



Kelvin waves in stratosphere, mesosphere and lower thermosphere temperatures as observed by TIMED/SABER during 2002-2006

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Temperature measurements from the SABER instrument on the TIMED spacecraft are used to elucidate the properties of Kelvin waves and other equatorial oscillations over the altitude range 20-120 km during 2002-2006. The dominant Kelvin waves transition from long-periods (5-10 days) and short-wavelengths (9-13 km) in the stratosphere, to shorter periods (2-3 days) and longer wavelengths (35-45 km) in the 80-120 km height region. Ultra-Fast Kelvin Waves (UFW) with periods of 2.5-4.5 days intermittently exist at amplitudes of order 3-10 K between 80-120 km during all months of the year, with variability in the 20-60 day range. An Intra-seasonal oscillation (ISO) of zonal mean temperatures also exists with periods 20-60 days that may be driven by Eliassen-Palm Flux Divergences (EPFD) due, at least in part, to UFW and migrating diurnal tides.