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## **Proportional variation of debris flow, hyperconcentrated flow, and stream flow deposits in a volcanic fan and the relationships with geomorphological features in Chokai volcano, NE Japan.**

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Chokai volcano is an andesitic stratovolcano located in northeast Japan. There are volcanic-fan deposits at the northern base of Chokai volcano that overlie a debris avalanche deposits. On the fan surface, geomorphological features change with distance from steep, rough, lobate appearance to gentle, smooth plain. From a geological survey in the proximal area, Minami et al. (2015) reported that post-collapse fan deposits accumulated by a series of debris flows and hyperconcentrated flows, and concluded that the lobe-structures in proximal area originate from deposition of debris flow. The distal area was not included with the previous study, therefore, origin of the transition in geomorphology has not been determined. This study aims to understand the transition of depositional processes and geomorphology with distance. In the distal area, the fan deposits are mostly composed of laharitic streamflow facies and braided river deposits with minor debris flow and hyperconcentrated flow deposits. Facies clearly varies with distance; dominated by debris flow deposits in proximal, shared by debris flow and braided river deposits in transition area, and dominated by stream flow deposits in distal area. This variation implies that lahars flowed down as debris flows in proximal areas; then, they transformed into stream flows, although some reached to the distal area. The proportional variation of facies can account for the topographic variation of the fan. Debris flow deposits formed “debris flow lobe” in proximal, further streamflow deposits formed a smooth plain in distal. As stream flow, some lahar reached to a highly populated coastal area, 20 km distant from the volcanic edifice. The area may be affected by similar lahar in future.