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-term infrasound monitoring of volcanic activities of Kyushu region in Japan

Tokyo VAAC(Volcanic Ash Advisory Center) issued more than 10,000 advisory reports describing volcanic activities in Japan over the past ten years(2009-2018). Around 98.5% of advisory is related to the volcanic eruption/explosion of five volcanoes of Kyushu area, Asosan, Kirishimayama, Sakurajima, Kuchinoerabujima and Suwanosejima. Infrasound signals produced by these volcanoes are well detected at the Korean Infrasound Network(KIN) which is consisted of eight infrasound array stations. Epicentral distance ranges from 502km to 1,034km. We have analyzed the infrasonic records by using PMCC with a reference to the event origin time of advisory reports, focusing on the Sakurajima which is most active. Analysis results show that the annual variations of arrival time and back-azimuth of infrasound signals are well matched to the annual change of atmospheric condition in regional scale. It shows also effects of winter stratospheric sudden warming in 2011/2012 and 2012/2013 in infrasound propagation. To examine possibility of characterizing each volcano, spectral features of beam-formed waveforms of representative infrasound signals are compared each other. It is confirmed that continuous volcanic activities in Kyushu region are excellent sources for infrasound study as well as atmospheric study in reginal scale.

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