LONGITUDINAL VARIATIONS OF STRATOSPHERIC TEMPERATURE AND OZONE PROFILES OBSERVED BY MIPAS IN THE SOUTHERN HEMISPHERE IN LATE SEPTEMBER, 2002

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MIPAS on ENVISAT measures vertical profiles of atmospheric temperature, ozone and other species with nearly global coverage. This report presents a preliminary analysis of the temperature and ozone data observed in the southern hemisphere during the late September of 2002 and retrieved by using the IMK data analysis processor. Significant longitudinal variations of the atmospheric parameters are found to exist. The amplitudes and phases of the zonal variations are derived by harmonics analysis on a daily basis for individual latitude bands and each altitude level. Their latitude, height, and day-to-day variabilities are investigated in detail. The zonal variations show drastic increases at latitudes 60S - 80S around 23 and 24 September, with maximum amplitudes of 2 - 3 ppmv and 30 - 40K in the region of 20 and 35 km for ozone mixing ratio and temperature, respectively. The large-amplitude disturbances break down in one or two days, with the wavenumber one amplitudes decreasing much more significantly. The amplitudes of wavenumber one and two then become comparable in the latitude and altitude regions, resulting in an apparent wavenumber two pattern of the observed temperature and ozone fields. These features are in agreement with other observations. Possible mechanisms are addressed.