

MTSAT で捉えた浅間山 2009 年 2 月 2 日噴火に伴う噴煙

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MTSAT Observation of the Eruption Cloud Occurred at the February 2, 2009
Eruption of Mt. Asama, Central JapanTakayuki KANEKO*, Hiroyuki DEN*, Kenji TAKASAKI***, Atsushi YASUDA*,
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Mt. Asama (2568 m a.s.l.) erupted on 2nd February 2009 at 1: 51 am (JST). Although it was a small-scale eruption, involving a eruption plume rising 2000 m high from the summit, the ashes accidentally fell in the Tokyo metropolitan area, due to strong seasonal wind, which draw public concern. We observed migration and enlargement processes of the eruption cloud, using infrared images from Multi-functional Transport Satellite (MTSAT), and analyzed its relationship to distribution of ash-fall deposits and meteorological conditions. MTSAT is a gestational meteorological satellite of Japan Meteorological Agency and Civil Aviation Bureau and has five observation channels in the visible to infrared regions (visible: 1 and infrared: 4). Although the resolution is low (4 km in infrared), the observation cycle is very high (every 30 to 60 minutes), which is preferable characteristics to eruption cloud studies. We used four MTSAT images taken on 2nd February at 2: 30 am, 3: 30 am, 4: 30 am and 5: 30 am. Images of brightness-temperature difference between two thermal infrared channels (10.3–11.3 μm and 11.5–12.5 μm) were applied for detecting distribution of the eruption clouds. The results show that the eruption cloud migrated to the southeast along the line connecting between Mt. Asama and Katsuura-city on the Boso peninsula through the central part of Tokyo. The eruption cloud elongated toward the direction of the migration and the total length increased with time. The speed of the head and tail of the eruption cloud was estimated to be 135 km/h and 51 km/h, respectively. This relative speed difference could cause elongation of the total length. According to the meteorological data, at the altitude of 4900–5700 m, wind was blowing to the southeast at the speed of 119 km/h, and at 2700–3100 m to the same direction at 50 km/h. These values roughly coincided with the estimated speed of the head and tail, respectively, indicating the difference in the wind speed was the main cause of the elongation. Distribution area of the ash-fall deposits on the ground did not well much the area where the eruption cloud flew over, but was located 0–40 km south of it. Unlike the higher altitude, in the regions lower than ~ 2000 m, wind was roughly blowing to the south at somewhat lower speed. When falling ashes from the eruption cloud entered this region, they could be blown to the further south, which could cause the wide and biased distribution of the ash-fall deposits, as observed.

Key words: MTSAT, Asama volcano, eruption cloud, infrared, remote sensing

1. はじめに

2009年2月2日未明に浅間山が噴火した。規模の小さい噴火であったが、風向きの関係で火山灰が首都圏に飛

来したため、社会的な関心を集めることとなった。我々は予てから MODIS (MODERate resolution Imaging Spectroradiometer), MTSAT (Multi-functional Transport SATel-

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