

Interactive comment on “The impacts of moisture transport on drifting snow sublimation in the saltation layer” by N. Huang and X. Dai

Anonymous Referee #3

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In this study, the authors present an interesting research to evaluate the effect of drifting snow sublimation in the saltation layer, which is rarely studied, but important for the hydrological balance of snow cover. A snowdrift model with considering the coupling effects of snow sublimation, temperature, humidity and moisture transport is established to address their ideas and research. They describe their models and methods concisely and clearly and analyze the results reasonably. They present a well-written article, but the Results section seems a little short and has no comparison with the measurements or published data.

The authors need to carefully check their manuscript again to do a better job of defining the parameters they use for the controlling equations, for example, the definition of the sublimation rate S .

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The prognostic equations of potential temperature and specific humidity (Eqs. 11 and 12) seem to be different from the reference, which may lead to misunderstandings (just as the comments of reviewer 1). In order to express the calculation of temperature and humidity more clearly, it would be better to derive the prognostic equations from the basic convection diffusion equation.

Why each calculation takes 60 s and doesn't show the sublimation rate when it tends to be stabilized?

I agree that it could be discussed if the variation of temperature could induce some effects on velocity field. The evolutions of snow particles concentration should be discussed.

On the whole, this work is a fundamental research and obviously focusing on science common topics, which is interesting and well present.

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