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Geoscientific Model Development Discussions
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Interactive comment on "The Landlab OverlandFlow component: a Python library for computing shallow-water flow across watersheds" *by* Jordan M. Adams et al.

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I enjoyed reading the article. It reproduced a 2D inertial based flow routing algorithm within an earth surface dynamics modelling package. I made quite a few comments/inquires in the document attached but the major comments are summarized below. I didn't comment on the sediment transport bits very much as I don't have the expertise in that area.

1. The writing needs to be improved. It is unclear at the first read in many places. A lot of polish is needed to make the texts more concise and remove the unnecessary bits. This needs quite a bit of work in my opinion.

Printer-friendly version

Discussion paper

2. Structure can be improved to follow the typical/classic way of journal paper writing. In particular, background sections within the two test cases should be incorporated into the introduction so readers can get a sense of the overall context of the work you undertook.

3. The design of the tests is rather unstructured and in many ways rather random, often un- or not justified properly. For example, why 5 mm/h storm - is this based on real events? Why two catchments with different shapes and how the relief is designed? A few sentences here and there are needed to justify the choice of rainfall intensity and design of tests.

4. Sensitivity to resolution and roughness needs to be investigated. Whether changing mesh resolution will change the hydrograph shape? What are the impacts of roughness? I suggest simulations to be designed and a graph or two to be included for test case 1 where the authors demonstrate the model's response to these two parameters.

5. It is rather disappointing that test 1 is not chosen in a site where real rainfall records and flow gauging records are available. Surely there are plenty of such datasets. As such the model is not validated in a robust way although patterns of hydrographs at the outlet look reasonable. A comment on this somewhere would be useful. Also perhaps highlight this for future studies?

Please also note the supplement to this comment:
http://www.geosci-model-dev-discuss.net/gmd-2016-277/gmd-2016-277-RC1-supplement.pdf

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