

Project under Hydrology & Cryosphere

Title	PI	Institute	Sanction Order and Date	Duration	Status	Major Equipment
Seasonal Hydrologic Predictions based on Regional Forecasts of Monsoon Rainfall with CWRF and Statistical Downscaling	Dr. Subimal Ghosh	Deptt. of Civil Engineering, IIT, Bombay	MoES/PAMC/H&C/35/2013-PC-II 25 September 2014	3 Years	On-going	Workstations Computational Support

Abstract:

Seasonal prediction of Indian Summer Monsoon Rainfall (ISMR) is a high priority research challenge because of the complex ocean-atmosphere and land-atmosphere interaction processes resulting in variability at diurnal to decadal time-scales, but the state of the art coupled climate models still have limitations in simulating regional Indian monsoon rainfall. Planning for water resources and agricultural management needs hydrologic predictions, which need predicted ISMR for hydrologic modeling. The project proposes to simulate and predict hydrologic scenarios over India at fine resolutions (very high-resolutions at river basic scales) with a coupled dynamic-statistical downscaling model applied to predicted ISMR from a global coupled climate model. For dynamic downscaling, the Climate Weather Research and Forecasting (CWRF) model will be used. The dynamic downscaling model is proposed to be run at a resolution of 10 km, which will be further downscaled at station level with statistical downscaling for watersheds with the Upper Godavari river basin acting as the pilot site. The advantage of using CWRF is its enhanced capability to simulate climate, optimized physics ensemble options, better representation of land atmosphere interactions, integrated watershed modeling, etc. Use of multiple physics modules of CWRF will help in testing different scientific hypotheses and understanding the processes.