Response to Editor comments

Dear Authors,

Thank you for your efforts and thoughtful revisions in response to reviewer comments. I am pleased to accept your interesting manuscript for publication in TC subject to addressing a few, largely technical last points:

1. Reviewer 1 asked "Does the choice of a different threshold affect when foehn is detected, and how did you settle on the specific directions you use?" I think this is a valid point and would be happy to see a more detailed answer to this question as well as a clearer justification for the specific ranges added to the methods section.

The wind direction criteria were chosen to make sure that the wind direction does not allow for false detection of foehn winds, for example through detecting down-glacier winds or the sea-breeze. We have clarified this as follows:

'A different wind direction criterion is used on AWS data compared to AMPS forecast, since the weather station was located close to the valley side and AMPS does not capture the topographic modification of the winds very well (Sect. 3.1). The range in wind-direction is chosen so that it excludes wind-directions that are expected during sea-breezes and down-glacial winds'

2. L118: Is the first part of this sentence correct? Measurements are not my speciality but S_in and S_out are usually measured (here presumably with the 4-component radiometer) while albedo is calculated.

We see this sentence is confusing. Indeed, albedo is calculated from S_in and S_out, however the model calculates the net shortwave radiation that is used in the energy balance from the forced S_out and accumulated albedo, to reduce errors introduced by errors in the S_in observations. We have rephrased this sentence to: 'S_net (S_in (1- a)) is calculated from observed S_out and accumulated albedo as suggested by Van den Broeke et al. (2004).'

3. L153: Please provide an indication of the atmospheric depth covered by the first 15 model levels in AMPS.

We have included this as follows: 'AMPS is run on 44 model levels, and this study uses AMPS products that were reduced to the first 15 model levels (covering approximately the first 1.5 km above the surface) and 6 fixed pressure levels.'

4. L302: I suggest adding "(not shown)" since this specific result is not visible to the reader.

We have included this in the revised manuscript.

5. Figure 10: I like the idea to use vectors but have trouble interpreting them. What does the length correspond to, if the origin indicates 10*windspeed? Can you please provide a reference vector as well as some indication in the caption which directions are up/down glacier for ease of reading?

We have added a reference vector next to the legend in both Figure 10 and C1 and have added in the caption the following: 'Arrows indicate wind-direction, with typically a north-easterly sea-breeze, south-westerly down-glacier wind and south-easterly foehn wind.'.

Thank you and best regards,
Emily Collier