

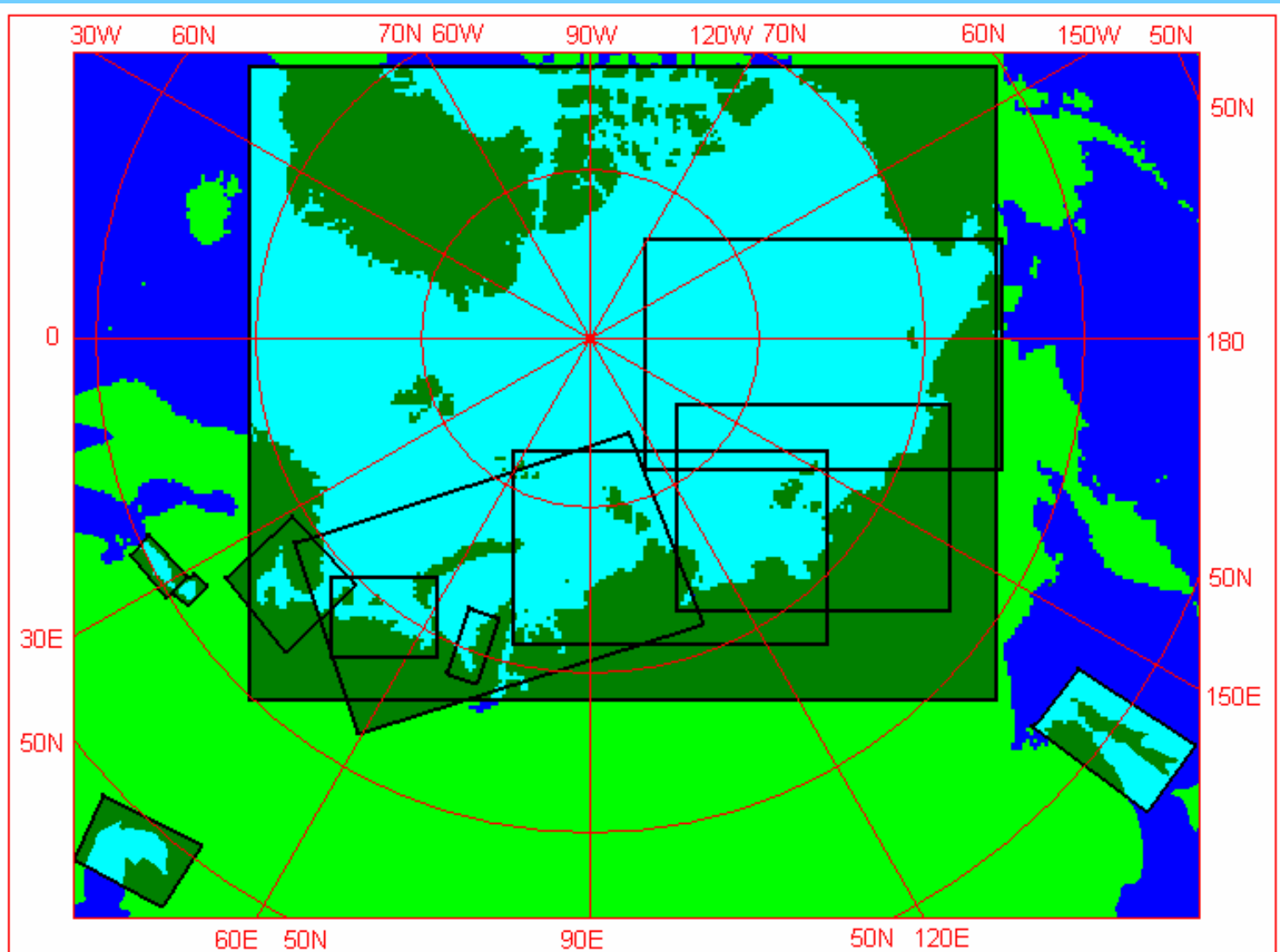
**ETSI IV
St. Petersburg**

**1-5 March
2010**

ON THE DATA ASSIMILATION PROCESS AT AARI

**Dr. Sergey Klyachkin
Arctic and Antarctic Research Institute**

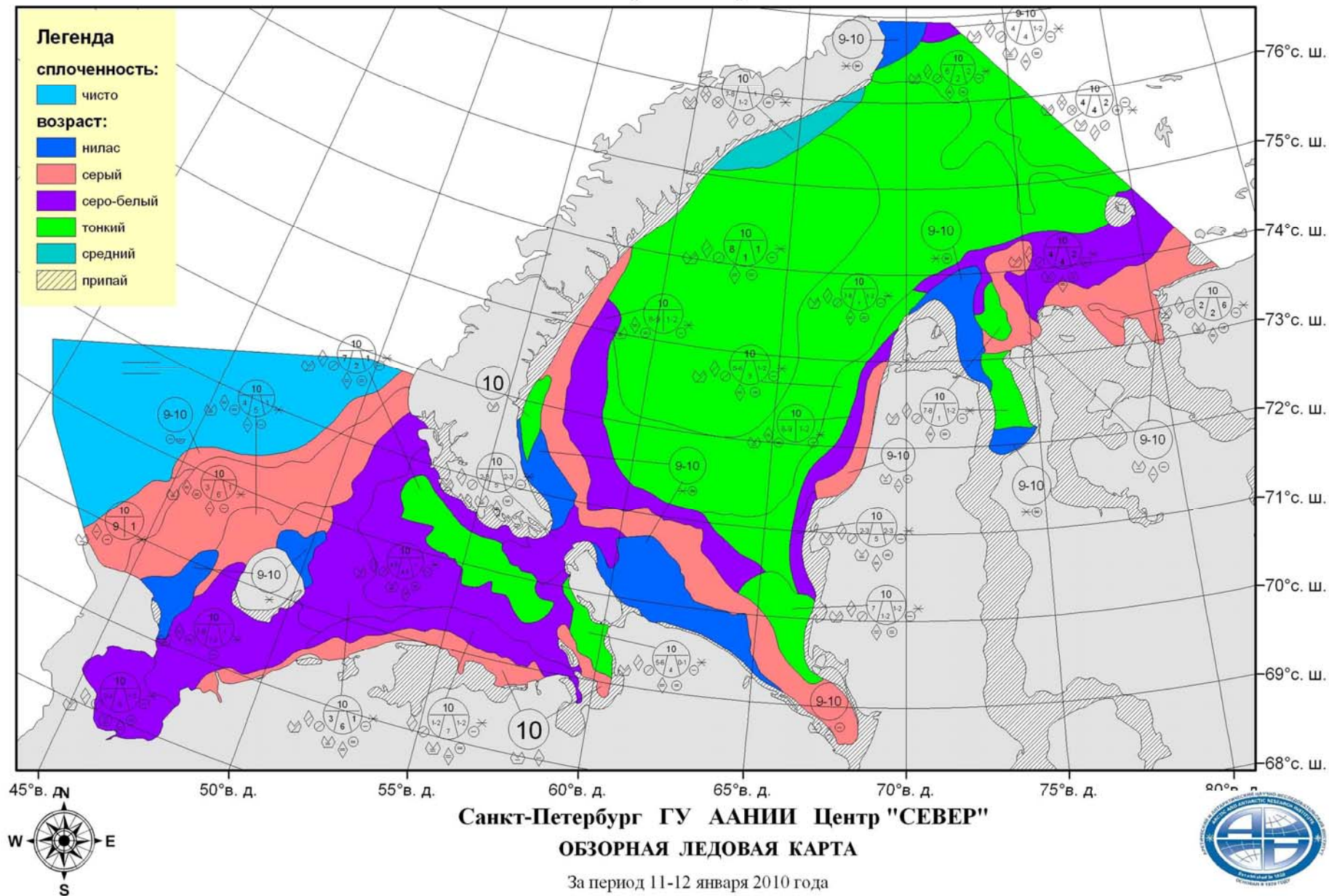
General view of model regions



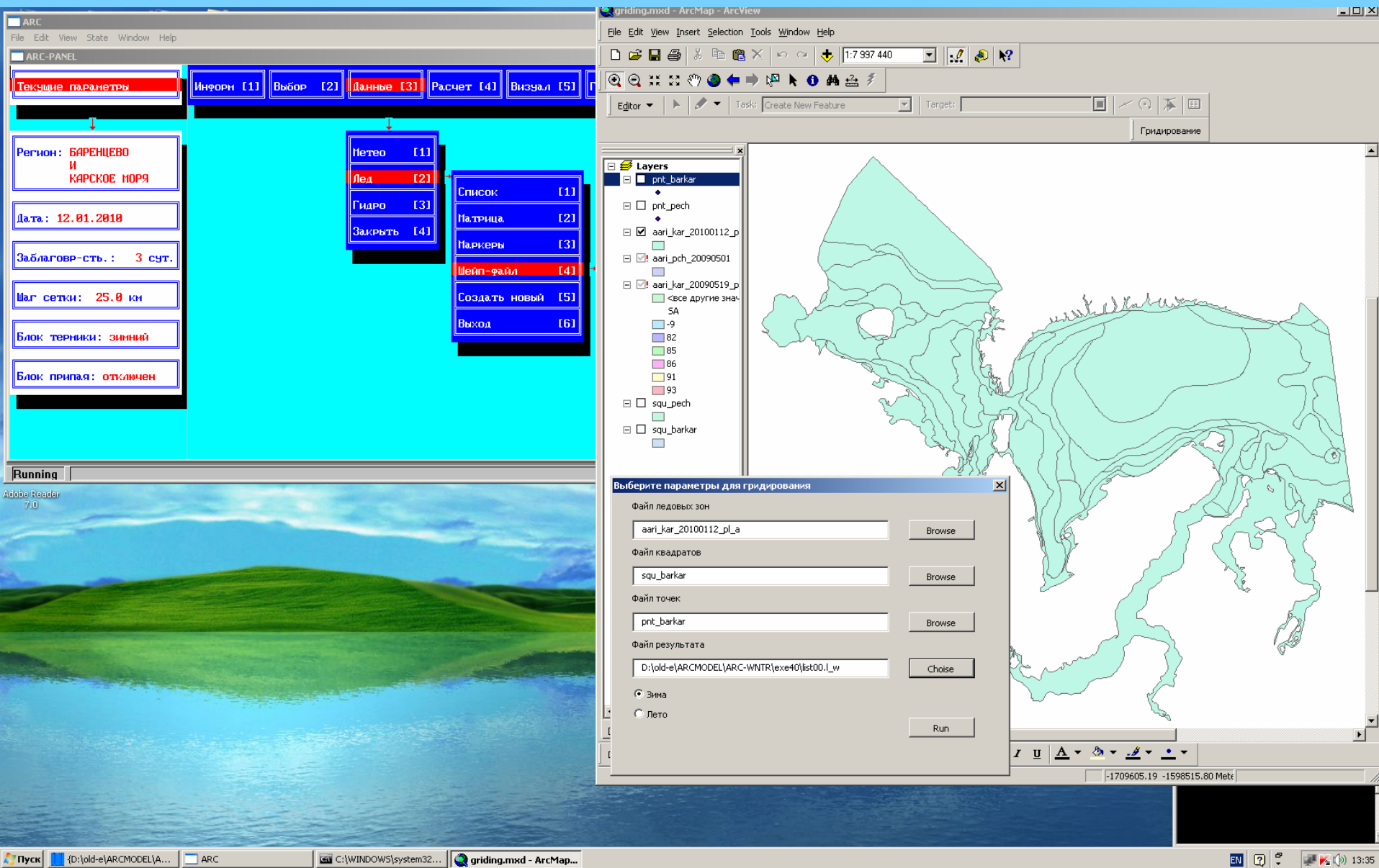
Общий вид регионов модели

New ice chart as graphic file

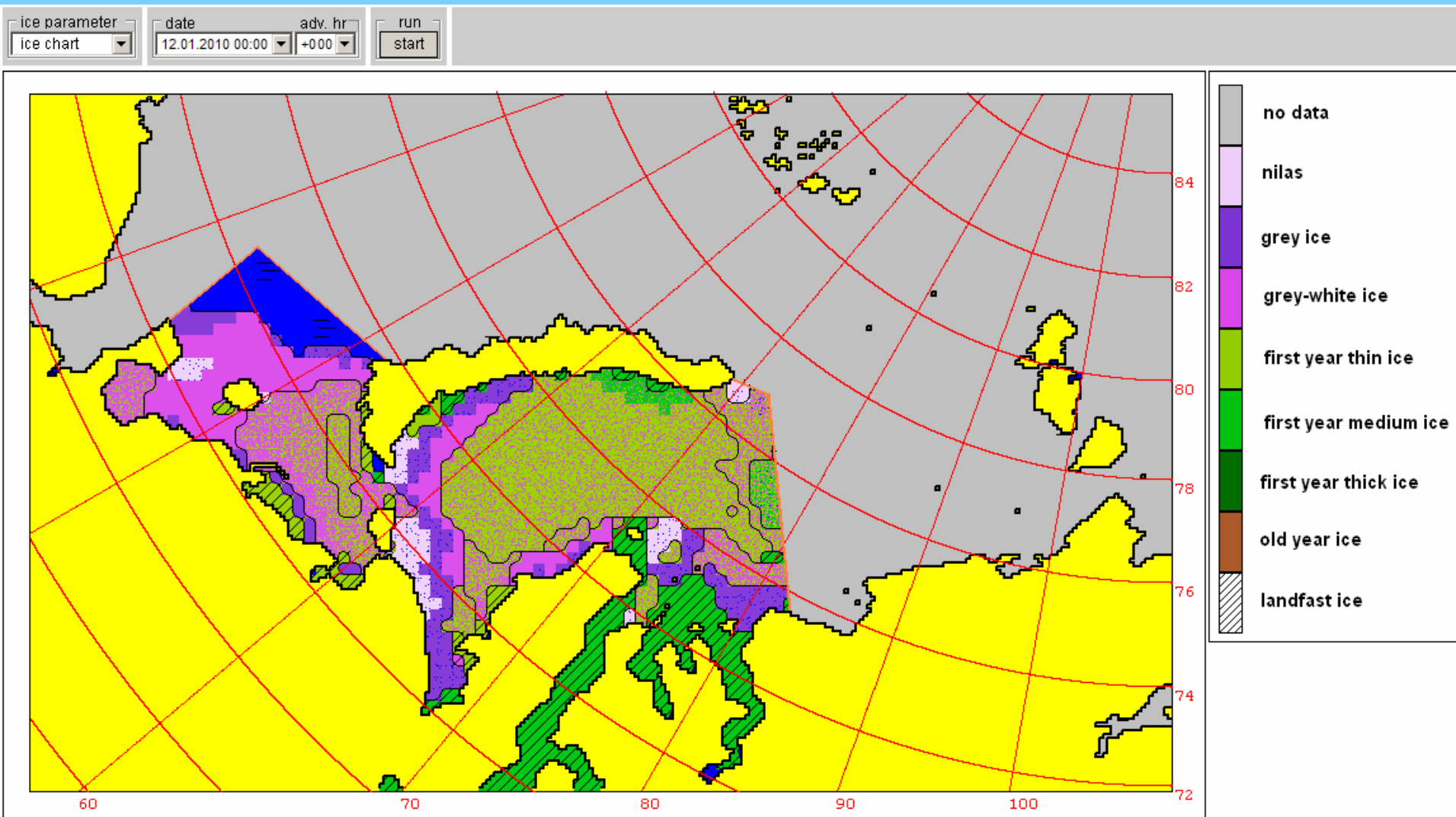
Карское море



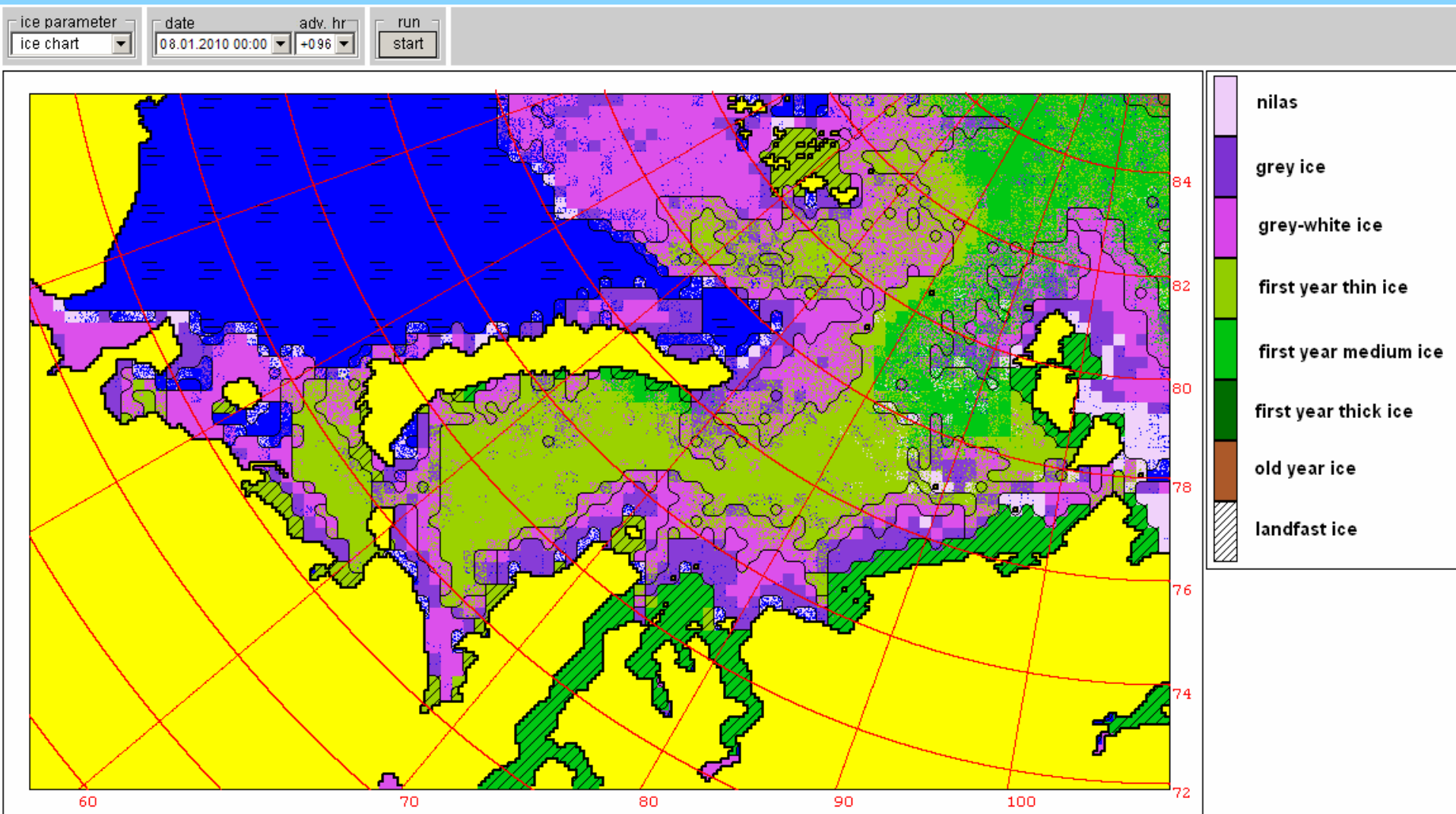
Example of gridding procedure: shape file obtained from new image



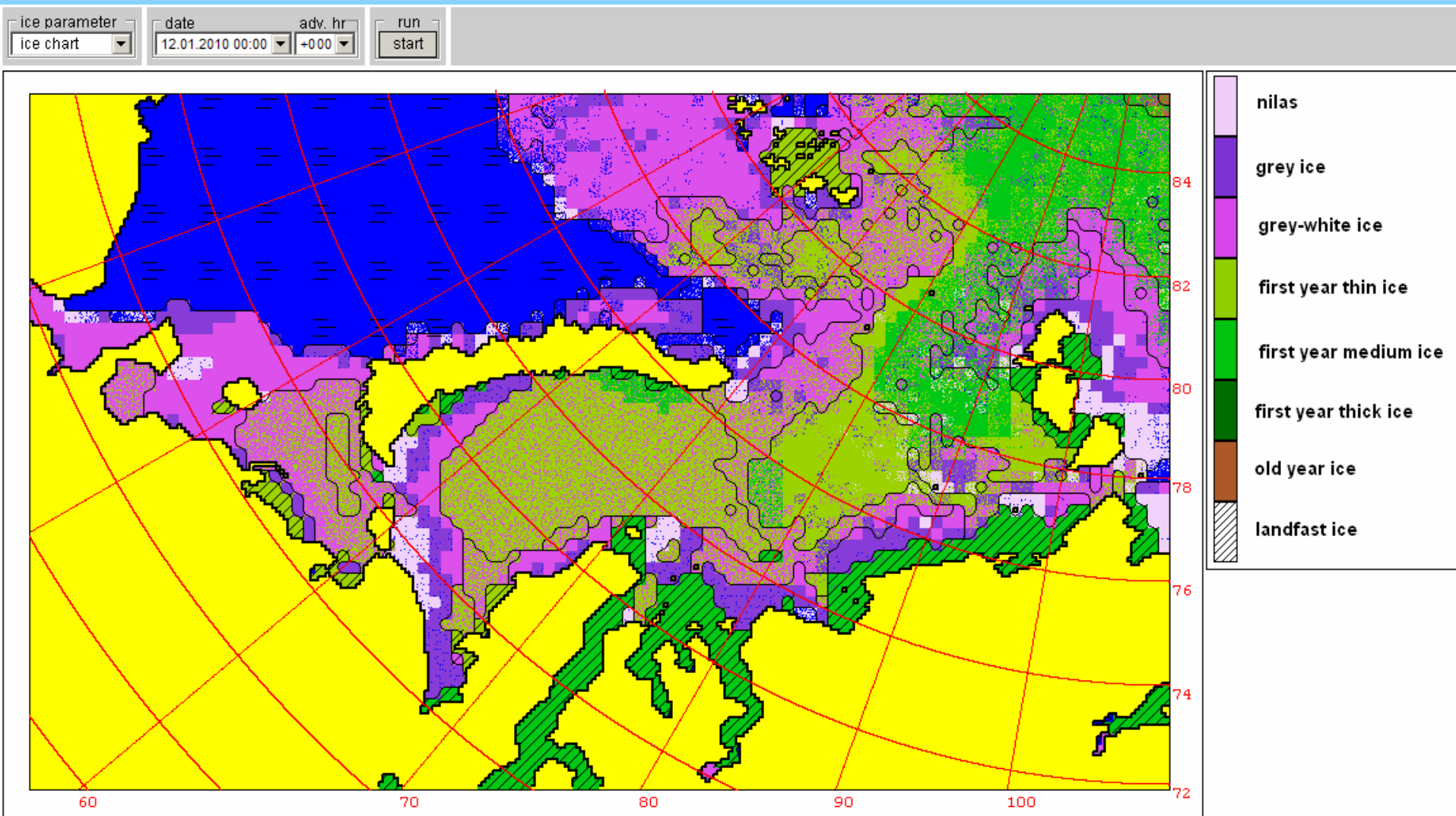
New ice chart obtained from new shape file



Previous forecast



Composite ice chart



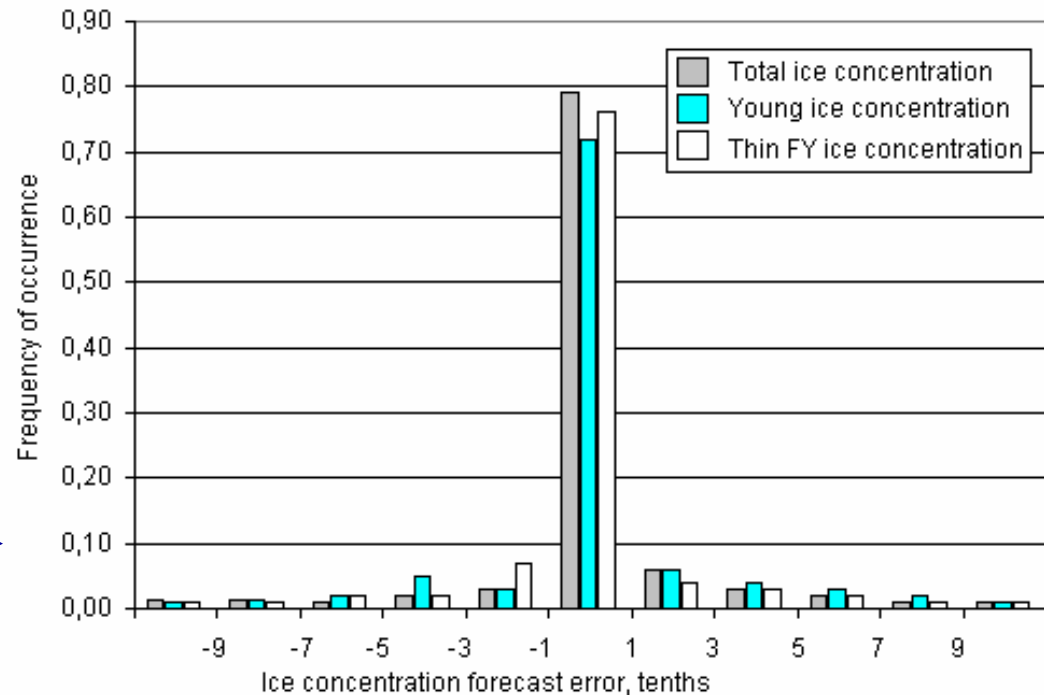
MODEL

The model consists of four principal components:

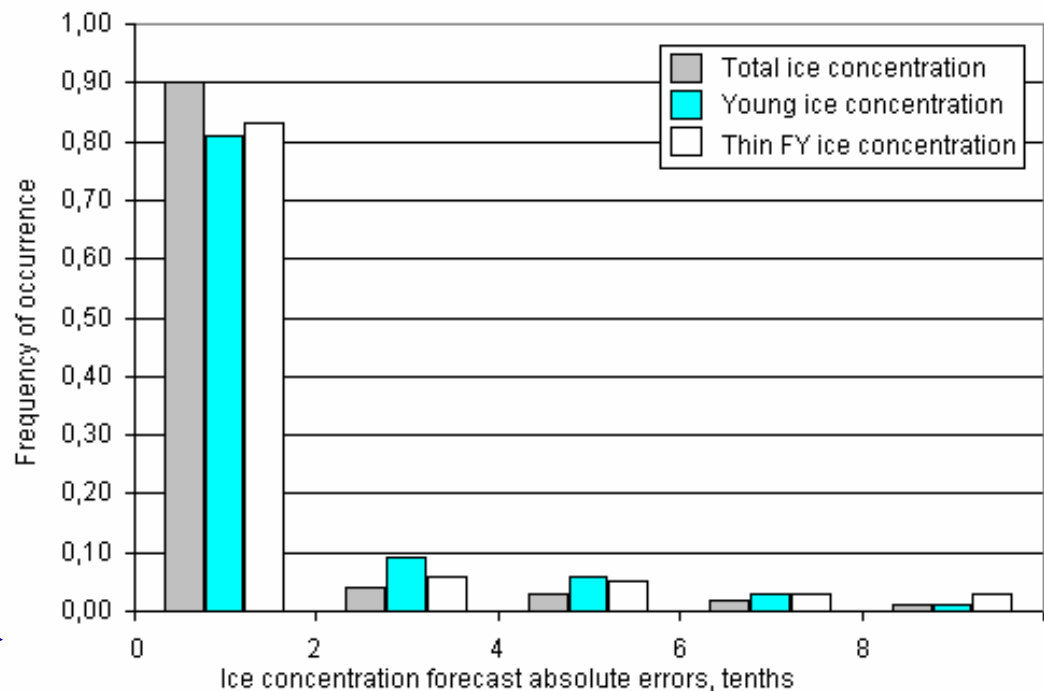
- 1) thermal evolution of the sea water (based on the equations of heat and salinity budget);
- 2) sea water dynamics (based on the equations of hydrodynamics);
- 3) thermal evolution of ice cover (based on the heat budget equation);
- 4) ice cover dynamics (based on the non-stationary equations of ice dynamics with viscous-plastic rheology).

Statistical distribution of ice concentration forecast errors

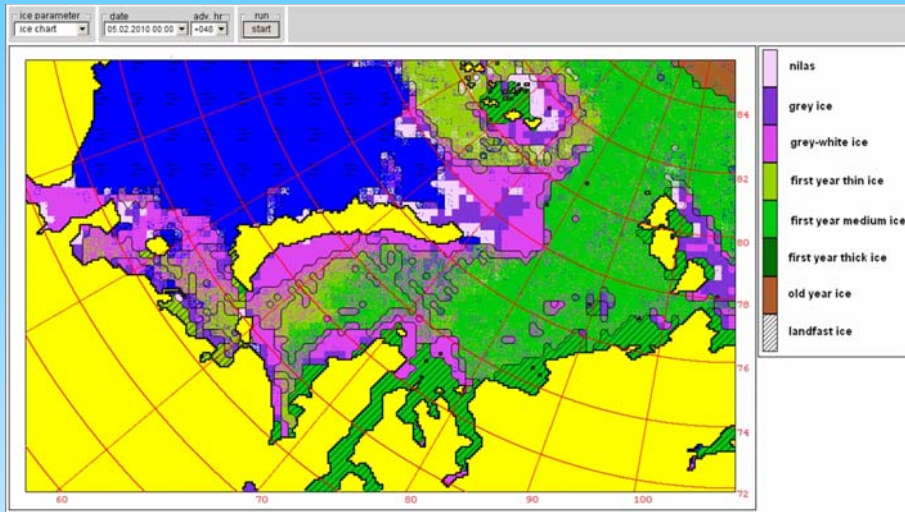
Arithmetic errors



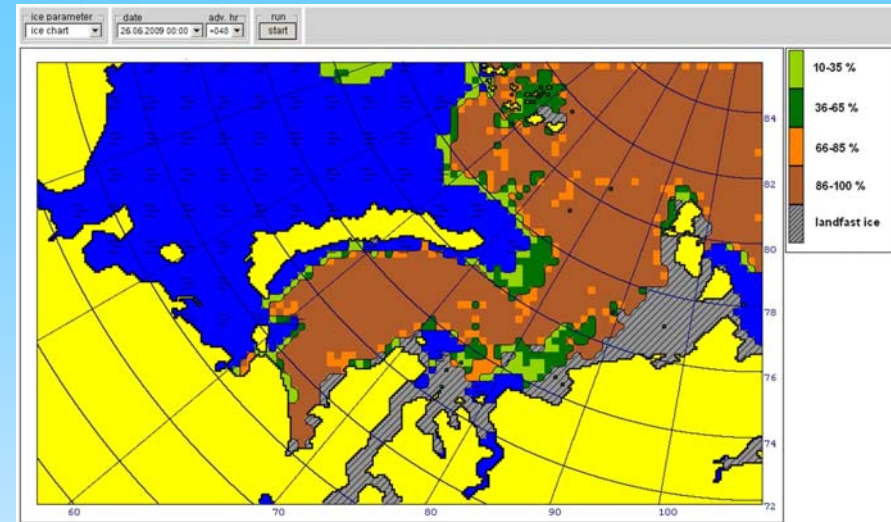
Absolute errors



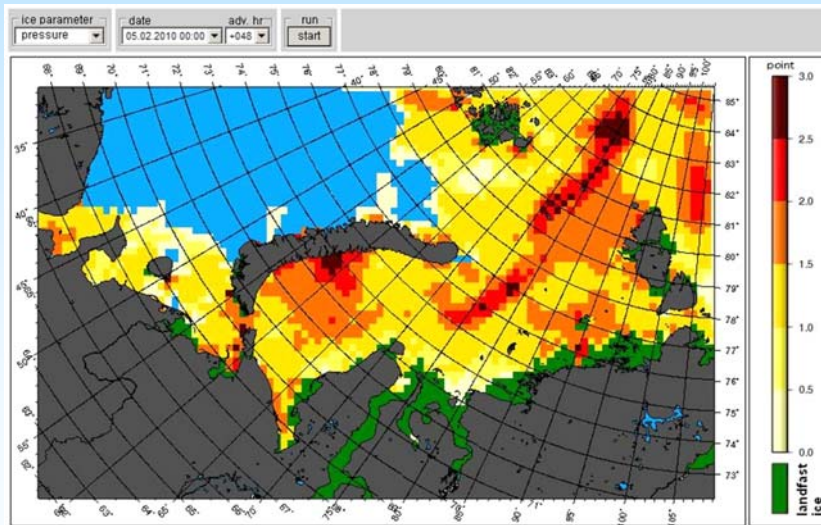
Sample numerical prognostic charts for the Barents and Kara Seas



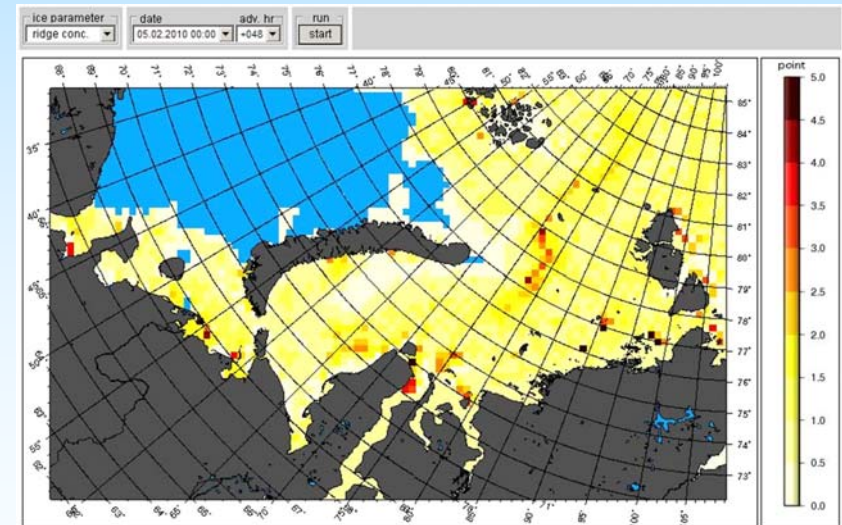
Stages of ice development, 2010-02-05 +048h



Sea ice total concentration, 2009-06-26 +048h



Level of compacting, 2010-02-05 +048h



Concentration of ridges, 2010-02-05 +048h