Geophysical Research Abstracts
Vol. 18, EGU2016-7346-1, 2016
EGU General Assembly 2016

Understanding Dry Bias in the Simulations of Indian Monsoon by CFSv2 Through Analysis of Moisture Transport

Sahana Saheer (1), Amey Pathak (1), Roxy Mathew (2), Subimal Ghosh (1,3)

(1) Indian Institute of Technology Bombay, Mumbai, India(sahanasebin@gmail.com), (2) Indian Institute of Tropical Meteorology, Pune, India(roxy@tropmet.res.in), (3) Interdisciplinary Program in Climate Studies, IIT Bombay, Mumbai, India(subimal.ghosh@gmail.com)

Simulations of Indian Summer Monsoon (ISM) with its seasonal and subseasonal characteristics is highly crucial for predictions/ projections towards sustainable agricultural planning and water resources management. The Climate forecast system version 2 (CFSv2), the state of the art coupled climate model developed by National Center for Environmental Prediction (NCEP), is evaluated here for the simulations of ISM. Even though CFSv2 is a fully coupled ocean-atmosphere-land model with advanced physics, increased resolution and refined initialization, its ISM simulations/ predictions/ projections, in terms of seasonal mean and variability are not satisfactory. Numerous works have been done for verifying the CFSv2 forecasts in terms of the seasonal mean, its mean and variability, active and break spells, and El Nino Southern Oscillation (ENSO)-monsoon interactions. Underestimation of JJAS precipitation over the Indian land mass is one of the major drawbacks of CFSv2. ISM gets the moisture required to maintain the precipitation from different oceanic and land sources. In this work, we find the fraction of moisture supplied by different sources in the CFSv2 simulations and the findings are compared with observed fractions. We also investigate the possible variations in the moisture contributions from these different sources. We suspect that the deviation in the relative moisture contribution from different sources to various sinks over the monsoon region has resulted in the observed dry bias. We also find that over the Arabian Sea region, which is the key moisture source of ISM, there is a premature built up of specific humidity during the month of May and a decline during the later months of JJAS. This is also one of the reasons for the underestimation of JJAS mean precipitation.