ABSTRACT

Hydrological time series forecasting is one of the hot topics in the domain of statistical hydrology. Providing accurate forecasting can contribute to diverse applications for catchment sustainability and management. Dew point temperature (Tdew) is one of the complex hydrological processes that highly essential to be quantified accurately for several catchment activities such as crops, agriculture, and others. In this study, three types of models' recursive strategy, direct strategy, and DirRec which is the combination of recursive and direct strategies were adopted to obtain h-steps ahead predictions of Tdew. Ten years monthly scale dataset of Tdew at two meteorological stations (Beach and Cavalier) located at the North Dakota, USA, were used for the modeling development. The performance of the considered models was compared with two benchmark models: autoregressive moving average (ARIMA) and exponential smoothing (ETS). Modeling results indicated that, compared with the benchmark models, the proposed methods gave good results for the multi ahead forecasting. For instance, for Cavalier station, the root mean squared prediction errors obtained from the proposed and benchmark methods when the forecast horizon is 12 are as follows: recursive strategy (RMSPE = 3.731) direct strategy (RMSPE = 3.385), DirRec (RMSPE = 3.141), ARIMA (RMSPE = 12.957), and ETS (RMSPE = 27.479).