



Decreasing trend of the Tropical Easterly Jet over Africa

Cristina Peña-Ortiz, David Gallego, Pedro Ribera, Maria del Carmen Álvarez, and Paulina Ordonez
Universidad Pablo de Olavide, Sistemas físicos, químicos y naturales, Sevilla, Spain (cpenort@upo.es)

In this work we use a new methodology able to characterise the jets streams on daily basis to study long-term trends in the position, strength and altitude of the Tropical Easterly Jet (TEJ). The method is based on the analysis of the 3-D wind field and it searches, at each longitude, relative wind maxima above 30 m/s in the upper troposphere, between 400 and 100 hPa. The frequency of occurrence of relative maxima during a certain period and at each grid point is interpreted as the probability of jet streaks to occur at each location. The probability of jet streaks at each longitude exhibits a distribution approximately normal around the latitudes with highest probabilities. To obtain the average jet streaks we calculate the mean position, velocity and altitude of the wind maxima around these latitudes of maximum probability.

This methodology has been applied to the NCEP/NCAR reanalysis for the period 1948-2008 to study the trends in the position, velocity and altitude of the TEJ streaks. The TEJ occurs in summer, near the tropopause and above Southeast Asia, India and Africa. Previous studies have found decreasing trends in the velocity of the TEJ over south Asia, in the region between 40°E-100°E. However, our results show an even stronger decreasing trend of the TEJ velocity over central and West Africa, in the region between 40°E and 20°W.