

Trend analysis of aridity index for southeast of Korea

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Abstract

Trend analysis can enhance our knowledge of the dominant processes in the area and contribute to the analysis of future climate projections. The results of previous studies in South Korea showed that southeast regions of Korea had the highest value of evapotranspiration. Thereby, it is of interest to determine the trend analysis in hydrological variables in this area. In this study, the recent 35 year trends of precipitation, reference evapotranspiration, and aridity index in monthly and annual time scale will be analyzed over three stations (Pohang, Daegu, and Pusan) of southeast Korea. After removing the significant Lag-1 serial correlation effect by pre-whitening, non-parametric statistical Mann-Kendall test was used to detect the trends. Also, the slope of trend of the Mann-Kendall test was determined by using Theil-Sen's estimator. The results of the trend analysis of reference evapotranspiration on the annual scale showed the increasing trend for the three mentioned stations, with significant increasing trend for Pusan station. The results obtained from this research can guide development of water management practices and cropping systems in the area that rely on this weather stations. The approaches used and the models fitted in this study can serve as a demonstration of how a time series trend can be analyzed.

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Keywords : Trend analysis, Precipitation, Reference evapotranspiration, Aridity index, Mann-Kendall

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