

Geological and petrological characteristics of the volcanic eruptions in the summit area of Kurikoma Volcano, NE Japan

*Raiki Yamada¹, Syun Watanabe¹, Hikaru Sato¹, Toshiro Takahashi², Takuya Harada³, Mitsuru Sato³

1. Graduate school of science and technology, Niigata University, 2. Department of Science, Niigata University, 3. Mt. Kurikoma Area Geopark Promotion Committee

1. Introduction

Mt. Kurikoma is a Quaternary volcano that is located at the volcanic front of northeastern Japan arc and straddling the border of Akita, Iwate and Miyagi prefectures. Recently minor phreatic eruption occurred in 1944 (e.g. JMA, 2015) from the Showa-ko crater, which is located at the northwest part of Mt. Kurikoma. Thus, volcanic activity of Kurikoma volcano is always monitored by JMA (Japan Meteorological Agency). Mt. Kurikoma is famous tourist site with many visitors every year, and it is the symbol of the Mt. Kurikoma Area geopark. The Mt. Kurikoma Area geopark is a suitable place to learn natural disasters (e.g. 2008 Iwate-Miyagi Nairiku earthquake) and the efforts of humans (e.g. Izunuma) created by the landform and geological features of the foot of Mt. Kurikoma. The detailed volcanic history of Kurikoma volcano is revealed by Fujinawa et al. (2001), and they divided into six volcanic edifices (Southern row, Older Higashi-Kurikoma, Magusadake, Younger Higashi-Kurikoma, Kurikoma and Tsurugidake). The Kurikoma-sancho and the Okomayama agglutinates, which are products of the Kurikoma volcanic edifice formed after 110 ka (Fujinawa et al., 2001), occupy the summit area of Kurikoma volcano and consist of lava and agglutinate. The aim of our investigation is to compile the geological story of Mt. Kurikoma, and in this report, we exhibit geological and petrological data of eruptions in the summit area of Kurikoma volcano.

2. Geological characteristics

The mountain ridge between Mt. Kurikoma and Tengu-iwa (Kurikoma-sancho agglutinate): Large blocks (more than 30 cm in diameter), which are gray-colored, massive and non-vesicular, are scattered along the trail. They would result from secondary migration of lava blocks.

Tengu-iwa (Kurikoma-sancho agglutinate), Omuro and the summit of Mt. Okoma (Okomayama agglutinate): Agglutinate is observed in this area. Agglutinate consists of various type fragments (e.g. spatter, red- and black-colored scoria, bomb). It is thought that these agglutinate was formed by accumulation of welded lava fragment near vents.

3. Petrographic and petrological characteristics

The almost samples have plagioclase, orthopyroxene and clinopyroxene phenocryst. Some samples include olivine phenocrysts. Groundmass of lava block shows hyaloophitic texture, whereas some clasts in agglutinate have groundmass of glass. The bulk-rock major element composition of all samples is subalkaline andesite field ($\text{SiO}_2 = 56.92 \sim 62.61$ wt.%) in terms of SiO_2 -total alkalis diagram (Le Maitre et al., 1989), and belong to the medium-K series in terms of SiO_2 - K_2O diagram (Peccerillo and Taylor, 1976). In terms of SiO_2 - FeO^*/MgO diagram, these andesites appear to show a calc-alkaline trend (Miyashiro, 1974).

Geological and petrological characteristics of eruptions of Kurikoma volcano in the summit area were revealed, however, more data of the other volcanic edifices is necessary to compile the geological story.

Fujinawa et al. (2001) *Bull. Volcanol. Soc. Japan*, 46, 269-284.

Japan Meteorological Agency (2015) *National Catalogue of the Active Volcanoes in Japan (Fourth Edition)* . 446-454.

Le Maitre et al. (1989) *A classification of igneous rocks and glossary of terms*. Blackwell, Oxford.

Miyashiro (1974) *Am. Jour. Sci.*, 274, 321-355.

Peccerillo and Taylor (1976) *Contrib. Mineral. Petrol.*, 58, 63-81.

Keywords: Kurikoma volcano, Mt. Kurikoma Area geopark