EMS7/ECAM8 Abstracts,
Vol. 4, EMS2007-A-00268, 2007
7th EMS Annual Meeting / 8th ECAM
© Author(s) 2007

MTM-SVD Analysis of the QBO Signature at the Tropopause

P. Ribera (1), C. Peña-Ortiz (1), L. Gimeno (2), J. Añel (2)

(1) Universidad Pablo de Olavide, Sevilla, Spain, (2) Universidade de Vigo, Ourense, Spain (cpenort@ upo.es)

The MTM-SVD approach has been applied to tropopause pressure data from the ERA-40 reanalysis to examine the QBO signature in this layer. The analysis has been performed for both monthly-mean and seasonal mean datasets covering the entire globe with a spatial resolution of 5º of latitude by 5º of longitude. This has allowed the study of the seasonal dependence of the tropopause QBO signature. The results obtained for the monthly means show in the tropical region higher (lower) pressure during the westerly (easterly) phase of the QBO. The largest anomalies are associated to maximum westerlies/easterlies at 40 hPa when they reach absolute values above 5hPa. A stronger signal is found at high latitudes in the northern hemisphere where anomalies are of the opposite sign to those in the tropics. The signal induced in the southern hemisphere is weaker and of opposite sign at middle and high latitudes. On the other hand the seasonal patterns show a seasonal dependence of the QBO signature induced in the extratropical tropopause which is stronger in the winter hemisphere.

The same method has been also applied to tropopause temperature and wind speed and direction data calculated from the IGRA radiosonde dataset. The QBO signature has been also detected and reconstructed for these variables