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Precursory eruptions of the 2011 Shinmoedake eruption, Kirishima volcanoes, Japan

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The first precursory eruption, occurred at August 2008, was a phreatic one, which formed fissure vents and produced tephra of 0.2 million ton (Geshi et al., 2010). The next eruption occurred on March 30, 2010 and small ones happened successively on April 17, May 27, June 27 and 28, July 5 and 10. After a half year dormancy, another phase of eruption started on January 19, and main magmatic eruption continuously occurred on Jan. 26. We reported here the representatives of these precursory eruptions.

The eruption of March 30, was very small-scale phreatic one, and ejected only a few ten tons of ash. The eruption of May 27 was also a phreatic, but violent jet was taken by a video camera. The mass of tephra was estimated to be about 300 ton. Eruptions of June 27 and 28 happened at cloudy day, so they were not witnessed. The eruption of July 10 was taken by some cameras. The report by JMA suggested that a small scale pyroclastic surge happened there, but we think it was only drifted gas along the crater rim.

The January 19 eruption was reported as a small scale phreatic one in the JMA report, but the mass of tephra was estimated to be 60,000 ton, which is much larger than the previous phreatic eruptions. The tephra is generally fine grained, and its bulk density is less than 1.0 g/cubic cm, and it is reported that the tephra carried about 10 % of vesiculated pumice material. And a week later, main magmatic eruption started on January 26 which is still going on at the time of writing.

Keywords: Shinmoedake, Precursory eruption, 2011, Kirishima volcano