

GMD-2022-120: Response to final comments (by editor)

L510: "we note that the baroclinic instability of the real atmosphere is much smaller than in the initial state of the JW test...": "instability is smaller" appears to be grammatically strange. For an example, "we note that the disturbance growth due to the baroclinic instability in the real atmosphere is much weaker than in the initial state of the JW test..." could be an alternative.

We clarified the formulation, now stating that the baroclinicity of the real atmosphere is weaker than in the JW test.

L563: "On the other hand, this test has shown the ability of the child-to-parent feedback mechanism to have a small but noticeable positive impact on the quality of the nest interface conditions.": Interpreting "positive impact on the quality" corresponds to representing leeward propagation in the R2B11 parent domain more consistently with the R2B12 reference run, than that in the R2B11 without nesting. If this is correct, it could be formulated more explicitly around L560.

We clarified the formulation in the preceding paragraph, emphasizing that a shorter feedback time scale improves the quality and consistency of the vertical nest interface condition, which in turn reduces the difference to the non-nested high-resolution reference run.

In addition, we fixed a few typos that we noticed during the final proofreading.

Figure revisions:

Comments by the editor:

We increased the font size of the labels in Fig. 4 and removed the y-axis tick labels from the right panels. In addition, we removed the x-axis tick labels from Fig. 7a. For Fig. 10 and 11, we are sorry that we were not able to increase the label font sizes due to the lack of access to the visualization software. However, we accomplished the requested revisions for Fig. 12, 13 and 14. For Fig. 14, we discarded the four uppermost pressure levels, which do not contain significant information, but decided to retain labels for each pressure level because these are not equidistant (i.e. the WMO standard pressure levels), implying that thinning the labels would reduce the accuracy of the information content.

Moreover, following a comment by Reviewer 2, we added boxes showing the boundaries of the nested domain to Figs. 13 and 15.