tude of this seasonal variation was less than ±10% of the average. The average of N_2O columnar density was 5.9×10^{18} molecule/cm^2 corresponding to 300 ppbv for tropospheric mixing ratio.

A more detailed analysis is under way using the whole spectral information on the absorption band to estimate more accurately the zero-absorption spectrum.

(Received April 4, 1986)

VARIATIONS OF ATMOSPHERIC CARBON DIOXIDE CONCENTRATION AT SYOWA STATION (69°00'S, 39°35'E), ANTARCTICA (ABSTRACT)

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Precise measurements of the atmospheric CO_2 concentration were initiated at Syowa Station, Antarctica in 1983. Preliminary inspection of the data obtained up to the present showed that; (1) a regular diurnal variation is not observable, (2) irregular variations are sometimes observed with extremely small amplitude of 0.2 ppmv at most, (3) a seasonal variation with the minimum concentration in mid-April and the maximum concentration in mid-Octoder and peak-to-peak amplitude of about 1.2 ppmv is detected, and (4) annual mean values of the CO_2 concentration are 341.2 and 342.6 ppmv for 1983 and 1984, respectively.

(Received April 30, 1986)

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INCREASING ATMOSPHERIC CONCENTRATIONS OF HALOCARBONS AND METHANE IN ANTARCTICA (ABSTRACT)

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We have been measuring the atmospheric concentrations of halocarbons (CCl_2F_2, CCl_3F, CH_3CCl_3, etc.) and methane (CH_4) in Antarctica as well as in the Northern Hemisphere (N.H.) in order to clarify behaviors and lifetimes of these compounds in the atmosphere and to estimate their effects on the earth's environment.