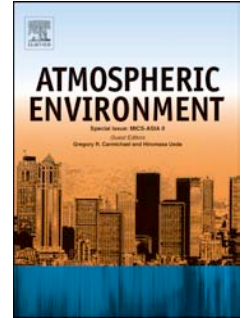


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Spatio-temporal analysis of rainfall trends over a maritime state (Kerala) of India during the last 100 years

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1 **Spatio-temporal analysis of rainfall trends over a maritime state (Kerala)**
2 **of India during the last 100 years**

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11
12 Kerala, a maritime state of India is bestowed with abundant rainfall which is about three times the
13 national average. This study is conducted to have a better understanding of rainfall variability and
14 trend at regional level for this state during the last 100 years. It is found that the rainfall variation in
15 northern and southern regions of Kerala is large and the deviation is on different timescales. There is a
16 shifting of rainfall mean and variability during the seasons. The trend analysis on rainfall data over the
17 last 100 years reveals that there is a significant (99%) decreasing trend in most of the regions of
18 Kerala especially in the month of January, July and November. The annual and seasonal trends of
19 rainfall in most regions of Kerala are also found to be decreasing significantly. This decreasing trend
20 may be related to global anomalies as a result of anthropogenic green house gas (GHG)
21 emissions due to increased fossil fuel use, land-use change due to urbanisation and
22 deforestation, proliferation in transportation associated atmospheric pollutants. We have also
23 conducted a study of the seasonality index (SI) and found that only one district in the northern
24 region (Kasaragod) has seasonality index of more than 1 and that the distribution of monthly
25 rainfall in this district is mostly attributed to 1 or 2 months. In rest of the districts, the rainfall
26 is markedly seasonal. The trend in SI reveals that the rainfall distribution in these districts has
27 become asymmetric with changes in rainfall distribution.

28
29 **Keywords: Rainfall variability, Trend, Seasonality Index, Kerala**

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