RESEARCH ARTICLE

STUDY OF SPATIO-TEMPORAL ANALYSIS OF ANNUAL RAINFALL VARIABILITY IN UTTAR PRADESH

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Abstract: Uttar Pradesh is Humid subtropical and semi arid climatic region situated between 23° 52' N and 31° 28' N latitudes and 77° 3' and 84° 39'E longitudes. The state is divided into 18 divisions and 71 districts. The statistical analysis of annual rainfall data of past to present 100 years (1915-2014) ranged from 532.7mm in year in 1991 to 1313.1 mm in year 2013 with an average annual rainfall of the area is 929.6 mm. The average rainfall with 2013 showing the highest positive rainfall anomaly (2.26) while the other years show rainfall below normal with 1991 Showing the lowest negative rainfall deviation (-2.34). The calculated value of standard deviation reveals that deviation of rainfall is of 169.7 mm. in a century. The trend analysis in XLSTAT 2014.6.02 ver. observed trend of rainfall, the R^2 value 0.018 means that only 1.8 percent variation is observed in hundred years. The coefficient of skewness has been computed as -0.06 for annual rainfall indicates a negative trend or going to decline pattern. The maximum standard deviation value and CV(%) is observed 210 & 23% in year 1935-44 and minimum standard deviation and CV(%) is observed 80.7 & 10% in year 1995-04. The overall decadal dataset observed decadal maximum rainfall 1328.9 in year 1955-64 whereas minimum rainfall 493.9mm in year 2005-14 observed. In future, expected annual rainfall may be less in year 2025 observed 881.9mm in the state. In the year 2021; expected rainfall may be 893mm. The geostatistical analysis is the ARCGIS 10.3.1 extension used for interpolation and kriging. The prediction map of dataset year 1995-2004 was highest rainfall in east side of some place of Uttar Pradesh. The western part of Uttar Pradesh covered less rainfall the other side cover area. The central part of state decadal map covered maximum area in year 1966-74. The objective of this study is to analyze the recent and future trend of annual rainfall pattern.

Keywords: Anomaly**,** GIS, Geostatistical method, Kriging & Monsoon

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