
[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), Fukushi 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-P01] Volcanic ash plume height estimation by weather radar

*Eiichi Sato¹, Keiichi Fukui¹, Toshiki Shimbori¹, Kensuke Ishii¹, Tetsuo Tokumoto¹ (1. Meteorological Research Institute)

Keywords: volcanic ash plume, weather radar

Although there were many eruption cases which were captured by weather radar (e.g. Sawada, 2003), few cases were sequentially captured in time (e.g. Harris et al., 1983; Arason et al., 2011; Shimbori et al., 2013). There are two main reasons. One is that scales of many eruption cases were not enough to be sequentially detected by weather radars. The other is that records of many eruption cases were not left because radar data weren't digitized in past. After the digitization of weather radars, eruption cases captured by weather radar have been gradually accumulated.

In this presentation, the overview of the method, problems to be solved, and future prospects will be discussed.

References:

Harris, D. M., W. I. Rose, Jr., R. Roe, M. R. Thompson, 1981: Radar observations of ash eruptions, The 1980 Eruptions of Mount St. Helens, Washington, *U. S. Geological Survey Professional Paper*, **1250**, 323-333.

Sawada, Y., 2003: Record of eruption cloud echoes measured with weather radars, *Weather Service Bulletin*, **70.4**, 119-169 (in Japanese).

Arason, P., G. N. Petersen, H. Bjornsson, 2011: Observations of the altitude of the volcanic plume during the eruption of Eyjafjallajökull, April–May 2010. *Earth Syst. Sci. Data*, **3**, 9–17, doi:10.5194/essd-3-9-2011.

Shimbori, T., T. Sakurai, M. Tahara, K. Fukui, 2013: Observation of Eruption Clouds with Weather Radars and Meteorological Satellites -A Case Study of the Eruptions at Shinmoedake Volcano in 2011-,

Quarterly Journal of Seismology, **77**, 139-214 (in Japanese).