

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

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The paper is interesting and well within the scope of the journal, nevertheless it needs to be reinforced with reference to several points, mainly regarding paper clarity and organization. The title should more informative and let the reader know that it deals with sediment transport and hydrological implications. The introduction should be clearer with respect to the paper's objectives and novelty. While it is clearly stated that three methods for individuation of discharge classes are compared, it is not evident how many and which methods are compared with reference to the evaluation of effective discharge, and other related methods including evaluation of return times. While the

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paper is strongly focused on issue related to the representativeness of available measures (discharge and concentrations), only few explanations are provided about physical processes related to sediment transport. The eventual presence of hysteresis which is at the core of many works on the topic is here barely mentioned. A figure representing the basin and its position is missing and basin description is almost entirely addressed to other papers referenced. Also, the organization of section 3 Methodology, does not help the reader in understanding what the authors are mainly presenting and comparing. Making an exception for subsections 3.2 about class intervals, all other parameters are presented without any specific order of hierarchy. Subsection 3.3 about hydrometric measurements and pre-processing could be probably moved in section 2. The evaluation of the Half-load discharge does not actually add any knowledge insight apart for a weak literature comparison. The same applies to the subsection 3.7 Recurrence interval which is a mere evaluation of a certain discharge compared to the distribution of maximum and mean discharge. Figure 3, upper portion, should be placed in a different scale, data are almost invisible. Last sentence of page 17 is not clear, should be rephrased. The striking difference between analytical and statistical approaches is simply distressing and does not find a satisfactory justification. Figure 9c and 9d, are hard to understand. Maybe that placing indications of number (1) to (6) on the time series (i.e. in figures 9a and 9b) may help. The discussion section is quite long and not always add useful information. Some parts could be shortened and moved to other subsections, for the sake of paper structure and readability. Other parts may be even canceled like lines 1-6 at page 25 or lines 1-10 page 26 or the entire 5.5 subsection.

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