

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC4
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Comment on nhess-2021-176

Anonymous Referee #4

Referee comment on "Hydrological Drought across Peninsular Malaysia: Implication of drought index" by Hasrul Hazman Hasan et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-176-RC4>, 2021

This study aims at investigating the spatial and temporal variations of hydrological drought in Peninsular Malaysia for the period 1978-2018 by Streamflow Drought Index (SDI) using streamflow data recorded at 42 stations. The drought was also characterized at four time scales of 3-, 6-, 9- and 12-month.

1- My main concern is on the novelty of this work, especially when it was submitted to the special issue "Recent advances in drought and water scarcity monitoring, modelling, and forecasting". Hydrological drought was characterized by Streamflow Drought Index (SDI) as developed by Nalbantis & Tsakiris (2009) without any modification. Drought characteristics were identified by the run theory (Yevjevich 1967) and the interpolation was done by the well-known Inverse Distance Weighting (IDW) method.

2- L147-149: " The main advantage of SDI is that it requires fewer data than other indices, such as the Palmer Hydrological Drought Index, which need streamflow and rainfall data. The selection of SDI is because of the availability of streamflow data." Does it mean rainfall data are not available in Peninsular Malaysia? In addition, as mentioned in lines 64-66 of the manuscript "several indices are using only streamflow data, namely, Regional Streamflow Deficiency Index (RSDI), Standardized Streamflow Index (SSFI), Streamflow Drought Index (SDI), Baseflow Index (BFI) and Regional Drought Area Index (RDAI)". Why was the SDI used here?

L107: "Due to the scarcity of research on hydrological drought monitoring using SDI". In Peninsular Malaysia? Because there are several studies using SDI in other parts of the world that were not cited in the paper. Have all the above indices been used before in Peninsular Malaysia?

Minor comments:

L82-85: It implies that the El Nino event in the year 1997-1998 was caused by climate change. If so, a reference is needed. If not, revise.

L157: "For a relatively more detailed drought index, the SDI can be computed based on the monthly streamflow value". Most of the drought indices use monthly or smaller-scale data.

L472: "For tropical regions, it is the most sensitive scale to alterations in streamflow." Isn't it the case everywhere because of the smoothing effect at longer scales?