

#68 Received 01/20/2015

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## **Mesosphere and Ionospheric Responses During Sudden Stratospheric Warming Events at Low and High Solar Activity**

Abstract:

In the recent years, there have been observational and modeling evidence that the ionosphere experiences significant changes during sudden stratospheric warming (SSW) events in the low latitude region. Due to the availability of extended observations and modeling work, the connection between the two is now well established. There are several mechanisms involving planetary waves and solar and lunar tides that have been suggested to govern the stated connection.

In this work, the sensitivity of the ionospheric response to sudden stratospheric warming (SSW) events has been examined during low and high solar activity periods through global observations of GPS TEC variation from GNSS, Coupled Ion Neutral Dynamics investigation (CINDI) observations from the C/NOFS satellite and the EEJ strength derived from the differences between the geomagnetic field variations obtained from Tirunelveli (8.7°N, 77.8°E) and Alibag (ABG) (18.6°N, 72.9°E).

In this work we present observational results for the low latitude mesosphere and global ionosphere during the SSWs of 2009 and 2013, as well as initial results from the latitudinal variation of the ionospheric response. The 2009 and 2013 events occur during the splitting of the polar vortex and they represent solar minimum and maximum conditions, respectively.