Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2018-459-RC2, 2018

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Distributive rainfall/runoff modelling to determine runoff to baseflow proportioning and its impact on the determination of the ecological reserve" *by* Andrew Watson et al.

D.S. Stampoulis (Referee)

dstampou@asu.edu

Received and published: 30 October 2018

Reviewer: Dimitrios Stampoulis

Recommendation- Moderate revision

General Comments- In this paper the authors investigate river flow dynamics in order to enable a more efficient implementation of protection strategies and management for ecosystems that are sensitive to streamflow fluctuations. Specifically, streamflow variability and aquifer baseflow contributions in the Verlorenvlei lake system were as-

Printer-friendly version

Discussion paper

sessed using the J2000 rainfall/runoff model, the groundwater components of which were distributed to improve baseflow and runoff proportioning for the aforementioned sub-catchment.

Overall, the work presented is significant, and the study is a rather considerable addition to the relative literature. The topic is within the scope of HESS, as it provides useful hydrological information that can potentially contribute towards achieving a more sustainable management of vulnerable ecosystems. The manuscript is generally very well-written. The methodological design is for the most part clear, however not entirely sound, and the authors' conclusions are well supported by their findings. Below, I outline a few general concerns, followed by a range of specific comments, which prevent me from recommending this manuscript for publication in its current form. I believe that the authors will be able to adequately address my comments and when that is done, this paper should be acceptable for publication.

Specific Comments-

1) The manuscript is not easy to read, due to the lack of a comprehensive structure that would help the reader easily understand the science and methodology. Please consider providing a more reader-friendly version of this paper, perhaps by changing the outline into a more compact one. 2) The authors needs to provide more information about the study area. Climatology-related information could be supported by a map or graph (time series). More detailed description about the regional hydrology is required. 3) Most of the references in the introduction are outdated. The authors need to make sure that they have conducted a thorough literature review. 4) The model is not sufficiently described. Please elaborate. 5) Are water abstractions taken into account by the model? It seems that this is not the case, and the authors need to clearly state this fact. 6) The results section is hard to read and follow; lack of supporting tables and graphs render reading a tedious task. The authors seem to have a lot of interesting results, which however, without a proper visualization have little meaning or use. Please consider using summarizing tables or time series or other graphs. 7)

Comparison between models is one thing, however one should not validate one model using the output of another. Please consider using an alternative data set or replace the word “validated” in Line 372 with “compared with”. 8) The modeling approach is rather difficult to be transferred to other catchments as is, because of the different level of complexities in the geomorphological structure as well as the unique climatologies that characterize each specific region.

Technical Corrections-

1) Line 191 replace “was” with “were” 2) Lines 272-273 six or seven AWS’s? 3) Line 361 Pbias 4) Line 497 In data-scarce

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-459, 2018.

Printer-friendly version

Discussion paper