

## First transect of $^{236}\text{U}$ and $^{129}\text{I}$ in the Mediterranean Sea

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Artificial radionuclides have been introduced to the Mediterranean Sea since the 1950s through nuclear weapon testing in the atmosphere and by the releases of the Chernobyl accident, reprocessing plants and other nuclear facilities (i.e. Marcoule). Yet, studies on their distribution in this sea are not comprehensive and only few vertical profiles for a limited number of locations and selected isotopes have been reported (mainly  $^{239+240}\text{Pu}$  and  $^{137}\text{Cs}$ ). The GEOTRACES GA04S cruise (MedSeA) covered two sections from Cádiz (Spain) to Heraklion (Greece) and from Heraklion to Barcelona (Spain) in May 2013. The cruise was designed to study the distribution, among others, of several anthropogenic radionuclides ( $^{137}\text{Cs}$ ,  $^{90}\text{Sr}$ ,  $^{236}\text{U}$ ,  $^{129}\text{I}$ ,  $^{238-240}\text{Pu}$  and  $^{237}\text{Np}$ ). Here we present the first comprehensive dataset of  $^{236}\text{U}$  and  $^{129}\text{I}$  in the water column from 10 full depth profiles in the western and eastern Mediterranean Sea basins. Total concentrations of  $^{236}\text{U}$  and  $^{129}\text{I}$  were determined using the compact Tandy AMS system at ETH-Zürich.  $^{236}\text{U}$  was detected along the full water column and the  $^{236}\text{U}/^{238}\text{U}$  atom ratios ranged from 700 to  $2200 \times 10^{-12}$ , with lowest ratios recorded in Modified Atlantic Waters and the Tracer Minimum Zone, and highest ratios in Levantine Intermediate Waters. The distribution of  $^{129}\text{I}$  followed a similar trend to that of  $^{236}\text{U}$ , with concentrations ranging from 4 to  $14 \times 10^7 \text{ atom}\cdot\text{kg}^{-1}$ . We will discuss the relative contributions of the various sources of both radionuclides to the Mediterranean Sea and their combined use as a novel tracer of ocean circulation.