

Association between stratospheric warmings and sudden Ionospheric Disturbances

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A study has been undertaken to examine in detail the influence of sudden Ionospheric disturbances on high and low –latitude middle atmosphere during winter of 1983-84. For this study data of daily stratalert messages from Berlin, the weekly rocketsonde temperature and wind data for Thumba (8.5N,76.9E) and the weekly rocketsonde wind data for Balasore(21.5N,86.9E) are utilized. The daily stratalert messages received from Berlin during December 1983 to March 1984, which gave information about the temperature field in the middle atmosphere over the high latitudes. Sudden Ionospheric disturbances are collected from the URL <http://www.ngdc.noaa.gov> . For this study ionospheric disturbances of time duration from 44 minutes to 120 minutes are considered. There were total 92 sudden ionospheric disturbances during the month of February 1984 when stratospheric warming occurred over high latitude middle atmosphere. Out of these 92 sudden ionospheric disturbances 42 are having time duration more than 70 minutes from 21 February to 25th February ,when stratospheric warming reached peak on 25th February1984. From the analysis it is inferred that, both in high and low-latitude upper stratosphere and lower mesosphere temperature increased following sudden ionospheric disturbances(SID). In case of low-latitude temperature increase observed 4 days after the SID. Also it is seen both in Thuma and Balasore, westerly phase changed from strong westerly (31ms-1) in the upper stratosphere and lower mesosphere to strong easterly (-53ms-1) following the sudden ionospheric disturbances