



Impact of warm ENSO events on the QBO in the tropics using MAECHAM5 simulations.

Natalia Calvo (1,2), Marco A. Giorgetta (3), and Cristina Peña-Ortiz (4)

(1) Facultad Ciencias Físicas (UCM), Dpto. Física de la Tierra II, Madrid, Spain (nataliac@fis.ucm.es), (2) Atmospheric Chemistry Division, National Center for Atmospheric Research, Boulder, CO, USA (calvo@ucar.edu), (3) Max Planck Institute for Meteorology, Hamburg, Germany (marco.giorgetta@zmaw.de), (4) Universidad Pablo de Olavide, Dpto. de Sistemas Físicos, Químicos y Naturales, Sevilla, Spain (cpenort@upo.es)

El Niño effects on the tropical atmosphere are well characterized. El Niño causes a large displacement of convection in the equatorial region and generates an anomalous warm response in the tropical troposphere and a cold response in the tropical stratosphere. In addition, warm ENSO events generate anomalous tropical upwelling due to stronger wave mean flow interactions. The Quasi Biennial Oscillation depends on tropical upwelling and is driven by tropical waves forced at different scales by tropical convection. We analyze here the El Niño-QBO interactions using the Middle Atmosphere ECHAM5 model. The experimental set up was designed to include simulations of extended Northern Hemisphere winter seasons for either strong westerly or strong easterly phases of the tropical QBO forced with either sea surface temperatures (SSTs) from the strong warm ENSO event occurred in 1997/98 or climatological SSTs. It has been found that El Niño 97/98 seems to accelerate the QBO evolution when it coincides with the westerly QBO phase, but not during the easterly phase of the QBO.