

安達太良火山, 12 万年前噴火(岳噴火)における噴火推移の復元: 火口近傍露頭と山麓火砕流との対比による推察

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Sequence of the 120 ka Adataro-Dake Eruption from Adataro Volcano, Fukushima, Japan:
Based on Correlations between the Outcrops of Pyroclastic Fall Deposits at
the Summit and Flow Deposits on the Flank and Foot of the Volcano

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We performed systematic sampling and description of the Adataro-Dake tephra outcrop on the summit of Adataro volcano, Fukushima Prefecture, Japan in order to reveal the detailed eruption sequence and temporal evolution of the magma system of this volcano that erupted 120 ka BP. Even though there is no recognizable eruption hiatus represented by a paleosoil layer, pyroclastic fall characteristics at the outcrop permit to divide Adataro-Dake tephra into 19 layers: A to R; from bottom to top. The earlier layers (A to L) are characterized by successive pumice fall deposits, intercalated by thin volcanic sand layers. The later layers (M to R) are rich in scoria fall and are partly welded, with agglutinate found in layers O and R. Representative clasts from each layer were analyzed to determine the grain size distribution, componentry, modal composition and whole rock chemistry. Layer M can be correlated petrologically and petrographically with the lower part of Yugawa pyroclastic flow deposit on the eastern foot and the Motoyama pyroclastic flow deposit on the western flank of the volcano. Similarly, the upper part of Yugawa pyroclastic flow correlate with layer N, meanwhile the upper part of Motoyama pyroclastic flow correlate with layers O or R. There is an increase in the lithic fraction with decreasing sorting in layer M, which we interpret to indicate increasing enlargement of vent during the phase of this layer. The scoria/pumice volume ratio also increases remarkably in layer M, suggesting that vent enlargement and sudden increase of mafic magma during phase M caused the column collapse that generated the Yugawa and Motoyama pyroclastic flows. The mafic magma composition changed after layer O, with the FeO*/MgO ratios becoming less than 2.1. After this change in chemistry in phases O to R, pyroclastic flows were continuously generated and agglutinated deposits were formed at the summit. This suggests that the eruption style of the final phase abruptly changed to relatively low column height.

Key words: Adataro volcano, agglutinate, Pyroclastic flow deposit, Correlation, Eruption sequence, Magma composition

1. はじめに

福島県中北部に位置する安達太良火山は、東北日本弧の火山フロントを構成する第四紀複合火山である (Fig. 1)。本火山は東西約 12 km, 南北約 15 km の範囲に、主として安山岩質の火山錐がほぼ南北に配列した火山列をなし、主なピークは北から鬼面山 (1482 m)、箕輪山 (1728 m)、鉄山 (1709 m)、矢筈ヶ森 (1673 m)、安達太良山 (1700 m)、和尚山 (1601 m) と称される。本火山は、約 55 万年

前あるいはそれよりも古い時期から現在まで、活動を続けてきた活火山である (藤縄, 1980)。藤縄ほか (2001) によれば、その活動期は、休止期の挟在により、大きく三期に区分される。最新の第三期は、三活動期中、最長・最大規模であり、約 25 万年前から現在までに、カルケアルカリ安山岩とデイサイトの噴出を繰り返し、本火山列の主体部を形成した。藤縄・鎌田 (2005) では、第三期をさらに、噴火様式や休止期の存在から 3-1、3-2、3-3 期

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