Clay mineral assembladge of Bandai 1888 eruptive deposits.

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Mt. Bandai is an active volcano in Fukushima Prefecture, NE Japan. The latest eruptive activity of Bandai occurred on July 15, 1888. 15 to 20 times phreatic eruptions were followed by large collapse of Kobandai edifice. Many investigations had been done to clarify details of the activity since immediately after July 15. But, there are some disagreement between results of geological approach and that of analysis of survey's testimony. In this study, we pigeonhole disaster's record of the eruption, and compare with our geological approach. Especially, we focus on clay mineral of the eruptive deposits having information of eruptive source.

Precursor activities of 1888 eruption were typical to phreatic eruption: there had been some rumbling and shaking. No juvenile materials have recognized in 1888 ejecta or debris avalanche deposit. Main eruptive activity ceased in a few hour. Phreatic eruptions generated low temperature surges. We investigated the surge deposits in a wider area than previous studies, because some disaster records show damage of the surges far from previously reported area. Surge and fall deposits had secondary removed by rain as lahar flowed along with Biwasawa to the eastern foot. This lahar is also covering the summit region in some places, and some pictures taken after the eruption show the lahar deposit. We found wider range distribution and stratigaraphy of, for example, at northeastern area (Tsuchiyuzawa), and in the north (on debris avalanche deposit). We found also some flow units in the surge deposit. These flow units can be recognized only at the summit region. These flow units are available to constrain the timing of generating surge and large collapse. Microscopic and X-ray diffraction investigations indicate that some units in the deposit have different components. The lowest unit contains Montmorironite - Ilite mixed layer, and upper unit contain Montmorironite, Haloycite, and Kaolin minerals. These imply that changing source of eruption.

We made the result correspond with disaster records, and clarified the surge generating events had occurred some times (at least two): pre-collapse and post-collapse generating. We inferred the flow direction based on the distribution, thickness of the surge deposits, and pictures showing surge blown off. Based on these, we inferred the surges were gravity currents generated by heavy eruption column around between Kobandai and Kushigamine. This place is on the line of fumaroles formed in collapse caldera.