THE TRANS-ARCTIC WATER 14C SECTIONS FROM MIRAI AND NABOS CRUISES: RECONSTRUCTION OF SURFACE-MID-DEEP WATER VENTILATION AGES AND THEIR COMPARISON OF PAST 14C INVENTRY DATA

Masao Uchida[1], Yuichiro Kumamoto[2], Igor Polyakov[3], Vladimir Ivanov[3], Polona Rozman[5], Motoo Utsumi[4], Koji Shimada[6], Yongwon Kim[3], Masahiko Murata[2]

[1] *National Institute for Environmental Studies*
[2] *Japan Marine-Earth Sciences and Technology*
[3] *University of Alaska Fairbanks*
[4] *University of Tsukuba*
[5] *Saint Petersburg State University*
[6] Tokyo University of Marine Science and Technology

We present $\Delta^{14}C$ values collected in the Arctic Ocean during four cruise that took place in the summers of 1999(MR99-K04), 2002(MR02-05), and 2008(MR08-04, NABOS2008). The cruses tracks of these four expeditions cover all the major basins of the Nansen, Amundsen, Makarov and Canada. The section is based on 20 stations covering the entire water column (about 250 data points). The combined $\Delta^{14}C$ data set was produced from a mixture of large volume samples measured by a low-level counting and small volume samples measured by Accelerator Mass Spectrometry (AMS) at National Institute for Environmental Studies. We used the $\Delta^{14}C$ sections, together with previously published $\Delta^{14}C$ values from single stations located in several basins of the Arctic Ocean, to derive mean movement age (isolation times) of intermediate water via Flam strait from the Atlantic Ocean. From comparison of $\Delta^{14}C$ values between 1979 and 2008, we estimated these mean movement age to be ca. 30 years in the Canada Basin. Such a evidence of movement of Atlantic intermediate water in the Arctic may provide a sensitive sign to detect variation of North Atlantic deep water formation under changing climate in the future.