General comment

This paper presents a high-resolution numerical simulation of a severe blowing-snow event near Zhongshan Station, East Antarctica, using the CRYOWRF coupled atmosphere–snow model. The study aims to investigate the interactions between katabatic winds, cyclonic forcing, and snow transport processes, and compares model results with ground-based and satellite observations. The manuscript addresses an important topic for Antarctic meteorology and surface mass balance studies, and it uses a promising modelling framework. Several of the reported results, especially those concerning the sensitivity of local meteorological processes to the activation of the blowing snow module, are potentially very valuable. However, the manuscript in its current form does not yet realize this potential.

Substantial work is required to (i) redefine and clarify the study objectives, (ii) streamline the presentation, and (iii) strengthen the scientific argumentation connecting the experiments to the broader knowledge gaps outlined in the introduction. The paper is overly long and sometimes loses focus through extensive, loosely connected descriptive passages. The introduction in particular reads as a dense compilation of facts, often lacking clear logical transitions or explicit linkage to the scientific questions addressed later. Many sentences remain vague or imprecise, weakening the overall clarity. A major review of redundant material would significantly improve readability. Despite these issues, the dataset and modelling framework are of clear scientific interest, and I would be pleased to read a revised version once these structural and conceptual improvements are made.

Specific comments

- **L43–44:** *"Most direct compared to what?"* The meaning of *direct* is unclear here. Please reformulate precisely.
- **L45:** *"The main way for the redistribution of surface snow"* : it is indeed the main way, because it is also the only one. Please rephrase or qualify.
- **L45–46:** *"Adjustment of surface mass balance"* : the term *adjustment* seems meaningless in this context.
- **L47:** Sentence too generic and vague, please remove.
- **L58:** *"strong wind duration, etc."* : "etc." should be deleted; the phrase as written is nonsensical.
- **L59–61:** Missing reference.
- **L67:** Define the acronym WRF at first use and remove "etc."
- **L66–70:** Add an appropriate reference.
- **L104:** "snow quality" : define this expression or link it to a measurable physical property related to snow erodibility (e.g., snow cohesion).
- **L105–109; L112–114:** Add supporting references.
- **Introductory structure:** The introduction lists results and ideas densely, often without clear connection. It would benefit from restructuring with one explicit objective per section and by adjusting the level of detail to match the research question. Many ideas appear at once, making the text hard to follow.
- **Referencing:** References should appear immediately with the first sentence that cites their results.
- **L127:** "surface mass balance budgets" : redundant. Choose either *balance* or *budget* and use it consistently throughout the paper.

- **L128–129:** Too vague. Specify *which aspects* remain uncertain and *what knowledge gaps* are being targeted. The discussion should also include previous modelling work on blowing snow to contextualize the study (e.g., Lenaerts and van den Broeke 2012; Gerber et al. 2023; Amory et al. 2021) and highlight the complementarity of the present approach.
- **L130–133:** The phrase "inaccurately characterizing" is ambiguous: by whom or by what? Albedo and thermal conductivity are physical properties, not processes. Clarify the logical link between these properties and the blowing-snow process introduced earlier.
- **L133–139:** Only a small fraction of CMIP6 ESMs implement multi-layer snow schemes; please nuance and rephrase accordingly.

Amory, C., Kittel, C., Le Toumelin, L., Agosta, C., Delhasse, A., Favier, V., and Fettweis, X.: Performance of MAR (v3.11) in simulating the drifting-snow climate and surface mass balance of Adélie Land, East Antarctica, Geosci. Model Dev., 14, 3487–3510, https://doi.org/10.5194/gmd-14-3487-2021, 2021.

Gerber, F., Sharma, V., and Lehning, M.: CRYOWRF—Model evaluation and the effect of blowing snow on the Antarctic surface mass balance. J. Geophys. Res.-Atmos., 128, e2022JD037744, https://doi.org/10.1029/2022JD037744, 2023.

Lenaerts, J. T. M. and van den Broeke, M. R.: Modeling drifting snow in Antarctica with a regional climate model: 2. Results, J. Geophys. Res.-Atmos., 117, D05109, https://doi.org/10.1029/2010JD015419, 2012.