

Interactive comment on “Identification of spatiotemporal patterns of biophysical droughts in semi-arid region – a case study of the Karkheh river basin in Iran” by B. Kamali et al.

Anonymous Referee #1

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The paper by Kamali et al. discusses the identification of historical drought patterns (including meteorological, hydrological, and agricultural (inclusively biophysical droughts) over the Karkheh River Basin (KRB), Iran. The period of study covers 1981–2004. The authors use the Soil and Water Assessment Tool (SWAT) hydrological model to derive required information such as soil-water content to estimate desired drought indices. The model was calibrated using the runoff records over 1986–2004 and was validated only against runoff records over 1981–1985. I find the subject of the study in the line of aims and scopes of HESS. I however believe that several technical issues exist in the current version of the paper that requires a thorough revision. Therefore, I believe the

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paper does not qualify to be published in HESS, and my recommendation is “a reject out-right” decision. I would encourage the author to critically assess their outcomes before returning to the journal. My main comments are listed in the following:

1. The introduction is very poorly written that it is not well connected to the study region.
2. The model has only been validated against runoff; no storage validations (including soil moisture water storage comparisons and/or total water storage changes) have been performed. This validation is essential since it should be proven that SWAT's storage simulations are realistic before using them in the drought-computation stage.
3. The study ends in 2004, which means the last 11 years have not been analyzed. Studying this period is particularly crucial considering the significant drought events after 2005 as reported in several remote sensing- water storage monitoring studies (e.g., look at the last three years publications in remote sensing of environment and water resources research).
4. There are freely available drought indices computed from remote sensing and re-analysis products. A critical comparison between the output of this study and some of them makes the study stronger.

————— End of Review

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