Basaltic andesitic pyroclastic flow deposit of the 3.3ka eruption at Tokachidake Volcano, Northern Japan

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A basaltic andesitic pyroclastic flow deposit associated with 3.3ka eruption is preserved at the western foot of Tokachidake Volcano, Northern Japan. The deposit can be divided into two units; lower and upper unit, based on the variation and content of juvenile materials. The lower unit consists of several flow units that are yellowish brown in color and contain a large amount of altered or oxidized lithic fragments and a minor amount of juvenile materials composed of pumice, scoria, and cauliflower-shaped bombs. The upper unit consists of several flow units that are block to dark brown in color and mainly contain scoria and cauliflower-shaped bombs as juvenile materials. Although the both units are matrix supported and poorly sorted, they lack fine-grained particles (less than 1/16 mm) in the matrix. The lower and upper units are mainly distributed in small valleys and cover areas of 3 km2 and 3.6 km2, respectively. The ratios of the height and the runout distance are estimated at 0.21-0.32 and 0.15-0.21 for lower and upper unit. The presence and content of juvenile materials of the lower unit suggest that the pyroclastic flow was generated by a collapse of a pyroclastic cone with volcanic edifice. For the upper unit, it could be generated by a collapse of the crater wall with lava pool that is same as a bomb rich pyroclastic flow deposits reported at Arenal and Aso volcanoes (Alvarado and Soto, 2002; Miyabuchi et al., 2006).