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The Double-ITCZ Bias in CMIP6 Models

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The double-Intertropical Convergence Zone (ITCZ) bias is one of the most outstanding problems in climate models. This study seeks to examine the double-ITCZ bias in the latest state-of-the-art fully coupled global climate models that participated in Coupled Model Intercomparison Project (CMIP) Phase 6 (CMIP6) in comparison to their previous generations (CMIP3 and CMIP5 models). To that end, we have analyzed the long-term annual mean tropical precipitation distributions and several precipitation bias indices that quantify the double-ITCZ biases in 75 climate models including 24 CMIP3 models, 25 CMIP3 models, and 26 CMIP6 models. We find that the double-ITCZ bias and its big inter-model spread persist in CMIP6 models but the double-ITCZ bias is slightly reduced from CMIP3 or CMIP5 models to CMIP6 models.