



Impact of mean climate change on ENSO in an intermediate coupled model

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The sensitivity of ENSO to mean climate change was investigated using an intermediate coupled model, in which three dynamical regimes were identified, all with distinct interannual SST variability. For a climate of normal trade wind and deep thermocline (20th century conditions), the SST anomaly is characterized by large loading in the eastern tropical Pacific. For a weaker trade wind and shallower thermocline (future warming scenario), the SST variability primarily appears in the central equatorial Pacific. For a slightly stronger trade winds and deeper thermocline (1990-2010 climate conditions), however, the SSTA exhibits two centers of variability, eastern equatorial Pacific and west of the dateline. Further analyses reveal that the central Pacific SST variations depend on the anomalous advection induced by local wind fluctuations, while the eastern Pacific SST anomalies follow the thermocline movements induced by winds farther west. Presumably, these results may help explaining the observed trend of weakened eastern Pacific ENSO events and increased ENSO Modoki (warm pool ENSO, or central Pacific ENSO) events since 1990s.