

Name: Wanqiu Wang
Wanqiu.Wang@noaa.gov
CPC/NCEP/NWS/NOAA
5830 University Research Ct
Attn: Wanqiu Wang
CPC/NCEP, 3004, W/NP52
College Park, MD 20740
Country: United States

Title: Impacts of the convection parameterization and ocean surface on the MJO prediction

Additional authors: Joshua Xiouhua Fu, Arun Kumar

Additional Affiliations: IPRC, CPC

Abstract:

This study analyzes the prediction of the Madden-Julian Oscillation (MJO) from the NCEP Climate Forecast System (CFsv2). We first assess the overall performance of the CFSv2 based on the hindcast for 1999-2010. We will then focus on the prediction during the DYNAMO Intensive Observing Period (IOP, 1 October 2011 - 15 January 2012). The most critical error in the CFSv2 is that the predicted MJO propagates too slowly and stalls over the Maritime Continent. We will analyze the impact of the use of alternative convection schemes and the specification of different ocean surface conditions on the MJO prediction during the DYNAMO IOP. Convection parameterizations tested include the Simplified Arakawa-Schubert (SAS) scheme, the Relaxed Arakawa-Schubert (RAS) scheme, and revised Simplified Arakawa-Schubert (SAS2) scheme. Impacts of the ocean surface are investigated by using different observed sea surface temperature (SST) analyses for the prediction of the MJO with atmosphere-only component.

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