Abstract

We investigate a simple nonlinear model, modelling the El Nino/ Southern Oscillation phenomena, which arises through the strong coupling of the ocean-atmosphere system. An important feature of this class of models is the inclusion of a delayed feedback which incorporates oceanic wave transit effects, namely the effects of trapped ocean waves propagating in a basin with closed boundaries. The model allows multiple steady states. When these fixed points become unstable, one obtains self-sustained oscillations. Thus this class of models provide a simple explanation of ENSO, and provide insights on the key features that allow the emergence of oscillatory behaviour.