

## Tephra-Fall Predictions with the JMA Regional Atmospheric Transport Model for the 1914 Eruption at Sakurajima Volcano

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A hundred years ago, the largest eruption in 20th century Japan, *i.e.* the Sakurajima Taisho Eruption occurred on 12 January 1914. With this eruption, tephra-falls were observed large-area in Japan from Kyushu to Tohoku region (Hasegawa, 1914; Omori, 1916). For such large-scale eruptions, the Meteorological Research Institute (MRI) is going to do new research project of the tephra-fall predictions with the JMA Regional Atmospheric Transport Model (JMA-RATM) from this year. The research will lead to the improvement of the Volcanic Ash Fall Forecasts (VAFFs) of the Japan Meteorological Agency (JMA). For the purpose of investigating the predictability of the current JMA-RATM against large-scale eruptions, predictions of volcanic-ash dispersion and tephra-fall for the Sakurajima Taisho Eruption were carried out. The initial values which are the total volume (ash and pumice) of  $6 \times 10^8 \text{ m}^3$ , the plume height of 3000-18000 m and the eruption duration of 38 hours are assumed based on Yamashina (1999), Yasui *et al.* (2006), Iguchi (2014) and so on. The input GPVs are the JMA Mesoscale Analysis after 28 March 2013. The forecast time by the JMA-RATM is 72 hours from starting time. Results of the calculations indicate that, under the assumption of the ash-density of  $1 \text{ g/cm}^3$ , the predictions of tephra-fall depths are over 1 m in Sakurajima Island for weak-wind weather condition, several 10 cm at Kagoshima City for easterly wind in summertime, and of the order of 0.1-1 mm at Osaka, Nagoya and Tokyo Metropolitan area for southwesterly wind field. In the atmosphere, dispersions of volcanic-ash up to Tohoku and Hokkaido region are also predicted at the same forecast time.

In the presentation, from the results of volcanic-ash dispersion and tephra-fall prediction, the predictability and problems of the current JMA-RATM for large-scale eruptions will be reported.

### References

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