OOPS technical meeting of February 29, 2012
IFS cleaning and re-factoring

Participants (MF) : Claude Fischer, Florence Rabier, Karim Yessad, Yves Bouteloup, Loïk Berre, Vincent Guidard, Alexandre Mary, Ludovic Auger, Thibault Montmerle
Participants (EC) : Deborah Salmond, Mike Fisher, Tomas Wilhelmsson, John Hague, Alan Geer

1. Wrap-up of previous actions

1. Yannick would check with Carla if LSIMOB and LOBSREF were used for sensitivity runs. => *awaiting for Yannick's precisions. On hold.*

2. Karim would circulate his document to describe the removal of Configs 421,422,521,522 etc. => *ECMWF wish to keep these configurations, as they are now re-used by the modelling team (Sylvie, Nils). ECMWF will validate them based on CY38 and maintain them. MF would not test them during the regular maintenance efforts.*
3. MF would check about use of LJCNMI, in the view of a later pruning => *MF confirms this key can be pruned.*

4. Karim would circulate his recent document about the command line work. => *done*.

5. Stéphane would send documents on MF's use of **git** as soon as they were available => *expected for next video-conf on March 6th*.

6. A short document with a list of all CDCONF's with one line describing them was to be produced and this work would be started by Karim. => *done*.

7. Claude would provide the ALADIN source and documentation to be available for the OOPS/LAM days. Also Claude would send an email to find suitable dates => *done*.

8. Tomas would respond to MF's map-factor proposals after checking how this fitted in with his encapsulation of the geometry => *obsolete action. MF and ECMWF keep each other continuously informed at video-confs about the progress and status of the Geometry re-factoring. Tomas stresses that the biggest effort consists in addressing the various cross-dependencies within the setup. This will take time (probably beyond CY39)*.

9. Claude would provide details from about 3-way video-confs from MF side and Deborah would check with EC technical staff to arrange a test of the system => *done. The best technical choice is that any partner calls in to ECMWF, for instance MF and a Hirlam/Aladin correspondent. We will use this facility at the next video-conf with Ulf*.

2. Overhaul of the observation operator structure

John performed most of the remaining pruning along the lines of Karim's proposal (except 2D and CANARI aspects). The resulting code however is not necessarily clearer to understand, so the question was raised whether another deeper overhaul should be done. Alan has come up with a proposal to further overhaul the obs operator code, and already started this analysis. He proposes to

reduce the complexity of the dataflow of GOMs and better separate the observational and model features from the message passing ones. He has described his analysis and proposals to go ahead in several emails that were exchanged before the meeting (the last ones however too short-term before the meeting date for being evaluated at MF).

Alan's proposal consists in two steps:

1. several preliminary cleanings: merge 2D and 1D GOMs, clean neutral wind handling (used for SCAT data), clean code of various other options (land/sea mask & LSLREJ, merge in a flexible way SLINT and SLINT_CANARI, SST field in SLINT, LRLOI => this key is used to only interpolate land model gridpoints)
2. make the GOMs more generic, in particular in MPOBSEQ: aim at making the code more flexible in the spirit of GMV/GFLs and make the message passing code obs and model-independent (especially, ensure send and receive buffers mirror each other as much as feasible)

The general feeling is that this overhaul should be done. ECMWF propose to do much of the work, starting already with the soon-to-come interim cycles (CY38R2/R3 etc.). However, MF will be specifically impacted in two of its operational configurations (GOM2D are used for storing model columns in the neighbourhood of radar pixel positions, when computing T and RH retrievals in the beginning of AROME's screening; the several extra options listed are used in MF's OI/CANARI and/or VAR). Claude insists that the impacts can be first analysed on the side of MF. It is agreed that this item will be re-discussed at the next coordination video-conf (March 29). Until then, Claude will:

a) check with MF's radar assimilation experts about the impact in AROME
b) check with CANARI and VARPACK experts about the impact on those applications
c) check about any possible scientific work that would impact the obs operator code between CY39 and CY40, as this would collide with the expected big overhaul at that time (and at the time of merging for CY40)

If feasible, MF and EC would exchange technical information on this topic before March 29.

3. Cleaning status (based on Karim's cleaning document version 7d)

Karim has done further cleaning in the dynamics for CY38T1. We also acknowledge the significant work done by Tomas for CY38R1. A few more items will be done at ECMWF until CY39: encapsulate RIPI* arrays, externalize interpolators (that is, remove MODULEs) => George M. would report on that on March 6, only SUGAW from TFL would be called in the IFS (Mats).

HIRLAM will prune part of its physics code, including its own version of the physics monitoring routine in Harmonie (HL_APLPAR) for CY38T1. Thus, we will liaise with Ulf after CY39 in order to see what remains to be done for the general IFS/OOPS cleaning exercise in Harmonie.

At MF, some ALADIN features would be cleaned during phasing of CY38T1.

Karim will update his cleaning doc in April or May, based on CY38T1 and CY38R2.

4. coding norms and checker

Paul Burton has prepared a new norm checker based on the new coding rules document. The

checker works together with a whitelist that can be used to tell the checker which violations it should ignore. When all violations are looked for, the new checker actually issues a significant bigger number of violations than the old one. This may not be necessary as some violations are desirable features for new code, but a complete cleaning in the old code would be much of the cosmetic type. Statements like FORMAT, PRINT, CONTINUE are agreed to be left aside from the regular checks. Important features to look are occurrences of unused variables for instance. Mike also would like to prune printouts so that the return listings only contain reproducible outputs (remove timing information for instance).
MF confirm they haven't yet tested the new norm checker. This would be done in the course of preparing CY38T1.

5. **pre-OOPS work on setup**

Tomas briefly recalls the work he presented during the OOPS/LAM days (FIELDSET Fortran code with associated constructor/destructor Fortran equivalents, broken-up versions of SUSC2B into SUSC2B and SUSC2C etc.), which is now visible in CY38R1. Deborah has already uploaded the final version of this code on the usual ECMWF repository place for exchange with MF.
Further progress by Tomas will be regularly reported at the video-confs.
ECMWF confirms that the 3D-VAR prototype will be built on the basis of CY38R1. MF would evaluate whether the prototype can be adapted to test a LAM 3D-VAR version with a reasonable amount of efforts for phasing LELAM.

AOB:

ECMWF and MF to agree on the dates for Karim's visit to the Centre (to be checked by Deborah and Karim).

Next meetings:

Next technical video conference: March 6, 2012

Next coordination video-conference: March 29, 2012

[OOPS Steering Committee (for information): May 3 in Toulouse]

Next physical coordination meeting: June 28, 2012, in Toulouse

List of Actions:

1. Yannick would check with Carla if LSIMOB and LOBSREF were used for sensitivity runs.
2. Obs operator overhaul related aspects. Claude will:
   - 2.1. check with MF's radar assimilation experts about the impact in AROME
   - 2.2. check with CANARI and VARPACK experts about the impact on those applications
   - 2.3. check about any possible scientific work that would impact on the obs operator code between CY39 and CY40, as this would collide with the expected big overhaul at that time (and at the time of merging for CY40)