Intercomparison of atmospheric tides in global reanalyses from the stratosphere to the lower-mesosphere

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Atmospheric tides in reanalyses are worth investigating because they are important lower boundary conditions of whole atmosphere model and also because they can be used for diurnal correction of satellite measurements. This study comprehensively assesses atmospheric tides in latest reanalyses (MERRA-2, MERRA, ERA-Interim, JRA55 and NCEP-CFSR), for both migrating and nonmigrating componennts in the region from the stratosphere to the lower-mesosphere, during the period of 2006-2012. SABER and MLS satellite measurements are used for comparison. It is found that all reanalyses reproduce realistic tides in a qualitative way, while the quantitative difference among the data sets depends on wavenumber and frequency. Particularly, there seems a systemeatic bias between SABER and reanalyses for diurnal migrating tide. We also analyzed long term changes in tides and found that they are artificially affected by the change in assimilated data.

