Geophysical Research Abstracts, Vol. 7, 04113, 2005
SRef-ID: 1607-7962/gra/EGU05-A-04113

Warming and cooling Events in the Arctic Ocean and Nordic Seas during XX Century

G.Alekseev (1), L. Bulatov (1), V. Zakharov (1), A. Korablev (1), A. Pnyushkov (1), P. Golovin (1), V. Ionov (2)

(1) Arctic and Antarctic Research Institute, StPetersburg, Russia (alexgv@ aari.nw.ru / Fax: +7 812 3522688), (2) Nansen International Science Fund

Historical and new oceanographic data collected throughout 1894-2004 in different regions of the Arctic Ocean and Nordic Seas from the Faeroe-Shetland Channel to the Beafourt Sea were used to construct long-term time series of water mass characteristics. Mean and maximal temperature in the Atlantic Water (AW) layer, its thickness and heat content, fresh water content in the upper layer was considered. Heat characteristics changes show two sizeable warm episodes in 1930s and 1990s that were preceded by periods of cooling. 1990s warming is much high in the Arctic Ocean especially in regions to east of 90˚ E meridian whereas the first is more visible in the Nordic Seas and regions adjacent to the Fram Strait. In the Arctic Ocean is traced as well the warm episode in 1960s. Recent observation data from the Arctic Ocean point to weakening of warming after 2000 whereas in the Nordic Seas is formed a new warm episode. 1990s warming in the Arctic Ocean was accompanied by salinisation of upper layer in the regions of the AW propagation. Concurrently the freshening water had displaced to the Greenland and Canadian Archipelago coast that can be an indication to intensification of the East-Greenland Current. The 1930s and 1990s warm episodes in the Arctic Ocean and Nordic Seas are distinguished by contribution of oceanic and atmospheric influence to its evolution. In the former episode is more visible the oceanic component whereas in the second one is more evident the atmospheric impact. The studies were supported by RFBR (project 03-05-64834) and INTAS (grant 03-51-4620).