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Observation evidences of the deep convection temporal variability in the Greenland Sea and its impact on ocean climate of the Nordic Seas

[Korablev, A. A.](#); [Alekseev, G. V.](#); [Johannessen, O. M.](#)

EGS - AGU - EUG Joint Assembly, Abstracts from the meeting held in Nice, France, 6 - 11 April 2003, abstract #7054

All available hydrographical data within the Greenland Sea Gyre (GSG) since captain Amundsen's 1901 measurements have been reanalysed with respect to water column stratification and contribution to the deep-water formation. Recent chimney-like events have been compared with profiles measured during active convection phase. Vertical mixing in the GSG is very sensitive to the local salinity variations coupled with interannual and decadal fluctuations in Atlantic Water (AW) spreading in the Nordic Seas associated with freshwater anomalies propagation. Low winter NAO index during 1965-1971 coincides with active deep-water formation stage in the GSG accompanied by extremely high upper layer density in the Nordic Seas. It caused both cold and fresh water overturning in the GSG and warm and salty water sinking along AW trajectory. Simultaneously the oceanographic parameters gradients increased between Arctic and Atlantic Domains of the Nordic Seas. Reduction of the deep-water formation rate in GSG leads to the Greenland Sea Deep Water (GSDW) temperature increase of 0.25°C since late 1960s, density decline and changing of Norwegian Sea Deep Water (NSDW) properties that is an important component of overflow to the North Atlantic.