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| Title | Patterns and Variability of Extreme Weather in Bangladesh: A Statistical Exploration | | |
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| Published Journal Name |  | | |
| Type of Publication | Conference Proceedings | | |
| Volume |  | Issue |  |
| Publisher | Department of Meteorology , University of Dhaka, Bangladesh | | |
| Publication Date | 10 December, 2023 | | |
| ISSN |  | | |
| DOI |  | | |
| URL | <https://drive.google.com/file/d/1DTluK40ZGV8U1ExA7kNcjzqnXLZ-aSE-/view> | | |
| Other Related Info. |  | | |
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| Abstract |  |
| Due to its geographical location and topographical features, Bangladesh is highly vulnerable to a spectrum of extreme weather events such as cyclones, floods, and heatwaves. The escalating frequency and intensity of these occurrences have profound implications for the nation's agriculture, infrastructure, and overall resilience. Recognizing the historical patterns and variability of extreme weather is imperative for the implementation of effective risk mitigation and adaptation strategies. The principal aim of this research is to conduct a meticulous statistical exploration into the patterns and variability of extreme weather events in Bangladesh. Specifically, the study seeks to uncover trends, quantify variability, and identify discernible patterns in the occurrence of cyclones, floods, and heatwaves over an extensive timeframe. Employing robust statistical methodology, the research utilizes historical weather data spanning several decades. Techniques such as time series analysis, regression modeling, and other advanced statistical tools are deployed to quantify trends, evaluate variability, and detect patterns in the incidence of extreme weather events. Additionally, spatial analysis is integrated to comprehend regional variations within Bangladesh. Preliminary findings indicate a noteworthy escalation in the frequency of extreme weather events throughout the study period. The analysis unveils specific temporal and spatial patterns in the occurrence of cyclones, floods, and heatwaves. These revelations contribute to a holistic comprehension of the evolving climate landscape in Bangladesh, facilitating the identification of high-risk zones and periods. This study assumes paramount significance in guiding policy formulation and strategic planning for disaster resilience in Bangladesh. The statistical insights derived from the research furnish a data-driven foundation for implementing climate change adaptation measures, directing infrastructure development, and formulating early warning systems. Furthermore, the findings contribute to the global discourse on climate change impact assessment and adaptation strategies. In conclusion, this study underscores the critical importance of continuous monitoring and data-driven decision-making in the face of a changing climate. It emphasizes the necessity for proactive measures to build resilience and ensure sustainable development in Bangladesh. | |