Author response to the reviews - 2

We would like to thank the two reviewers for their detailed and constructive comments, which greatly helped us to improve the manuscript.

According to the comment of Referee 1, we have modified sentence L264-265: “The 98th percentile corresponds to the largest 2% of daily precipitation events, of which approximately half are caused by the intense localized snowfall events produced by atmospheric rivers (Wille et al., 2021).”

As for comments from Referee 2, SMB is no longer mentioned in line 172.
Figures 5, 7 and S4 have been modified so that the circles indicating the position of the ice cores are now more visible (in dark red). Regarding the comment on lines 324-325, the reference to Carter et al. (2022) and the mention of remaining differences between RACMO forced by ERA-Interim and RACMO forced by ERA5 have been specified.
Finally, regarding the comments specifically related to RACMO: 1) The altitude given in RACMO is relatively close to the altitude measured in the field, keeping in mind that this is a mean altitude for the entire grid cell (about 25 km^2), as opposed to the altitude of the summits where the ice cores are drilled. 2) We analysed the time series of the eight adjacent grid cells for each of the three sites. The mean state differs between grid cells, but the variability is highly similar, with time-series that are still highly correlated (with average correlation coefficients of 0.66, 0.85, and 0.77, for IC, FK, and TIR, respectively). Furthermore, there is no temporal trend, and the average of the adjacent grid cells is relatively close to the grid cell corresponding to the ice core location: the differences are in the order of 10 to 50 mm, compared to differences between the model and the ice core records in the order of 200-265 mm (L154-156). This does not change the conclusion that RACMO indicates a lower SMB than the ice cores and does not explain the temporal trends observed in the ice cores.