Innovative Trend Analysis (ITA) of Rainfall for Kadiri Watershed Area

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ABSTRACT

Precipitation (Rain fall) is an important parameter of the hydrological cycle; drought and floods are really pertinent with variability of rain fall. Long-term changes in hydrological processes are referred the climate change for an area. Enormous increase in the population, urbanization, industrialization, and release of green house gases like Chlorofluorocarbon (CFC) gases are having negative effects on the environment. It is very essential to study of trends in the long term from climatic change and socioeconomic perspectives. Changes in rainfall pattern and distribution have an important effect on the amount of water available in watershed. Hence, it is required to analyze the rainfall pattern over time. This study employs the Innovative trend analysis (ITA) method to assess the long-term (1982–2020) temporal trends of annual rainfall in different seasons (*Kharif, Rabi, and summer*) for the Kadiri watershed division of the Anantpur district in Andhra Pradesh state. The ITA technique is a highly effective tool for finding patterns in rainfall time series data since it can provide results in graphical form. This technique is also used to detect trends as 'low,' 'medium,' and 'high,' which needs to be considered in upcoming research on drought and floods. According to the outcome of the analysis, the bottom cluster exhibits a negative trend, the middle cluster exhibits a positive trend and no trend, and the higher cluster exhibits a positive trend during the annual analysis. During this time, average seasonal analysis took into account the pre, post, and monsoon seasons. The investigation showed that while the average seasonal rainfall during the monsoon season is close to the yearly average, it is lower during the post-monsoon and pre-monsoon seasons. The average rain fall values observed as 161.8, 111.60 and 435.69 mm during pre, post and monsoon seasons respectively. This study will helps as a scientiûc foundation for expecting and mitigating the effect of climate change on the natural resources to lowering the risk of weather conditions.

Keywords: *Climate change, Hydrological cycle, Innovative trend analysis and Long-term trend.*