



Multiresolution in CROCO (Coastal and Regional Ocean Community model)

Laurent Debreu (1), Francis Auclair (2), Rachid Benshila (3), Xavier Capet (4), Franck Dumas (5), Swen Julien (6), and Patrick Marchesiello (7)

(1) Inria, Univ. Grenoble-Alpes, CNRS, LJK, F-38000 Grenoble, France (laurent.debreu@imag.fr), (2) Université Paul Sabatier, Laboratoire d'Aérodynamique, Toulouse, France, (3) CNRS - Laboratoire d'Etudes en Géophysique et Océanographie Spatiales, Toulouse, France, (4) CNRS - Laboratoire d'Océanographie et du Climat, Paris, France, (5) SHOM, Brest, France, (6) IFREMER, Brest, France, (7) IRD - Laboratoire d'Etudes en Géophysique et Océanographie Spatiales, Toulouse, France

Multiresolution in CROCO (Coastal and Regional Ocean Community model)

Abstract :

CROCO (Coastal and Regional Ocean Community model [1]) is a new oceanic modeling system built upon ROMS_AGRIF and the non-hydrostatic kernel of SNH, gradually including algorithms from MARS3D (sediments) and HYCOM (vertical coordinates). An important objective of CROCO is to provide the possibility of running truly multiresolution simulations.

Our previous work on structured mesh refinement [2] allowed us to run two-way nesting with the following major features: conservation, spatial and temporal refinement, coupling at the barotropic level.

In this presentation, we will expose the current developments in CROCO towards multiresolution simulations: connection between neighboring grids at the same level of resolution and load balancing on parallel computers.

Results of preliminary experiments will be given both on an idealized test case and on a realistic simulation of the Bay of Biscay with high resolution along the coast.

References:

[1] : CROCO : <http://www.croco-ocean.org>

[2] : Debreu, L., P. Marchesiello, P. Penven, and G. Cambon, 2012: Two-way nesting in split-explicit ocean models: algorithms, implementation and validation. *Ocean Modelling*, 49-50, 1-21.