

Changes in the ENSO spatial structure in relation to the PDO in the CMIP5

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During recent decades, the tropical Pacific mean state is dominated by a La Nina-like state, which also reflects a negative phase of Pacific Decadal Oscillation (PDO). Concurrently, the so-called central Pacific El Nino, in which the location of maximum anomalous SST is observed in the central tropical Pacific, occurs frequently than the conventional El Nino events. This may indicate that a phase of PDO has some connections with the ENSO diversity in terms of its spatial structure although there is no clear explanation for this relationship. To examine this issue, we analyze the historical run and the RCP4.5 run in the Climate Model Inter-comparison Project Phase 5 (CMIP5) multi-model datasets. It is examined that the changes in the ENSO properties in relation to the PDO phase by directly comparing the RCP4.5 run with the historical run. Our preliminary results indicate that the changes in the ENSO structure from the historical run to the RCP4.5 run are different in terms of a phase of the PDO. In particular, a center of maximum anomalous SST in the El Nino simulated in the historical run is shifted to the west under a negative phase of PDO in the RCP4.5 run, indicating that the PDO may play a role to change the ENSO structure under the global warming. Detail mechanism will be discussed.