



## **The new SINTEX-Frontier coupled model on the Earth Simulator**

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This presentation will give a quick overview of the implementation and use of the SINTEX-Frontier coupled model on the Earth Simulator. This model, originally developed in Europe and based on OPA8 and ECHAM4 coupled with OASIS 2.4, has been recently updated in the frame of EU-Japan collaborations. All models versions have been updated (ECHAM5.3, OASIS3, OPA8.9). Grids resolutions have been increased to T106L31 for the atmosphere and half-degree L31 for the ocean. Ocean and atmosphere are now parallelized with MPI. This presentation will focus on the coupling strategy. First we will detail the computation performance of the high-resolution coupled model. How to use efficiently more than 120 cpu of the Earth Simulator? Balance between models performances, “parallelization” of OASIS 3 by using one OASIS process for each exchanged field? Which are the limitations of the parallelization of the SINTEX-Frontier coupled model? How could we solve these problems? In a second part, we will explore the coupling interface. We will underline the necessity to send ocean surface current to the atmosphere and the best way to do it in a technical point of view. Next, we will discuss the interpolation methods. In order to maximize OASIS performances, we used the so-called “MOZAIC” interpolation but with weights and addresses computed to perform either surface weighted interpolation or bilinear or a kind of cubic spline interpolation. To concluded we will briefly expose our strategies to perform ensemble experiment.