Surajit Chattopadhyay, Expert Opin Environ Biol 2021, Volume 10

A look into the long-term autocorrelation pattern of the Indian summer monsoon rainfall through rescaled range analysis

Surajit Chattopadhyay
Amity University, India

The work presented in this talk reports a detailed analysis of the rainfall over a meteorological subdivision of India using Markov Chain analysis. We observe through Normal distribution fitting that the overall pattern of annual rainfall has a strong association with the Indian summer monsoon rainfall (ISMR). However, the post-monsoon season has a minor role in the overall yearly rainfall pattern over the eastern peninsula of India. A Markovian analysis has shown that the rainfall time series, discretized to a binary time series, is serially independent. Finally, we carry out a rescaled-range analysis for all the time series under consideration. It that in all three cases, the Hurst exponent is less than 0.5. It comes out that the time series are not characterized by strong long-term autocorrelation. Instead, there exists long-term switching between high and low values of rainfall.

Biography

Dr. Surajit Chattopadhyay, presently an Associate Professor of the Department of Mathematics, Amity Institute of Applied Sciences, Amity University, Kolkata, and Fellow, Royal Astronomical Society, London, began his journey as an academician in Pailan College of Management & Technology, Kolkata where he had enlightened students for more than a decade. He is actively engaged in research on theoretical cosmology, with emphasis on dark energy and modified gravity theories. Statistical modelling of meteorological processes is also within the purview of his interests. Dr. Chattopadhyay's research is often facilitated by travel grant that is sponsored by DST, Government of India, CICS, CSIR, INSA-ICSU, ICIAM and International Astronomical Union.