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Tropical Ocean Circulation Experiments

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ABSTRACT

A primitive equation model of the equatorial Pacific Ocean was forced by realistic wind stress distributions over decades. Results were presented for a set of two experiments. In the first experiment the model was forced by an objectively analyzed wind field, while for the second experiment a subjectively analyzed wind field was used. The results indicate a strong sensitivity of the model to the choice of the wind fields. Especially, model results in the eastern Pacific show big differences between the two model runs.

Taking the results of the second model run the performance of the model with respect to interannual variability is investigated. Sea level, temperature and zonal currents show pronounced interannual variations within the equatorial belt from 10°N to 10°S.

Special attention is given to the simulation of the 1982/83 El Niño event. The model reproduces most of the basic features, which were observed during this El Niño event. In particular the deceleration of the equatorial undercurrent, the evolution of eastward surface currents and the zonal redistribution of heat associated with an eastward propagation of warm water are simulated by the model.

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