OOPS technical meeting - 6th October 2011
IFS cleaning and bottom-up OOPS work

Participants (MF) : Claude Fischer, Karim Yessad, Yves Bouteloup,
Stéphane Martinez, Alexandre Mary
Participants (EC) : Yannick Trémolet, Deborah Salmond, John Hague,
Mike Fisher, Sylvie Malardel, Tomas Wilhelmsson

1. New Coding Norms Document for IFS

Mike had received the latest version from Olivier Riviere. He has made a few final changes and now considers the document is ready for circulation.

Action: Mike to send document to Claude to be circulated and passed to OOPS steering committee before their next meeting on 30th November

2. Update on OOPS-3D-Var

Yannick reported that the parts extracted from IFS could now be called from the OOPS C++ layer. This work had now progressed as far as H(x) (calling HOP).

3. Re-organisation of Setup and Geometry

Tomas reported on his work to encapsulate the Geometry Object and streamline the Setup routines to split the setup of Geometry from the setup of the FieldSet.

The plan was to introduce POINTERS and use the 'Tomas trick' to have multiple copies of the geometry object – in the same way that has been done for the FieldSet. Once this was done different resolutions could run in the same execution as would be needed for 4D-Var This was proving to be a very complex piece of work - but was not needed to progress with the OOPS-3D-Var.

Tomas expected to have some code ready for Meteo-France to look at in April/May 2012. The subroutine susc2b had already been split into susc2b and susc2c – where susc2b deals with Geometry setup and susc2c deals with FieldSet setup.

Meteo-France were keen to have Tomas' modifications as soon as possible so that they could analyse the consequences for their configurations and understand the magnitude of the work on their side. In the meantime Tomas would give updates and more information as his work progressed at forthcoming video-conferences.

Tomas pointed out that the **order** of the setup of Geometry and FieldSet would not be changed for the IFS – the order would only change when these routines were called by OOPS.

The reason for the change in order is that in the OOPS 3D-Var we need to allocate multiple instances of Fieldset objects, and eventually for 4D-Var also multiple instances of Geometry objects. In the current IFS part of the setup of Fieldset data is interleaved with setup of Geometry data. For OOPS they have to be disentangled, so that all of the Geometry setup is done first, before setting up a Fieldset. Consequently the setup order in OOPS will be different from the current IFS.

Similar rearrangements can be expected for the setup other OOPS objects too.

One of the important tasks was to have a complete list of modules which contain the geometry – Karim has already done some work towards this in his "OOPS: Action Cleaning' document"

Action: Tomas would keep contact with Karim to agree the list of modules to define the Geometry.

4. Externalisation of LASCAW

Karim's document "Status of Different Interpolators coded in Arpege/IFS – towards unification and externalisation" was discussed. The work was to be split into two steps:

Firstly – for CY39 rewrite interpolator and halo management in order to make it externalisable (e.g. remove all references to Global modules in the interpolation routines and replace them with passed arguments) Then externalise it and put it in a new library. It was thought that this work could most easily be done at ECMWF – as George was already making changes in this area.

Then – after CY39 – rewrite LASCAW in a more flexible way. Karim was planning to do this work. He pointed out that care had to be taken with LASCAW – from the point-of-view of optimisation – and there might be a need to have vector and scalar versions.

Sylvie proposed that rather than having a monolithic routine like LASCAW – it would be nicer to have smaller routines to handle the LASCAW-type operations for different interpolation schemes – existing and new.

Action: Deborah would check with George on how this would fit with his work and Sylvie would give feedback on Karim's proposed re-write of LASCAW.

5. Cleaning of OBSHOR

Karim's document 'New Presentation for OBSHOR observation interpolator' was discussed. Much of the work in this area had been done – so the remaining document was now quite slim. Also John had also been streamlining this part for OOPS - for CY38R1- COBSALL would have GMV,GMVS,GFL and surface fields as **input** arguments and GOM arrays as **output** arguments – instead of accessing these in the low-level routines from the modules. It was proposed that the cleaning work was to be done in two steps:

Firstly – for CY39 – mpobseq would be cleaned up to remove the 'dangerous' counting for indices like KBP=KPB+8 etc. John agreed to look at this

Then - after CY39 – we would investigate making the GOM arrays reflect the structure of the Surface fields.

Action: John would communicate with Karim by email to get a good solution for the mpobseq work.

Reminder : next meeting on Thursday 20th October (1:30pm Reading ; 14:30h Toulouse).

This meeting will cover:

- IFS cleaning actions for CY39
  - Karim's Version V7c cleaning document - Appendices L and M have not yet been

updated to take account of CY38
  - Reflect new coding norms document
- OOPS/C++ aspects
  - Status of 3D-Var OOPS-IFS prototype
  - Porting of OOPS toy to NEC at MF
- Evolution of B-matrix and control vector code