ALADIN QUASI-OPERATIONAL BULLETIN N° 1

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Since yesterday ALADIN has reached its quasi-operational status. As you surely did, we have also noticed the development of a numerical instability over Poland at 36 hours. Reasons for this abnormal behaviour are under investigation. It is extremely unlikely that the known phenomenon of orographic resonance with semi-Lagrangian time-stepping could be here at work. Let us however explain what happened in the last weeks before pre-operational implementation and why we could not detect beforehand this worrying behaviour. The next paragraph will however be a very technical one and can be jumped over without lost of any important general information.

In order to be able to increase the horizontal resolution by a factor 1.3 we decided on 26/04 to use the semi-Lagrangian time-stepping developed by starting from the (yet under test) semi-Lagrangian version of ARPEGE. While the semi-Lagrangian algorithm in itself did not create too many problems (and they were solved rather quickly) it indirectly brought in our path two very serious difficulties.

- the initial version of the semi-Lagrangian algorithm could run only when we "shifted" the area of interest of ALADIN inside the biperiodic domain of computations. Unfortunately this shift was connected with an independent (identified on 17/05 and yet unexplained) "bug". We had to find a way to avoid the shifting and this was only done on 24/05.
- meanwhile, for purely technical but unavoidable reasons, all code developments had been done on a higher version of the basic ARPEGE code (12 vs. 11r2) ; we then discovered (19/05) that the corresponding ALADIN version suffered from a very nasty "phasing bug" and this happened at a stage when returning to 11r2 would have become very difficult, partly because of the developments associated with our first problem. After a very intensive "chase", the "phasing bug" was found on 27/5. Unfortunately its most important signature was in vertical velocities, which explain why we started to look at "plain " vertical velocities only 5 days ago.

In short, ALADIN is still quasi-operational, we are aware of some weaknesses and need further input from you for detecting any abnormal behaviour. In that sense, many BULLETINS like this one will be necessary and we would like to get from you as soon as possible the name of a contact point to which they could be sent directly.

Finishing on a positive note, let us recall that the whole ARPEGE + ALADIN schedule will soon be pushed earlier by about one hour. This is currently supposed to happen on June the 13th. At that stage the window of RETIM ALADIN reception should roughly become 4 to 5 UTC.