



Tropospheric Biennial Oscillation (TBO) indistinguishable from white noise

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Previous studies proposed that the year-to-year variability of seasonal monsoon indices is partly determined by a Tropospheric Biennial Oscillation (TBO). Invoking coupled ocean-atmosphere-land processes and the presence of an annual memory, the TBO mechanism describes how a relatively strong monsoon is followed by a year with weaker monsoon and vice versa. Here we revisit the issue of preferred biennial timescales in tropical monsoon systems, by testing the biennial tendencies in observed and simulated monsoon indices against the white noise null hypothesis. According to an analytical expression for the null hypothesis, we expect the probability for this biennial tendency to be $2/3$, which is in close agreement with observations, reanalysis products, and Atmospheric Model Intercomparison Project/Coupled Model Intercomparison Project general circulation model simulations. Thus, it is concluded that biennial tendencies in these monsoon indices and the associated TBO are fully consistent with a white noise process and do not require the presence of a preferred biennial timescale.