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Presence of ^{233}U , ^{236}U , ^{237}Np , ^{239}Pu and ^{240}Pu in the continental shelves of Angola and Namibia

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The Southern Atlantic continental shelf of Africa is an almost blank area regarding available information on the presence of anthropogenic radionuclides, namely actinides. The coast of Namibia, part of the northern Benguela Upwelling System, was the target of the first two studies reporting ^{236}U , ^{237}Np , ^{239}Pu and ^{240}Pu in seawater [1,2]. The obtained ^{236}U and ^{237}Np inventories and the measured $^{240}\text{Pu}/^{239}\text{Pu}$ atom ratios in a seawater column were consistent with the global fallout source. Additionally, evidence of a different geochemical behaviour of ^{236}U and ^{237}Np in coastal seawater was observed.

In this work, new results on the presence of the above-mentioned radionuclides in seawater samples collected from two transects along the shelves of Angola at 10°S and 17°S , and one along the Namibian shelf at 22°S , will be presented. Additionally, the profiles of ^{233}U , ^{236}U , ^{238}U , ^{239}Pu and ^{240}Pu , in a sediment core collected at 120 m depth from the upwelling cell will be presented and discussed. Thus, more information on the Pu, U and Np contamination sources in the region and on the geochemical behaviour of ^{236}U and ^{237}Np in coastal seawater and sediments will be provided.

This study was carried out as a collaborative effort of different institutions and in the frame of the existing agreement between the IAEA Marine Environment Laboratories and the CNA. The seawater samples were collected during the NANSEN expedition in 2019 and the sediment core during the sampling campaign along the Namibian continental shelf in 2014. Sample processing was carried out at the CNA as well as the analysis of ^{236}U , ^{237}Np and $^{239,240}\text{Pu}$ in the seawater samples and of ^{239}Pu and ^{240}Pu in the sediment core at the CNA (Seville, Spain) [3,4]. The $^{233}\text{U}/^{238}\text{U}$ and $^{236}\text{U}/^{238}\text{U}$ atom ratios in the sediment core samples were analysed on the compact AMS system MILEA at the ETH (Zürich, Switzerland) [5]. The ^{238}U concentrations in the sediment core were determined by ICPMS at the University of Seville.

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Student Submission

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Primary author: Mrs CHAMIZO, Elena (Centro Nacional de Aceleradores (CNA), Universidad de Sevilla, Sevilla, Spain)

Co-authors: LÓPEZ-LORA, Mercedes (Universidad de Sevilla, Sevilla, Spain); LEVY, Isabelle (International Atomic Energy Agency, Marine Environment Laboratories, Monaco); LÉRIDA-TORO, Victoria (Centro Nacional de Aceleradores (CNA), Sevilla, Spain); CHRISTL, Marcus (ETH Zürich, Switzerland); Dr MAS, José Luis (Departamento de Física Aplicada I, Universidad de Sevilla, Sevilla, Spain); Mr GASSER, Beat (International Atomic Energy Agency, Marine Environment Laboratories, Monaco); Mr LOUW, Deon (DebMarine, Windhoek, Namibia); Dr ROZMARIC, Martina (Comprehensive Nuclear-Test-Ban Treaty Organization –CTBTO, Vienna, Austria); Prof. GARCÍA-TENORIO, Rafael (Centro Nacional de Aceleradores (CNA), Universidad de Sevilla, Sevilla, Spain); Dr OSVATH, Iolanda (International Atomic Energy Agency, Marine Environment Laboratories, Monaco)

Presenters: Mrs CHAMIZO, Elena (Centro Nacional de Aceleradores (CNA), Universidad de Sevilla, Sevilla, Spain); Prof. GARCÍA-TENORIO, Rafael (Centro Nacional de Aceleradores (CNA), Universidad de Sevilla, Sevilla, Spain)

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