

Eruptive history of Koshikidake Volcano of the Kirishima volcanic group - A study on growing stratovolcanoes-

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The Kirishima volcano group has over 20 craters within a 25 km WNW-ESE and 15 km NNE-SSW expanse. Volcanic activity in the northwest area of this group has been reported for the recent 30,000 years by Imura (1992), Imura and Kobayashi (2001), and Tajima et al. (2014). We studied the Koshikidake Volcano, which comprises 11 tephra layers (Tajima and Kobayashi, 2011), of the Kirishima volcano group. These tephra layers are named Koshikidake-Shiratorishimoyu 1 to 11 tephra (Ks-Ss1 to Ks-Ss11) in this study because their type locality was around the Shiratori-Shimoyu Onsen. The first-stage five tephra layers indicate occurrence of small to medium vulcanian and scoria fall eruptions. The largest scoria fall (Ks-Ss6) among all Ks-Ss tephra was recorded in the sixth eruption event, which produced over 2 km³ of lava flow to the northern part of Koshikidake Volcano. Subsequently, Koshikidake volcano erupted again, indicating repeated vulcanian and scoria fall eruptions. Peat was found in Ks-Ss7a and Ks-Ss7b, and lake deposits in Ks-Ss7b and Ks-Ss8 tephra at Jogasaki. Ko-Kakuto lake in the Kakuto Caldera had been ponded at the Ito-pyroclastic flow eruption from the Aira Caldera (Aramaki, 1968). This study shows that Ko-Kakuto lake existed before Ks-Ss5 tephra, but the lake disappeared after Ks-Ss9 or 10 at Jogasaki. A peat layer deposited in Ks-Ss7a and Ks-Ss7b and lahars deposited above Ks-Ss8, indicate shallow water conditions at the Jogasaki location.

Koshikidake Volcano has ejected the greatest volume of products in the Kirishima volcano group, and its activity has been divided into the first small or medium eruption, second climax eruption with huge lava and scoria fall, and third small to large eruption stages, similar to those of the developing Takachihonome Volcano.

Keywords: Kirishima volcanic group, Koshikidake volcano, strato volcano, lava, Ko-Kakuto lake