EMS Annual Meeting Abstracts
Vol. 16, EMS2019-448, 2019

Impact of model biases in the ISV on TC forecasting in the S2S models

Masuo Nakano (1), Kazuyoshi Kikuchi (2), and Frederic Vitart (3)

(1) JAMSTEC, CRM-DAG/CEMA/RIGC, Yokohama, Japan (masuo@jamstec.go.jp), (2) IPRC, University of Hawai'i, Honolulu, USA (kazuyosh@hawaii.edu), (3) ECMWF, Reading, UK (frederic.vitart@ecmwf.int)

The tropical intraseasonal oscillation (ISO) is a major source of predictability of extreme weather events including TC genesis on the S2S time scale (e.g., 3-4 weeks). Recently, Nakano and Kikuchi (2019, GRL) applied a method based on the bimodal ISO concept (i.e. the MJO and the BSISO) which can objectively determine which ISO mode is dominant on a given day to CMIP5 models. They found that all the CMIP5 models have common biases in the representation of the ISO; the MJO is selected even in boreal summer (referred to as the summer MJO bias) and the BSISO is selected even in boreal winter (referred to as the winter BSISO bias). Furthermore, the simulated amplitude of the ISO is about half of the observation. Here, we extend their work to the S2S models. All the S2S models analyzed here show the winter BSISO bias and some S2S models show the summer MJO bias as well. Moreover, the amplitude of the ISO weakens with forecast lead time except for the Meteo France model. How do these biases affect TC genesis forecast? We analyzed the ECMWF model in detail in boreal summer. The model generally well reproduced the BSISO-TC genesis relationship. The distribution of negative TC genesis density anomaly in the convectively suppressed phases of the BSISO in the western north Pacific, however, shifts westward and is weaker. This result suggests the weaker amplitude bias in the ISO affects TC genesis forecast. We will also discuss the impact of summer MJO and winter BSISO biases on TC forecast.