



Structure and long-term variability of oceanographic characteristics in the Nordic Seas derived from observed and gridded (DIVA software) datasets

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Continuously growing necessity in high-resolution oceanographic fields for climate change research stimulates compilation of comprehensive 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 1900-2011. Applied quality control algorithms on observed data were specifically designed to preserve regional variability and to produce the oceanographic fields with enhanced spatial resolution. Temperature and salinity monthly fields at the standard levels for the 1900-2011 on 0.25 x 0.25 gr. latitude-longitude grid were computed by means of rapidly developing Data-Interpolating Variational Analysis (DIVA, C. Troupin and J.-M. Beckers, 2010). The updated observed dataset and developed climatology were used for studying of temporal and spatial variation of water thermohaline characteristics. A number of stable regimes and periods with abrupt changes of the water masses thermohaline properties were identified. Spatial and temporal distribution 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. A lack of observations over the western and northern parts of the region does not allow 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 over the Greenland's continental shelf.