



Quasibiennial modulation of the Northern Hemisphere tropopause height and temperature

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The influence of the quasibiennial oscillation (QBO) on the tropopause pressure and temperature is studied through the application of the multitaper-singular value decomposition method (MTM-SVD). Reanalysis data (ERA-40) from the European Centre for Medium-Range Weather Forecasts (ECMWF) and radiosonde data from 61 observatories included in the Integrated Global Radiosonde Archive (IGRA) covering the period 1979-1999 are used.

The results show an inversion in the pattern of anomalies from the west phase of the QBO cycle to the east phase of the cycle, about 16 months later. The QBO modulation of tropopause characteristics at high latitudes in the winter analysis is observed to be more intense in the winter analysis than in the annual analysis.

The results obtained using computed soundings and reanalysis are in very good agreement. Moreover, the modulation of the pressure and temperature is as expected, with coincident anomalies in both sign and spatial coverage.

The evolution of the mass stream function through a QBO cycle is used to justify the differences observed in the evolution of the tropopause characteristics at low and high latitudes through the QBO cycle.