ATMOSPHERIC CF_2Cl_2 AND $CFCl_3$ IN ANTARCTICA (ABSTRACT)

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In order to understand the global distributions and trends of atmospheric CF_2Cl_2, $CFCl_3$ and N_2O, air samples have been collected at Syowa Station since February 1982. Samples were analyzed by a GC-ECD method. Linear trends were calculated with the data of the period between February 1982 and January 1984. Annual increases of 19.2 ppt yr^{-1} for CF_2Cl_2 and 10.2 ppt yr^{-1} for $CFCl_3$ were obtained. Annual increase was 2.2 ppb yr^{-1} for N_2O, which was within the range of experimental uncertainty, and further improvements are in progress (M. HIROTA *et al.*: Mem. Natl Inst. Polar Res., Spec. Issue, **39**, 57, 1985).

In JARE-26, air samples were only collected on board of the SHIRASE between Tokyo and Syowa Station late in 1984. Volume mixing ratios of CF_2Cl_2 and $CFCl_3$ at 60° and 66°S were compared with those at Syowa Station. Mixing ratios at 60° and 66°S were 353 and 351 ppt for CF_2Cl_2 and 206 and 208 ppt for $CFCl_3$, and were in agreement with those estimated by extraporating the linear trends, which were 354 ppt for CF_2Cl_2 and 202 ppt for $CFCl_3$ as of December 1984. These results indicate that atmospheric CF_2Cl_2 and $CFCl_3$ have been increasing steadily in the last few years in Antarctica.

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SPECTROSCOPIC MEASUREMENTS OF ATMOSPHERIC N_2O AT SYOWA STATION, ANTARCTICA (ABSTRACT)

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Infrared solar spectra observed at Syowa Station, Antarctica (69°00′S, 39°35′E) were analyzed with respect to the N_2O $2\nu_1$ absorption band. Transmittances at the three wavenumbers were used to deduce the atmospheric total nitrous oxide columnar density, *i.e.* at the center of N_2O absorption band (2576 cm^{-1}) and at both margins of the band (2521 and 2611 cm^{-1}, respectively).

Synthetic transmittances corresponding to the observed spectra were calculated with a multi-layered model atmosphere, in which the radiosonde data were adopted for the lower layers and the U. S. Standard Atmosphere, 1976 for the upper layers respectively, using the AFGL Atmospheric Absorption Line Parameters Compilation, 1982.

The deduced values showed two maximums in April–May and September and two minimums in the austral summer and winter in 1983. However, the ampli-