

Report **on the revised version** of the paper
Impact of black carbon on daytime valley and slope winds in idealised simulations
by J. Mikkola et al.

The authors have addressed all my comments satisfactorily, with the thoroughness that characterizes their work. I therefore recommend that the article be accepted, provided that the minor comments below are addressed in the final version.

The page and line numbers below refer to the revised version.

p. 2, l. 19-20:

change

and weakly stable or unstable stratification

into

"and unstable or weakly stable stratification"

to make it clear that "weakly" applies to the word "stable" only.

l. 47: *the heating due to absorption further stabilises the top of the BL*

following my comment, the sentence has been reformulated but is now too long.

My point was simply that heating in itself does not necessarily stabilise (heating from below destabilises). I suggest going back to the original sentence and simply adding "from above": "the heating from above due to absorption further stabilises the top of the BL".

If the authors would like to keep the new sentence, it should be splitted into two sentences for clarity. For instance: "If absorbing aerosols are located near the BL top or right above it, the absorption of incoming solar radiation leads to warming and further increases the stability of the top of the BL. This reduces the shortwave radiation reaching the lower levels hence weakening the surface heating (Chen et al. (2022), Ma et al. (2020))."

l. 50: *Both of these effects suppress buoyancy in the BL* -> I would write "reduce" in place of "suppress".

Figure 1a: I think what is missing is simply a color (grey here actually) scale.