



A ray-tracing approach for the vertical propagation of equatorial Kelvin waves from the troposphere into the middle atmosphere

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Based on time-resolved tropospheric spectral source distributions derived from TRMM OLR and rainfall data the vertical propagation of equatorial Kelvin waves from the troposphere into the stratosphere is investigated by means of the GRO-GRAT gravity wave ray tracer (Marks and Eckermann, 1995), here applied to Kelvin waves in a particular adapted version. Both spectral distributions and the variation of wave variances with the QBO are simulated over the 5-year period 2002-2006 in an ECMWF background atmosphere and compared to analyses of equatorial waves based on SABER and ECMWF data. The results demonstrate the importance of radiative damping for explaining the spectral distribution of the space-time spectra in the stratosphere.