

GASEOUS ACIDS IN THE ATMOSPHERE AT SYOWA STATION, ANTARCTICA (ABSTRACT)

Nobuko KANAMORI¹, Satoru KANAMORI¹, Masataka NISHIKAWA²,
and Okitsugu WATANABE³

¹*Water Research Institute, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-01*

²*National Institute for Environmental Studied, 16-2, Onogawa, Tsukuba 305*

³*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

Seasonal variation of atmospheric aerosols and gaseous acids in the atmosphere at Syowa Station was observed during JARE-31 by the use of a 3-stage air filter unit which consists of an 0.4 μm Teflon filter followed by 2 stages of alkali impregnated filter.

Gaseous SO_2 and aerosol SO_4^{2-} were similarly high in the summer. Gaseous HNO_2 was high in the winter whereas gaseous HNO_3 and aerosol NO_3^- were high in the summer. Gaseous HCl is remarkably high in the summer and apparently consistent with high aerosol H_2SO_4 in the summer as often suggested by liberation of HCl from sea salt particles in the air or on an aerosol filter. However, the concentration of HCl gas is far higher than that of Na aerosols, by a factor of several hundred, and the source of the HCl gas cannot simply be attributed to sea salt particles. The origin of the HCl and possibly other acid gases at higher altitude, and connection with photochemical reactions such as ozone consumption are suggested.

(Received December 16, 1992)