

Characteristics of seasonal variation and Kosa events of atmospheric aerosols collected in Nagoya

Yusuke Mizuno[1], Kenji Kai[2], Yutaka Kanai[3]

[1] Earth and Environ. Sci., Nagoya Univ., [2] Graduate School of Environmental Studies

Nagoya Univ., [3] AIST

The measurement of aerosols was made by high-volume sampler and an Andersen sampler from March 2001 to May 2002 on the roof of fourth floor building of Nagoya University in the eastern Nagoya. The purpose of the present study is to investigate the characteristics of aerosols with an emphasis on the effect of the Kosa. Mass concentration, size distribution, pH of water-soluble fraction and water-soluble ion concentrations have been analyzed.

Following results are obtained in the present study

1. The annual peak of mass concentration was observed in the spring when the Kosa was observed, and the lowest concentration was observed in the winter.
2. In March and April, the size distribution had two peaks near diameter of 0.43 - 0.65 μm and near 3.3 - 4.7 μm . In December and February, a clear peak could not be seen, but there was a peak near diameter of 0.43 - 0.65 μm in other seasons.
3. The value of pH the water-soluble fraction of atmospheric aerosols became high in the spring. The value of pH during the Kosa event was 6.39.
4. The annual peaks of water-soluble ion concentrations except for NH_4^+ and SO_4^{2-} were observed in the spring. All water-soluble ion concentrations during the Kosa event became high.
5. In the spring and winter the sum of cations in equivalent was higher than that of anions, because the Kosa particles had the ability of neutralization in March and April.
6. The sequence of Kosa event was ended by rain. After that the increase in fine particles was seen immediately. Instead of the Kosa particles, the wind of SE carried anthropogenic aerosols from industrial areas located to the south of the observation point.