Variabilities of Mesospheric Tides and Equatorial Electrojet Strength During Major Stratospheric Warming Events

S. Sridharan[1], S. Sathishkumar[2] and S. Gurubaran[2]
[1]*National Atmospheric Research Laboratory, Gadanki 517 112, India*
[2]*Equatorial Geophysical Research Laboratory, Indian Institute of Geomagnetism, Krishnapuram, Tirunelveli 627011, India*

The relationship between the high latitude northern hemispheric major sudden stratospheric warming (SSW) events and the reversal in the afternoon equatorial electrojet (EEJ), often called the counter-electrojet (CEJ), during the winter months of 1998-1999, 2001-2002, 2003-2004 and 2005-2006 is studied. As the EEJ current system is driven by tidal winds, an investigation of tidal variabilities in the MF radar observed zonal winds during the winters of 1998-1999 and 2005-2006 at 88 km over Tirunelveli, a site close to the magnetic equator, shows that there is an enhancement of semi-diurnal tidal amplitude during the days of a major SSW event and a suppression of the same immediately after the event. The significance of the present results lies in demonstrating the latitudinal coupling between the high latitude SSW phenomenon and the equatorial ionospheric current system with clear evidence for major SSW events influencing the day-to-day variability of the CEJ.