

## ***Interactive comment on “Understanding runoff processes in a semi-arid environment through isotope and hydrochemical hydrograph separations” by V. V. Camacho et al.***

### **Anonymous Referee #1**

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The paper entitled “Understanding runoff processes in a semi-arid environment through isotope and hydrochemical hydrograph separations” by V.V. Camacho et al., represents an interesting work to understand the different processes governing runoff response in a South African catchment. It summarizes the results of the application of isotopes and hydrochemistry to 4 flood events to separate the hydrographs and investigate the main surface and groundwater sources. However, my feeling is that the paper is not adequate in its actual form to be published in HESS due that authors have tried to explain very complex hydrological processes with data gathered for just 4 floods, a fact that I consider totally insufficient. I also consider that the format, structure and

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redaction of the paper is more adequate for a technical report, or a final report of a research project rather than for a scientific piece of work.

The introduction is quite repetitive (see lines 19-29 of page 978 and 1-3 pag 980) and there are some paragraphs useless (see lines 3-13 page 980); in case you include them, they should be moved to the study area.

Results should be explained deeply (probably they are not as they are not very remarkable). For example, regarding the section 4.4, what about the temporal variability of the hydrochemical variability? Why do they increase in time (from the 1st to the last flood)? Concerning section 4.6, I consider totally necessary a more detailed and accurate study of the differences between "old water" and "groundwater"; by the way, what do you consider as "old water"?. Concerning section 4.7, I consider that lines 12-22 of page 990 are irrelevant, they do not provide any interesting result.

As the results, discussion should be improved a lot. It is mainly based on describing Figure 10 and Table 6 which to my understanding add nothing to the paper, they are divulgative rather than scientific; if not, where are the final values (at least approximations, order of magnitudes)? Moreover, discussion seems be a compilation of sentences of papers already published in similar locations (see lines 21-26 of page 991 and 1-10 of page 992) rather than discussing the actual results of the paper, which are quite obvious by the way (see lines 1-2 of page 993).

I am aware the work that you have already done and the difficulty of gathering data in Africa, but I consider that to publish this it is totally necessary to generate more results, give them more relevance and significance and especially, discuss them accordingly to the importance of the journal. However, I encourage you to do it and submit again the paper to HESS which, I guess, is the correct journal to publish these results.

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**HESSD**

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