Modelling for Reference Evapotranspiration of Pantnagar using Various Training Functions in Artificial Neural Network

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Abstract: The main objective of this study was to estimate climate based reference evapotranspiration on daily basis and to develop the models using various training functions of Artificial Neural Network (ANNs). This study deals with the location and climate of study area, collection of meteorological data and methodology adopted for reference evapotranspiration estimation and modelling it using artificial neural networks for Pantnagar and criteria for evaluating performance of the models is also discussed. Gradient Descent with Momentum and One Step Secant training function are almost equally fitted. The reference evapotranspiration in 5 years (2011-15) varies from 0.65 to 6.01 within 5 years. The correlation coefficient for testing data for Levenberg Marquardt function is 0.832, for Gradient Descent with Momentum function is 0.976 and for One Step Secant function is 0.981. One Step Secant training function produce the high value of correlation coefficient rather than Levenberg Marquardt. So it is considered as best model for evapotranspiration modelling of Pantnagar.

Keywords**:** Artificial neural network (ANN), Cropwat 8.0, Meteorological parameters and Training functions