

Volcanic cloud of the 2004 eruption of Asama volcano observed by weather rader

Hiroyuki Ishimori[1]; Jun'ichi Miyamura[2]; Takashi Yokota[2]

[1] Japan meterological Agency
; [2] JMA

Vulcanian eruption occurred on 1 September 2004 at Asama volcano and ballistics of 50cm or more in diameter reached the northeastern flank up to 2.7km from the summit crater and volcanic lapilli and ash fell to the northeastern foot of the volcano. Though the volcanic cloud was not visible because of bad weather, the Nagano weather rader installed at about 45km southwest of Asama volcano by JMA caught the rader echo corresponding to the volcanic cloud. Furthermore, Akagisan rader rain gauge set up at about 60km east-northeast of Asama volcano by Kanto Regional Development Bureau also caught the identical rader echo.

In order to understand the movement of volcanic cloud in detail, we attempt to analyze the rader echo data obtained by Nagano weather rader and Akagisan rader rain gauge. Echo data observed by both raders in the same time were available for only 2 eruptions : one is the eruption on 1 September 2004, the other is on 14 November 2004.

As a result of analysis, the smoke just after the eruption on 1 September rose to 3000-4000m above the summit crater and expanded about 8km in east-west and about 6km in north-south to the horizontal direction. 10-20 minutes later, the cloud went about 30km away from Asama volcano in northeast or east-northeast direction and finally dispersed in the shape of a line. The other cloud just after the eruption on 14 November rose to 4000m above summit crater and expanded about 5km in east-west and about 4km in north-south. After that, the cloud went about 35km away from Asama volcano in east direction and finally dispersed in the shape of a point.

We compared the behavior of the cloud provided from the echo data with the distribution of ash fall deposits (Yoshimoto et al., 2005), and it was found that the cloud moved along the axis of ash fall deposits that slightly curved.

In the presentation, we will also report the relation between echo strength (dB) and quantity of ejecta(g/m²).