



## **Evaluation of Dynamics of the West African Monsoon Jump Simulated by the MIT Regional Climate Model**

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The seasonal advance and retreat of the West African monsoon behaves abrupt northward jump of maximum rainfall from the Guinean coast to the Sahel region. Both global and regional climate models have difficulties in accurately reproducing such a behavior due to its complexity combined the dynamical and physical processes. In this study, we evaluate the performance of the MIT Regional Climate Model (MRCM) in simulating the West African monsoon. For this, 20-year long-term simulation (1989-2008) is performed using the ERAInterim reanalysis as the initial and boundary condition, and the analysis primarily focuses on the dynamics associated with abrupt phase transitions of the monsoon rainfall. We first examine detailed characteristics in terms of the onset, maximum, and retreat of the monsoon rainfall using daily precipitation. We then present the dynamical explanation behind rainfall variability from the analysis of the absolute vorticity near the tropopause and the meridional gradient of boundary-layer entropy within the dynamical theory proposed by Eltahir and Gong (1996).

### **Acknowledgements**

: This research was supported by the National Research Foundation Singapore through the Singapore MIT Alliance for Research and Technology's Center for Environmental Sensing and Modeling interdisciplinary research program.