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## **Stratospheric ozone variations during polar stratospheric warming events and their relationship with mesospheric semi-diurnal tidal activity**

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The present study demonstrates how the relationship between the high latitude northern hemispheric major sudden stratospheric warming (SSW) events of 2006 and 2009 and low-latitude mesospheric tidal variability in zonal winds observed by the MF radar at Tirunelveli (8.7°N, 77.8°E) exists. It is found that the ozone mixing ratio increases at low latitudes during the SSW and it could probably be due to the weakening of Brewer-Dobson circulation as a consequence of decreased planetary wave activity after the onset of the SSW, which may prevent the ozone transport from low to high latitudes. The enhancement of equatorial ozone can also be explained through chemistry as cooling associated with the equatorial upwelling induced by the SSW may prevent the temperature dependent ozone destruction chemical reactions. As semi-diurnal tide is produced due to solar insolation absorption of ozone and the increase in the ozone mixing ratio could be a reason for the increase in the semi-diurnal tidal amplitude. There is an unusual decrease of semi-diurnal tidal amplitude in zonal wind at 88 km over Tirunelveli (8.7°N, 77.8°E) prior to the onset of a minor warming event of 2011. During that time, there is a sudden decrease of TIMED-SABER observed ozone volume mixing ratio at equator. These results suggest the close relation between low-latitude ozone variations and mesospheric semi-diurnal tidal variations.