



## **Changes in the Greenland Sea deep convection since the last glacial – first results**

Maciej M. Telesiński and Marek Zajączkowski

Institute of Oceanology, Polish Academy of Sciences, Marine Ecology, Sopot, Poland (mtelesinski@iopan.pl)

The deep convection is one of the key processes in the ocean circulation. It is responsible for the formation of deep water masses and crucial for the ventilation of the deep ocean. It is also important for the Earth's climate as the deep water masses can store large amounts of excess heat and carbon from the atmosphere. One of the regions where deep open-ocean convection takes place is the Greenland Sea. The intensity of this process changes over time but the exact course of its evolution remains largely unknown. We reconstructed the evolution of the Greenland Sea deep convection since the last glacial using radiocarbon ventilation ages obtained by calculating the offset of radiocarbon-dated benthic foraminifera from the contemporaneous planktic species and the atmosphere. The results show extremely high ventilation ages (up to  $\sim 10,000$  years) during the Last Glacial Maximum indicating that the deep convection was almost completely absent during that time. During the deglaciation, the ventilation ages decreased, which shows a slow recovery of the deep water formation process. However, only in the early Holocene, the ventilation ages reached level comparable to modern (late Holocene) values, indicating a full recovery. During the middle Holocene, the ventilation ages reached a minimum, suggesting that the deep convection was more intense than at present. Finally, after  $\sim 3$  thousand years BP the intensity of the deep convection decreased to its present-day level.