

A modeling study: On the influence of ocean-atmosphere interactions over intraseasonal oscillations during the El Niño 1997-98

Enver Ramirez Gutierrez, I. Cavalcanti

CPTEC/INPE

In this work, the intraseasonal oscillations, emphasizing the MJO, were studied by coupling an intermediate complexity model named QTCM (QuasiEquilibrium Tropical Circulation Model) with a slab mixed layer ocean model. The slab mixed layer ocean model was used to rectify the time evolution of the specified sea surface temperature (SST). This rectification was done at the atmospheric model integration time step every twenty minutes. In this way, the high frequency correction allows us to have a systematic ocean-atmosphere interaction at time scales shorter than one day. The coupled model was integrated for a period that runs from January 1990 to December 1999, so the El Niño 1997-98 was included in the simulations. The component waves at intraseasonal time scales, were studied also with the use of the space-time spectral analysis projected in a dispersion diagram, useful to separate the modes which show distinctive dispersive properties. The general results showed that the inclusion of the coupling leads to an improvement in the representation of the intraseasonal modes with eastward propagation, increasing its variability and its propagation mainly over the Maritime Continent. These improvements occurred in special during El Niño 1997-98.