

## ***Interactive comment on “Regionalising rainfall–runoff modelling for predicting daily runoff in continental Australia” by H. Li and Y. Zhang***

### **Anonymous Referee #2**

Received and published: 10 November 2016

#### I. General comments

The overall impression of this paper is that: not good structured, not clear on the purpose and novelty of this study, no sufficient support for the conclusion and poor language (not interesting to read and the text very hard to follow).

#### II. Specific comments

Page 1, abstract needs to be restructured: recapitulating the intention of the study, the novelty of the analysis and how it could be useful; key points about how these could be supported by the main findings. Page 2, introduction needs to be fulfilled with deep thinking on status quo, and what this study will bring or add on; with more insightful discussions on literature research. Page 4, line 1 and 2, why these 3 examples are listed here? Any particular reasons to select these from the long list in Table 1? Add

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more discussions. Page 4, line 5, "may produce different conclusions between studies", here needs more details. Page 4, line 8, what "descriptors"? please elaborate. Page 4, line 10, not enough support to come to this conclusion. Page 4, line 12, it seems not true, there are many other studies, e.g. Oudin et al. 2008 Page 4, line 15-28, not sufficient argument why the authors chose these four methods, two models, and what's the value to compare the methods, models, and why it's applied to those catchments in Australia? Actually after reading the whole paper, still no clear idea on what's the purpose of this study and what's the benefit?

Page 5 and 6, Data section needs more details and to be addressed in a more meaningful way and in a logic structure. Just list a few example here, more can be found in text and need to be revised. Page 5, line 17, what's the meaning of "revised" rainfall-runoff models? Page 5, line 20, please add more details for the daily data of 605 catchments "collated by zhang et al. 2013" Page 5, line 21, please state why "data from 1975 to 2012 are used in this study". Page 5, line 26, & page6, any reference or source for "MODIS", "International Geosphere-Biosphere Programme"? There are many other similar things need to quote reference properly. Page 6, line 1-10, it's not clearly stated where and how data was obtained, produced, or processed. Please either cite original data sources, or data processing method, or quote reference properly, and in a meaningful, easy-understandable way.

Section 3-6, Poor language, poor structure, lack of detailed description, lack of meaningful discussion, no adequate justification through all these sections. Considerable modification will be required, and suggest having someone review the article before submission.

Why these objective functions were selected? How to do the model calibration and evaluation? What are the conditions to relate donor and ungauged catchments? Why select these five properties to define catchment similarity? Please embed more discussions and justifications in these sections, to lead to meaningful conclusion.

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### III. Technical comments

All the equations should be in a consistent format, and also for the paragraph after the equation which explains all the parameters in equation.

Many sections are too short to be a section, e.g. 3.5, 3.6, some has just one sentence.

In the 1st paragraph of section 4, all figures are mentioned together, this is not a good way to state the results. Please revise and prefer to talk about them one by one, with discussion.

Given the comments above, I won't recommend publication of this paper in current form, and suggest this paper will need major revisions for a future submission when applicable. I do hope these comments could be seen as constructive criticisms to help improve the overall paper and usefulness of the analysis.

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