



The role of mesoscale eddies for primary production along the ice edge

Annette Samuelsen

NERSC, Bergen, Norway (annette.samuelsen@nersc.no)

The ice-edge is a favorable area for the generation of mesoscale eddies. Because of the high latitudes, these eddies are often order of 10 km, but have been observed up to 50 km. The physical surface manifestation can be remotely observed by SAR (Synthetic Aperture Radar), but the corresponding patterns of phytoplankton are hard to observe by ocean color because of the presence of ice and clouds. Because these eddies will transport fresh-water it is likely that they influence the stratification and thus the local blooming conditions.

A regional model for the Fram Strait with resolution 3.5 km has been set up as a coupled physical-biogeochemical model, HYCOM-NORWECOM, nested into a 15-km basin-scale model for the North Atlantic and Arctic. The biogeochemical model represents nutrients, phytoplankton and zooplankton. The 3.5 km resolution model is adequate to resolve the largest eddies in the region, while smaller eddies and submesoscale processes are not resolved. Patches of higher primary production are present close to the ice edge, despite nutrient availability being comparable to adjacent regions. During late summer the biomass and primary production close to the ice edge is dominated by diatoms and closely follows the mesoscale structures. Here we investigate whether these eddies play a role primarily in redistributing the water with high production and if the eddies themselves contribute to enhancement or reduction in the production.