

The estimation of formation ages of fans at the eastern foot of Ikeda Mountains, central Japan by the AMS¹⁴C dating and re-examination of average slip rates of Ikedayama fault

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A number of small fans have been developed at the eastern foot of Ikedayama Mountain of Ibuki Mountains, central Japan. These fans are regarded as useful landforms in evaluating the reverse fault activity of Ikedayama fault, dividing from the Nobi Plain, because it runs across the terraces with different ages. The average slip rates of Ikedayama fault, with a length of ca.16 km, was once evaluated as 0.8-0.9 m/1,000 years (Gifu Prefecture, 1998, 1999, and AIST), and recently, re-evaluated as 0.4-0.7 m/1,000 years in the area of northern margin, and 1.3-1.7 m/1,000 years or more in the central part of fault (Ishimura, 2010). On the other hand, we have been carried out AMS¹⁴C dating of humus developed on the debris-flow fan deposits, and classification of the terrace landforms in order to clarify the geomorphologic development process of these small fans. Our results show the estimated age of terrace surface as 17-20ka (upper surface), 10ka (middle surface (upper)), 9ka (middle surface (lower)) and 8ka (lower surface) (Takaba et al., 2016). These ages clearly differ from those estimated by the detection of crypto-tephras from the topsoil (Ishimura, 2010). Therefore, we consider the necessity for re-examination of the activities of Ikedayama fault, again. In this study, using the Fundamental Geospatial Data (Digital Elevation Model of 5 m mesh) by the Geospatial Information Authority of Japan, the fault vertical offsets on the terrace surfaces of same age were measured. They are 9-10.5 m in the upper surface of the northmost part, 10-11 m in the middle surface (upper), 8-10 m in the middle surface (lower), 9-11 m in the middle surface of the central (lower), 6-7 m in the lower surface, 2-2.5 m in the lower surface of the south, and 1.5-2 m in the lower surface. Based on the estimated ages of the terrace surfaces and their vertical offsets above, the average slip rates were calculated to 0.45-0.53 m/1,000 years (the upper surface), 1.0-1.1 m/1,000 years (the middle surface (upper)), 0.89-1.18 m/1,000 years (the middle surface) in the north part of fault, and 1.00-1.29 m/1,000 years (the middle (lower) surface), 0.71-0.88 m/1,000 years (the lower surface) in the central part of fault, and 0.18-0.25 m/1,000 years and 0.24-0.32 m/1,000 years (the lower surfaces) in the south part of fault. Although the lower values should be discounted, the representative average slip rate of Ikedayama fault can be 0.8-1.2 m / 1,000 years, close to the estimate by the Gifu Prefecture (1998, 1999).

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