

Three-Dimensional Structure of Sakurajima Volcanic Eruption Columns Observed with Rapid Scanning Doppler Radar

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After the Great East Japan Earthquake, we face an increased risk of largescale volcanic eruptions. The pyroclastic flows generated by large-scale volcanic eruptions, and the resulting falls of pyroclastic material, can cause immediate damage to lives and property of local residents. Large ash falls paralyze traffic and communications infrastructures, disrupt daily life, and destroy the economies of local communities. In addition, the heavy rains which occur simultaneously with or around an eruption can cause multiple disasters, such as floods and landslides. In order to deal with these situations effectively, the pyroclastic material released by volcanic eruptions need to be quantitatively measured and the information collected must be used for disaster prevention and reduction measures.

Recent domestic and international studies have found that meteorological radars are effective for the quantitative evaluation of pyroclastic material. Based on such findings, Kagoshima University began outfitting a rapid scanning Doppler radar (KuRAD for short) for use in volcanic observations as a part of a research project entitled ‘Creating a Community Resilient to Large Volcanic Eruptions’ (2016 –2021). When a large-scale eruption occurs, the ash fall distribution will be measured by dynamic radar observation and the information gathered will be provided to the national and local government officials in charge of disaster prevention so as to increase the safety of local evacuees and the rescue and reconstruction crews working in the affected areas.

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