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## Transition of Shinmoe-Crater activity inferred from correlation patterns between infrasound and ground motion

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Shinmoe-dake of Kirishima volcano complex started major eruptions on January 26, 2011. Three eruptions occurred in two days from 26th to 27th, each of which emitted a large ash cloud for a couple of hours. Isolated explosions generating large N-shaped airwaves started on 28th. The volcanic activity is still changing. In December, 2010, we installed a microphone at 1-km north of Shinmoe-Crater, and the data is being sent to the institute with the pre-installed broad-band seismometer signals. This is the closest station to the crater available during these eruptions. Correlation function between infrasound and seismic signals measured at this station is continuously calculated and change of its pattern is investigated. This method has been found to be useful in detecting the crater activity at Asama Volcano. Clear correlation patterns are observed associated with the activities of Shinmoe-Crater, and the patterns change with time visualizing the change of the crater activities. The strength of the correlation is not related to the amplitudes of the seismic or infrasonic waves. Distinct changes of the correlation pattern are sometimes observed in the middle of a sequence of ash cloud emission. In some periods, a couple of patterns are overlapped and an alternate one of them sometimes dominates the others. Such a feature may indicate existence of plural active craters changing their strength alternately. It is confirmed that this method is useful in detecting the crater activities. The mechanisms generating the correlation between infrasound and seismic signals and controlling its patterns are to be understood.

Keywords: Shinmoe-dake, eruption, infrasound, explosion, Kirishima