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Interactive comment on "Methods for automatized detection of rapid changes in lateral boundary condition fields for NWP limited area models" *by* M. Tudor

Anonymous Referee #2

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Summary:: The main goal of this submission, as suggested by the title, is to introduce methods that can give warning related to Lateral Boundary Conditions (LBCs) during simulations of limited area model. Using Monitoring the Couple Update Frequency (MCUF) with long-time operational periods, the authors find that MCUF can be good indicator for RMPDs except it may not smooth the initial fields as shown in the DFI method. Based on these calculation, the authors also indicate that there are potential problems of high-resolution limited area model if their LBCs are came from high-resolution model.

This paper makes a valuable contribution in operational center in which limited area model is mainly used for their weather forecasting system. There are two main areas

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where I would like to make suggestions to the authors.

1. My main criticism of the manuscript is about IFSM which is from ALADIN. There are no solutions that derive MCUF directly from IFS and the authors estimate RMPDs for IFS using ALADIN. Although similar patterns are obtained between IFSM and MCUF (from ARPEGE) from long-time operational statistics, there can be significant difference between two of them, because IFSM is also derived from limited area model (and different dynamical core from ALADIN). I suggest that the authors should emphasis this point when IFSM is introduced. 2. The authors focus on LBCs problem using rapidly moving pressure disturbances. However, significant problems can be caused from upper-level disturbance or inertia-gravity waves. I am wondering what opinion the authors have about this and whether it is worth to mention this point in the introduction of this paper.

Specific Comments:

P. 2695 line 3:: What is the meaning of “larger horizontal resolution”? Is it “fine horizontal resolution” ?

P. 2695 lines 19∼2- :: The statement “then hourly data would be less than satisfactory when both global model and LAM. . .” This means that “ then hourly data would be less satisfactory when both global and LAM..”?

P. 2697, line 1 :: avents -» events

P. 2706, line8-19 related to Figure 3 and 4 :: Maximum value of MCUF is not exceed 0.006 in Figure 3. But in Figure 4 lots of cases have MCUF exceeding 0.15 (both of their units are 0.001hPa). I think there might be some error for unit.

P. 2709, line 7∼9 :: “The average values are low along lateral boundaries, but the maxima do not decrease towards the lateral boundaries.” -> This sentence should also refer to Figure 8.

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