OOPS technical video-conference of September 19, 2013
meeting number 3 towards CY41

Participants (MF) : Claude Fischer, Karim Yessad, Ryad El Khatib, Etienne Arbogast
Participants (EC) : Deborah Salmond, Tomas Wilhelmsson, John Hague
Participants (LAM): Ulf Andrae (SMHI/Hirlam)

This meeting was the third among three, planned for discussing the Fortran re-factoring until CY41, and perhaps a bit beyond until CY42.

1. wrap-up of actions from August 22:

1. Deborah and Stéphane shall liaise during the phasing process of CY41 in order to perform the rename/move changes of Appendix E in the most optimal way. The Aladin "ald" routines will be changed in MF during the same phasing. => *Open*
2. Claude to hand over decisions and recommendations about F2003 features, to the Aladin partners (Programme management, Local Team Managers). => *Claude has informed the Aladin management (Piet Termonia and Maria Derkova). The decisions about F2003 in IFS will also be announced at the forthcoming meeting of Aladin Local Team Managers (during the EWGLAM workshop, October 1, Antalya). Closed*
3. Action for ECMWF: John to send finalized code changes for the IFS forecast OOPS prototype & complete technical discussion (all) at the Sept 19 video-conference. MF to finalize timing and staffing of work towards an Arpège forecast prototype. => *Tomas and John are now phasing their respective code changes (IFS/OOPS forecast prototype and STEPO_OOPS + Geometry and Setup reorganization, resp.). It's planned that this merged code will be sent to MF in one or two weeks time. For the IFS forecast prototype code, CNT4 now only calls STEPO_OOPS for the forecast model and any occurrence of YOMSP in the calling tree below CNT4 is replaced by the encapsulated derived type. At MF, it's planned that Karim and Alexandre will study this code, and Alexandre will start working on the implementation of an Arpège forecast prototype this autumn with help by Karim and Etienne. EC further mentioned that they had switched off DDH for the time being in the OOPS-IFS, as it wasn't running properly (crash). DDH will have to be investigated for the OOPS version later. Claude mentioned Fabrice Voitus is the contact at MF (other contact could be François Bouyssel). Closed.*
4. All: have a final update about the new code for Geometry, the break of setup and the STEPO re-factoring strategy at the Sept 19 video-conference. => *Tomas and Karim have liaised about the reorganization of the Setup. Once EC have sent the code to MF, Karim would add some extra changes (plus perhaps some code adaptations for the Arpège prototype ?), and MF will send the whole code package back to EC by end of November. We plan a wrap-up discussion at the next video-conference about the Actions 3 and 4 of this meeting. This action closed, and new action formulated for next meeting.*
5. MF/Full-POS: all technical consequences of pruning FP1 must be evaluated. At least one necessary condition before pruning FP1 was that the Boyd option (for LAM LBC) is recoded in FP2 (it's not there yet). Claude also wished to make sure MF and Aladin management is well informed about this pruning possibility. => *Claude has started to*

announce the possible pruning and investigate inside GMAP, where reactions were rather positive. Alain Joly and Dominique Giard however suggested to widen the scope and announce the perspective of removing FP1 to other R&D and Production teams that do use FP in their applications. Claude also handed over the message to the Aladin management, who was for the time being reserved about this pruning because of the various and critical uses of FP in the change of domain applications in partner countries. From a technical and performance point of view, the group of attendees to this meeting reassessed that FP2 was both an improvement in terms of code architecture, numerical performance and OOPS-compliance. FP2 is validated for all known configurations of use, except in case spectral fields would be computed on pressure levels. FP2 gives bit-identical results when only grid point data is output. Another security for the various users, and guarantee for a smooth transition, is that FP1 and FP2 can be simultaneously available in a CY39T1+bugfix and a CY40T1+another smaller bugfix. Claude will resume his inquiry and announcement tasks in MF and in Aladin. MF asked whether EC could describe the major code issues for FP1 (key LFPART2) that arise due to the setup reorganization. Tomas explained that the code for LFPART2 was not removed for the time being, but clearly, it is broken in several places by the mechanical move of blocks of initialization. If and when decided, MF will prune FP1. Open action.

6. Towards Level 2 actions (Action 5 from July 11):
   - 6.1. Alan Geer would write a short note about the work towards a single call to COBSALL => *Alan now has a branch with this code change, that is scientifically validated though the results are not bit-reproducible (Note: only for all-sky radiances, where the two calls to COBSALL are activated in the present IFS versions). Action: Alan will send an e-mail to describe his code changes to MF (Eric Wattrelot, Jean-François Mahfouf and Claude)*
   - 6.2. Filip Vana would write a short note about the encapsulation of the trajectory code => *Filip has just started to encapsulate the trajectory arrays, starting with the data for physics. He will resume this work (later dynamics as well), and can contact staff in MF. MF main contacts will be Yves Bouteloup and Cécile Loo for the physics parts (Claude and François Bouyssel can be kept in copy). MF think that in a later stage, there will be an analysis and work required for binding the Fortran Trajectory structures to the OOPS/C++ Trajectory class. The contact then in GMAP will be Etienne Arbogast. A wrap-up discussion is planned at the next video-conference.*
7. The strategy for phasing of CY41 shall be re-addressed at the Sept 19 video-conference (two stage or not, and some precision about calendar). => *in order to accommodate constraints at EC (migration to CRAY) and at MF (an early start of phasing for CY41 in Toulouse), the strategy decided is that EC prepare a CY40R2 (formerly known as CY40R1+) including all technical changes for code re-factoring and send that release to MF for building CY41 by end of March. The build of CY41 is then planned at MF from end of March through May/June. There's no specific strong constraint on a date of declaration except summer holidays (!). EC will build in parallel CY40R3 including scientific changes required for the first scientific E-suite to be started on CRAY. Those changes will be phased into a CY41R1 in the summer or autumn. There's a pending question about including RTTOV-11 in CY40R2 and CY41 (Note: a new RTTOV version is a scientific progress, but it can slow down technical validation). Claude indicated that the first reactions in GMAP were rather positive for including RTTOV-11, but MF will confirm this later. Deborah explained she could send a more complete list of the scientific changes for CY40R3 to MF in a few weeks. Action for next meeting: finalize the possible scientific content of CY41 (RTTOV-11).*

2. Hirlam proposal for code normalization aspects:

Rimvydas Jasinskas (Lithuania) made a number of proposals for addressing code normalization aspects in the various NWP code libraries. He implemented the corresponding code changes that were sent to MF and EC before the meeting (Ulf), The changes span over the IFS core codes, the RTTOV code, the SURFEX and Méso-NH source codes.

At first, the several items for the IFS/Arpège/LAM NWP codes were evaluated (CPP macros, IMPLICIT NONE, de-tabulation, etc.). All were accepted and decision was taken to implement them in CY40T1 (as a separate GIT branch, besides the scientific contributions from Harmonie/Hirlam for the next interim cycle in Toulouse). For the CPP/macro aspect, Ulf will ask Rimvydas to update the official common norm checker tool (contact at EC: Deborah, at MF: Ryad). For FA/LFI, Ulf shall contact Philippe Marguinaud and check what is the status of the C-code version of the LFI package, and they should decide together whether the LFI modset of code normalization still is relevant in terms of maintenance of the Fortran version of LFI. Rimvydas mentioned a possible bug in one minimizer of "xla/algor" => action on Ulf to ask Rimvydas for more details, and send info to EC and MF.

For RTTOV, it was decided to delay the implementation since RTTOV-11 would soon enter the official releases. The question of who should approach the RTTOV consortium was raised, and for this time, EC would check if they can take over the proposal (Deborah to check with Cristina Lupu).

For the SURFEX code, Ulf will take contact with Stéphanie Faroux. It was suggested that these changes could be proposed in view of the next major SURFEX code release, in 2014 (Version 8).

For the Méso-NH codes, Ulf will take contact with the Méso-NH core team (Sébastien Riette and Christine Lac), with copy to Claude and Ryad, in order to agree on their implementation. We should then also discuss how the modset should be technically committed (directly to Méso-NH or via the CY40T1/GMAP code release).

For SURFEX and Méso-NH codes, Rimvydas will have to redo separate packages with all normalization features in.

The group welcomed the technical documentation prepared by Rimvydas, which greatly helped to understand the whole modset and speeded up the discussions.

The link between this normalization effort and a technical evaluation note of the IFS/Arpège/LAM codes, prepared and sent to EC by DMI (J. Poulsen), was raised. The present effort is rather independent of the DMI analysis, and is thought as a general move towards more code coherence with the norms. Hirlam will re-evaluate the outcome of the study by DMI, and come back later to EC and MF with some possible future proposals.

3. AOB

EC staff are now on HPC training for their new CRAY.

4.Next meeting

scheduled for Wednesday, November 20, 1.30pm (UK) / 14h30 (CEST).
Possible content would include a wrap-up by Filip Vana on the encapsulation of the trajectory, a wrap-up on the exchange of codes for geometry and OOPS/forecast model (Tomas/John/Karim etal.), any issue arising from other coding activities or in preparation of the OOPS/SC of Nov 27.

List of Actions :

1. Deborah and Stéphane shall liaise during the phasing process of CY41 in order to perform the rename/move changes of Appendix E in the most optimal way. The Aladin "ald" routines will be changed in MF during the same phasing.
2. Wrap-up discussion about the Geometry/Setup/OOPS-IFS forecast/STEPO_OOPS code changes, and work at MF on an OOPS-Arpège prototype forecast.
3. MF/Full-POS: all technical consequences of pruning FP1 must be evaluated. At least one necessary condition before pruning FP1 was that the Boyd option (for LAM LBC) is recoded in FP2 (it's not there yet). Claude also wished to make sure MF and Aladin management is well informed about this pruning possibility.
4. Alan Geer would send an e-mail to MF, about the work towards a single call to COBSALL and the results of validation (contacts: Eric Wattrelot, Jean-François Mahfouf, Claude Fischer)
5. Wrap-up discussion about the work by Filip Vana for encapsulating the trajectory arrays.
6. Finalize the expected scientific content of CY41 (RTTOV-11)
7. Hirlam normalization modset. Related actions:
   - 7.1. For the CPP/macro aspect, Ulf will ask Rimvydas to update the official common norm checker tool (contact at EC: Deborah, at MF: Ryad)
   - 7.2. For FA/LFI, Ulf shall contact Philippe Marguinaud and check what is the status of the C-code version of the LFI package, and they should decide together whether the LFI modset of code normalization still is relevant in terms of maintenance of the Fortran version of LFI
   - 7.3. Rimvydas mentioned a possible bug in one minimizer of "xla/algor" => action on Ulf to ask Rimvydas for more details, and send info to EC and MF
   - 7.4. For RTTOV, it was decided to delay the implementation since RTTOV-11 would soon enter the official releases. The question of who should approach the RTTOV consortium was raised, and for this time, EC would check if they can take over the proposal (Deborah to check with Cristina Lupu).
   - 7.5. For the SURFEX code, Ulf will take contact with Stéphanie Faroux
   - 7.6. For the Méso-NH codes, Ulf will take contact with the Méso-NH core team (Sébastien Riette and Christine Lac), with copy to Claude and Ryad, in order to agree on their implementation. We should then also discuss how the modset should be technically committed (directly to Méso-NH or via the CY40T1/GMAP code release).