Answer to minor revisions.

Dear Editor,

Thanks for handling the review process of our paper submitted to TC. We have considered all the comments made during the second stage of reviews and changed the manuscript accordingly. The changes are described below in blue font and can be found in the manuscript in track-change mode.

All the best,

Vincent Vionnet

Comments of Reviewer 1

1. Please use large font size for Figure 7, 8, 13.

The font size of the color bars has been modified for the three figures.

2. Please improve the layout of Figure 6.

As suggested by the editor, the space between the main figure and the color bar has been reduced. In addition, the title and the legend of the figure have been revised to be more consistent.

3. In the abstract, the authors mentioned that the revised methods improved snow albedo simulations on average by 10% with the largest improvements found in the Arctic (more than 25%). Please indicate which metric was used to evaluate the model performance, and which benchmark dataset was used.

The abstract has been modified as follows:

The revised coefficient improved snow albedo simulations at the ten experimental sites (average reduction in root-mean-square error, RMSE, of 10%) with the largest improvements found for the sites in the Arctic (RMSE reduced by 25%).

Comments of the Editor

- L. 113: The mathematical symbol “dopt” is not defined in the running text. It is better to indicate the mathematical symbol and its definition together here, like “(optical grain diameter dopt, age A).”

“dopt” is now defined in the revised manuscript following the recommendation made by the editor.

- L. 130, L. 329, L. 460: “gamma” -> “γ”

The Greek letter γ is now used in the text.

- L. 393: “inter-annual variability”: It is helpful for readers to add “(Eq. 7)” after this part.

The reference to Eq. 7 has been added to the text.

Comments of the editorial office

1. Please note that the title in your *.pdf manuscript should not be all capitalized.

The title in the revised manuscript read as:

Improving large-scale snow albedo modeling using a climatology of light-absorbing particle deposition

2. For the next revision please remove the placeholder "TEXT" from your manuscript or fulfill it with the information.

The placeholder "TEXT" has been removed from the revised manuscript