Geophysical Research Abstracts,
Vol. 11, EGU2009-12469, 2009
EGU General Assembly 2009

Parameterization of an iceberg drift model in the Barents Sea

I. Keghouche, L. Bertino, and K. A. Lisæter
NERSC, Mohn-Sverdrup Center, Bergen, Norway (intissar.keghouche@nersc.no)

The problem of parameter estimation is examined for an iceberg drift model of the Barents Sea. The model is forced by atmospheric reanalysis data from ECMWF, ocean and sea ice variables from the 10 km resolution HYbrid Coordinate Ocean Model (HYCOM). The model is compared with four observed iceberg trajectories from April to July in 1990. The first part of the study focuses on the forces that have the strongest impact on the iceberg trajectories, namely the ocean, the atmospheric, and the Coriolis forces. The oceanic and atmospheric form drag coefficients are optimized for three different iceberg geometries. As the iceberg mass increases, the optimal form drag coefficients increase linearly. A simple balance between the drag forces and the Coriolis force explains this behavior. The ratio between the oceanic and atmospheric form drag coefficients is similar in all experiments, although there are large uncertainties on the iceberg geometries. The precision of the first two iceberg trajectory simulations is better than 20 km during the two months of their drift period. The trajectory precision of the two latter simulations is better than 20 km only during the first month of their drift, where after it reduces rapidly to 100 km. The second part of the study focuses on the sea ice parameterization. The sea ice conditions East of Svalbard in winter 1990 were too mild to exhibit any sensitivity to the sea ice parameters.