

## Preface

A magmatic eruption at Shinmoe-dake (Kirishima), Japan, occurred in 2011 after 300 years dormancy. The eruption began with three sub-plinian explosive events, followed by lava accumulation at the summit crater and then vulcanian explosions. Precursory phreatic events took place first in 2008 and often in 2010. Seismic activity around the Kirishima region had increased since 2006 and had been escalating further since 2010. As well, ground deformation by GPS measurements suggested inflation of the region in the same time scale. Multi-purpose observational research was carried out on this eruption. Satellite SAR was very effective for monitoring the eruption condition and for issuing alerts to the public. Unmanned autonomous aerial vehicles were employed to get information on physical and chemical conditions of cooling lava which filled the summit crater. Details of the eruption story, magma system under the ground, and mechanisms of eruption phenomena were deciphered. We believe that the information and experiences of this eruption are very important for earth scientists in the world to understand how to face and prepare for infrequent eruptions of potentially intermediate-scale.

This special issue under the title of “Shinmoe-dake Eruption in 2011—An Example of Less-Frequent Magmatic Activity—” contains 18 papers. They cover geological, geochemical and geophysical observations and results on this eruption, together with research on its crisis management, responses and impacts. Magma chamber and eruption processes, and changes of physical and chemical parameters during eruption events are discussed. Magma movement, magma degassing and gas-flow in the conduit, and ash-plume simulation during eruption are also presented.

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