



Near coastal high resolution forecast of Disko Bay

The maritime industry continues to expand in the waters around Greenland. Apart from fisheries, which is the most important income for Greenland, an important element is transportation of goods, which often depend on the waterways and the sea ice conditions. During the winters of 2022 and 2023 severe sea ice conditions has been seen in Disko Bay. Especially in 2022, there were discussions on whether or not to fly in supplies instead of using the usual transportation on the ocean. A trustworthy high-resolution forecast of ocean and sea ice conditions could have remedied this decision. High-resolution near coastal forecasts are also requested from especially cruise ships that have a great interest in the area as the volume of tourist. For these and other purposes such as search and rescue, environmental impact studies and surveillance, it is important to forecast the weather, ocean and sea ice conditions of the area. The near coastal environment is often not well resolved in Arctic/global models forecast models and narrow straits and sounds are often not included at all. For these reasons a high-resolution (~750 meters Disko Bay) domain is developed. This setup utilize the Copernicus Arctic Marine forecasting system as boundary conditions and assimilates available level 2 sea ice products based on data fused SAR and passive microwave ice charts. The model system is based on a coupled ocean (HYCOM) and sea ice (CICE) model, which is forced by a none hydrostatic atmospheric forcing at 2.5km resolution from the Danish Meteorological Institute. This is important in order to resolve the steep Greenlandic topography. This presentation will discuss the development and setup of the high-resolution regional ocean and sea ice forecast for Disko Bay. In addition, it will discuss results and first feedback from users.

Till Andreas Soya Rasmussen, Mads Hvid Ribergaard, Imke Sievers, Mia Nørholm