Simulating weekly pan-evaporation in the foothills of Indian Central Himalayan region

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ABSTRACT : This paper explores the potential of multi-layer perceptron (MLP), co-active neuro-fuzzy inference system (CANFIS) and multiple linear regression (MLR) in simulating weekly pan-evaporation at Pantnagar, located in the foothills of central Himalayan region in Uttarakhand, India. In this study, a non-linear modelling tool i.e. gamma test (GT) was utilized to identify the most significant input parameters for MLP, CANFIS and MLR approaches. The simulated pan-evaporation using these techniques was compared with the empirical models such as Stephens-Stewart (SS) and Griffith (G) based on root mean squared error (RMSE), Nash-Sutcliffe efficiency (NS_E) and coefficient of correlation (r). The results of comparison reveal that the MLP model performed superior than the CANFIS, MLR, SS and G models in simulating the weekly pan-evaporation using the available meteorological data for study location.