

Classification of terrace surfaces and radiocarbon dating of alluvial fans at the northern foot of Minoh Mountains, Kyushu Island

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Seventy small-scale fans are distributed at the northern foot of Minoh Mountains, located in the eastern Tsukushi Plain, Kyushu. Few geomorphological researches are published about the eastern Tsukushi Plain including Minoh Mountains area (e.g. Kuroda and Kuroki, 2004; Zaitu, 1987). It is important to elucidate landform development of these small-scale fans for more understanding of geomorphology of the Tsukushi plain.

At first, landform classification map was created on the bases of aerial photographic interpretation and field survey. In the field survey, roamy sediments and humic deposits were sampled for dating. For five humic deposits, the ¹⁴C dating with AMS technique were employed (operated by Institute of Accelerator Analysis Ltd.).

Based on the aerial photographic interpretation, the small-scale fans in this area were classified into five terraces (I, II, III, IV and V surfaces). Outcrop of I surface (highest) displays a loam layer (thickness: 40 cm) containing numerous BW type volcanic glasses just above the terrace deposits. ¹⁴C age of the lower end of 10 cm of the humic sand layer (thickness; 20 cm), deposited above the loam layer, is 1,181–1,056 cal BP. BW type volcanic glasses are possible to be originated from K–Ah (7.3 ka; Machida and Arai, 2003) or AT (26–29 ka; Machida and Arai, 2003) eruptions. Outcrop of III surface displays a humic sand layer (thickness; 10 cm) just above the terrace deposits, showing that its ¹⁴C ages are 7,127–7,015 cal BP at the lower end of 5 cm and 6,182–5,999 cal BP at the upper end of 5 cm. Outcrop of IV surface displays that a humic sand layer (thickness; 20 cm) just above the terrace deposits. The ¹⁴C age of charcoal included in the humic sand layer is 1,408–1,320 cal BP at the lower end of 10 cm. At another outcrop of IV surface, a sand layer and a humic sand layer (thickness; 20 cm) are observed just above the terrace deposits. The ¹⁴C age of the humic sand layer is 1,058–938 cal BP at its lower end of 10 cm.

The above results suggest that the timing of terracing was influenced by several factors, such as global climate change, movements of Minoh faults (Tsukushi earthquake in 679 A.D.; Matsumura, 1990) and human activities involved in this region.

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