



Improvement of simulated monsoon precipitation over South-Asia with a regionally coupled model REMO-MPIOM

Pankaj Kumar (1), Dmitry Sein (2), William Cabos (3), Daniela Jacob (1,4)

(1) Max Planck Institute for Meteorology, Hamburg, Germany (pankaj.kumar@mpimet.mpg.de), (2) Alfred Wegener Institute, Bremerhaven, Germany, (3) University of Alcalà, Spain, (4) Climate Service Center, Hamburg, Germany

The REgional atmosphere MOdel REMO with 50km horizontal resolution is coupled to the global ocean – sea ice model MPIOM with increased resolution over the Indian Ocean (up to 20 km). The CORDEX south Asia domain is taken as atmospheric model domain. The models are coupled via the OASIS coupler. The global Hydrological Discharge model HD, which calculates river runoff (0.5° horizontal grid resolution), is coupled to both the atmosphere and ocean components. Exchange of fields between ocean and atmosphere takes place every three hours. Lateral atmospheric and upper oceanic boundary conditions outside the REMO domain were prescribed using ERA40 reanalysis for the hindcast simulations as well as with MPI-ESM-LR historical run (the total simulation period is 1958-2005). Coupled model simulation results showed more realistic precipitation both over land and ocean. Comparison with observed precipitation showed that coupling leads to a significant improvement over core precipitation zones like an increase over Bangladesh (~75%), over plains on northern India (~50%) and decrease over ITCZ region (~50%) with respect to uncoupled model. The possible mechanisms responsible for such an improvement in the coupled model precipitation will be presented and discussed.