

Reply to Anonymous Referee #1

Thanks a lot for your kind comments and suggestions. The following is our reply,

1. The authors use R^2 as a symbol for the Nash-Sutcliffe criterion. R^2 is generally used for the coefficient of determination and this is confusing.

Answer: For avoiding this confusing, we use 'NSE' instead of ' R^2 ', as the abbreviation of 'Nash and Sutcliffe efficiency statistic index', in the revised manuscript.

2. P1391, l1. What do the authors mean with snow duration?

Answer: Energy input (E) for snowmelt can be regarded as a temporal variable. If the snow existence or not at a special grid can be known, the theoretical snowmelt can be computed accordingly. However, snow existence cannot be known directly if there is clouds obscuration. The concept of snow duration was used for illustrating the importance of snow existence discrimination. We would revise this part so that it is described clearer.

3. SCA and SCF are sometimes mixed up for example on p3193, l12-21

Answer: Thanks. We will correct it.

4. Paragraph 2.2 is unnecessarily complex. It only states that on cloudy days SCF is linearly interpolated based on the nearest non-cloudy days. Also was a threshold used if the number of subsequent cloudy days exceeded a certain period?

Answer: We will modify this part so that it is more briefly. There is no a threshold was used for the interpolation. In Part 4.1, we counted the cloudy durations over the whole 2008 snow season. It is found that the maximum cloudy duration was 15 days, accounting for only 0.8%, and the duration less than 4 days accounted for 91.0%. It means that only in a few cases the SCF were interpolated incorrectly.

5. p3195, l5-10. the authors state that runoff is only released if the temperature of the snow pack is raised to the melting point and the snow pack is saturated. It is however not clear how this is taken into account in their modeling approach.

Answer: We will add a formulation and detailed description about how the runoff was computed when the snowpack reached its melting point.

6. p3195, l22. The values of 20 cm for M_{ini} and 0.95 for C_s should be justified.

Answer: The distribution of snow depth was measured in a few experimental regions in 2008 snow season. We noticed that land surface can be covered fully by a snowpack which average depth is about 20cm in these regions. 0.95 is an empirical value. That is why the 2 values were used. We will add more description about it.

7. The results and discussion section is very limited and this could be extended to make the paper even more interesting.

Answer: Thanks for your suggestion! We will extend this part with more discussion.

8. Minor remarks: p3190, l18. Do not use "difficult"; p3190, l25. Remove "thus"; p3191, l17-20.

Rephrase the paragraph; p3192, l9-13. Rephrase the paragraph

Answer: Yes, we will revise the manuscript as your suggestion.