

Methods used for Radium analysis ARK-XI/1

Seawater samples of about 40 L were collected at 37 stations. After filtration, a solution of barium chloride was added to the samples to coprecipitate radium with BaSO₄. At 16 of these stations the samples had previously been acidified, spiked with Fe and ²³⁰Th and neutralized with ammonia to isolate Th isotopes on a Fe(OH)₃ precipitate. Radium activities were determined by gamma spectrometry.

The freshwater components were calculated using the δ¹⁸O data of Frank (1996) and the three-component (Atlantic water, meteoric water and ice melt) mixing model of Östlund and Hut (1984) with endmember compositions according to Ekwurzel et al. (2001).

- Ekwurzel, B., Schlosser, P., Mortlock, R. A., Fairbanks, R. G., and Swift, J. H., 2001. River runoff, sea ice meltwater, and Pacific water distribution and mean residence times in the Arctic Ocean. *Journal of Geophysical Research*, **106(C5)**, 9075-9092, doi:10.1029/1999JC000024.
- Östlund, G. and Hut, G., 1984. Arctic Ocean water mass balance from isotope data. *Journal of Geophysical Research*, **89(C4)**, 6373-6381, doi:10.1029/JC089iC04p06373