A Multimodel Ensemble Approach for Hydrologicalprediction

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Abstract: *Watersheds are the basic units of hydrological system. For effective watershed management, annual runoff from a watershed needs to be modeled. Many runoff simulation models have been developed but till todayneither of them is able to predict runoff accurately due to the inherent uncertainty. The present study focuses on creating multi-model ensembles by combining outputs of eight hydrological models i.e. MIKE SHE, SWAT, HEC-HMS, AWBM, SIMHYD, SACRAMENTO, SMAR and TANK for Salebhata catchment of Mahanadi river basin to simulate daily runoff. The performances of ensemble are evaluated by using Root Mean Square Error (RMSE) and Correlation Coefficient. The results of this study confirmed that even the weakest of the individual models brings useful information to an ensemble. The results further suggest that most of the ensembles are more accurate than the best of the eight individual models used in the ensemble creation, thereby justifying the use of such a methodology in the context of rainfall-runoff transformation.*

Keywords: *Multi-model ensembles, Root Mean Square Error (RMSE) and Correlation Co-efficient.*