

## Anthropogenic $^{129}\text{I}$ and $^{236}\text{U}$ along the GEOTRACES-GA01 transect in the North Atlantic

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Since 1945, artificial radionuclides have been introduced to the North Atlantic Ocean through atmospheric nuclear weapon tests, authorized discharges from European used nuclear fuel reprocessing plants and emissions due to the Chernobyl accident. Recent works showed that the discharges of  $^{129}\text{I}$  and  $^{236}\text{U}$  from Sellafield (UK) and La Hague (France) can be used to trace the water circulation from the North Sea into the Arctic Ocean [1,2]. Here, we present new data on the distribution of  $^{129}\text{I}$  and  $^{236}\text{U}$  between Lisbon (Portugal) and St. John's (Canada), obtained during the GEOVIDE project (GEOTRACES-GA01 transect) in spring 2014. A total of 150 seawater samples (surface and 12 vertical profiles) were collected and measured using the TANDY AMS facility at ETH-Zurich. Radionuclide levels ranged from close to natural levels in Antarctic Bottom Waters ( $^{129}\text{I} < 1 \times 10^7 \text{ at}\cdot\text{kg}^{-1}$  and  $^{236}\text{U}/^{238}\text{U}$  atom ratios  $< 50 \times 10^{-12}$ ) in the deep West European Basin, to reprocessing-labeled waters ( $^{129}\text{I} > 50 \times 10^7 \text{ at}\cdot\text{kg}^{-1}$  and  $^{236}\text{U}/^{238}\text{U}$  atom ratios  $> 2000 \times 10^{-12}$ ), intruding from the NE-Atlantic and Arctic Oceans into the Irminger and Labrador Seas. These reprocessing-labeled waters were transported downward by deep-water formation into the deep Labrador and Irminger Seas.

[1] Christl *et al.* (2015). *J. Geophys. Res. Oceans* **120**, 11, 7282-7299.

[2] Casacuberta *et al.* (2016). *Earth & Planet. Sci. Letters* **440**, 127-134.