

Representation of the MJO and its teleconnection in the GEM model

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Aimed at improving the model ability for subseasonal predictions, a 24-year simulation of the Global Environmental Multiscale Model (GEM) of Environment and Climate Change Canada (ECCC) is evaluated for the representation of the Madden-Julian Oscillation (MJO) and its connection with the North Atlantic Oscillation (NAO).

It is shown that the propagation of MJO and its teleconnection with NAO remain a challenge. The MJO convection doesn't seem propagating in the similar way as observations. At the same time, the precipitation and the outgoing longwave radiation (OLR) are much weaker than the observation although the projected real-time multivariate MJO index (RMM Index) represents a higher percentage of MJO events.

The Northern Hemisphere 500hPa geopotential height teleconnection pattern following the occurrence of MJO Phases 3 and 7 in the extended winter has a structure similar to the NAO, but with shifted centers and more persistent. As the temporal coverage extends, the teleconnections becomes less similar as observations. This may be caused by the standing feature of the tropical convection anomaly in the model in contrast to the propagating heating source of the MJO in the observations.