

Volcanic Ash Fall Forecasts of Japan Meteorological Agency and its improvement

Yoshihiko HASEGAWA¹, Akira SUGAI¹, Yosuke HAYASHI¹, Shota IMAMURA¹, Toshiki SHIMBORI²,
Toshiyuki MATSUMORI¹

¹Japan Meteorological Agency, Japan, ²Meteorological Research Institute, Japan

E-mail: y-hasegawa@met.kishou.go.jp

The Japan Meteorological Agency (JMA) has issued Volcanic Ash Fall Forecasts (VAFFs) for the nation since March 2008 in Japan. When an eruption which has an effect of ash-fall on wide area occurred, JMA will issue a VAFF which has a graphical format and informs hourly ash fall areas predicted to 6 hours after from the event. JMA issued VAFFs for the 2009 Asamayama eruption, the 2011 Kirishimayama Shinmoe-dake eruptions and recent eruptions of Sakurajima.

It is well known that effects of ash-fall varies with ash-fall quantity and differs among fields such as agriculture, buildings, communication networks, transportation, and so on. Although JMA must inform prediction data of ash-fall quantity on VAFF primarily, we have not been able to do because the JMA's prediction technique of ash-fall quantity, that is the prediction of tephra-fall with the JMA Regional Atmospheric Transport Model, has insufficient prediction accuracy at present.

Meanwhile, the recent development of the JMA's prediction technique with improvement of measurement technique of volcanic plume height using weather radar data by Meteorological Research Institute (MRI) (Shimbori et al., in this session) enabled JMA to inform prediction data of ash-fall quantity on VAFF.

Therefore, JMA plans to improve VAFF on the basis of not only use of the new prediction technique but also user's needs from the research for people living near active volcanoes and opinions from experts of various fields about volcanic ash-fall such as volcanology, disaster prevention, broadcasting, medical service, and so on.

Characteristics of new VAFF are as follows.

- On new VAFF, JMA informs not only prediction data of ash-fall quantity but also that of centimeter-sized lapilli-fall area.
- On new VAFF, JMA also informs effects of ash-fall for people and its preparedness of people to predicted ash-fall quantity.
- New VAFF has 3 types of information: information issued before an eruption, quick and brief information issued just after the eruption and full information issued after the eruption.
- JMA will issue a new VAFF when predicted ash-fall quantity reaches effective level for people or community.
- JMA will make a category table of ash-fall quantity as to effects of ash-fall for people and its preparedness of people, and use this table for new VAFF.

JMA aims to issue new VAFF a few years later.