

Comparative Analysis of Rainfall Trends in the Jinghe River Basin During 1959-2014

Xunjian Long¹, Xuerou Weng¹, yan ye¹, and Yong Ye¹

¹Southwest University

April 22, 2021

Abstract

Trend analysis is widely applied in hydrometeorological research. Considering that Innovative Trend Analysis (ITA) and Innovative Polygonal Trend Analysis (IPTA) can detect small variations on annual and smaller scale, rainfall trends at 14 hydrometeorological stations in the Jinghe River Basin were analyzed by ITA, IPTA and Mann Kendall test (MK). The results showed that the rainfall trends are subsistent from 1959 to 2014. Comparing the results of ITA and MK on annual level, it was determined that trends are consistent, but only two stations passed the 90% significance test through MK, while all stations passed the significance test through ITA. Accordingly, the ITA method proved to be better than MK in detecting small changes in time series. Changes in high and low values, obtained by the ITA method, reflected flood and drought trends in the basin. In addition, IPTA is an improved ITA method that is suitable for a relatively short time span. Through the IPTA method for analyzing the monthly precipitation trends, the results showed that rainfall at 14 stations increased in January, February, March, June and December, and decreased significantly in September. Therefore, the methodology applied in this study can provide detailed recommendations for hydrometeorological research.

Hosted file

Comparative Analysis of Rainfall Trends across0404.pdf available at <https://authorea.com/users/409318/articles/519058-comparative-analysis-of-rainfall-trends-in-the-jinghe-river-basin-during-1959-2014>

Hosted file

Graphical Abstract.pdf available at <https://authorea.com/users/409318/articles/519058-comparative-analysis-of-rainfall-trends-in-the-jinghe-river-basin-during-1959-2014>

Hosted file

Figure legends.pdf available at <https://authorea.com/users/409318/articles/519058-comparative-analysis-of-rainfall-trends-in-the-jinghe-river-basin-during-1959-2014>