

# **SIMULTANEOUS TEMPERATURE MEASUREMENTS OF THE UPPER MESOSPHERE OBTAINED BY LIDAR AND AIRGLOW IN THE BRAZILIAN LOW LATITUDE SECTOR**

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We present temperature measurements of the upper mesosphere obtained by lidar and airglow in the Brazilian low latitude sector over a period of two years. In the 80-110 km region, free sodium atoms are abundant enough to allow probing of the Doppler broadened hyperfine structure of the  $D_2$  resonance transition by ground-based lidar. The lidar technique consists in detection of the resonance transition at two wavelengths, one at the  $D_{2a}$  peak, and another at the minimum between the  $D_{2a}$  and  $D_{2b}$  peaks, making it possible to calculate the density and temperature profiles. At the same time, rotational temperatures obtained from the airglow OH (6-2) emission using photometer data were determined. Given the lidar-derived temperature profile, we adjusted the height of an empirical OH emission profile so as to minimize the difference between the observed OH temperatures and the lidar data. This procedure was carried out using lidar data from São José dos Campos (23°S, 46°W) and photometer data from Cachoeira Paulista (22,7°S, 45°W), about 100 km away. In general, the OH temperatures were higher than those derived from the lidar measurements, and it was not always possible to find an emission profile giving good agreement between the two. On some occasions we observed oscillations in the estimated OH emission height, which we believe to be caused by gravity waves.

Mesosphere, lidar, OH

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