IV ROSS SEA CONFERENCE 2023

Università degli Studi di Napoli "Parthenope"
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Topic: Biogeochemistry

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ABSTRACT Subject :

Radioisotope research in the marine environment, methodologies and perspectives

Abstract 15/02/2023 11:36:59

In environmental research and management, the observation and identification of the source of a phenomenon or a pollutant is of great importance and requires high accuracy. The isotopic ratio of specific elements, both man-made and natural, provides unique information about the source, its characteristics and the overall interactions with the wider area. A number of different sources, such as radioactive fallout from nuclear weapon tests, accidental releases and operational discharges from nuclear facilities, create a mixture of parameters that alter the internal composition and ratio of radionuclides on the planet. Isotopic ratio surveys are characterised by a huge difference in sensitivity and selection, in terms of overall methodology and target. In this presentation we are going to compare the results of previous investigations in the area of Aegean Sea where 137Cs used as a tracer in order to estimate and characterise the mixings and the subsurface flows of marine masses in the area, a study carried out some 30 years after the Chernobyl accident, with the ongoing isotopic survey of the 236/238U, 236/235U, 129/127I and 239/240/241/242Pu ratios aiming to clarify the conditions under which the radiological background of the Vefsna fjord (Norway) was formed. The overall aim is to develop a method to complete and support the traditional tools for water mass identification, which are mainly salinity and temperature, developing a standardised methodology and technical approach for radiochemical research in marine environment. Furthermore, within the presentation, we will compare a variety of technologies starting from HPGe gamma spectrometry to the highly sensitive Accelerator Mass Spectrometry (AMS).