

MIS029-P04

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Temporal and spatial trends of acidic substances in the ambient air at the top and foot of Mt. Fuji (1)

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It was clarified that long-range transport of acidic substances and the subsequent deposition caused forest decline in Europe and North America in the 1960s. Various air pollutants, emitted in East Asia by recent economic and industrial development, are inevitably transported to Japan by the westerlies because Japan is located at the east end of Asian continent. Chemical transport model like CMAQ revealed that the long-range transport of ozone and the precursors from China causes the increase of advisory for photochemical smog in widespread area from the northern part of Kyusyu to Kanto region in Japan.

Mt. Fuji, which is the highest mountain in Japan (3776 m a.s.l.), is an isolated peak and therefore could be regarded as the tower to observe the long-range transportation from East Asia such as China and Korea to Japan, the mixing processes from the boundary layer to the free troposphere, and the nucleation/precipitation scavenging processes of various atmospheric pollutants.

Simultaneous sampling of acidic gases (SO₂, HNO₂, HNO₃, HCl) and aerosols were performed with a four-stage filter pack sampler at daytime (6:00 ? 18:00) and at nighttime (18:00 ? 6:00) at the top and foot of Mt. Fuji during summer observational campaign. After sampling, chemical analysis was performed by commonly used method after extraction with ultra pure water or hydrogen peroxide solution (0.05 %) and filtration samples through 0.45 μm. Cloud water was also collected by a passive sampler (Usui Kogyo, FWP-500).

We here report the spatial and temporal trends of acidic substances in the ambient air and discuss the influence of long-range transportation on the background concentration of acidic substances in the ambient air at the top of Mt. Fuji during the summer observational campaign in 2009 and 2010.

Keywords: background concentration, free troposphere, Long-range Transportation, East Asia, backtrajectory analysis