



## **A new high-resolution climatology for the Nordic Seas**

A. Korablev (1), O.M. Johannessen (1), A. Pnyushkov (2), A. Smirnov (2,3)

(1) Nansen Environmental and Remote Sensing Center, Bergen, Norway (Alexander.Korablev@nersc.no, 47 55 205801), (2) Arctic and Antarctic Research Institute, St. Petersburg, Russia, (3) Nansen International Environmental and Remote Sensing Center, St. Petersburg, Russia

Constantly growing interests in high-resolution oceanographic fields stimulate compilation of comprehensive initial datasets and advanced methodology of the objective analysis. Observed level database for the Nordic Seas and the North Atlantic compiled from large amount of initial sources was recently considerably updated by adding historical and modern measurements. Improved database allows evaluating ocean climate variability in the area for 1900-2007. Applied quality control algorithms on observed data were specifically designed to preserve regional variability and to produce the oceanographic fields with enhanced spatial resolution. Objectively analyzed (OA) temperature, salinity and dissolved oxygen monthly fields at the standard levels for the 1900-2007 on 0.25 x 0.5 gr. latitude-longitude grid were computed by means of block variant of ordinary kriging system. The OA monthly fields comprise climatology and can be used for studying of temporal and spatial parameters variation. A number of stable regimes and periods with abrupt changes of the water masses thermohaline properties were identified and will be discussed. Monthly mean fields were compared with available high-resolution (better then 0.5 gr.) climatology fields, including Generalized Digital Environmental Model (GDEM) version 3.0 and NODC/NOAA products based on data from World Ocean Databases 2001 and 2005. Results show considerable discrepancies originated from differences in initial datasets, quality control algorithms and methods of objective analysis. Allocation of the collected oceanographic stations for more than one century and derived climatological fields over the Nordic Seas reveals a disproportion in data coverage. Repeated standard stations, sections and polygons are most important for uniform long-term time series compositing and ocean climate variation study. Lack of observations over the west and northern parts of the region do not allows reliable climatology fields compilation. Presently, the ARGO profiling floats give a considerable contribution to observations generally over the deep basins. Therefore a monitoring schema for the Nordic Seas should include shallow areas inaccessible for the floats, especially on the Greenland shelf and slope due to vital importance for global climate under Arctic sea ice and Greenland ice sheet accelerated melting.