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Tropical waves in the LMDz stratospheric model and in the ERA40 reanalysis

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The stratospheric dynamical variability is in part driven by planetary wave issued from the tropical troposphere. A reasonable representation of these tropical waves is essential for a good simulation of the stratospheric dynamics. In this presentation, the tropical waves are analyzed using a method that uses reanalysis or model data and that mixes spectral analyses techniques with the equatorial waves theory. The equatorial waves extracted in a 20 year integration with the LMDz model are compared with those extracted from the ERA40 reanalysis during the 1980-2000 period. A special emphasis is given to the waves with zonal wave numbers, s=1 (Kelvin wave) and s=4 (mixed Rossby Gravity or Yanai wave). Since the equatorial stratosphere is affected by the semi-annual and quasi-biannual zonal wind reversal, the propagation of these waves during different phase of these oscillations will be shown. Descrepancies between the simulations and reanalyses data are critically discussed in terms of the possible limitations in the model simulations of the SAO and of the QBO.