
 [JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS16] Dynamics of eruption cloud and cumulonimbus; modelling and remote sensing

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Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Volcanic eruption clouds (eruption column, pyroclastic flow, and umbrella cloud) and cumulonimbus are similar phenomena in the atmosphere. Models that can precisely reproduce the physical processes in such phenomena and accurate observations have been required. Recently, the developments of remote sensing such as weather radars and weather satellites are remarkable, and they are being adopted for volcanic eruption monitoring. In this session, we will discuss the modelling and the observations of eruption clouds and cumulonimbus from the viewpoint of meteorology, volcanology, remote sensing and other related fields. Approaches from environmental meteorology, in-situ observation of rainfall/ashfall, geology, and material science are also welcomed.

[MIS16-P02] 2017 Shimmoe-dake eruption and 2018 Kusatsu-Shirane eruption observed by weather radars

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Keywords: volcanic ash plume, weather radar

At Shimmoe-dake, eruptions occurred in October 2017, and at Kusatsu-Shirane in January, 2018. During the Shimmoe-dake eruptions, we sometimes failed to monitor the volcanic ash plume in cloudy or rainy days. As for the Kusatsu-Shirane case, Mt. Moto-Shirane wasn't targeted by cameras around Kusatsu-Shirane in the first place. In such circumstances, weather radar is effective for monitoring active volcanoes. However, there are two big problems with this method with conventional weather radars. One is an error of radar echo height against actual volcanic ash plume height. The other is inability in quantitative ash amount estimation inside volcanic ash plume. The former can be improved by ray tracing with numerically calculated refractivity of Local Analysis (LA) made by JMA. In order to solve the latter problem, we have to use advanced weather radar such as polarimetric radar, and furthermore, a large amount of data will be needed. In this presentation, the results of radar analysis and future prospects for the method will be presented.