

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

\*Eisuke Fujita<sup>1</sup>, Hideki Ueda<sup>1</sup>, Taku Ozawa<sup>1</sup>, Yosuke Miyagi<sup>1</sup>, Takahiro Miwa<sup>1</sup>, Ryohei Kawaguchi<sup>1</sup>

1.National research Institute for Earth science and Disaster prevention, Volcanic research department

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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