Talk by Dr. B. B. Goswami on 19th July 2017

Conventional Cumulus parameterization schemes, such as the simplified Arakawa-Schubert (SAS), are based on the quasi-equilibrium framework. As a consequence, fail to capture the sub-grid scale variability and add uncertainty in terms of precipitation bias. Reference to Randall et al 2003 and Arakawa 2004, multiscale modelling framework (MMF), a.k.a. superparameterization (SP) approach, is a possible approach to reduce the uncertainty and improve the sub-grid scale variability by putting cloud resolving models within the global climate model grids. Although promising, SP approach is computationally costly. A cheaper (computationally) alternative is the Stochastic Multi-Cloud Model (SMCM) developed on the basis of multi-scale interaction among the three major cloud types in tropics. To better represent organized convection in the Climate Forecast System version-2 (CFSv2), the Stochastic Multi-Cloud Model (SMCM) approach (Khouider et al 2010) are adopted in two separate climate runs. We have replaced the SAS convective parameterization scheme used by the CFSv2 model by the SMCM (named as the CFSsmcm). CFSsmcm is run for 15 years. The simulated climate obtained from the CFSsmcm run appears to be significantly better than the default CFSv2 model. The major features of the CFSsmcm simulated climates will be discussed in this presentation.