<h1 style="text-align:center">Video-Conf to discuss plans for Cleaning IFS for CY38</h1>

Held on Tuesday 25th January 2011 .

Participants (MF) : Ryad El Khatib, Patrick Moll, Karim Yessad,
                     Claude Fischer, Olivier Rivière, Dominique Puech

Participants (EC) : Yannick Trémolet, Deborah Salmond, Anne Fouilloux,
                    Mike Fisher, Tomas Wilhelmsson, John Hague,
                    Sylvie Malardel, George Mozdzynski

Preliminary note: several of the cleaning items under discussion are already described or listed in technical notes (many written by Karim) => the reader may get these notes from Deborah Salmond or Claude Fischer.

1. <u>Reorganisation and classification of IFS modules</u>
   Karim's proposals for re-organisation / re-classification of the modules in IFS were discussed. The naming convention for the module XXXX_MOD in files xxxx_mod.F90 was agreed. There was some discussion about the length of the 'XXXX' – some preferring a long, descriptive name and some preferring a short, easy to type name. It was thought that some hierarchy in the classification would be helpful. Some renaming such as the EINT = 'External Interpolation' module etc. would start as cleaning progressed. However, the full renaming could be done automatically in a cleaning cycle at a later date.

   The issue of implementing some of the Fortran re-coding in the OOPS spirit in CY38 was addressed. ECMWF proposes to include the externalized Jb code already in CY38. This proposal will be confirmed after MF has checked the impact and requirements for phasing the LAM counterparts. Mike stresses that the code changes remain small and that the control vector code is not changed at this stage.

2. <u>Cleaning of ODB</u>
   Further cleaning of ODB was foreseen for CY38. Anne and Dominique coordinate this by email.

   The following is a list of proposed cleaning actions for ODB (provided after the meeting):
    - bitfields (status, event, blacklist, etc.) in type_definitions.h
    - errstat and update tables
    - surface emissivity
    - revise vertical coordinates (ongoing discussions for satellite channels)
    - removal of aux*@body columns
    - possible removal of ssmi tables (were used for ssmi1d) and associated code (ssmi1d)
    - reorganisation of conventional group (add new tables for this group and remove entries in hdr/body)
    - reorganisation of gpsro group (add new tables for this group and remove entries in hdr/body)
    - reorganisation of ozone group (codetype 206)
    - reorganisation of aeolus

3. Cleaning of SLCOMM interface
   George briefly described his cleaning work on the interface to SLCOMM – this work was done following the suggestions of Karim. There is now a derived type SL_STRUCT containing the arrays needed for a call to SLCOMM and the uses of SLCOMM from Dynamics, Observation Interpolation, Radiation and FULLPOS are separated. This work had touched 130+ routines and would have some implications for the Limited Area versions. This cleaning will collide with other work done by Karim and Fabrice Voitus in Toulouse and Filip Vana in Prag; Karim will ensure pre-phasing of his and George's code, then also with Filip's and Fabrice's contribution.
   Action: Deborah to send CY37R3 (pre-CY38) to MF by June – to allow more time for the phasing work.

4. Cleaning of OBSHOR
   OBSHOR had been the subject of much cleaning and re-structuring for CY37 continued in CY37R1. Karim had made a new flag for each surface field in SU_SURF_FLDS to say whether they were active or not – this would avoid bugs in OBSHOR and avoid very complicated IF tests.
   Action: Karim to send new SU_SURF_FIELDS to Deborah (DONE)

   John is preparing the grouping of calls to COBS and COBSLAG (under SCAN2M) into one single call. This implies only small changes in the code.

5. Cleaning of HOP
   As part of the OOPS development, Anne and Deborah propose to simplify HOP by introducing new HOP routines for different Observation types. Work to encapsulate the HOP subroutine tree so it can be called from the OOPS framework is expected to be completed in the next month. This will **not** imply extensive changes to the IFS code.
   Action: Deborah to send OOPS version of HOP to Patrick, along with a short descriptive document of the change, so that MF and EC can circulate it around (obs people should verify whether the change collides with expected scientific contributions in the obs operator code for CY38 => this would require careful phasing)

   Reminder about CY38 and RTTOV: RTTOV-10 will be introduced in the IFS for CY38.

6. Karim's V6d Cleaning document
   Karim will update V6d to take account work that has been done.
   Action: Karim to update V6d → V6e (DONE)

7. Planned Cleaning actions

• Cleaning of GFL attributes
   Sylvie would like to rationalise the GFL attributes and check for any inconsistencies in their use in the Dynamics and Physics.
   Action: Sylvie to write a proposal and circulate to MF and EC

• Removal of Array filling for RRTM/SRTM (Appendix N of V6d)
   Tomas will re-code the setting of the RRTM coefficient Arrays so they are done by reading from a binary file and distributing to other processors as is done in RTTOV – this will remove 600000 lines of code from IFS!
   Action: MF to check what impact this will have and Tomas to implement.

- Removal of comments on modifications before 2001
  Karim had proposed to remove the modification lines dated before 2001 – this would remove 100's of lines in the headers of some subroutines. This was agreed.
  Action: Karim to implement

- Removal of Obsolete variables (Appendix G of V6d)
  Tomas will continue this work.
  Action: Tomas to remove as many as possible of Appendix G list

- Removal of 'Argument not Used' (Appendix L of V6d)
  Deborah will continue this work.
  Action: Karim to give list of what remains to be done after his work

- Removal of dependency of IFS on SATRAD modules
  Deborah will do this work.
- **Action: Ryad to check if this has any implication for MF**

8. <u>37 and 37r1 Norm Violation Statistics</u>
   At CY37 we have 4606 violations compared with 5565 in CY36. For CY37R1 we are down to 4020. With the work we have discussed we can hope to be down to about 3000 by CY38. It was thought that some current coding norms violations could be investigated to see if they were still important to be worried about e.g. Empty lines starting ! - are not too serious.

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Violations breakdown:


                                  CY37       CY36       37R1

     ----------------------------------------------------------
     CCPT(04) useless declarations  452       1057        382
     ----------------------------------------------------------
     CTRL(03) alternate returns     186        194        180
     CTRL(10) > 9 arg              1280       1326       1249
     CTRL(10) > 50 arg              124        163
     CTRL(20) DR.HOOK                99         63        110
     CTRL(27) MPL                    68         53         16
     CTRL(35) Macro DOC              14        404          0
     ----------------------------------------------------------
     NORM(02) tabulations            17          0          0
     NORM(03) IMPLICIT NONE missing   1          2          0
     NORM(07) Explicit Kind           5          4          2
     NORM(09) USE without ONLY      869        927        845
     NORM(10) non-DOCTOR             95        158         53
     NORM(13) GOTO                  673        706        639
     NORM(16) EQUIVALENCE            29         29         29
     NORM(17) COMPLEX                 6          0          6
     NORM(21) Cont lines &           17        145         14
     NORM(24) .GT. repl by >          5         40          2
     NORM(27) INTENT                 38         35         28
     ----------------------------------------------------------
     PRES(07) ! + Empty lines       650        297        424
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PRES(21)  , at end of line        1          0          0
PRES(22)                          0          1          0
-----------------------------------------------------------
END DO, END IF, ..               22         19         17
-----------------------------------------------------------
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Action: Deborah Create exclude list of 'Use without Only'
Action: Deborah to investigate VARBC violation of CTRL(20)

9. New Coding Norm document
   Olivier has prepared a new version of the 'Coding Norms' document. Mike will send comments by email. The plan is to issue this new version as soon as possible.

Action: Mike to send comments to Olivier