island. We found two outcrops of a fault, low fault scarps and sinistral displacements of the valley and a mountain ridge. It was therefore concluded that this was an active fault. Tephra analysis of deposits of fluvial terrace, which is displaced 1.5 m vertically by the latest faulting, in the Tani district was carried out. It is clarified that these deposits contained Kikai-Akahoya tephra (K-Ah: 7.3ka yBP) and Aira-Tn tephra (AT: 26-29ka) tephras [Machida and Arai(2003)]. We concluded that this terrace age is younger than 7.3ka.

In conclusion, an active fault was identified in the central part of Chikuzen-Oshima Island and the Holocene terrace surface was displaced 1.5 m vertically by the latest faulting.

Keywords: active fault, Chikuzen-Oshima Island, Nishiyama fault, Off Oshima fault