Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/hess-2022-199-RC1, 2022

Comment on hess-2022-199

Anonymous Referee #1

Referee comment on "Regional significance of historical trends and step changes in Australian streamflow" by Gnanathikkam Emmanuel Amirthanathan et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2022-199-RC1, 2022

Summary:

This manuscript uses statistical tests to show the historical trend of the streamflow in Australian, which is intriguing. The results would be useful for the future study to learn how climate change, evapotranspiration, rainfall pattern or other factors affect the streamflow pattern.

Major Comments:

- For several statistical tests, the 0.1 of P value were used. Nowadays, many research use p value of 0.05, could you give us more detail or explanation why 0.1 has been used.
- Line 675, “abrupt shift in streamflows across water year”, it would be better to show how abrupt percentage is based on the region (spatial) and year (year), like in Table.
- How does the long drought or extreme event affect the statistical test, like linear trend? E.g. after the long drought years, will it become increasing trend?
- I recommend have a table or paragraph to show the raw data format like time interval, and explain how to deal with the raw data (take out extreme abnormal data, delete zero value). This is really important input for the following statistical tests.
- Climate change could make extreme events more often, but it could be possible that the average yearly precipitation will not change. In this case, it might have increasing trend for the wet season, decreasing trend for the dry season and no trend for the annual basis. Do you find any station having this similar situation?

Minor Comments:

- Line 39, please add reference to support the statement
- Line156, 23,2846 km separator is wrong. It should be 232,846
- Figure 1, north arrow is missing
- Line 409, how do you convert GL/year to mm/year
- In section 4.2, the authors mention the Figure 3 several times. Did you mean by Figure 5?
- Line 706, where is the Figure 14?