

## An evidence of secondary explosion on Saruana lava flow at Chokai volcano

# Akihiko Yokoo[1], Fukashi Maeno[2]

[1] Inst. Min. Petro. Econ. Geol., Tohoku Univ., [2] Earth Sci., Tohoku Univ.

<http://www.cneas.tohoku.ac.jp>

Generally speaking, secondary explosions will occur under the condition that volcanic deposits meet either external waters or wet sediments. For example, numerous secondary phreatic explosions, which sent plumes to several kilometers high, occurred in the result of dynamic interaction between hot pyroclastic flow deposits and groundwater in Pinatubo. At Shikine-jima and Kozu-shima, there were also a lot of phreatomagmatic explosions at the bottom of hot lava flow caused by destruction of phase-equilibria. They produced craters about 100-200 meters in diameter. On the other hands, there were very small phreatic explosions occurred on Taisho lava flow at Sakurajima volcano. They were characterized by steam plume of 40 to 50 m height and lava projecting of fragments about 10 m distances. Secondary explosions have wide scales of explosivity as above; hence, it is difficult to find the geological evidences of small explosions in the case of Sakurajima volcano. In other words, if we can find the geological data in pyroclastic deposit, we'll know that the large-scale explosions were occurred here. In this presentation, we'll report the geological evidence of secondary explosion on Saruana lava flow at Chokai volcano.

Chokai volcano, located at the boundary between Akita and Yamagata Prefectures, is one of the largest andesitic volcanoes in Japan. 0.02 million years ago, this volcano issued a huge volume of lava to the west of the mountain and it is called as Saruana lava flow. Saruana lava flow has a typical inner structure of andesite massive lava, outer part is the oxidized clinker and inner part is massive. In inner massive part, we find the evidences of secondary explosions around Misaki Park, it is the most west margin of lava flow. The characters of them are as follows; 1) pyroclastic dykes with irregular shape intrude on massive lava and some fractures of massive lava are filled with these dykes, 2) the matrix of these dykes are composed of fine oxidized particles and they are weakly welded, 3) the blocks in these dykes are poorly sorting, and relative displacements each other are large, 4) there are the dykes including blocks with red oxidation vein, which shows that occurrences of several explosions. These characteristics resemble closely the facies called spiracle reported in Shikine-jima and Kozu-shima. Because spiracle is one of the typical evidences of phreatomagmatic explosions, it seems that same phenomenon was occurred at Saruana lava flow. Sea level on 0.02 Ma also supports this idea.