Late Cenozoic large felsic magmatism with caldera forming in the Tayama area, northeast Japan Arc

Yosuke Kobayashi[1]

[1] Inst. of Mineralogy, Petrology and Economic Geology, Tohoku Univ

In the northeast Honshu Arc, many calderas relevant to the felsic magmatism at Late Cenozoic are distributed. Especially, many large-scale calderas over 10km in diameter are distributed around the backbone range.

In the Tayama area, large amount of acid volcanic rocks in middle Miocene to Pliocene are widly overlying on the marine sediments deposited by transgression accompanying lifting at the time of the opening of the Sea of Japan. Although existence of a few calderas is pointed out in the Ito et. al.(1989), the Geological Survey of Japan(1990), Yoshida et. al.(1999), based on a distribution of pyroclastic flow deposits and lacustrine deposits, gravity anomaly data, etc, the details are not yet reported. Moreover, the stratigraphy based on the history of volcanic activity of each caldera has not established. In this paper, in accordance with the result of geological survey and the existing data of dating (the Agency of National Resources and Energy, 1985; Nakajima et. al., 1995; Yasui et. al., 2000), the history of magmatism and structural development of calderas (especially the Obesawa caldera) which are distributed in the Tayama area were studied, and the Neogene system of this area are examined based on caldera sequences.

In the Tayama area, many felsic volcanic rocks formed during middle Miocene to Pliocene are distributed, those activity is classified into three group from the formation age.

(1)12-10Ma : Kiritoshi caldera and Tayama caldera
(2)7.5-6.0Ma : Obesawa caldera and Araya caldera
(3)4.0-2.5Ma : post-caldera stratovolcanos

These four calderas, which were active at (1)12-10Ma and (2)7.5-6.0Ma, are forming a caldera cluster. Among those, the Tayama caldera and the Araya caldera which were formed at (1)12-10Ma and (2)7.5-6.0Ma, are covered with basaltic-andesitic stratovolcanos that were erupted at (3)4.0-2.5Ma.