Dear Dr. Essery

Thank you for your comments. Based on the feedback, we have made several changes and improvements to the manuscript. Below we have provided a response to each of the comments provided. The reviewer's original comments are in black and our responses are in red.

178
State that UA is at 4 km spatial resolution

We have revised this sentence in lines 177-178 on page 6 as:
"(2) daily gridded estimates of snow depth and SWE developed by University of Arizona (UA; Zeng et al., 2018) available at 4 km spatial resolution,"

204
The Sturm et al. (1995) classification includes an Alpine class that does not appear in Figure 1c. The updated Liston and Sturm (2014) classification is unpublished and inaccessible.

We agree it's confusing and have removed 'Strum et al. (1995)' and revised this sentence as follows:
"In this analysis we use a snow classification at a higher (10 km) resolution proposed by Liston and Sturm (2014, unpublished), which analyzes the relationships among textural and stratigraphic characteristics of snow layers, climate variables (e.g., air temperature, precipitation, and wind speed), and vegetation to globally categorize terrestrial snow into seven classes: Tundra, Taiga, Maritime, Ephemeral, Prairie, Warm forest, and Ice."

210
MODIS-IGBP has 17 land cover classes

Thanks for correction. It's been corrected.

240
Delete ", as we will show in Section 3.2.2" (information repeated in the next sentence).

It was deleted.

291
"across the forcing datasets when driving a common LSM"

Corrected.

380
"change in total water storage from GRACE data"

Corrected.