



The East Asian Summer Monsoon in pacemaker experiments driven by ENSO

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The variability of the East Asian summer monsoon (EASM) is studied using a pacemaker technique in a atmospheric general circulation model (AGCM) coupled to a slab mixed layer model. In the pacemaker experiment, sea surface temperature (sst) is constrained to observations in the eastern equatorial Pacific throughout a q-flux that measures the contribution of ocean dynamics to SST variability, while the AGCM is still coupled to the slab model. An ensemble of pacemaker experiments is analysed using a multivariate EOF analysis to identify the two major modes of variability of the EASM. Results show that the pacemaker experiments simulate part of the variability of the first mode seen in the ERA40 reanalysis (correlation up to 0.67 for the model ensemble mean), as expected. Different from previous study, the pacemaker experiments also simulate part of the variability (correlation up to 0.51 for the model ensemble mean) of the second mode, a mode of variability that is related to that of the Indian Summer Monsoon. A possible reason is the success of the pacemaker experiments at reproducing the relationship between El Nino Southern Oscillation (ENSO) and the second mode of EASM.