

Interactive comment on “The increasing snow cover in the Amur River Basin from MODIS observations during 2000–2014” by X. Wang et al.

Anonymous Referee #1

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This is an interesting analysis for the specific area analyzed in China, and certainly important for the regional hydrological applications (water resource management).

Mainly, this paper has 3 objectives:

- 1) To validate the MODIS daily cloud-free snow cover product developed by Wang et al (2014): interesting for the region analyzed, but relative limited contribution for the scientific knowledge (regional validation of an already published study).
- 2) To apply this cloud-free snow cover product to study the spatiotemporal variations of the snow cover extent in the entire Amur River Basin. Even if this is a very large area, this remains a particular region (comparing to global snow cover analysis), and this analysis is over a relatively short time period (14 years). The observed trend analyzed against temperature variation over such a short period does not really bring

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new insights in the snow process evolution knowledge. The observed variations are very specific to the interannual regional variations of the meteorology. I do not contest the results (link between temperature and snow cover), but, again, the contribution to new science knowledge on the climate-snow interactions is weak.

3) To evaluate the influence of forest on snow cover mapping and variations. This is the most interesting part for a general contribution to the snow cover processes. But, the results obtained in this study are in fact already known: weaker agreement in snow cover estimates at forested stations compared to non-forested stations (known problem, but any improvement method is proposed here); and snow cover duration shorter in forest areas compared to open areas (due to lower accumulation in forest area, even compensated by the canopy shadowing effects). This last problem is also known, even if the forest snow evolution is a very complex process, including several aspects that induce opposite impacts (trapping effects, sublimation of intercepted snow, decrease shortwave radiation, increase long wave radiation..). This paper does not try to investigate these different processes (this is not the objectif of this paper).

Thus, I suggest to the author to publish this paper in a regional application-oriented journal, because this study is interesting for the particular analyzed region, done with adequate methodology and is well presented (but maybe too long).

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