

Interactive comment on “Assessment of probability distributions and minimum storage draft-rate analysis in the equatorial region” by Hasrul Hazman Hasan et al.

Anonymous Referee #2

Referee #2 Comment:

The manuscript focuses on analyzing streamflow in seven stations in the Selangor state (Malaysia). The paper is interesting and presents an acceptable analysis, however, in my opinion there are a few drawbacks in the paper, which can be eliminated by carrying out some major revisions following the list of comments below.

MAJOR PROBLEMS: My main concern refers to the trend analysis. First, why the trend analysis has been performed on 5 8-years sub-periods?

Authors Response:

The trend analysis has been performed on every 8-years sub-period to find any significant trend. When using the 10-years sub-period, the study area does not reflect any significant trend in streamflow and no relative different for 10-years sub-period.

Referee #2 Comment:

Then, are the trends statically significant? Recommendation: specify if the trends are statically significant and the confidence level considered. Finally, the authors applied both the MK and the Sen’s Slope to evaluate the trend sign, but besides the trend sign it could be interesting to detect the trend magnitude. I suggest to apply the Sen’s Slope for the evaluation of the slopes of the trends and the Mann–Kendall test for the assessment of the statistical significance.

Authors Response:

Thank you for your recommendation. We have revised the manuscript in the Table 4 Trend analysis for time series period, page 29.

Referee #2 Comment:

Which is the influence of the dams on the results of this study?

Authors Response:

The dam is only for the application that would benefit from this result. The minimum storage required in this study is referred to the drainage basin stores that consists the surface of significant quantities of water that may regulate the rate at which input feeds through to the output. The storage, which is the maximum cumulative deficiency in any dry season, is obtained from the maximum difference in the ordinate between the mass curve of water supply and demand. The estimation of the storage draft rate in this study will determine the minimum storage of a river to sustain the water supply during low flows and droughts. The mass curve of the monthly low flow rate is used in this analysis to obtain the minimum storage rate of the river.

Referee #2 Comment:

Can the authors better explain the aims of the paper?

Authors Response:

The primary purpose of this study are: (1) to arbitrate the trend analysis of streamflow for 40 years; (2) to determine the best-fitted distribution of probability for each station for low flow frequency analysis; (3) to evaluate the hydrological drought characteristics, including severity, duration and magnitude; (3) to determine the minimum storage draft rates in 7 catchments in Selangor region in Malaysia. This study is essential to understand the concept of low flow, drought characteristics, and the predictive significance of river storage-draft rates in managing

sustainable water catchment. The results are useful for developing measures to maintain flow variability and can be used to develop policies for risk management.

Referee #2 Comment:

Finally, the author simply describe the results present in the study, and not discuss those results in depth. The authors should try to improve the discussion to underline the added value of their work compared to other similar in the same area and in different areas of the world.

Authors Response:

Thank you for your comments. We have revised the manuscript in line 435-480, page 15-16.

Referee #2 Comment:

MINOR COMMENT:

The English grammar, syntax and punctuation should be improved and I recommend professional proofreading by a native speaker.

Authors Response:

Thank you for your comments. We have submitted the last manuscript for the professional proofreading. We have attached the proofreading certificate in the attachment.

Referee #2 Comment:

Add some references for the Mann-Kendall test, for the Sen's slope estimator and for each distribution of Table 2.

Authors Response:

Thank you for your comments. We have revised the manuscript in Table 2, page 28.

Referee #2 Comment:

Some references in the text are missing in the references list: Kannan et al. (2018); Sarailidis et al. (2019b). In the references list the latter is a duplicate of Sarailidis et al. (2019a).

Authors Response:

Thank you for your comments. We have revised the manuscript in line 595, page 19 and line 645, page 21.

Referee #2 Comment:

Figure 1: I think that this figure is not sufficiently informative and it must be greatly improved. Can the authors try to better identify the different sub-basins? Moreover, can the authors show the position of the dams?

Authors Response:

Thank you for your comments. We have revised the manuscript in Figure 1, page 23.

Referee #2 Comment:

Figure 3: please describe what the boxes and the whiskers mean. Which percentiles or interquartile ranges are represented?

Authors Response:

Thank you for your comments. We have revised the manuscript in line 351-356, page 12. The existence of extreme values in the streamflow data may be determined using the Box plot method. The Box plot method is based on creating a so-called Box graph. This graph is the best possibility for geometrical visualisation of the distribution of random variables in some groups. These groups are created ordering the streamflow data between the extreme values, minimum and maximum. Each group has an equal number of data, and in mathematical statistic, this is

called a quartile. The skewness describes the form of distribution of the random variables and measures both direction and degree of asymmetry of the distribution of the random variables.

Attachment:



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16th April 2020

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This document certifies that the manuscript titled "Assessment of probability distributions and minimum storage draft-rate analysis in the equatorial region" was proofread and edited by Proofreading Service UK.

The editor aimed to ensure that the author's intended meaning was not altered during the review.

All of the suggested amendments were tracked with the Microsoft Word "Track Changes" feature. Therefore, the author had the option to reject or accept each change individually.

Kind regards,

Proofreading Service UK