



## Assessment of the tropical Pacific climate and ENSO in the BCC\_CSM1.1

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Tropical Pacific climate and ENSO of the CMIP5 historical experiments are evaluated in the BCC\_CSM1.1, developed at the National Climate Center, China. Although the observed annual-mean climate characters are well captured by the model, some biases are obvious. There exist a cold SST bias along the equator, a warm bias along the coast of South America, strong precipitation in the far western Pacific and along the South Pacific convergence zone relative to observations and very weak cross-equatorial southerlies. Along the equator, the model exhibits the semi-annual cycle of SST in the eastern Pacific, which a cooling signal is linked to an unrealistic reversal of the simulated meridional winds in the east during boreal spring. Moreover, westward-propagating annual cycle of SST fails to be captured due to a north-south asymmetry unapparent in the east. The spatial pattern of interannual SST anomaly is consistent with observations and the amplitude is weaker, especially off the Peru coast. The main irregular period is between 2 and 3 yr. The wind stress response to eastern equatorial Pacific SST anomaly is narrower and too far west. The former limits the warm volume involved in the recharge/discharge of the equatorial thermocline close to the equator, while the latter can impact the advection feedback. Both discrepancies of the wind stress anomaly patterns may be responsible for the shorter ENSO period in the model. A distribution of SST anomaly is skewed toward warm events as observed, which the amplitude of skewness is weaker with respect to observations and the center is north of the equator. The model can simulate only “SST-mode”. Impacts of the annual-mean biases on the simulated interannual variability are discussed.