

Response to Associate Editor from 6/9/23

Dear Dr. Dumont:

Thank you for editing our manuscript. I appreciate your time and critiques.

Your comments are in blue, our responses are in black, and text to be included in our revision is in red.

Dear Authors,

Once again, thanks a lot for accounting for the comments from the editor and the referees and for changing the title.

I feel that the paper is now ready for publication.

There is one technical correction which is required by the referee :

"The authors have satisfactorily addressed my concerns. The new title reflects the content of the study. Only Equation 1 remains inconsistent since the result of the & operator should be a boolean, not a SWE value.

We have adjusted equation 1 as

Pixels with the same snow cover duration are identified by the logical vector t as

$$t = (SWE_{GLDAS,\Delta t_1} > 0, fsca_{\Delta t_1} > 0) \wedge (SWE_{GLDAS,\Delta t_2} = 0, fsca_{\Delta t_2} = 0) \quad (1)$$
$$SWE^*_{GLDAS} = SWE_{GLDAS,t}$$

In addition it is not clear how Δt_1 and Δt_2 are defined.

We have added (days) on l 166

"...indicate different time periods (days)."

Note that the \wedge symbol (instead of &) is used below for the same operation."

Can you take this into account ?

The \wedge has been changed to an & in Eq 3

Other changes:

The data availability section has been updated , as the FTP links have been replaced with repositories with DOIs.

References were corrected to add DOIs and fix other errors

L 320 was changed to match the new title which is no longer a yes/no question.

In summary, the answer to the question posed by the title of this study is that basin-wide SWE is marginally more accurate with finer spatial resolution.