

Minutes of the IFS/Arpège teleconf of Thursday March 13th, 2008

participants:

MF: A. Joly, C. Fischer, R. El Khatib, S. Martinez, G. Beffrey

EC: J.-N. Thépaut, D. Salmond, M. Hamrud, K. Yessad, S. Saarinen (first part)

1. actions listed at previous coordination meeting:

- MF to send “bator” code to EC: Ryad is in contact with Sami, and the code will be sent soon within an ODB tarball.
- MF to report on ODB contacts in Ald/Hir: Claude has been addressing the issue with the Aladin and Hirlam Programme Managers, and proposed that specific ODB experts should be identified and trained to serve as “first-level” ODB support for any national contact within the two consortia. Typically, 2 such experts per group would be ideal. The issue will be discussed again at the next joint Aladin/Hirlam meeting (7-10 April). Aladin might identify 2 such people, but their names still need to be confirmed. Hirlam intends to organize an ODB training workshop, at which EC staff would be invited (probably Sami and Drasko). The dates still are fairly open (maybe only in 2009). *This item shall be kept for next coord meeting.*
- GP Balsamo to give details on surface field/forcing conversions from Tessel scheme: GP presented his approach to Claude last November. The technique, based on interpolating the Soil Wetness Index, is also the one set up at MF following a suggestion by D. Giard (ERA40 or IFS coupling with Arpège or Aladin). Work in this direction might start still before the summer at MF.
- Mats and Erik to investigate a possible externalization of obs operators: not really started; JNT has contacted the Canadian Center (actually, Pierre Gauthier) to get their experience. He will need to come back to them (new contact: Goddieve Deblonde). The soon-to-come change of positions of Mats (scalability aspects of the IFS) and Erik (head of Met Division at EC Operations) will force EC to resume this effort once their successors have been chosen. JNT confirms that EC wished to continue progress on the side of specifications. *This item shall be kept for next coord meeting.*
- Mats and Karim to distribute work on commenting modules (plus more generally preparations for the cleaning cycle CY35): for comments in modules, MF has started to distribute some work to Arpège and Aladin staff (some might enter CY33T1). Some files actually could be obsolete and require a more in-depth check, so that some work will be prepared for just before CY34. EC will also distribute some of the work (for CY33R2). A major effort will concern renaming and moving routines within the projects and libraries. Mats is preparing a script to perform that automatically (both in terms of catalogs and in terms of source code modifications). He will send the script to MF in April, so that MF can perform a “blank test” on CY33T1. The procedure also needs to be adapted to MF library management, so that the changes are properly historicized. The cleaning shall be applied immediately after CY34, in June this year, to produce a CY35.
- CF and JNT to check for video-conf possibility: no practical system is available at EC. This item is closed for the short-term coordination.

2. progress at ECMWF:

A CY33R1 has been prepared with several trials, as it should become an operational cycle at EC. The initial version produced poor scores and did not improve previously deteriorated fields (Tropical winds most notably). The last version of CY33R1 is now run in Research mode and should soon go into E-suite. It is expected that it could be turned to operations just after Eastern.

Content of CY33R1:

- * Wave model:
 - o Improved shallow water physics (new shallow water nonlinear source term, bottom-induced wave breaking), modified advection scheme (inclusion of corner points in advection scheme);
 - o Extension of freak wave warning system and introduction of two new parameters, maximum wave height and corresponding wave period;
 - o Increase in spatial resolution of European shelf wave model from 25 to 10 km.
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- * Physics:
 - o Improved physics in tangent linear/adjoint mode; used in 4D-Var;
 - o Re-tuned entrainment in convection scheme.
 - o Bug fix to scaling of freezing term in convection scheme.
 - o Additional shear term in diffusion coefficient of vertical diffusion (controlled by empirical profile).
 - o Increased turbulent orographic form drag.
 - o Fix for soil temperature analysis in areas with 100% snow cover (Iceland problem).
 - o Tile aggregated roughness instead of dominant tile roughness for momentum, and change in post-processing of 2m T and q (use of dominant low tile instead of specified WMO value).
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- * Observations:
 - o Active assimilation of AMSR-E/TMI radiances in 1D+4D-Var.
 - o Active assimilation of OMI
 - o Usage of all 4 wind solutions for QuikSCAT, rather than only 2 previously;

given the preparations for CY34 , which will start in mid-May, EC would do one more interim cycle CY33R2. CY33R2 might not be for operations, but only a technical and development cycle.

Content of CY33R2 (tentative):

- RTTOV-9
- GEMS reanalysis code merged into IFS
- Scientific and technical codes (under switch) for surface analysis EKF and ASCAT soil moisture monitoring
- analysis change-of-variable to avoid anunnecessary transform of gridpoint fields to and from spectral space.

- The next scientific cycle will be based on CY35.

3. progress at MF:

Various important changes have taken place in early 2008: global perturbations have been introduced in the ArpègeEPS system (PEARP); Arpège has switched to variational bias correction and to higher horizontal and vertical resolution (T538C2.4L60), 60 levels also for MF's Aladin models (France, La Réunion); further steps for the pre-operational installation of the Arome model (MF expect to run Arome in pre-operational conditions in April, for a switch to operations scheduled for October). MF also mention that they will soon change their operational databases, NWP suite real time monitoring and upstream production system, a heavy exercise for their Operations Division. This technical evolution and the implementation of AROME are the topmost priorities of the computer department.

Next E-suite content:

- Arpège and Aladin-France E-suite number 1 for 2008 :
 - CY33T0
 - assimilation of new AQUA/AIRS channels (~30 channels),
 - assimilation of Metop/IASI channels (~60 channels), Metop/HIRS,
 - assimilation of GRAS radio-occultation,
 - assimilation of MSG/SEVIRI Clear Sky Radiances,
 - assimilation of clear-sky microwave radiances over land (DMSP F14 SSM/I),
 - couple the assimilation with variances derived from the ensemble assimilation,
 - ALADIN-France : new obs like in Arpège, remove RH2/T2 obs in night time runs (spurious surface/PBL forcing via B matrix, flag will be on real solar time), VarBC for SEVIRI, monitoring of some radar radial winds from the French ARAMIS network (to be confirmed).
 - ARPEGE physics: new GWD, modified surface turbulent exchange coefficients, corrected snow melting reaching the ground
 - modified timestep for Aladin-FR (450 s) to have an even number of iterations for 1h, modified post-processing for isolated lakes

This E-suite is expected for testing over April-May 2008. For Aladin-France, the Arpège VarBC file can be read in and the coefficients merged with those adaptively computed for SEVIRI by the Aladin/VarBC.

Content of CY33T0:

- Catch-up of changes for the Arpège HR E-suite from CY32T0_op2

Content of CY33T1:

- Assimilation:
 - cleaning of code for scatterometer winds
 - Code adaptations for reading in maps of (small ensemble DA derived) σ_b 's
 - Variational bias correction adapted for Aladin (to SEVIRI HR radiances)
 - New humidity control variable (E. Holm's dev.) in Aladin
 - adaptations in obs part for HR AMDAR and AMSUB (G. Bölöni)
- Arpège and Aladin-FR Physics:
 - frame for calling TKE routines (but TKE code itself not yet fully included)
 - fixes in CBR and top-PBL entrainment
 - SURFEX plug-in: make implicit coupling between surface and atmospheric vertical diffusion possible for any model version (Arpège, Aladin-FR, Alaro0)

- Store exchange coefficients for vertical diffusion from the HR trajectory and read them in the TL/AD integrations
- fix a bug for CAPE computation in fullpos (Y. Seity)
- AROME:
 - Surfex3 including CANOPY scheme for PBL diagnostics,
 - EDKF shallow convection scheme,
 - Hail as an option in the microphysics, plus fullpos extensions for hail
 - Optimization of size of LFI surface files; control surface file outputs with the usual logic for model output files (frequency or hours)
 - ensure the possibility that model and surface orography are identical
- ALARO0: *vertical diffusion implicit coupling with SURFEX now possible (see above)*; updated code, mostly for 3MT, to the CHMI-operational version of February/March 2008 (R. Brozkova)
- enhanced portability (R. El Khatib & Hirlam)
- fullpos adaptations for post-processing the Model-To-Satellite (MTS) fields (simulated radiances). Old dataflow via XFU buffers has been removed.

33T1 should become an export cycle for Aladin partners.

MF won't produce any CY33T2. Some small code changes might be prepared for just before phasing with CY33R2 and be included in CY34 (mostly, module comments, code cleaning and bugfixes).

4. dates for next cycles:

EC will send their contribution to CY34 on May 15-16th. In April, Mats will send the cleaning scripts to MF, for a first test in Toulouse (renaming+moves, compilation and loading). CY34 should be completed by the time of the next coordination meeting (confirmed for June 24th), then followed by the cleaning action for a CY35 in early July.

Further plans will be considered during the June meeting: MF have uncertainties on the exact scheduling of the porting of their applications to the NEC Phase 2. The final decisions at MF should be known at about the same date as the next coord meeting.

5. AOB:

MF ask EC to send the code and documentation of the bias correction for RS and Synop data. Drasko V. shall contact P. Moll asap.

EC mention that Paul Burton is working on an improved compilation tool (analysis of dependencies). Ryad shall be kept informed.

6. next coordination meetings:

June 24th, in Toulouse. EC delegation would arrive on the previous evening.