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Comprehensive study on the 2011 eruption at Shinmoedake (Kirishima Volcano) and the eruption scenario

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Magmatic eruption began in January 2011 after about 300 years of hiatus. We started comprehensive study using a Grant-in-Aid in 2010-2011 jointly with researchers from national universities. This study was carried out by four investigation teams on (1) condition and structure under crater and near conduit, (2) magma accumulation system in geodetic and seismological methods, (3) products in the geochemical and geological methods, and (4) volcanic mud flows.

Inflation had occurred at the point about 10 km below the surface and 7-8 km northwest of the Shinmoedake crater since 2006. Phreatic eruptions were repeated in 2008 and 2010. Subplinian explosions were repeated in three times in January 26 and 27, 2011, which preceded lava accumulation at the Shinmodeke crater and repeated vulcanian explosions since February 1. The inflation was canceled during the eruption of the plinian explosions and lava accumulation in crater. The volume of deflation is balanced with the volume of erupted magma.

The eruption scenario was formed soon after the start of eruption and revised, based on the geological history of the eruption in this volcano 300 years-ago (Imura and Kobayashi, 1991). We should revise the eruption scenario by reflecting the research results of this study.

Keywords: Shinmoedake, volcanic eruption, comprehensive study, eruption scenario, Kirishima volcano