General Comments

This paper addresses the issue of detecting systems moving quickly across lateral boundaries in LAMs when the temporal resolution of the lateral boundary data is insufficient to resolve their movement. A monitoring method was introduced by Termonia (2003) for the ALADIN-Belgium model which used ALADIN-France lateral boundary conditions (LBCs). Here the method is applied to ALADIN-LACE driven by ARPEGE and ECMWF IFS. As pointed out in the text, the obvious solution of simply increasing the frequency of the LBC files is not feasible if the model providing the LBCs is not under the control of the LAM user. Extending the LAM domain would help since any problems with fast-moving systems moving through the boundary would take longer to affect the area of interest. However, this would probably be too costly. A cheaper alternative would be to use additional nesting (i.e. a larger area LAM using the same resolution as the LBCs) if it could be afforded; with data assimilation this would help to partially recover loss of skill due to LBCs having older data time LBCs. However, if neither of these options are practical, some sort of monitoring is needed.

Much of the detail in the paper is specific to the ALADIN community although aspects of the monitoring are applicable to regional climate modellers which is another community of users having little control over the frequency of LBC files provided by global climate models. The monitoring focuses on surface pressure but fast-moving upper level disturbances are more common and these are also a source of forecast error in LAMs, especially in convective regimes.

Specific Comments

1. p2692. Line 2. " ... lateral boundary data for limited area models (LAMs) can be too infrequent to resolve rapidly moving storms." rather than "... lateral boundary data can be too low to properly resolve rapidly moving storms."

2. Line 5. Line 14/15. Remove sentence "other global models do not compute such field."

3. Line 21. DFI/SSDFI are not defined at first use.

4. Line 24/25. RMPD was defined on line 13.

5. Line 25. "The error functions without ... " rather than "Error function without ... " ALADIN is not defined until line 2 of page 2694.

6. p2693. Line 2. "Operational LBCs are provided to LAMs at a time interval ..." rather than "The operational lateral boundary conditions (LBC) are provided to limited area model (LAM) with a time interval ..."

7. The paragraph begining on line 13 needs rewording or perhaps even deleted. Model errors are not caused by LBCs. The LBCs do contain errors which eventually propagate to the area of interest. Errors might be induced by the boundaries due to a variety of reasons but most of these can be avoided apart from the frequency issue which is partly the subject of this paper.

8. Line 23. " ... LBCs act ... " rather than " ... LBCs to act ... "

9. Line 25. "Without" misspelt. Also remove the word " does".

10. p2694. Line 2. ALADIN should be defined in the Abstract.

11. Line 15. "..lose.." not "..loose..". 12km not 11km. Line 16. 48km not 11km.

12. p2695. Line 3. "... larger horizontal resolution ...". Replace larger with either higher or lower to make it clear.

13. p2697. Line 23. Remove word "model" after ALADIN.

14. Line 24. semi-Lagrangian not semi-lagrangian.

15. Line 25. Insert "the" between "Operationally" and "model".

16. p2698. Line 14. ".. to initialize the ...

17. p2699. Line 13. semi-Lagrangian not semi-lagrangian.

18. p2703. Line 2. Typo "od" instead of "of".

19. p2704. Line 4. "Eq.(3) describes ... " rather than "The Eq.(3) describes ... "

20. Line 26. Typo "one" instead of "on".

21. p2705. Line 6. Typo "ommited" instead of "omitted".

22. Line 17. Typo "lagrer" instead of "larger".

23. p2707. Line 4. "... indicate which ... " instead of "... can bee seen as a guideline which ..."

24. Line 5 . "fewer" instead of "less".

25. p2710. Line 9. Typo "ad" instead of "and".

26. p2712. Line 20. Replace the sentence beginning "A solution..." with "Termonia (2004) developed a strategy to monitor rapid changes in surface pressure in ARPEGE by producing a diagnostic output field for the filtered surface pressure (MCUF)."

27. p2714. Lines 7 to 14. Replace "global model" by "IFS" or whichever global model you mean. At the end of the sentence, remove thefull stop and insert "but it is feasible." Replace the rest of the paragraph with "However the results contain some detrimental effects: (i) different model dynamics ... MCUF values," (ii) a quickly moving storm ... missed by the MCUF, (iii) rather low cyclone activity indicated in the western Mediterranean compared with results using ARPEGE." These suggested changes also remove "aladinist" which is a made-up word.

28. Line 15. ".. (Termonia, 2003) were computed.." instead of ".. (Termonia, 2003) computed .."

29. p2715. Line 7. Typo "no" instead of "not".

30. Line 24. The sentence should begin as "The error function ..."

31. Line 25. What do the words "and amplitude" mean? Should the the paragraph just read "The error function computed without initialization is cheap and can be applied in a straightforward manner. MCUF from IFSM seems reliable for most of the LACE domain. However, computing the error function from initialized fields does not improve the results enough to justify the extra cost. The alternative is to compute MCUF in the operational IFS."