

Interactive comment on “Bayesian objective classification of extreme UK daily rainfall for flood risk applications” by M. A. Little et al.

Anonymous Referee #3

Received and published: 23 December 2008

General comments

The paper is presented by the authors is an interesting contribution to, but I would suggest a major revision before it could be considered in HESS. I fully agree with earlier reviewers in terms of the statistical methods applied. The paper is poorly balanced, and the impacts of the results are not fully investigated. I would suggest a major revision, alternatively a separation of the different classification methods into two papers. I therefore suggest a major revision, adding on a substantial part to the discussion part and then to resubmit the paper to new reviewers.

Specific comments.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



The paper sets out to do both a subjective and objective classification of rainfall patterns over UK. The subjective classification is very scarcely described. I would suggest that the authors either develop that sections more, or lift it out of the paper all together and submit it as a study in its own. Also, I miss the practical implications if the classification scheme. I would suggest a case study on how exactly the classification is to be used in.

The language in the article is generally good, but it could be more concise and to the point. Sometimes the authors go into lengthy explanations about quite trivial matters, just to in the next section go very quickly through some more technical parts of the paper.

1. Introduction.

The authors do the link between extreme rainfall and floodings, and I would agree to that extent that it can cause flooding, but does not have to. Also, flooding could occur in less extreme rainfall events, for example after a long-time of intermediate rainfall. The authors do a literature review of existing methods/studies and draws on the work of Bardossy (1994). However, that reference is 14 years old, and he and his colleagues have done a lot of research regarding the weather patterns classification, and I would suggest that the authors updated their reference list.

2. Data The authors later states that the extreme rainfall is considered as above 63.5 mm or 50 mm (please refrain from using inches in an international journal), and I wonder how this number was derived? However, that reference is 14 years old, and he and his colleagues have done a lot of research regarding the weather patterns classification, and I would suggest that the authors updated their reference list.

3. Methods

3.1 I agree with earlier reviewers that the first two paragraphs of section 3.1 should be deleted. The next two sections, describing the rainfall characteristics in UK can be

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



shortened and I would like to see some references to earlier work in describing the precipitation pattern over UK.

3.2 This section is interesting, but it is not clear to me why five patterns were selected. I would like this section to be more explained

3.3 In the listing of existing objective classification schemes there has been substantial work done in recent years, and again I would suggest a more thorough background on this.

On this note, however, I am not really sure how the weather classification work relates to this article? The authors mention Lamb's weather types and Grosswetterlagen as subjective classifications. That is true, but they classify circulation patterns rather than precipitation. A certain pattern might have characteristic precipitation pattern, but it is not the same thing as a clustering of rainfall events.

The section on PCA can be omitted from the paper, since it is a well-known and often used technique

Also, how large does the event have to be in real resolution to be considered an extreme event? It is enough for 1 station within the very coarse scale of 1 degree? Surely, the number of stations over a threshold must be interesting in terms of extreme events. Why do you not consider this? If you want to look at extreme events there could be complex areal correlations that are not considered in this study.

Why not use an equal-size grid such as the BNG instead of lat-long grid points?

4. Results and discussion This whole section is very much results and very little discussion. The paper is misbalanced, and a lot more need to go into the discussion part of the paper. What are the big differences between the classifications? How and when should they be used? Can they be verified using other meteorological variables?

I would suggest figures 1-5 to be put in one figure. Also, what is the reason for classifying (a) as east coast and (e) as east coast? Table 2 suggests otherwise.

S2238

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



5. Summary and conclusion.

This section is good, but much of it should go into chapter 4 since it is discussions. Try to keep the conclusion part very short and to the point. Here the authors explain a bit how the classifications should be used, but it is still not clear to me. How would the mapping be used in planning? Maybe an example would be useful. Also, what depicts a “strong association” between the objective and subjective classification? A statistical test such as a contingency test could tell whether the two classifications are significantly different from each other or not.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 3033, 2008.

HESSD

5, S2236–S2239, 2008

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

S2239

