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Interactive comment on “Improved modelling of Siberian river flow through the use of an alternative frozen soil hydrology scheme in a land surface model” by D. L. Finney et al.

D. L. Finney et al.

emb@ceh.ac.uk

Received and published: 29 March 2012

We, the authors of this paper were delighted to receive such positive comments about this paper. We have made a few alterations to the text to address some of the comments. In particular we have added an appendix which outlines the representation of soil freezing in the original JULES model as this was asked for by both reviewers. Both reviewers asked us to explain the flow-velocity used in TRIP which we have added to the text. In addition, in response to the first reviewer we have updated the text to refer to Figure 2, added in the complete set of variables included in the driving data and changed the units of the figures 7 and 8. More particularly, we have not added a plot

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to show how JULES models the snow depth and SWE as we felt that would complicate the discussion. Instead we have cited someone else's work that covers exactly this. The second reviewer required us to be more explicit about how the FPA impact on the soil hydraulics was calculated, so we have added some text to explain that. We have also altered the titles of the sections to comply with more standard or traditional titles, increased the clarity of the different runs (CTRL, TOP and NEW) throughout the manuscript, included the grammatical suggestions the reviewer has suggested. We liked the suggestion of adding a reference to the Muskett and Romanovsky (2009) paper and have added some text and a citation in the manuscript. The reviewer was right to spot a mistake in Figure 2. It had been plotted the wrong way round and the legend has now been corrected. A new manuscript has been prepared along these lines.

Interactive comment on The Cryosphere Discuss., 6, 309, 2012.

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