Hydrology and Earth System Sciences Discussions

Interactive comment on "A robust and parsimonious regional disaggregation method for deriving hourly rainfall intensities for the UK" by D. Maréchal and I. P. Holman

Anonymous Referee #1

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GENERAL COMMENTS

The manuscript addresses an important topic in urban hydrology. It has partially applied the technique developed by Boughton (2000, 2005) to disaggregate the daily rainfall to hourly rainfall. It does not produce a time series which is possible using the Boughton's technique. Without this, the usefulness of the disaggregation scheme is questionable. The manuscript possibly should have given more credit to the work of Boughton and his conclusions about the highest hourly rainfall in a day. For the method described to be robust and regional, more effort is required to validate the performance. A more extensive description of what the rainfalls provided by the technique will be used for and why/how the threshold of 15 mm was selected would be helpful. Boughton selected the 15 mm threshold because of the characteristics of the daily

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rainfall generation model and the intended application was flood estimation.

SPECIFIC COMMENTS

1. Authors have not tested whether the "h1" values are homogeneous within a climate zone.

2. h1 defined by equation (2) will be less than or equal to 1. I do not understand how a value greater than one is obtained for the mean value of h1 (Table 2).

3. What is the purpose of defining Hk in equation (3)? It is not used anywhere else in the manuscript.

4. Line 17 in page 1052 refers to rainfall amount, but the symbols are defined as rainfall intensities.

5. rk is dimensionless but it is referred to as rainfall depth in line 1, page 1053.

6. What is R1 in figure 3? Is it "h1"?

7. The relative intensity is not mentioned anywhere in the text but appears in the figure captions.

REFERENCES

Boughton, W., 2000. A model for disaggregating daily to hourly rainfalls for design flood estimation. Tech. Report 00/15, Cooperative Research Centre for Catchment Hydrology, Monash University, Melbourne.

Boughton, W., 2005. Disaggregation of point daily rainfall to hourly values for design flood estimation. In: Proceedings 29th Hydrology & Water Resources Symposium, Institution of Engineers, Australia, Canberra (available on CD).

Srikanthan, R., Boughton. W. and Frost A., 2004. Evaluation of a daily-hourly rainfall disaggregation model for Australia. International Conference on sustainable water resources management in the changing environment of the monsoon region. 17 - 19

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