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Reexamination of Kambara Pyroclastic Flow Deposit erupted in the 1783 Tenmei Eruption of Asama Volcano

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Kambara pyroclastic flow deposit (Aramaki, 1956) flowed out towards the northern side in the 1783 Tenmei eruption is a block and ash flow type deposit. However, this has the feature which does not have an example in others as follows. Huge essential blocks are included in the thin matrix deposit. Main portion of the deposit deposited on the horseshoe-shaped depression which made by simultaneous erosion and gradually changed to debris avalanche deposit which mainly consist of the substrate materials in the down-stream section. However, the upper-stream section is covered by Onioshidashi lava flow, the distribution, depositional sequence and mechanism of the generation of Kambara pyroclastic flow is not yet clear. Aramaki et. al. (1986) suggest the huge essential blocks which blew off from the summit crater fell on intensively the northern slope and flowed as pyroclastic flow, the kinetic energy of the blocks used to eroded substrate and created depression. On the other hand, there are some ideas of the pyroclastic flow occurred explosion produced near the depression. The great portion of human and social damage in the case of the 1783 eruption relate to this pyroclastic flow, and the mechanism of production should be clarified also from the standpoint of disaster prevention.

When National Research Institute for Disaster Prevention newly installed the Onioshidashi observation station in the locality which adjoins the east side of horseshoe-shaped depression, the section of a pyroclastic flow deposit outcropped. This is regarded the "blast deposit" which is known by the marginal section of Kambara pyroclastic flow deposit. This deposit consists of several depositional units, and grain size and the degree of sorting and color tone differ from each other. Essential clasts are contained about 95%, mainly consist of dark gray, angular, dense particles and some. These grain size distribution of some depositional units are deficient in block sized particles and silt sized particles compared with the main part deposit of Kambara pyroclastic flow deposit(Aramaki et. al., 1986). Although the above feature does not give restrictions immediately about a mechanism of production, because of the blast deposits are not enough mixed with substrate materials, the original feature of morphological textures, fragmentation process, and the information about those sequential progress.

Keywords: pyroclastic flow, Asama Volcano, Tenmei eruption, blast, lithology, depositional texture