

NEMO Perspectives in 2013

Contributions from the EC-Earth consortium

Background: EC-Earth 3

- EC-Earth 3: IFS c36r4 + NEMO 3.3.1 + LIM3
- Main configurations:
 - Standard resolution: T255L91 + ORCA1L46
 - High resolution: T511L91 + ORCA025L75
- Use cases:
 - Climate predictions
 - Seasonal to decadal forecasts (initialisation!)
- More components to come...
(vegetation, atm chemistry, land ice, bio-geochemistry)

Configurations

- ESM-ready reference configuration
 - Global configuration finer than ORCA2
 - Activated coupling interface
 - Sea ice model (LIM3) incl. categories and coupling
 - Cost effective BGC model

Other:

- AGRIF over Arctic (coupled)

Bio-geochemical model

- Cost-effective BGC model
 - Typical run length is 100 years
 - Typical resolution is 1 (or even 0.25) degrees
- Suggested investigation focus (cost effectiveness)
 - BGC model on lower resolution
 - “basic” BGC with less tracers (as PISCES)
 - Numerical improvements
 - Coupling interface to atmosphere
- Sediment model as part of BGC model

Sea-ice model

- Coupling interface for LIM3 incl ice categories (ongoing work within EC-Earth consortium)
- Improved re-distribution of incoming atmospheric fluxes on ice categories
- Integrate LIM3 variables in XIOS output
- Improved albedo scheme
 - sophisticated melt ponds
 - improved snow albedo on ice (ice aging)
- Ice calving / ice berg model

Various features

- Numerical/artificial tracers for diagnostics
Dye or age tracers
- Drying/wetting
For simple ocean – ice sheet/shelf coupling and paleo applications
- Large scale caves
Integrate large scale ice shelf ice caverns
- Mixed layer heat budget
As optional diagnostics