



## **RAYLEIGH LIDAR OBSERVATIONS OF SUDDEN STRATOPAUSE WARMING OVER A LOW LATITUDE**

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Rayleigh lidars have proven to be a powerful means for mapping middle-atmospheric temperature structures with high range and time resolutions. In this paper, we report on the first observation of sudden stratopause warming using the lidar installed at the National MST Radar Facility, Gadanki (13.5°N; 79.2°E). The lidar is in operational since March 1998, collecting data on both Mie and Rayleigh channels with height and time resolutions of 300m and 250s, respectively. The Rayleigh channel data provide temperature profiles with high-resolution over the height range 30-80 km. During winter, an event of stratopause warming has been observed on 22-23 February 2001. The temperature enhancements associated with that warming event, observed as significant deviations from the mean profile, are found to be as high as 25 K (>10 s) and to occur in the stratopause region (45-55 km). That warming event observed with the lidar has also been seen in the data from Halogen Occultation Experiment (HALOE) on board the UARS satellite. Zonal-mean temperature at 80°N and zonal-mean zonal wind at 60°N from the NCEP analysis indicate that a major warming episode also took place in the northern polar stratosphere during that time. Eliassen-Palm (E-P) flux calculations from the ECMWF analysis show clear evidence of propagation of wave activity from high, mid- to low latitudes in the stratopause region consecutive to the major warming episode in the polar region. Our results lend support to the notion that one possible source mechanism for the observed stratopause warming is the planetary-wave activity.