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The Cryosphere Discussions

Interactive comment on "A regional climate model hindcast for Siberia – assessing the added value of snow water equivalent using ESA GlobSnow and reanalyses" *by* K. Klehmet et al.

Anonymous Referee #2

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General comments

The manuscript has an interesting and relevant topic – a reanalysis-driven regional climate model hindcast for snow in Siberia - but I think it is not ready for being published. I have made some brief suggestions and comments of how to revise it but the list is far from complete. A future version of the paper, with a better structure and some research issues considered, could make a valuable contribution.

The title of the ms is not very clear. Some suggestions: "A reanalysis-driven regional climate model hindcast for snow water equivalent in Siberia: comparisons to the forcing data and ESA GlobSnow" or simply "A reanalysis-driven regional climate model

hindcast for snow in Siberia".

I'm not a modeller myself but I think it should be more or less clear without further studies that then NCEP-R1 results for variations in snow are so poor (Figs. 3-5), downscaling by any regional climate model with some better description of snow processes should give more realistic results. Why not to take forcing data from one of the more recent reanalyses? That might give a better understanding of the added value of the dynamical downscaling exercise.

The structure of the text should be improved. First, please divide the sections into paragraphs. Many parts of the ms should be rewritten and shorten.

Some specific comments

1. Page 4638, line 2: It is good to have Appendix A; despite that please spell out CCLM (only given on page 4642).

2. Section 3: Please avoid mixing results and discussion.

3. Page 4651 and Fig. 2: Snow cover frequency of 80-100% (in grey) covers most of the region. I suggest using (and discussing) a different scale, e.g., <40, 40-60, 60-80, 80-90, >90. Spatial correlations could also be informative.

4. Fig. 3b. Correlation with GlobSnow, I guess? Figs. 3a and 3c: on paper it is difficult to distinguish between the blue for CCLM and the black curve for GlobSnow. Please use e.g. dashed red line for CCLM (as NCEP-R1 is in red).

5. The conclusions were helpful.

Interactive comment on The Cryosphere Discuss., 6, 4637, 2012.