

**Séminaire vendredi le 20 avril 2018 11:00 / Seminar Friday April 20<sup>th</sup> 2018 11:00h**

**Sujet/Subject:** Semi-Lagrangian advection in the NEMO ocean model

**Langue/language** : Anglais/Englishh

**Conférenciers/Lecturers:** **Christopher Subich (RPN-A)**

*Pierre Pellerin, François Roy, Greg Smith*

**Résumé/Abstract:**

The GEM dynamical core uses a semi-Lagrangian advection scheme to permit large timesteps, with Courant (CFL) numbers larger than one. However, the NEMO ocean model, used in the ice/ocean and coupled forecasting systems, relies on an Eulerian representation of advection, and consequently the model is constrained by the CFL number. This bound will become increasingly binding as the global forecasting resolution increases, and unless addressed it may become the most restrictive computational constraint on the coupled forecasting system.

This talk presents the ongoing work in adapting a semi-Lagrangian advection scheme to the NEMO ocean model, focusing on:

- \* Retaining compatibility with NEMO's leapfrog approach to timestepping,
- \* Spatial interpolation with Hermite splines, and
- \* Trajectory calculations that respect NEMO's immersed boundary construction.

Additionally, this talk will present preliminary results from multi-year free runs of this algorithm applied in the CONCEPTS v3 and CONCEPTS v4 frameworks, designed to test the algorithm's stability and performance with an increased timestep.