

鳥海火山北麓に分布するラハール堆積物の運搬・
堆積過程と構成物質の時間変化

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Depositional Processes and Temporal Component-change of Lahar Deposits
at the Northern Foot of Chokai Volcano, NE Japan

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Chokai volcano is an andesitic stratovolcano in northeast Japan. The collapse of parts of the volcano occurred about 2500 years ago, and formed the Kisakata debris avalanche deposits. The post-2.5 ka fan (partly volcaniclastic apron) deposits are largely distributed in north to northwestern foot of the volcano. The fan deposits consist of several lithological/sedimentological units, however, most of their geological, sedimentological, and geomorphic characteristics have not been examined in previous studies. This paper, therefore, aims at understanding of geomorphology and depositional processes of these lahar deposits and mineralogical component changes in relations with different sources.

Field survey in the upstream and observation of a trench in the downstream area revealed that the fan deposits consist of more than 16 units, which are composed of debris flow, hyperconcentrated flow and streamflow facies; most of them were deposited by lahar events. The lahar deposits have total thickness of 30 m, and overlie the Kisakata debris avalanche deposit. In proximal areas (with steep to moderate slopes), lahars flowed down as debris flows. Whereas in the distal area (with very gentle slopes), the lahars were transformed into hyperconcentrated flow and/or stream flows commonly, although some of them reached to the distal area with a debris flow nature.

Clasts of the lahar deposits comprise altered and fresh andesites, mudstones and sandstones. Proportions of altered andesite clasts to total clasts decrease upwards in stratigraphic sequences. Matrices of the lower eight units are composed of grayish-blue clay and are different from those of the upper eight units, which are composed of brownish yellow volcanic sand. The stratigraphic variation in the matrix component is consistent with the change in matrix mineral assemblage, possibly reflecting changes in the source materials from Chokai volcano.

Key words: Chokai volcano, Lahar, Volcanic fan

1. はじめに

ラハールは火山周辺で発生する火山砕屑物と水の混合物の急速な流動現象の総称である (Smith and Fritz, 1989)。ラハールはこれまでも世界中で多くの火山において発生

し、前世紀においてはおよそ 30,000 人の死者をもたらした、火山災害の中で火砕流に次ぐ最も危険な現象の一つである (Schmincke, 2004 など)。ラハールによる影響・被害は甚大で、例えば、フィリピン、ピナトゥボ火山で

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