

EQUATORIAL COUNTER ELECTROJETS AND POLAR STRATOSPHERIC SUDDEN WARMINGS – STUDY OF THE VERTICAL AND LATERAL COUPLING IN THE EQUATORIAL IONOSPHERE

TARUN KUMAR PANT¹, C.Vineeth², R. Sridharan¹

1. Space Physics Laboratory, Vikram Sarabhai Space Centre, Trivandrum, India.
2. SRI International, Menlo Park, CA, U.S.A.

Favored occurrences of Equatorial Counter Electrojets (CEJs) with a quasi 16-day periodicity over Trivandrum (8.5°N, 76.5°E, 0.5°N diplat.) in association with the polar Stratospheric Sudden Warming (SSW) events are presented. It is observed that, the stratospheric temperature at ~30 km over Trivandrum shows a sudden cooling prior to the SSWs and the CEJs of maximum intensity occurs around this time. It must be mentioned that the strength of the CEJs is proportional to the intensity of the SSW events. Stratospheric zonal mean zonal wind at ~30 km also exhibits a distinctly different pattern during the SSW period. These circulation changes are proposed to be conducive for the upward propagation of the lower atmospheric waves over the equatorial latitudes. The interaction of such waves with the tidal components at the upper mesosphere and its subsequent modification are suggested to be responsible for the occurrence of CEJs having planetary wave periods.

Sudden stratospheric warming, Counter electrojet, planetary waves and tides

Tarun Kumar Pant, Space Physics Laboratory, Vikram Sarabhai Space Centre, Trivandrum, Kerala, India 695022; tele: 91-471-2562553, Fax: 91-471-2706535;
email: tarun_kumar@vssc.gov.in