

## Improvements of the Eastward Propagation of the MJO in MIROC6

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A new version of the atmosphere–ocean general circulation model cooperatively produced by the Japanese research community, known as the Model for Interdisciplinary Research on Climate (MIROC6), has recently been developed. Many aspects of the Madden Julian Oscillation (MJO) simulations are improved compared with its previous version MIROC5. For example, MJO amplitudes underestimated in MIROC5 are enhanced; the MJO convective envelopes over the Indian Ocean, which often decays too early around the Maritime Continent in MIROC5, propagate farther to the Central Pacific; the vertical structure of the MJO related humidity shows more realistic stepwise moistening associated with the transition from shallow convection to deep convection. Our preliminary analyses indicate that these improvements are associated with a newly implemented shallow convection scheme. The shallow convection in MIROC6 transports the boundary layer moisture to the lower free troposphere, mitigating dry biases around 800hPa over the Western Pacific. MIROC6 also shows improvements in climatological mean precipitation and shallow cloud distribution.

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