



ENSO diversity as a result of the equatorial recharge oscillator interacting with noise

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In this study we address the cause of the diversity in the spatial structure of ENSO variability. We explore the idea that ENSO is a fixed pattern of variability following the recharge oscillator mechanism, which interacts with the atmospheric weather noise. We present a simulation in which a fixed pattern recharge oscillator model is coupled to an AGCM with a slab ocean model. The model is capable in simulating the leading modes of SST variability in the tropical Pacific with better agreement to the observations than most coupled GCMs in the CMIP database. The ENSO amplitude, seasonality, period, the structure of the leading pattern and its variations in an eastern and central Pacific pattern, i.e. EP El Nino and CP El Nino, are simulated very well by including the interaction of recharge oscillator and slab noise in our model. Furthermore, we find that the observed 1st EOF mode might result from the interaction between slab ocean noise and recharge oscillator which is believed to be only activated in a narrow band along the equator.