

## ***Interactive comment on “How to determine the effective discharge and its return period in a semi-arid basin? The case of the Wadi Sebdou, Algeria (1973–2004)” by Abdesselam Megnounif and Sylvain Ouillon***

**Anonymous Referee #2**

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I think this is an interesting manuscript potentially reporting on an interesting data set and a thorough analysis. However, in my opinion the authors fail to make a convincing case for while this paper is a significant and original contribution to the scientific literature. The introduction is mostly a methodological introduction. There is some text in section 3.3 which does try to describe the scientific context of this particular study which could perhaps be used as a starting point for a more focused introduction, reviewing the literature and identifying knowledge gaps.

Also, the manuscript is quite long as there is a lot of fundamental methodology in-

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cluded. I think it would be more readable if the focus was more on the original aspects of the analysis with less reference to standard methods used.

The conclusion is very long. I would suggest a more concise set of conclusions would help to communicate the potential importance of the paper to readers.

In summary: this is potentially an interesting paper, but there is much that can be done in order to improve the quality of the presentation.

Other comments

Section 3: Discharge is  $Q$ , concentration is  $C$ , and the product of the two is  $Qs$ . I find that notation a little confusing. Especially as a few lines down sediment load is denoted  $\dot{A}D\dot{Y}$ .

Page 7, line 16: what is a locally made abacus and how does it work?

Page 8, line 14: A subdivision of what exactly?

Page 9, line 8: what flow frequencies are being referred to? Annual, daily, instantaneous, all of them?

Page 9, line 9: What is meant by ‘irregular flow’

Page 9 line 10: No results for the exponential distribution are included in this study?

Section 3.7: I don’t think this section is necessary

Page 11, line 8-11: I don’t understand this sentence. What is  $QT99$ , and what is meant by ‘1% of the annual time’? Is this based on analysis of annual maximum data, or all daily flow data? Also, there is a reference to Fig.2 but I have no idea from the text what I am looking at in that Figure. More explanation is required here. Finally, this section used  $QY$  for sediment (check units in line 16, page 11) rather than  $QS$  as on page 3.

Page 12, line 3: From the description in the text I am not sure what I am looking at in Figure 3. Please try to be more helpful to the reader.

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Section 4.2: This headline is not very helpful in describing what is the content of this section.

Page 17, line 8: Qs, but should that be QY?

Figures 7 and 8: The layout of these two figures is different and it would be better if they had a more uniform look. For example, remove gridlines from Figure 8, add y-axis label on Figure 7.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-189>, 2018.