

MEASUREMENT OF ATMOSPHERIC DIMETHYLSULFIDE AT
SYOWA STATION, ANTARCTICA (ABSTRACT)

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Measurements of atmospheric sulfur compounds, especially dimethylsulfide, were carried out automatically at Syowa Station, Antarctica, from August 1993 to January 1994. The measurement system consisted of a preconcentration device for cooling the air sample to 0°C on Tenax GC and desorbing it at 240°C, and Gas Chromatography-Mass Spectrometry. The detection limit of this system was about 24 pptv for a volume of 600 ml of air.

Atmospheric DMS was found during only a few days in January with sharp increase and its maximum concentration was 358 pptv. Also, 600 ml of air was collected in a glass flask three times (November 15, December 1, January 2), flying over an open sea area called Ohtone Suido and analyzed by this system at once. But DMS was not found in these air samples.

The reason why DMS was detectable only for a short period is that phytoplankton excretes DMS during mainly its bloom, and Syowa Station was surrounded by thick sea ice all year round, even in the 1993/1994 austral summer; thick sea ice prevented gas exchange between sea water and the atmosphere near Syowa Station. Consequently DMS could be found without being thoroughly oxidize by OH radicals before arriving at Syowa Station.

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