



Solar Cycle Effects and Trends in Mesospheric Temperatures from HALOE in both Altitude and Pressure Coordinates

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Fourteen-year time series of mesospheric and upper stratospheric temperatures have been analyzed and reported from the satellite experiment, HALOE, for 13 latitude zones and 16 pressure levels. The analyses are repeated now, but with reference to constant altitudes. In both cases the analyses are conducted by including both the sunrise (SR) and sunset (SS) measurements of HALOE into single time series of zonally-averaged data points. The results for constant pressure surfaces indicate changes in temperature that occur locally in the atmosphere, whereas the results for constant altitudes indicate the effects of temperature changes within the underlying, deep column of the middle atmosphere. The results on altitude surfaces are compared with those reported from analyses of station time series of rocket and lidar soundings of the middle atmosphere as well as with zonal-mean, model simulations of the effects of increases in the “greenhouse gases”.