

Evaluation of RESM in Simulating Intraseasonal Variability During the Indian Summer Monsoon

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The accurate simulation of intraseasonal variability (ISV) during the Indian Summer Monsoon (ISM) remains a crucial challenge for regional climate models. This study evaluates the performance of the RESM in simulating ISV characteristics, including the dominant modes of variability, propagation features, and amplitude biases. Using reanalysis datasets and observational records, we assess the model's ability to capture key monsoon ISV components such as active and break spells, northward propagation of convection, and the influence of large-scale climate drivers. Preliminary results indicate that while RESM reasonably reproduces the broad-scale features of ISV, biases in rainfall intensity, phase propagation, and regional-scale variability persist. Sensitivity experiments highlight the role of convective parameterization, lateral boundary conditions, and land-atmosphere interactions in shaping intraseasonal monsoon behavior. This evaluation provides insights into potential model improvements, contributing to enhanced simulation of monsoon variability and better seasonal forecasting capabilities.