

PROJECTION OF FUTURE CLIMATE DATA FOR TORONTO CITY USING GENERALIZED EXTREME VALUE THEORY

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ABSTRACT

Climate change is now recognized as one of the most critical impact on infrastructure. The objective of this research is to predict the future minimum temperature, hourly mean temperature and wind hourly mean data using generalized extreme value theory (GEVT) for next (50 -100 years) return period. In this research, the historical minimum temperature, hourly mean temperature and wind hourly mean data for Toronto city have been gathered annually from Canada weather statistics. The full characterization for the minimum temperature, hourly mean temperature and wind hourly mean data have been performed. The analysis was done by different software programs such as (SPSS and MATLAB). The minimum temperature, hourly mean temperature and wind hourly mean data were tested using Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test and Augmented Dickey–Fuller test (ADF) to recognize the data type (i.e., stationary or nonstationary). Based on the results of this study, it is observed that the minimum temperature, hourly mean temperature and wind hourly mean data are nonstationary data. Additionally, the return level for minimum temperature, hourly mean temperature and wind hourly mean hourly mean temperature.

KEYWORDS: Generalized Extreme Value Theory, Return Level, Non Stationary, Minimum Temperature, Wind Hourly Mean, Hourly Mean Temperature

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