

We thank all anonymous reviewers and the editor for their time and effort and the suggestions. The original comments of the reviewers are in blue. Our replies are in black.

Anonymous Referee #1:

I only noted one technical detail that should be corrected before publication: the acronym for the Nash-Sutcliffe coefficient is sometimes written "NSC" (e.g., line 214), sometimes "NSE" (e.g., line 247 and in Table 2). Please stick to one acronym throughout the manuscript.

>>> corrected to NSE throughout the text

Anonymous Referee #2

On line 122 it is said that SNOWPACK does not use the precipitation data and on line 130 it is said that "A threshold of 50 % in relative humidity was set for all stations for rainfall/ snowfall discrimination". Does that mean that SNOWPAK sees rain or snowfall when the relative humidity is over 50 %? I am confused. How does SNOWPACK deal with precipitation coming from the observation and the bias adjusted RCM data. Could the author clarify this?

>>> we write in line 122 that we do not use the original measured precipitation data, but correct it for undercatch, before using it in SNOWPACK. The undercatch corrected precipitation data is then used as input for SNOWPACK. For bias adjustment we also used the undercatch corrected data as reference dataset.

In line 122 we write:

As wind induced gauge undercatch underestimates precipitation, especially for mixed-, and solid precipitation, we do not use the original measured precipitation data to run the model. As described in Schmucki et al. (2014) precipitation was undercatch-corrected by applying a method developed by Hamon (1973), using a function of wind speed and temperature.

Editorial comments

Line 35 (and elsewhere in the manuscript): You may consider replacing "man-made".

>>> we replaced it with "anthropogenic"

Lines 74-78: The way the hypotheses and research questions are stated is a bit unusual and you never refer to the abbreviations (HI, etc) you introduce. You may as well just state: We hypothesize that ICV is a major ... and IAV will change. Hence, we address the research questions: What are the uncertainties ... and how does...

>>> we changed it accordingly

We state the following hypotheses and aim at answering two research questions: First, ICV is a major source of uncertainty in trends of future Alpine snow depth. Our research question is: what are the uncertainties in future trends in Alpine snow depth attributed to ICV? Second, IAV of snow depth will change with anthropogenic climate forcing. Hence, our research question is: how does IAV of snow depth change with anthropogenic climate forcing?

Line 114: I am not sure whether you were actually considering snow transport by wind in your SNOWPACK simulation. If yes, I suggest you change “wind transportation” into “snow transport by wind”. If no, I suggest you delete “wind transportation”.

>>> replaced it with “*snow transport by wind*”

Line 248 (and elsewhere in the manuscript): My preference is elevation rather than altitude. “Altitude is for things that fly” I was once taught by a reviewer.

>>> altitude was replaced with elevation

Line 531: You may consider adding “the high-elevation station” Weissfluhjoch. This would provide some explanation.

>>> we added “high-elevation station“