Precipitation Sensitivity to Sea Surface Temperature in a Regional Climate Model

by

G. P. Singh, Jai Ho Oh and Jeremy Pal
[1] Department of Geophysics, Banaras Hindu University, Varanasi, India
[2] ICTP, Trieste, Italy

Summary

RegCM3 has been used to simulate the summer monsoon precipitation over India and its 6 homogeneous zones. The RegCM3 has been integrated at 60km horizontal resolution from April to October for various castrating monsoon years. The RegCM3 simulated circulation features are compared with those of NCEP/NCAR reanalysis and precipitation is validated against observations from GPCC data sets. Comparison of the wind patterns at lower and upper levels and precipitation show that the RegCM3 simulated wind patterns are close to the NCEP/NCAR reanalysis and precipitation close to the GPCC data sets. Some important features of the intra-seasonal oscillation are also examined by applying a frequency filter and the technique of wavelet analysis to simulated rainfall data. Results indicate that while faster mode (10-20 days) mode dominated during excess rain years and slower mode (30-60 days) prominent in deficient rain year, agree well with observations. The influence of warm sea surface temperature (SST) by 0.6^0C on the following summer monsoon precipitation has been examined in details. The SST experiments show that the regional warming of SST over Arabian and Bay of Bengal Seas enhanced the monsoon precipitation mainly over south and west peninsular India and over the Oceanic sectors and reduced precipitation is found over northeast India.