

Minutes of NEMO Developer's Committee – 8 July 2014

Participants (using videoconference, through 7 sites):

Experts: Jean- Marc Molines (CNRS), François Massonnet(UCL), Arthur Vidard(INRIA), Laurent Debreu (INRIA), Julien Le Sommer (CNRS), Richard Wood (Met-Office), Mike Bell (Met-Office), Anne-Marie Tréguier (CNRS), Stephen Pickles (SFTC), Andrew Porter (SFTC)

System Team: Clément Bricaud (Mercator ocean), Emmanuella Clementi (INGV), Damiano Del Rosso (INGV), Pierre-Antoine Bouttier (CNRS), Gurvan Madec(CNRS), Paolo Oddo (INGV), Tim Graham (Met Office), Claire Lévy(CNRS), Stefania Ciliberti (CMCC), Dorotea Iovino (CMCC), Italo Epicoco(CMCC), Silvia Mocavero (CMCC), James Harle (NOC)

Introduction – Agenda and objectives of the meeting

General context: first version of « NEMO's development strategy: consensus and open discussions » officially announced 1 month ago, after one year of work on mid-term goals for NEMO.

As first consequence, a new yearly agenda, with this path starting each year, and this new meeting of Developer's Committee in the middle of the way (in July).

At this stage, questions are: do we have new results, conclusions, ideas, which might affect the development strategy and/or the next year's workplan?

As it works for now, NEMO's development work is going on in parallel on 2 main streams:

- One is the workplan: a list of actions, each one has a PI coming from one of the 6 institutions of the consortium. Supposed to produce “something” by the end of the year, presumably some new/updated parts of the code
- The other is the Working Groups: in general (we'll see may be different for each working group) more thinking than coding. Each leader to tell us about the results of the work.

The possible changes in short or long term perspectives may come either from the PIs of the workplan, or from the Working Groups, or from the experts of this Committee.

The proposed agenda follows this description:

- listen to and discuss with the leaders of working groups
- the same with the 6 NEMO officers representing the PIs of their institutions for the contribution to the workplan
- open general discussion and answer the questions:

Discussion and decision on the need for an update of the Development Strategy document

Preliminary suggestions on 2015 workplan, and especially review and update if relevant for 2015 the list of working groups and of shared actions

Agenda is approved.

Brief reports and discussion on Working groups

The report should include

** the main progress of 2014 (especially if they induce changes in the development strategy document)*

** the coherency/discrepancies of these results and the 2014 work plan*

** if relevant the inputs from these results for the 2015 work plan*

- WG Wave Coupling: Paolo Oddo as leader of the Working Group
- Objective of the working group: define the plan, determine how to define wave effects in NEMO
- Some additional external experts have been added to those chosen by the consortium
- A 2 days meeting took place at ECMWF in June: theory + technical.
- Actions are now clearly identified

- 2 phases for development: effect on large scale, effect in coastal areas
- A development branch already created, implementing the work done by ECMWF
- Some technical issues remain to be discussed on the work already done.
- **Next step : identify volunteers for doing the work (to be listed in 2015 Shared Actions). For now, more a question to System Team and 2015 worplan than to the Working Group**
- The goal of the working group was to discuss the science in order to define the actions. It is mainly done

- WG AGRIF: Laurent Debreu as leader of the Working Group
- Work has been identified and distributed, see report on the wiki page <https://forge.ipsl.jussieu.fr/nemo/wiki/WorkingGroups/AGRIF>.
- Main actors in 2014: Sébastien Masson, Jérôme Chanut and Rachid Benshila (implement new AGRIF release).
- The new AGRIF release will be added in a new development branch before merge in 3.6 before its release this year
- **For now more testing is needed for which volunteers are welcome**, beyond the contribution of Jean-Marc Molines
- Daley Calvert will work on vertical grid refinement in Oct/Nov, starting from a quite old version of Laurent Debreu. Objective is to implement it in the “new AGRIF” development branch

- WG Configuration Manager: Clément Bricaud on behalf of Julien Paul as leader of the Working Group
- A first version has been implemented in 3.6 during 2013 Merge party in Bologna.
- In 2014 : bug fixes and adjustments
- For now, the work takes more time than expected.
- The working group, cf https://forge.ipsl.jussieu.fr/nemo/wiki/WorkingGroups/nemo_ConfigurationManager has not been very active up to now (technical problems during videoconference and not many answers).
- **All members of Working Group agree but also confirm their interest and motivation**
- comment from James Harle : **developing python tools in Liverpool, to be implemented as a contribution**
- comment From Claire Lévy : building the CFG is strongly related to the simplification process: for the files related to grid/bathymetry definitions, if simplification removes this from the code, it has to be working effectively in the Configuration Manager. **Need to coordinate between Simplification and Configuration Manager Working Groups**
- **Need for a Technical report on implementation and modularity of the Configuration Manager for validation before this autumn**

- WG Simplification: Gervan Madec as leader of the Working Group
- a wiki page https://forge.ipsl.jussieu.fr/nemo/wiki/WorkingGroups/Simplification_and_robustness
- An email sent to the whole community on 18 April 2014 listing the proposed simplifications and requesting feedbacks from applications
- A significant number of answers, and agreement with proposed changes.
- Few people are concerned with backward compatibility
- LIM2 will be removed once LIM3 is able to run as LIM2-equivalent
- Simplification has been discussed but not robustness and test cases
- **The simplification choices are now done: ready to become a list of shared actions in 2015 workplan: need to be distributed within whole System Team. The Working Group on Simplification should come to an end. A new Working Group on robustness and test cases will be created now, in place of this one. All volunteers are welcome (and Jérôme Chanut hoped). A leader to be chosen.**

- WG HPC: Italo Epiccoco on behalf of Sébastien Masson as leader of the Working Group
- interaction with GungHo project.
- G-Ocean project will end in March 2015.
- ongoing work with Mike and GPU architectures: analysis of timing by routines
- Comment by Julien Le Sommer : report on HPC WG regarding Gung Ho was scheduled for december 2014. Should we wait for results from G-ocean? Yes, confirmed by S. Pickles, **report on HPC/GungHo postponed to March 2015.**
- This shift in time **shifts also the Gateway meeting, to be organised in mid 2015**
- **Deciding the success criteria for Gateway meeting to be defined end 2014**

- WG nemo-assim: Pierre-Antoine Bouttier on behalf of Eric Blayo as leader of the Working Group
- Consolidate existing tools
- Promote the tools: demonstrator for DA to be implemented in 3.6
- Need link with simplification group (through P.A. Bouttier and A. Vidard)
- Next meeting early 2015.
- Comment F. Massonnet : will sea-ice be considered in ASSIM ? Not now for TAM but already some implementations in OBS

Brief report on actions of 2014 workplan by the institutions of the Consortium

The report should include

** The status of the specific and shared actions of the work plan for which an expert of their institution is PI (see <https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP>). The goal is not to screen all the work plan, but only to identify delays or problems, if relevant*

** The preliminary streams, as seen for now, for 2015 work plan*

- CMCC : Dorotea Iovino as CMCC NEMO Officer
- WP2014 : https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/2014Action_institutions_CMCC
 - 5 actions listed: 4 in HPC, and *CMCC-5 - OBC with BDY for biogeochemistry*
 - CMCC-1 - Scalability with MPI-OPENMP is done, other are ongoing, except CMCC-5 - OBC with BDY for biogeochemistry for which it is uncertain for 2014
- This year, Srdjan Dobricic has left so as Marcello Vicchi: huge reorganization on-going
 - CMCC-5 may be postponed
- WP2015:
 - No idea yet since huge reorganization on-going

- CNRS : Gurvan Madec on behalf of Christian Ethé as CNRS NEMO Officer
- WP2014 : https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/2014Action_institutions_CNRS
 - on time except *CNRS-5 - TOP Online coarsening*: the development branch exists but still some bugfix work, and to be updated for 3.6 (now in 3.4). Question from R. Wood: will it be available for CMIP6? Answer: yes, very probably, but uncertain for now: can be shared as development and debugged with more testers already
 - Some development done although not in workplan: 4th order TVD vertical + rotation biharmonic
 - *CNRS-10 - Energy diag.* : to be confirmed
- WP2015 :
 - No idea yet

- INGV : Paolo Oddo as INGV NEMO Officer
- WP2014: https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/2014Action_institutions_INGV

- *INGV.1 – Continuation of Surface Pressure effect developments in limited area model: done* although becoming partly useless with choices on simplification
- *INGV.3 – River lateral open boundary conditions :ongoing effort*
- *INGV.4 – Wave-current interaction: done, see report of WG above*
- *INGV.6 – GMD NEMO Special Issue: NEMO Special Issue successfully created, but the number of paper submitted by System Team is much lower than announced. Question should be addressed by the end of this year on the future of this initiative: having a nearly empty GMD Special Issue may not be the best way to emphasize the development efforts*
- WP2015
 - Contribute to shared action
 - Pursue wave-current interaction
- Mercator: Clément Bricaud as Mercator ocean NEMO Officer
- WP2014: https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/2014Action_institutions_MERCATOR
 - All actions going on in time except *MERCATOR-5 - Implement quasi-hydrostatic approximation*, which will not be done
 - On going beta testing of 3.6: reproducibility between 3.5 and 3.6, LIM3, cyclones
 - GMD: 1D configuration paper submitted last week.
- WP2015
 - Terminate 2014 actions
 - Continue Configuration Manager.
 - Contribute to AGRIF Shared action
 - Specific action on z-tilde discretization, demo with tide only configuration in ORCA025
- Met Office: Tim Graham as Met Office NEMO Officer
- WP2014 : https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/Met_Office - 16 actions
 - All actions going on in time except *Met_Office-1 - Process Evaluation of diapycnal mixing*, and *Met_Office-6 - Sponge Layer at open boundaries*, which will not be done
- WP2015 :
 - More multilayer thermo in CICE
 - Surge model based on NEMO.
 - Cool skin. diurnal warming
 - Model bias correction
- Question P. Oddo: What is surge model compared to wetting and drying? Answer coming soon

Additional information from Richard Wood:

- Rachel Furner has moved from System Team to development of Surge model
- Some changes in ocean forecasting group: Mike Bell is now Met Office fellow and will work on “simple modelling” in ocean dynamics and diagnostics. J. Siddorn is taking his previous tasks and Helen Hewitt is taking J. Siddorn’s activities.
- 2014 has been a tricky year for funding. Met Office will be back up for his contribution to NEMO System Team in April 2015
- NOC: James Harle on behalf of Andrew Coward as NOC NEMO Officer
- WP2014: <https://forge.ipsl.jussieu.fr/nemo/wiki/2014WP/NOC>
 - All 4 actions going on in time
 - Wetting and drying at NOCL : H. Liu is working and code has now been updated from 3.4 to 3.6
 - Regional configuration tools in python should be part of Configuration Manager
- WP2015:
 - G. Nurser: Eden et Greatbatch parametrisation
 - A. Coward: add information to support of configurations, contribute to NEMO user manual.

Open general discussion and answer the questions:

Discussion and decision on the update of the Development Strategy document

The document will not be updated this year. This question will be asked again in one year from now: July 2015.

Important to note the announced shift in time for the HPC report, coming in March 2015.

Need to

- Decide the criteria. For Gateway meeting success in December 2014
- Shift the Gateway meeting after the HPC report in 2015 and organise it

Preliminary suggestions on 2015 workplan, and especially review list of working groups and of shared actions

The 2015 workplan is still unclear today but some clear paths have been identified concerning the Shared Actions and Working groups:

- AGRIF: very active in 2014 and more experts and beta testers needed for 2015
- Wave coupling: working group has mainly fully succeeded in fulfilling its tasks. Need now to transform the conclusions in actions for 2015 workplan, distributed within all consortium institutions
- Simplification working Group has now to discuss and get to some conclusions with Configuration Manager Working Groups. After this action, the work of the Working group will be done. Need now to transform the conclusions in actions for 2015 workplan, distributed within all consortium institutions
- Simplification Working Group will end by the end of this year
- A new Working group on Robustness and test cases to be created
- Configuration Manager Working Group needs to be more active. A Technical report on implementation and modularity of the Configuration Manager is expected as soon as possible to initiate the discussion and distribution of tasks
- GMD NEMO Special Issue has to be questioned this autumn if still so few papers

Others

C. Lévy will propose in the next weeks an update of the list of members of Developers Committee, as requested by the Steering Committee: with the prospective work, this committee needs more work and implication. In particular, need to update the list of external experts (many of them did not even answer to the invitation to this meeting), whereas they are expected to represent a whole group of applications and needs. Also need now to have all leaders of working groups invited. All suggestions to C. Lévy for this update are welcome.

R. Wood gives information on Copernicus: work to elaborate the calls is ongoing at national level. It is suggested to send identical inputs for NEMO from at least GB, France and Italy. This suggestion is similar to the one from J. Le Sommer to Steering Committee (see mail from C. Lévy – 5 April, on Strategy of NEMO consortium for H2020). Dead-line is coming soon. It is decided that R. Wood will send a mail to Steering Committee; C. Lévy to forward it to NEMO officer for a collective answer in the next week.