Evaluation of CORDEX South Asia simulations using WFDEI data over the Meghna Basin

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Abstract

This paper will evaluate the ability of Regional Climate Models (RCMs) from CORDEX South Asia in simulating characteristics of rainfall patterns over the Meghna Basin. This basin is shared by India (67% catchment area) and by Bangladesh (33% of the catchment area). The elevations of the basin ranges from -1m to 2600m above mean sea level. The mountainous region mostly falls in India, whereas the flat and low-lying areas are belonged to Bangladesh. The world's top two wettest places, Mawsynram and Cherrapunji, at Meghalaya state, India with annual precipitation 11,871mm and 11,777mm, respectively, are located on this basin. The basin is characterized by flash flood during pre-monsoon and riverine flood during monsoon. Hence, this basin is severely vulnerable to climate change due to its geo-graphical location, complex climatic condition and geo-morphological characteristics. The changes of climate over this region would have substantial impact on agricultural production, water resources management and overall economy of basin.

In this study, we will use simulated monthly rainfall data from seven RCMs over CORDEX South Asia region. The RCMs were forced by lateral and surface boundary conditions from ERA-INTERIM reanalysis. The seasonal climatology, annual rainfall cycles, inter annual variability of RCMs output will be assessed over the Meghna Basin against WFDI (WATCH Forcing Data methodology applied to ERA Interim) data for the period of 1979 to 2000. Both the RCMs and WFDI data are available at 0.5X0.5 degree resolution.

Several studies suggest that there is a teleconnection between El Niño Southern Oscillation (ENSO) events and rainfall pattern over the region. Hence, in this study, we will also assess the ability of the RCMs in simulating large-scale global climate forcing signals by compositing the El Niño Southern Oscillation (ENSO) events. These evaluations are very important for identifying the strengths and weaknesses of these models for their use in producing future projections regional climate change over the region.

Key words: *Regional Climate Models, Meghna Basin, WFDI, ENSO, IOD, Flash Flood, Riverine Flood.*

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