



Fig. 1. The shaded area indicates the observed temperature range at Syowa Station (69°S , 40°E) in July 1983 (A) and in September (B). Lines a and b are frost-point temperature of pure water. Lines c and d are frost point of $\text{HNO}_3\text{-H}_2\text{O}$ (50% weight) crystal.

active ozone-loss regions do not correspond to the region where particle production rate is large. The height of the ozone-loss region is lower than that of active particle formation area. The descending motion of particles to the region where evaporation rate is high seems to occur the formation of Cl_2 and ClOH .

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LOW-FREQUENCY VARIATIONS WITH ZONAL WAVENUMBER 0 IN THE SOUTHERN HEMISPHERE TROPOSPHERE (ABSTRACT)

Masato SHIOTANI

*Geophysical Institute, Kyoto University,
Kitashirakawa Oiwake-cho, Sakyo-ku, Kyoto 606*

An observational study is made of the low-frequency variations in the southern hemisphere troposphere, using global geopotential height and wind field data for 6 years, from 1980 to 1985, provided by the European Centre for Medium Range Weather Forecasts (ECMWF).

Prominent variations with a rhythm of about one to two months are observed in the height field during the southern hemisphere winter and spring. The variations on a hemispheric scale show a barotropic seesaw pattern with an almost circular node around 60°S in the whole troposphere. This is closely related to the mean zonal wind field in the upper troposphere; there is only one latitudinal maximum of the westerlies at subtropical latitudes when the height field at high latitudes is relatively high (we call it D+ event), but there is another maximum at high latitudes when it is relatively low (we call it D- event).

Although these variations are basically zonal ones, stationary planetary wave of wavenumber 3 is dominant in D+ events but stationary wave 1 is dominant in D- events. Moreover, time variations of high-pass (<7 day) height field data, which indicate synoptic-scale wave activity, show that large variation around 50°S is confined in the eastern hemisphere for D- events but it surrounds the whole latitude circle for D+ events. The active region in the western hemisphere corresponds to another westerly maximum at high latitudes for D- events.

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