Section 2.1: This section could be supported with a schematic diagram that outlines the model setup.

We have improved the description of the coupling strategy, namely by adding the sentence “In this way, FSM2trans is coupled to the atmosphere within HICAR similar to how other existing LSM options are.” which lays out the coupling more clearly. Following feedback from reviewer 2, the naming of the different coupled runs has also been state more clearly in section 2.1.

Section 2.2: Which of the redistribution processes was calculated first?

Following SnowTran, Saltation is calculated first. This has been made clearer in the schematic figure added.

L 128: How sensitive is the model to different amounts of iterations?

Depending on the prevalence of saltation/suspension, and decomposition of the domain, a single iteration is not sufficient. 2 was found to be sufficient for most circumstances, while 3 was found to be sufficient for very windy, fresh snow conditions using a high level of decomposition. For this reason, 3 was chosen. As mentioned in the text, steady-state fluxes are reached at 3 iterations, indicating that going beyond this does not result in new values calculated.

Section 2.4: How sensitive is the model to the amount of snow layers? Does the top layer represent the surface that interacts with the atmosphere?

The top layer does represent the surface which interacts with the atmosphere. The model is sensitive to the maximum number of snow layers, which higher sensitivity to fewer snow layers. 6 was chosen following the methodology of Quéno et al., 2023. Quéno et al., 2023, which describes FSM2trans, provides a discussion of the layering scheme used in FSM2trans.

L. 170: There is a (TODO: HERE)?

Thank you, this has been fixed.

L. 205: Which criteria are used for partitioning precipitation into snowfall and rainfall? How is the rain-snow slope line defined?

Snowfall and rainfall are partitioned naturally by use of a microphysics scheme. The rain-snow line referenced here is just referring to the elevation where snow transitions to rain – a phenomena which is notoriously difficult to accurately forecast in complex terrain in the months preceding and following winter. This phrase has been changed to “rain-snow transition elevation” in the text to be clearer.

Section 3.1.1: What contributes most to the advection of snow particles and snowfall pattern during the event (wind aloft, above the ridge, or the updraft on the downwind slopes)?

This is tricky to disentangle. How these three flow features affect snowfall deposition involves interdependencies between the individual flow features. For this reason, we have stayed away from commenting on relative contributions (which would likely be very difficult and necessitate arbitrary delineations between the processes), and instead emphasize the interdependency of these different flow patterns. Future studies may examine this by running the model without the lee-side flow parameterization to remove this effect, but such a comparison is outside the scope of the current study.

Section 3.1.2: How much do the two discussed redistribution processes (wind-driven or gravitational redistribution) individually contribute to total redistribution? Can you give an estimate?

This discussion would implicitly pertain to the redistribution models used here, which would repeat the discussion of Quéno et al., 2023. For this reason, a comparison of the relative contribution of these processes is left to the aforementioned study, where it is well discussed.

L. 333: It would be good if there were a brief statement of model performance in terms of meteorological variables earlier in the manuscript.

A relevant sentence referencing the earlier Reynolds et al., 2024 study has been added to the introduction.

L. 355: "5" is "Figure 5"?

Thank you – changed.

L.359: "The following paragraph ..." could be a new paragraph.

Thank you – changed.

L. 363: Is the warm bias due to the too low albedo in high elevations?

How is snow albedo parameterized, and which values are assumed for fresh and accumulated snow?

The warm bias in temperature hypothesized here is attributed to the use of the Morrison microphysics scheme, following the findings of Reynolds et al., 2024. Snow albedo is parameterized using a prognostic scheme, as noted on L384. The value for fresh snow albedo, 0.8, has been added to the text as well.

L. 375: "4" is Figure 4"?

Thank you – changed.

L. 435: Are the differences in the blowing snow sublimation percentage of snowfall due to differences in snowfall or the rate of sublimated snow?

These differences in relative sublimation are due to differences in the rate of sublimated snow – the difference in snowfall amounts between two points in the domain may be a factor of 2 at most, while the relative sublimation reported for the ridge is a factor of 10 greater than the relative sublimation averaged over the whole domain. Additionally, the patterns observed are too spatially heterogeneous to be caused by the snowfall patterns.