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#### Abstract

The future behavior of climate for a particular area is mostly determined by the long term climate variability as it has a large impact on climatic trend. As the climate variability changes from one season to the other, the variability of a given time series is well studied using Fractal Dimension. In this paper we deal with the estimation of Hurst exponent, Fractal Dimension and Predictability Index using wavelet method for each of the meteorological parameters: daily means of temperature, pressure, relative humidity, wind speed and daily totals for precipitation at each station Jammu, Rajouri, Pulwama, Srinagar, Kargil, Leh, Qazigund, Banihal and Doda selected strategically over the State of Jammu and Kashmir. It is observed that for the entire data set temperature, pressure, and wind speed time series show persistence behavior with a strong correlation for the temperature time series however the rainfall time series for the entire data set shows an unpredictable behavior except for the case of Jammu. Also a discrepancy is found to exist between the predictability indices of the entire data set and that of the seasonal data sets due to the diversity in the climate at sub-sub-regional levels.

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