

***Interactive comment on “How extreme is extreme?  
An assessment of daily rainfall distribution tails”  
by S. M. Papalexiou et al.***

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Received and published: 1 June 2012

This is a paper that every reviewer would like to receive. It is well written, simple to read, concise, and describe an impressive case study.

So, I recommend the publication of this manuscript.

However, I have some suggestions to improve it.

Other to some minor corrections listed at the end of this document, my feeling is that the data description and the conclusions could be more effective and better described.

1) The data set description should have more details, and a table with the summary

C1935

of time series properties could be useful. Time series length is important as well as the percentage of missing data. The geographical location also is important and from figure 2 I do not think it is possible to verify some curiosities (i.e. time series density per continent or type of rainfall regime, etc.) Did authors fill the missing values? 20% could be an high percentage if the extreme values are included in it.

2) The same comment arises reading the last part of the paper. There are two sentences that surely can be better supported, like: 2a) “we believe that even in the cases where the gamma tail performed well, the true underlying distribution tail may be heavier” While in Figure 1 and 3 authors guide the reader to explain in detail and effectively the adopted procedure, at the end of the paper they were too concise to explain this point that is interesting other than important.

2b) “The map of Fig. 7.....seem follow a random variation” The same comment for this point. From the Figure 7 is not possible to make any conclusions neither the authors conclusion. I would suggest to show only two maps with “heavy tail” and “light tail” points, and give some information on the geographical distribution. Authors could not see a specific conclusion but the reader could be interested on it.

Minor comments

Abstract

line 11. I would remove “of thousands of records”. This is specified in the line 12

line 15 “distributions”

Introduction

line 20. the sentence “what can be considered “extreme” rainfall” could be improved.

page 5759 line 1-3. this period could be improved.

page 5759 line 28-29 the reference El-Adlouni.....is not included in the reference list.

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page 5760 line 12 Milke probably is misspelled.

I would spend some lines to clearly describe the aim of the paper and the summary of it, and, eventually, cite previous similar analysis with so huge database.

#### Methods

in general authors could be more appealing the Section titles, but, in any case, they should change the 3.1 and 3.2 titles.

page 5762 line 5-12 To choose the threshold value there are some approaches suggested in literature that probably could be mentioned. Moreover, only Cunanne (1973) followed the same approach or there is also some more recent?

page 5762 line 15-20 Would be important to verify the sample independence? probably not but I should mention it.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 5757, 2012.