

Author response to editor comments:

“The surface energy balance in a cold-arid permafrost environment, Ladakh, Himalaya, India”

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Response to Editor comments

Thank you very much for your review and your constructive editing/comments on this manuscript. I hope that the explanation given below to the specific comments, and the changes to the manuscript, will provide an adequate response.

Please note the line numbers mentioned in the author response refer to the line numbers of the revised draft.

Editor comments	Author response
Line 10-11: unclear sentence: consider revising. What exactly is the meaning of this statement ?	Line 10-11: In the abstract the sentence is revised as suggested.
Line 67-70: this is a very strong statement: are you really sure that no previous study about permafrost in Himalaya is available? This I cannot believe...I would suggest to modify the sentence to a less strong wording	Line 67: The statement is removed from the revised manuscript.
Line 72-74: without saying how large either the glacier or the permafrost area is, this statement is meaningless (both could be extremely small, so 22 times larger would have no impact). It is also not necessary to quantify this here. I suggest to delete it and/or just mention that permafrost surface areas can be significantly larger than glacier areas.	Line 67-68: The statement is revised as suggested.
Line 77-80: as your study focuses on a single site in Ladakh, the repetitions of all these large-scale details is not necessary for your paper, and can be shortened considerably.	Line 71-72: The numbers are removed in the revised manuscript.
Line 81: insert new paragraph here.	Line 73: Inserted as suggested.
Line 83-88: see comment above: this is not relevant for your study and can be shortened considerably, if not deleted. If you need the elevation range of discontinuous permafrost, then cite it for your study region only.	Line 75-77: The lines are revised as suggested.
Line 110: as this expression has not been introduced yet, you should explain it here (in brackets)	Line 101-102: The surface offset is defined as suggested.

Line 131: maximum flow (?)	Line 122-124: The values of daily maximum flow are inserted as suggested.
Line 132: repetition.	Line 125: Removed as suggested.
Line 185-187: unclear sentence: please make your statement clearer	Line 169-171: The sentence is revised for better clarity.
Line 192-208: please considering formatting these 4 ESOLIP steps as vertically numbered and itemised list.	Line 176-194: Changes made as suggested.
Line 199: psychrometer constant?	Line 183: The word psychrometer constant is replaced with psychrometric constant
Line 201, Eq. 1: u_{10} ?	Line 186: u_{10} is described as the wind speed measured at 10 m height.
Line 206-208: split into two sentences	Line 192-194: Divided into two sentences as suggested.
Line 209: "point surface energy balance"	Line 195: The word "point" is removed from the heading as suggested.
Line 221-226: multiple repetition (yellow); can be combined with "modelling of ground temperatures in complex topography"	Line 209-210: The citations are combined into one as suggested.
Line 232-234: We use the sign convention that energy fluxes towards the surface are positive and fluxes away from the surface are negative (Mölg, 2004).	Line 218-220: Modified as suggested.
Line 246: repetition.	Line 232: Deleted as suggested.
Line 256-260: trivial and well-known, should be deleted.	Line 242: Deleted as suggested.
Line 265: T_s has already been introduced and does not have to be repeated here, but σ has not been introduced!	Line 244: removed as suggested.
Line 271, Eq. 7: beta and alpha are not explained here. They come later, but you have to at least mention it here.	Line 254-256: alpha and beta are defined as suggested.
Line 280: unclear what you mean by this phrase: ground surface ?	Line 260: The word is revised to ground surface.
Line 318: what do mean by "finer" here: smaller? or do you mean that the discretisation is finer? Then you have to rephrase the whole sentence. as it is now it does not make complete sense	Line 295-296: Yes, we mean that the snow discretisation is finer. The sentence is revised for better clarity.
Line 376: include the year here	Line 347: Inserted as suggested.
Line 423-427: are all these seasonal details necessary here? Try to focus only on these values, which are important for later analysis.	Line 395-398: These are necessary as later in the manuscript we are discussing the seasonal variability of the SEB components.
Line 445, Figure 5D: Is the wind direction really only covering angles between 50 and 240? Are the other directions (0-50 and 240-360) really never happening or is this a shading or averaging effect?	Line 415-417, Figure 5: This is due to the averaging effect. In the revised manuscript, the 5D is removed and the values in the text are referred to the supplementary Figure S5, where hourly values of WD are plotted against the wind speed.

Line: 450-451: I guess these are sums ? so annual total precipitation ?	Line 419-420: Yes, these numbers are sums of annual total precipitation. The word annual is inserted.
Line 472-480: if you don't need these values for the following argumentation, it is not needed to cite them all. They are presented in Figure and Table. Of course, if you need them for an argumentation of specific processes or features they should be mentioned explicitly. As it is now, it is just a long list of values, which are already presented in Figures/Tables and should be omitted/shortened.	Line 441-445: These sentences have been revised and the numbers are removed as suggested.
Line 482: see comment above?	Line 447-448: The sentence is revised as suggested.
Line 483: start new paragraph here.	Line 449: New paragraph started as suggested.
Line 488-491: trivial and well-known, not necessary to repeat here.	Line 453: Removed as suggested.
Line 494-496: trivial and well-known, not necessary to repeat here.	Line 456: Removed as suggested.
Line 522-524: delete	Line 488: Deleted as suggested.
Line 556: unclear: seasonal or diurnal variation ? please rephrase	Line 521: its seasonal as well as diurnal variation. The sentence is revised for better clarity.
Line 560-580: if you describe here a figure in detail, it must also appear in the main text. If you put it into the supplementary material, additional text should be added there and not in the main text. As these two figures (S6 and S7) are part of the suppl. material, this corresponding text should be placed also in the suppl. material.	Line 522-525: This part is moved to the supplementary material as suggested and only the significant result is mentioned in the main manuscript.
Line 605-606: repetition, should be deleted.	Line 549: The sentence is removed for as suggested.
Line 619-621: this is quite a lot of repetitions now. I suggest to delete this sentence for better readability	Line 561: The sentence is removed for better readability as suggested.
Line 630-631: is this important? I would suggest to delete it to improve the readability. If you add too many (not significant) details, it is difficult for the reader to notice the important details !	Line 569: Removed as suggested.
Line 631: use either sensible heat flux or 'H', but not H flux.	Line 569: the word 'flux' is removed as suggested.
Line 635-636: this is a repetition to the previous section and can be deleted here.	Line 572: Removed as suggested.
Line 656-658: repetition	Line 589: Removed as suggested.

Line 661-662: this is again a repetition. If the sentence cannot be modified to include new aspects, it should be deleted.	Line 592: Removed as suggested.
Line 671-672: This sentence is out of context here. Either, move it to be included in the text further below or add some more info here: for example, what is meant with "Comparatively"? Compared to what or where? (other sites ?)	Line 606-609: The sentence is moved in the text further and more information is added for better clarity.
Line 735-737: this is mainly a repetition to the sentence above. Either combine or delete.	Line 670: The sentence has been removed as suggested.

Furthermore, all other changes suggested in the text have been complied and can be found in the track change file of the manuscript.