Rainfall Trend Detection Using Non Parametric Test in the Yom River Basin, Thailand

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Abstract

Several studies of the world have analyzed the regional rainfall trends in large data sets. However, it reported that the long-term behavior of rainfall was different on spatial and temporal scales. The objective of this study is to determine the local trends of rainfall indices in the Yom River Basin, Thailand. The rainfall indices consist of the annual total precipitation (PRCTPOP), number of heavy rainfall days (R_{10}), number of very heavy rainfall days (R_{20}), consecutive of dry days (CDD), consecutive of wet days (CWD), daily maximum rainfall (R_{x1}), five-days maximum rainfall (R_{x5}), and total of annual rainy day (R_{annual}). The rainfall data from twelve hydrological stations during the period 1965-2015 were used to analysis rainfall trend. The Mann-Kendall test ,which is non-parametric test was adopted to detect trend at 95 percent confident level. The results of these data were found that there is only one station an increasing significantly trend in PRCTPOP index. CWD, which the index is expresses longest annual wet days, was exhibited significant negative trend in three locations. Meanwhile, the significant positive trend of CDD that represents longest annual dry spell was exhibited four locations. Three out of thirteen stations had significant decreasing trend in R_{annual} index. In contrast, there is a station statistically significant increasing trend. The analysis of R_{x1} was showed a station significant decreasing trend at located in the middle of basin, while the R_{x5} of the most locations an insignificant decreasing trend. The heavy rainfall index indicated significant decreasing trend in two rainfall stations, whereas was not notice the increase or decrease trends in very heavy rainfall index. The results of this study suggest that the trend signal in the Yom River Basin in the half twentieth century showed the decreasing tendency in both of intensity and frequency of rainfall.

Keywords : Rainfall indices, Variability, Trend, Mann-Kendall Test, Yom River Basin

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