



Dynamic downscaling of South Asia summer monsoon precipitation over COREDEX South Asia using the regional climate model (RegCM4.3)

Mujtaba Hassan (1,2), Du Pengfei (1), Waheed Iqbal (3), and Wulong Ba (1)

(1) State Key Laboratory of Environmental Simulation and Pollution Control (SKLESPC), School of Environment, Tsinghua University Beijing 100084, P.R. China, (2) Department of Space Science, Institute of Space Technology, Islamabad 44000, Pakistan, (3) Department of Meteorology (MISU), Stockholm University SE-106 91 Stockholm Sweden

We used the latest version of Abdus Slam International Centre for Theoretical Physics (ICTP) regional climate model (RegCM4.3) in the present study to analyze the multiyear climate simulation over the COREDEX South Asia, which characterize by complex topographical features with extensive mountain ranges of Hindukush-Karakorum-Himalaya (HKH) regions.

European Community-Hamburg atmospheric model (ECHAM5) and the European Centre for Medium-Range Weather Forecast (ECMWF) 40 years reanalysis data (ERA-40) are used to provide the initial and lateral boundary conditions. Two experiments hereafter referred as RegCM-ERA40 and RegCM-ECHAM5, are performed for present day climate from 1970-2000 with a horizontal resolution of 50 km. Seasonal mean climatology, Interannual variability and annual cycle are compared against the observational data.

The main features of spatial distribution of South Asia Summer Monsoon (SASM) precipitation are reproduced well by RegCM4.3 than ECHAM5 GCM. Regional climate model show wet bias over south peninsular India and dry bias over the central India. However RegCM4.3 improves the simulation results for SASM precipitation as compared to both of the driving fields. Our results show that the performance of RegCM4.3 is sufficient for climate change simulation and impact assessment studies over the complex topographical domain of South Asia.

Keywords: Regional climate modeling. South Asia. Summer monsoon precipitation.