

The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy.

Workshop on “Grand challenges in monsoon modeling: representation of processes in climate models”

In climate models, simulating the monsoon precipitation climatology remains a grand challenge. Compared to CMIP3, the multi-model-mean (MMM) errors for the Asian-Australian-Monsoon (AAM) precipitation climatology in CMIP5, relative to GPCP observations, have shown little improvement (Fig. 1). One of the implications is that uncertainties in the future projections of time-mean changes to monsoon rainfall may not have reduced from CMIP3 to CMIP5. Despite dedicated efforts by the modeling community, the progress in monsoon modeling is rather slow. This leads us to wonder if there are fundamental limits to realistically simulating the AAM monsoon, or if a concerted observational and modeling effort can enhance the fidelity of models in simulating the monsoon.

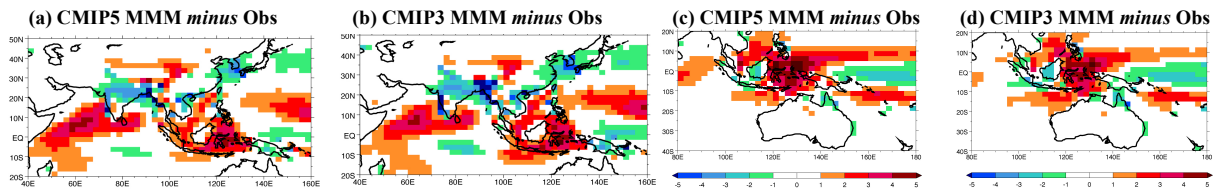


Fig. 1: Seasonal mean precipitation climatology difference (mm/day) between CMIP3/5 multi-model-mean (MMM) and GPCP observations: (a) and (b): boreal summer; (c) and (d): boreal winter.

A 2.5 day invitation only workshop, endorsed by the GEWEX/CLIVAR Monsoon Panel, is organized at the Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy. The vision of the workshop is *confluence of experts in modeling processes in atmosphere, ocean and land-surface in conjunction with experts in process-based diagnostics of monsoon-Indian Ocean systems in climate models, and in direct field observations*. Such a confluence, first of its kind, will facilitate model developers to: *i)* get first-hand details on the models’ ability in simulating the mean monsoon precipitation; *ii)* provide feedback to diagnosticians on specific analysis of model processes and *iii)* indicate need for direct field observations of key variables to constrain model physics. In turn, from the knowledge gained from diagnosticians, model developers can focus on key processes for improvement in monsoon simulation. To foster the growth of monsoon modeling, this workshop will act as a platform for a *two-way direct interaction* between monsoon diagnosticians and parameterization experts.

The structure for the first 1.5 days is as follows: Selected presentations on: *i)* process-based model diagnostics, and sensitivity studies that identify processes leading to errors in simulating the basic-states of the monsoon and tropical Indian Ocean climate systems; *ii)* recent advances in modeling physical processes in atmosphere, ocean and land models with relevance to monsoons; *iii)* new efforts in direct field observations over the monsoon-influenced countries, and *iv)* process-based diagnostics from satellite-derived observations.

The structure for the rest of one day will be interactive sessions on: *i)* two-way discussions/feedbacks between diagnosticians and modelers and *ii)* identify new observational priorities to help constrain model physics.

Venue: The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy.

Dates: June 13-15, 2016

Organized by: ICTP/IITM-Pune/COLA-GMU/IPRC-UH

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