

ABSTRACT

The main objective of this paper was to investigate runoff changes in the catchment Ala-Arca, Alamaedin and Kara-Balta in Kyrgyzstan, as well as change in climate conditions from available stations in the area. The runoff, precipitation, and temperature series were subjected to monthly, seasonal and annual analyses based on available data. Both absolute and relative data homogeneity were verified using statistical tests such as the Mann-Whitney-Pettit test, the SNHT test, and the Willcoxon's two-sample test for absolute homogeneity, and the Alexandersson's test for relative homogeneity. The Mann-Kendall test was used to determine the trend in each serie. There were inhomogeneities found in a number of runoff data. In most cases, the changes of rivers Ala-Arca and Kara-Balta were recorded in 1987. Compare to Ala-Arca and Kara-Balta, the changes of river Alamedin were recorded 3 years later, in 1990. There was a positive trend development by the rivers with the glacial-snow regime. However, there was no statistically significant trend for the entire time series.

Key words: runoff change, precipitation, temperature, glacial-snow regime, snow-glacial regime, homogenization, Mann-Whitney-Pettit test, trend, Mann-Kendall test, glaciation, Kyrgyzstan, Tien-Shan