



Interactive comment on “A dynamic continental runoff routing model applied to the last Northern Hemisphere deglaciation” by H. Goelzer et al.

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This is a nice paper looking at a key issue - modeling the routing of meltwater. It is an unusually clearly written paper that it is in essence a clear presentation of the modelling approach and, as such, is highly relevant for CMD. It should be published after the authors have addressed the following minor comments:

1. A slightly more detailed discussion of the routing ideas put forward by Clark et al and Broeker et al would be very useful to give more motivation for this work. Interestingly, a self-consistent routing/GIA model such as this could actually help constrain ice sheet reconstructions more fully if properly integrated with data.
2. Page 5 line 2 - I suggest that 'use' rather than 'utilize' is less verbose

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3. There is some similarity between this problem and other topography-related problems: sills in the ocean, mountain peak altitude for atmospheric models. Can the authors compare their solution to these problems with parallel problems for other cases?
4. Page 10, line 14: are these really the most accurate/appropriate resources? Are there not more 'scientific' resources in the hydrography literature?
5. Page 10, lines 15-31: this raises some issues for me. As I understand it, all transport is only from one grid box to the lowest neighbouring grid box. These complexities indicate that the transport could be proportionally distributed to all neighbouring grid boxes and not just to the lowest one. Or am I missing something?
6. Page 10, lines 15-31: is the ETOPO5 map really the best resource for this application? Inevitable smoothing is a very serious issue when this problem requires clear delineation of very narrow minima of the scale of rivers (<1km). Certainly, much better resolution is available from region-specific cartography. I think that a careful discussion of why relatively low resolution mapping is being used and what could be done to improve this is important.
7. Conclusions/further work - What data could the model be compared to/improved against?

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