An Investigation to Identify the Best Precipitation Missing Data Methods

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ABSTRACT

Rainfall is very much important for the agricultural activities and also important part of the hydrological cycle. Studying about precipitation is important in identifying precipitation characteristics; occurrence is a spatial and temporal variability, statistical modeling and forecasting of precipitation and resolving the problems such as floods, droughts, landslides etc., Numerous methods have been introduced for estimating and reconstructing missing data. Several methods are available to predict the missing data. Those methods are Arithmetic average method, Normal ratio method, Inverse distance method, Aerial precipitation ratio method, Multiple linear regression method and UK Traditional method. These methods derive the missing values using observations from neighboring stations and to estimate the missing data of precipitation. Some of these methods are taken up in this study to identify the best method based on the method selection criteria *i.e.* R^2, RMSE and MAPE. The results needed that the multiple linear regression method, Normal ratio method, Decision tree method, UK Traditional method provide successful estimation of the missing precipitation data. It is found that multiple linear regression method performs well over other standard methods when missing rainfall is estimated for both dry and rainy months.

Keywords**:** *MAPE, Missing data, R^2, Rainfall and RMSE.*