Investigation of Propagation Characteristics of Equatorial Kelvin Waves Using Temperature Data Obtained from FORMOSAT-3/COSMIC

C. J. PAN, S. S. YANG, UMA DAS
Institute of Space Science, National Central University, Jhongli - 32001, Taiwan

The structure and propagation of equatorial atmospheric Kelvin waves has been investigated using temperature data obtained from the GPS radio occultations by FORMOSAT-3/COSMIC constellation of satellites. Equatorial Kelvin waves were observed in temperature fluctuations which show a distinct eastward propagation. The periods of the dominant wave numbers 1 and 2 are 12-17 and 8-12 days respectively during 2006-2007 and the phase speed is 2680 km/day at 19 km altitude, approximately above the tropopause. The vertical structure shows an eastward tilt in the altitude region of 18-30 km with vertical wavelengths in the range of 4-6 km during 2006 and 6-10 km during 2007. The phase propagation is eastward and downward at a speed of 0.5-1 km/day. These Kelvin waves do not propagate below approximately 15 km and seem to be quasi stationary at the tropical tropopause altitude. More results on the characteristics of Kelvin waves observed during 2006-2010 will be discussed in relation to the stratospheric winds and the quasi-biennial oscillation.