Influence of Boreal Sudden Stratospheric Warming On Northern Hemispheric Tropical Troposphere

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During winter, the temperature in the polar stratosphere suddenly rises by 30 -50^{o} C and the prevailing westerly wind become weaker and often changes its direction to easterly within a time span of few days is known as the Sudden Stratospheric Warming (SSW) event. This study demonstrates the variability over northern hemispheric tropical troposphere during boreal sudden stratospheric warming. The study confirm an enhancement in the convective activity in the latitude zone 0–10˚ N associated with SSW. The convective activity over the study region during the major SSW period indicates strong interactions between stratosphere and troposphere. During the major SSW, there is an abrupt increase in surface temperature over the tropics. The tropical surface temperature is seen to be negatively correlated with the tropical stratosphere temperature and an upward motion of air creates a convective cell over the study region. A change in circulation in the upper troposphere with a zonal wind reversal from westerly to easterly related to SSW has also been verified using the Stratosphere Troposphere (ST) wind profiler radar operating at 205 MHz is operational at the Advanced Centre for Atmospheric Radar Research, Cochin University of Science and Technology, Cochin (10° 2 'N 76° 20' E), India.