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

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

convener:Eiichi Sato(Meteorological Research Institute), Fukashi Maeno(Earthquake Research Institute, University of Tokyo), Takeshi Maesaka(防災科学技術研究所)

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-P03]Evaluation of accuracy of ash falling particle measurement in laser-optical Particle Size Velocity disdrometer

*Ren Takaoka[1], Masayuki Maki[2], Seiji Fukushima[1] (1.Kagoshima University, 2.Observation and Prediction Resarch Department, Kagoshima University)

In this study, we describe the measurement accuracy of volcanic ash particle size with laser-optical Particle Size Velocity disdrometer (hereinafter referred to as "Parsivel-2"). In order to monitor the volcanic smoke and related volcanic disaster by remote sensing, it is necessary to obtain volcanic ash fall information such as particle size distribution and particle fall velocity. In recent years, we attempt to observe ash using a Parsivel-2 which has been used for precipitation observation in order to understand the volcanic activities and the associated eruption phenomena such as eruption columns and ash clouds. However, Parsivel-2 assumes that the shape of falling particles is those of rain particles when it measures particle size. Therefore, when the shape or posture of falling particles does not fit the assumption of rain particles, an error occurs in the particle measurements with Parsivel-2. This study estimates the maximum measurement errors of ash particles with Parsivel-2 due to various axis ratios and falling attitudes. theoretically and experimentally studies show that the maximum error due to the particle axial ratio is about ± 15% and the maximum error due to the particle falling posture increases with the flatness of the particle. For example, the maximum error was about 20%, 30%, 60% when the axial ratio is 0.9, 0.7, 0.5, respectively.