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LONG-TERM TREND ANALYSIS OF ANNUAL PRECIPITATION FOR SHORT PERIODICITIES

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Abstract

The climate variability analysis is often performed by studying trends in hydro-climatic series. In this study, precipitation series trend analysis was performed by applying the parametric test of linear regression and the non-parametric tests of Mann-Kendall (MK) and Pettitt's. Trend tests were applied on the original precipitation series and the denoised precipitation series via the discrete wavelet transform (DWT). This study aims to evaluate the classical and new approaches used for analyzing precipitation trends. The paper presents a new approach for analyzing non-significant trends by combining Pettitt's test, linear regression, and discrete wavelet transforms. The most effective periodic component of the time series was determined, and precipitation series were transformed for a short-term periodicity scale (2-years). The trend analysis results obtained from the denoised precipitation series had presented more significant results than those of the original series.

Keywords: change point, discrete wavelet transform, precipitation, trend analysis

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