

Abstract

Trend analysis is a prominent area of interest for both climatology and hydrology for investigating climate change scenarios and to enhance the efficacy of climate impact research. Trend analysis of a time series data consists of the magnitude of trends and its statistical significance. Trend analysis plays an important role in identifying variations in the pattern of observed time series data and to predict the climate change for future by identifying changes in climatic variables like temperature. Climate change detection through trend analysis is an active area of research and available methods have many uncertainties in assessment and prediction of climate change. It has been noticed that Climatic variables are location specific & climate trends are not available at regional scale for a same time. This work aims to analyze the trend of temperature which is one of the most important climatic variable for detecting changes in climate. The study area is Uttar Pradesh state of India. In this study area various statistical methods have been implemented for analyzing trend and shift of trend for climatological variables. Every method has its own pros and cons. The most commonly used methods for trend analysis are Mann–Kendall test, Sen's slope estimator test and Pettit test. The first two methods are used to detect monotonic trend direction and change in magnitude over time and Pettit test is used to detect possible change points.

The work is carried out on the trend analysis of maximum, minimum & mean temperature at annual, seasonal and monthly scales for 70 districts of Uttar Pradesh (India). Statistical trend analysis techniques, namely the Mann– Kendall (MK) test, Sen's slope estimator, Modified Mann-Kendall (MMK) and Pettit-t test has been used to examine trends (1901–2002).