

## Stratigraphy of pyroclastic deposits of Akan Caldera, East Hokkaido

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Several caldera clusters are located in Central and East Hokkaido, Japan. They have been formed since late Pliocene. Akan Caldera is one of the calderas and it shows an elliptic shape, 24\*13km in diameter, with NE-SW elongation. Although it has been previously considered that the caldera was formed by the eruption of large-volume pyroclastic flows (Akan Pyroclastic Deposits: APD) during the middle Pleistocene, detailed studies of eruptive stratigraphy and eruption style had not been performed. We carried out geological and volcanological survey of pyroclastics and related deposits around the caldera. In addition, we determined phenocryst assemblages, modal analysis of phenocrysts, mineral and glass chemistry, and whole-rock chemistry of juvenile pumice.

APD comprises non-welded to strongly welded pyroclastic flow deposits and pumice fall deposits. Five welded pyroclastic flow deposits are recognized, and degree of welding of them increase toward to Akan Caldera. The thickness and grain size of several representative pumice fall deposits remarkably increase toward to Akan Caldera. We divided the deposits into 13 or 14 eruptive episodes. Between these episodes, there exists evidence for dormancy of eruptions, such as paleosol and fluvial deposits. We can group APD into two main groups, Older Akan pyroclastic deposits (OA) and Younger Akan pyroclastic deposits (YA) with intervening Kushiro Group (Sato and Kakimi, 1967). OA comprise 11 eruptive episodes, and 7 of them involve pyroclastic flows. The lower parts of OA are correlative with Kuchoro Tephra Formation (Sato and Kakimi, 1967). The formation dated as 1.26±0.1 Ma by FT method (Miyata et al., 1988). The uppermost deposit of OA was dated as 0.43 Ma by K-Ar method (Nakagawa et al., unpublished). YA consists of 2 or 3 eruptive episodes, and they involve pyroclastic flows. YA intervenes between Kp6 and Kp5 (Katsui and Sato, 1963) derived from the east adjacent Kutcharo caldera. Kutcharo pumice flow deposit 4 (Kp4) was reported on 0.11 Ma (Okumura et al., 1985). Therefore, the duration of caldera-forming stage of Akan Caldera could be estimated to be about 1 million years. Most juvenile materials of APD are 2-pyroxene dacite to rhyolite (SiO<sub>2</sub>=67-78wt.%). The rocks of each group show different petrological features as follows. (1) The rocks of OA often contain olivine and quartz phenocrysts, whereas those of YA do not contain. (2) Phenocryst contents of YA are often larger than 18 wt.%, on the other hand, that of OA are less than 12 wt.%. (3) Comparing at the same SiO<sub>2</sub> contents, K<sub>2</sub>O contents of the rock of OA (1.2-2.1wt.%) are lower than those of YA (2.2-2.6wt.%). We conclude that the caldera-forming eruptions of Akan Caldera were derived from at least two distinct magma-plumbing systems, and that eruptions had intermittently continued 13-14 times during nearly 1 million years.