Iceberg modelling with NEMO

Juliana M. Marson[1] and Paul G. Myers[2]

[1]University of Manitoba, Centre for Earth Observation Science, Winnipeg, Canada (Juliana.MariniMarson@umanitoba.ca))

[2]University of Alberta, Department of Earth and Atmospheric Sciences, Edmonton, Canada

Icebergs represent around half of the yearly mass discharge from the Greenland Ice Sheet. They are not only important freshwater sources, but also pose a threat to navigation and other offshore activities. Since monitoring individual icebergs in large numbers is unfeasible, numerical models are great tools to evaluate their role in freshwater distribution and their general trajectory patterns. While large-scale iceberg modelling is in its infancy, we show recent model improvements done in the Nucleus for European Modelling of the Ocean (NEMO) iceberg module. Among those, we highlight a newly implemented iceberg-sea ice dynamic, where icebergs are locked in concentrated and strong sea ice packs, so they will move with sea ice instead of across it. Additionally, recent code modifications allow the user to choose if the iceberg melt plume is inserted in the ocean's first model layer or distributed along the iceberg draft. Results will show if these code upgrades change the way freshwater is distributed in the ocean and if they better represent iceberg trajectories and their surge seasonality off the Labrador shelf.