

"Diabatic processes modulating the vertical structure of the jet stream above the cold front of an extratropical cyclone: sensitivity to deep convection schemes"

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Authors' response

Dear Editor,

10 We would like to thank the referee for these new technical corrections. Please, find below our point by point answer to the reviewer's comment. Replies are in blue, while reviewer's comments are in black. To make our answer clearer, we refer to lines in the new revised version of the manuscript.

Reply to referee 1

15 I would like to thank the authors for the careful consideration of the open questions and feedback by the reviewers and for the additional analyses and figures shown in the reply document. The additional figures shown in the reply document and the according modifications in the manuscript strengthen the results and conclusions of the original manuscript. Based on the authors' replies and the revised manuscript, I recommend publication of the manuscript in Weather and Climate Dynamics.

20 We would like to thank the referee for this second review and these last technical corrections, that have been taken into account in the new submitted manuscript. Our point by points answer to your comments is listed below.

Some technical corrections that could be considered prior to publication:

1. 1. 232 Please re-phrase: "but is upper in the two analyses"
25 We change the formulation "but is upper" by "with higher heights". Thus the sentence at line 215 in the new submitted manuscript is now : "The height of maximum wind speed fluctuates from dataset to dataset with higher heights in the two analyses than in ERA5".
2. 1. 450 Please correct "vertically heating difference" (e.g., change to "differences in vertical heating")
As suggested, we change the formulation to "difference in vertical heating". Thus, the sentence at lines 411-412 is now : "Such difference in vertical heating has already been observed in Fig. 4 and is partly linked to a different behaviour of deep convection schemes in the liquid phase".
- 30 3. 1. 452 Please use either singular or plural: "a negative PV differences"
We correct the sentence and use singular : "a negative PV difference". You will find the corrected formulation at line 413.
4. In the conclusion, "sooner" was replaced by "earlier". I suggest to adjust this throughout the manuscript (see p. 2, 10 and 14)
35 To be more consistent, we replace all "sooner" by "earlier" at lines 286, 411 and 496.