

3.115 The Behavior of Nitrogen Components in Atmospheric Aerosols at the Coastal Area of Seto Inland Sea in Summer.

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Abstract:

Seto Inland Sea is located in west Japan, and semi-closed coastal sea surrounded by Honshu: the main island of Japan, Shikoku and Kyushu Island. The Seto Inland Sea area is one of the most industrialized areas in Japan, and also affected by anthropogenic and mineral substances transported from the Asian continent. It is necessary to understand the factors of high concentrations of atmospheric pollutants, and the influences to the marine ecosystems by atmospheric deposition. This study represents the chemical properties of atmospheric aerosols, especially nitrogen and phosphorus components, and the estimation of nutrients deposition to the ocean, during the summer of 2017. Atmospheric aerosols were collected in fine (<2.5 μm) and coarse (>2.5 μm) modes. These were analyzed ionic species and water soluble total nitrogen (TN_{WS}). The concentration of $\text{PM}_{2.5}$ was also measured.

The concentrations of TN_{WS} in fine mode and $\text{PM}_{2.5}$ co-varied well. During the observation period, the concentrations of TN_{WS} and $\text{PM}_{2.5}$ were often increased drastically. In particular, from 25 to 26 and 28 July, the concentrations of $\text{PM}_{2.5}$ were up to about 60 ug m^{-3} . This is because the study area in summer was also mainly affected by the air masses originating from the East Asian continent by back trajectory method, although it is necessary to take regional pollution into consideration comparing with the measurements of a neighbor observation station. The mean concentrations of TN_{WS} in fine and coarse modes were 1.0 ± 0.57 and 0.19 ± 0.083 (standard deviation) ug N m^{-3} , respectively. Total nitrogen existed mainly in fine mode, but coarse mode TN_{WS} affected the deposition to the ocean.

In the presentation, organic nitrogen and phosphorus components in atmospheric aerosols, and the estimation of nutrient deposition from atmosphere to the ocean will be discussed.