

Latitudinal distribution of ^{137}Cs in the western Indian Ocean

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The horizontal and vertical distributions of artificial radionuclide ^{137}Cs were determined in the water column of the west Indian Ocean along the 67° E in 2017 (3° N to 22° S). The ^{137}Cs activities in the surface water ranged from 0.33 ± 0.03 to 0.95 ± 0.06 mBq kg⁻¹ (average: 0.67 ± 0.22 mBq kg⁻¹), and the maximum activities were observed in the northernmost region (3° N). The vertical profiles showed higher activities in surface layer and decreased with depth. Overall, the activities of ^{137}Cs showed the minimum detectable activities (MDA) in below 1,000 m depths. The variations of ^{137}Cs activities in the upper layer (<200 m) might reflect the origin of water mass in this region. For examples, the input of Arabian Sea Surface Water (ASSW) in around 3°S tend to decrease the activities of ^{137}Cs below 50 m, and the input of South Indian Subtropical Underwater (STUW) in around 20° S could be result in decrease of the activities of ^{137}Cs in 200-300 m. Chronologically, ^{137}Cs activities had decreased in the surface layer upto 2 times relative to those in 1980s and 1990s (^{137}Cs activities of average 2.41 ± 0.88 mBq kg⁻¹ and 1.19 ± 0.32 mBq kg⁻¹, respectively) based on compiled dataset from IAEA (International Atomic Energy Agency) Marine Radioactivity Information System (MARIS). In this presentation, more details about the sources and trends of the spatial and temporal variation of ^{137}Cs will be discussed.