Project: 704

Project title: Study of key oceanic processes with an eddy-resolving numerical simulation of the Arctic-Atlantic Ocean.

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The project aims at completing a coupled ocean-sea ice numerical simulation of the Arctic and Atlantic Oceans for the period 2002-2010 at an unprecedented high eddy-resolving resolution (4 km) using the MIT general circulation model. The simulation spans the observationally data-rich period (in particular the ARGO era starting at 2002), opening the possibility for intense model-in situ data comparison studies.

The scientific focus is the study of dominant patterns of circulation variability at intraand inter-annual timescales. In particular, studies about turbulent statistics (momentum, heat and freshwater eddy fluxes and respective divergences) and eddiesmean flow and/or eddies-topography interactions will be possible. Another aim is to assess the impact of resolved eddy motions on the variability of large-scale quantities, such as the meridional overturning circulation and heat/freshwater transport and on the exchange between the subpolar, the subtropical and the tropical Atlantic. The eddy resolving simulation will allow the direct estimate of the influence of processes that can only be parameterized in synthesis or climate simulations, thus also enabling an evaluation of parameterization deficiencies.