



Evaluating the extended-range ice cover forecast over the Northern Baltic Sea

Joni-Pekka Pietikäinen, Jouni Vainio, Terhi Laurila, and Hilppa Gregow
Finnish Meteorological Institute, Helsinki, Finland (joni-pekka.pietikainen@fmi.fi)

Icebreakers are ships used to keep the shipping channels open during the winter season. Finland has several icebreakers operating in the Baltic Sea and some of the ships are also used at the Arctic Ocean. Deciding the temporal placement of ships between the Baltic Sea region and other needed areas is a difficult task. Thus, it is important to have information about the development of Baltic Sea ice cover so that the ships capable of working in the Arctic Ocean can be utilized, when needed.

The Finnish Meteorological Institute (FMI) has provided seasonal ice condition forecast to the icebreakers concerning the Baltic Sea since 2011. The forecast is based on three elements: 1) the monthly forecasts of CFSv2 (up to 12 months ahead) and also other modelling centres are monitored, 2) the prevailing information about the state of the atmosphere and 3) temperature and sea ice condition in the Baltic Sea. After the model forecasts and matching of these to the current atmospheric and marine states have been made, the meteorologist/ice-experts will make estimates on how the ice season will continue to develop and how that will affect the icebreaker need and trafficability.

The European Centre for Medium-Range Weather Forecasts (ECMWF) uses a fully coupled atmosphere-ocean configuration, where the ocean part is the NEMO ocean model that incorporates the LIM2 sea-ice model. The extended-range forecasts (ERF) of ECMWF provide an overview of the forecast for the coming 46 days and these are updated twice per week. During the winter 2018, the ERF ice cover product was used as an additional source of information for the seasonal ice cover forecasting at FMI. The sea ice cover forecasts were produced as weekly outlooks. At the EMS2018, we would like to show our evaluation of sea ice cover forecasts from ECMWF against the actual situations at Northern Baltic Sea, including analysis of the week-by-week evaluation of the forecast product.