

Seasonal variation of planetary wave in the polar mesosphere/lower thermosphere

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Various processes provide/transfer energy and momentum to the atmosphere in the polar lower thermosphere. In particular, upward propagating waves affect significantly the atmospheric dynamics there. In addition, during geomagnetically active periods, particle precipitation and convective electric field give significant impact on the lower thermosphere. To obtain better understandings of the lower thermospheric wind dynamics in the polar region, we examine how significantly the planetary wave plays a role in the dynamics. Based on Tromsø MF radar wind data between about 60 and 100 km height obtained over 2 years in 1999 and 2000, we have determined planetary waves with periods of 2, 5, 10, and 16 days and utilized them to examine their effect on the lower thermospheric wind dynamics.