

Failed eruption observed by seismic arrays during the Sakujirama volcano activity on Aug. 15, 2015.

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NIED conducts seismic array observation at two sites (north of Kitadake and Kurokami) in Sakurajima volcano from March 2015. Each array consists of nine 1Hz seismometers and 1 infrasonic sensor with 200Hz data loggers. We analyzed seismic data observed during the failed eruption on Aug. 15, 2015. The observed waveforms have significant characteristics as below: 1) P-arrival times at Kitadake-array leads 0.2s to those at Kurokami-array around 7:00. At 6:00 seismic signal is clear at Kitadake-array but not at Kurokami-array. 2) Rough estimates of epicenters are around east of Minamidake-Nakadake. 3) Waveforms at all stations of Kitadake-array are coherent, but at Kurokami-array, seismic stations at east of Nabeyama and others show different features. 4) Waveforms in 12:00 have lower frequency components. 6) LP vents have precursory high frequency noises.

Temporal change of cross-correlation factors of these seismic waveforms indicate that there are three different periods, i.e., A: 6:00 - 10:30, B: 10:30 - 12:00, and C: 12:00 - 24:00. There are no family waves between these three periods. In A period, many family earthquakes were observed but not in B period. During C period, some pairs separated as long as hours have high cross-correlation factors. It is implicated that, in the A period, some similar fault slip occurred successively in the initial phase of dike intrusion, in the B period, VT events may suggest random fractures, and there occurred some similar slips all around the intruded dike in the C period.

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