



MPI regional climate model REMO simulations over South Asia

P Kumar, R Podzum, and D Jacob

Max Planck Institute for Meteorology, Hamburg, Germany (pankaj.kumar@zmaw.de)

Climatological features associated with South Asian summer monsoon (June-Sept.) is examined on intrannual time scale by Max Planck institute for meteorology (MPI) regional climate model REMO with a focus over India to downscale MPI global model ECHAM5 IPCC AR4 simulation. The objective is to validate the model over the region and identify the strength and weakness of the model. Before making a climate simulation various sensitivity experiments (using ERA15 reanalysis) have been performed to validate the model over the region. In one of the sensitivity experiment by changing the soil type from medium moist soil to dry type in the model, have shown a significant realistic drop in 2m temperature. Another experiment showed significant reduced ocean precipitation by changing ocean roughness constant in the model. After incorporating all these positive changes in the model, climate simulation have been performed for the period 1970-1999 at 0.5 degree resolution. Results showed that the regional model is able to simulate the mean monsoon climate reasonably well while comparing with the observed climatologies. The complex topographical precipitation pattern, and the mean annual cycle of precipitation and 2m-temperature is well simulated by the model both over model domain and over the India. Model is showing a cold temperature bias of nearly 1 deg C in DJF season and a positive bias over India of same magnitude in MAM season, also during monsoon season model has simulated 25% less mean precipitation over India. The spatial patterns of high variability in temperature and precipitation where noticed over the region where model simulated total cloud cover is 10-20% less. The circulation pattern simulated by the model is fairly well though with some limitations.