Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

HSC024-08 会場:201A 時間:5 月 24 日 10:45-11:00

流れ山の分布にみる磐梯火山における 1888 年の山体崩壊量
Sector-collapse volume of Bandai volcano in 1888, Japan, inferred from size-distance distribution pattern of hummocks

吉田 英嗣 [1*]
Hidetsugu Yoshida[1*]

[1] 関東学院大学経済学部
[1]College of Economics, Kanto Gakuin Univ.

This study aims to investigate the sector-collapse volume of Bandai volcano at the 1888 event, the best-known example in Japan. There are some conflicting views concerning the volumetric magnitude at the collapse. In this research, the author focuses on the size-distance distribution pattern of hummocks in order to definitize the collapse volume. The widespread preservation of hummocks along the course of rockslide-debris avalanches is useful for understanding the physical characteristics of landslide. Our recent researches (Yoshida, 2010; Yoshida et al., 2010) have shown the empirical relationships between size-distance distribution pattern of hummocks and the collapse volume of the source volcanoes. Hummock size generally decreases as an exponential function of distance for volcanic rockslide-debris avalanches. It has been found out that the intercept coefficient, which corresponds to the initial average size of hummocks (blocks) at the origin of the landslide, shows a strong correlation with the volume of the collapsed mass, indicating that the initial size of blocks at the source may be determined by the volume of the collapsed mass. For the 1888 debris avalanche hummock, too, hummock size decreases as an exponential function of distance. According to the empirical relationship shown by the previous results and the intercept coefficient value for the 1888 avalanche hummocks, the landslide volume should be expected as ca. 0.5 km^3. Previously (or traditionally), the estimated value (ca. 1.2 km^3) by Sekiya and Kikuchi (1889) has been most frequently referred to as the catastrophic collapse volume of Bandai volcano in 1888. However, the above result supports the estimation (ca. 0.49 km^3) by Yonechi et al. (1988) and Yonechi and Chiba (1989), emphasizing the significance to consider that the volumetric magnitude of the sector collapse stays within the order of 0.1 km^3.
Keywords: collapse volume, hummocks, size-distance relationship, 1888 debris avalanche, Bandai volcano, Japan