



## **The North Atlantic ocean in an unstructured mesh: combining eddy resolving and coarse resolution meshes.**

A. Huerta-Casas, S. Danilov, D. Sidorenko, Q. Wang, and J. Schroeter  
Alfred-Wegener-Institute, Bremerhaven, Germany

Most of the current ocean models employ structured grids and are well established, whereas unstructured grid models are still under development. Only a few Finite Elements (FE) ocean general circulation models that employ unstructured meshes have been developed. The advantage of using unstructured grids is that they allow for the flexibility to discretize the computational domain and local mesh refinements, without the need of nesting; the representation of coastlines and topography is natural. The main challenge is to achieve a best compromise between numerical efficiency, accuracy and flexibility.

The purpose of this work is to show that the unstructured mesh models are a good alternative of nesting without nesting. This is done analysing the general circulation in the North Atlantic current system in the state-of-the-art Finite Element Ocean Model (FEOM), which employs unstructured grids. A fine mesh was constructed for the Caribbean and Gulf Stream system. The state of the NA in this configuration is discussed.