

GCM Based Fuzzy Clustering to Identify Homogeneous Climatic Regions of North-East India

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Abstract : The North-eastern part of India, which receives heavier rainfall than other parts of the subcontinent, is of great concern now-a-days with regard to climate change. High intensity rainfall for short duration and longer dry spell, occurring due to impact of climate change, affects river morphology too. In the present study, an attempt is made to delineate the North-Eastern region of India into some homogeneous clusters based on the Fuzzy Clustering concept and to compare the resulting clusters obtained by using conventional methods and non conventional methods of clustering. The concept of clustering is adapted in view of the fact that, impact of climate change can be studied in a homogeneous region without much variation, which can be helpful in studies related to water resources planning and management. 10 IMD (Indian Meteorological Department) stations, situated in various regions of the North-east, have been selected for making the clusters. The results of the Fuzzy C-Means (FCM) analysis show different clustering patterns for different conditions. From the analysis and comparison it can be concluded that non conventional method of using GCM data is somehow giving better results than the others. However, further analysis can be done by taking daily data instead of monthly means to reduce the effect of standardization.

Keywords : climate change, conventional and nonconventional methods of clustering, FCM analysis, homogeneous regions

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