

Interactive comment on “Extreme precipitation and extreme streamflow in the Dongjiang River Basin in southern China” by W. Wang et al.

Anonymous Referee #1

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In the paper daily average precipitation, a number of extreme precipitation indices, average annual discharge, and a number of extreme runoff indices are analysed for changes during a period of about 50 years with the objective of detecting impacts of climate change. Four non-parametric tests, the Mann-Kendall trend test, the Kolmogorov-Smirnov test for identical distributions, the Levene test for variance homogeneity among groups, and the Levene quantile test for shift in the tails, are applied to annual and monthly rainfall indices at 4 stations in the Dongjing River basin, China. Quantile-quantile plots of basin averaged monthly precipitation before and after the end of 1979 are presented as well. The trend test is applied to annual discharge series at six gauging station in the basin. Finally, the power the non-parametric tests is investigated by means of Monte Carlo techniques.

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The annual precipitation series did not show any significant changes (except for one index at one station), while on a monthly basis some indices in some months appeared significant. The distribution of significant values over stations and months, however, did not show a clear pattern. No consistency was found between the quantile-quantile plots and the statistical tests. This motivated a power analysis of the tests, which showed that the record lengths were too short to obtain reliable results. Significant changes were found in the streamflow series but were for obvious reasons ascribed to land use change and reservoir construction in the basin.

It is postulated that the statistical test are relatively new in hydrology. The present reviewer disagrees. Moreover, the application of the tests is a simple exercise and did not bring any new insight, neither methodologically nor on climate change impact on precipitation. The Monte Carlo test revealed the well-known fact that non-parametric tests are not particularly powerful. Altogether the novelty of the paper is very limited.

The paper is well structured and written in relatively nice English, which, however, needs some improvement. The paper provides a lot of references revealing a great effort to be up-to-date on analyses of climate induced changes in precipitation. This is fine but not a substitute for lack of novelty.

The paper is a good contribution to HESS Discussions but should not be moved forward to HESS due its limited scientific novelty.

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