

AAS020-06

会場:102

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TIMED/SABER 衛星データおよび全球再解析データを用いた一日周期大気潮汐の研究

Diurnal migrating tides in the troposphere to lower-mesosphere as deduced with TIMED/SABER data and six reanalysis data

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It is important to study the tidal variability in the troposphere and stratosphere, since it has a great impact on the mesosphere and lower thermosphere (MLT region). However, there has not been a comprehensive study of tides in this altitude region. Here, we reveal the global structure and seasonal variation of diurnal migrating tides in the troposphere to lower-mesosphere, using TIMED/SABER satellite data and six reanalysis data sets (NCEP/CFSR, NASA/MERRA, ERA-Interim, JRA-25, NCEP1, NCEP2), as well as output data from Global Scale Wave Model (GSWM09).

It is shown that MERRA, ERA-Interim and CFSR perform best in reproducing the observed features in SABER as follows. The amplitude is basically the largest in the tropics for this altitude region, except for the maximum in midlatitudes in the upper stratosphere. The amplitude maximizes in winter and in summer over the tropics, while it maximizes at solstice in midlatitudes.

Using the classical Hough mode decomposition, it is confirmed that the propagating modes are mainly excited by the tropospheric heating, while the trapped modes are excited by the heating in the troposphere and upper stratosphere. Also, numerical experiments with a linear tidal model shows that the seasonal variation of background winds/temperatures (non-classical terms) shows a non-negligible contribution to that of tidal signatures.

キーワード: 一日周期潮汐, SABER 衛星, 全球再解析, 季節変化

Keywords: diurnal migrating tides, SABER, reanalysis, seasonal variation