新田川河口海域における台風Wilpaによる出水イベントに伴う懸濁態放射性セシウムの沿岸輸送について

Neasrshore transport of suspended radiocesium In the Fuksima Coast derived from Niida River induced by Typhoon Wipha

*徳永 夏樹[1]、内山 雄介[1]、津旨 大輔[2]、山田 正俊[5]、立田 穣[2]、伊藤 友加里 [3]、石丸 隆[3]、渡邉 豊[7]、池原 研[4]、福田 美保[6]
*Natsuki Tokunaga[1], Yusuke Uchiyama[1], Daisuke Tsumune[2], Masatoshi Yamada[5], Yutaka Tateda[2], Yukari Ito[3], Takashi Ishimaru[3], Yutaka Watanabe[7], Ken Ikehara[4], Miho Fukuda[6]

1. 神戸大学、2. 電力中央研究所、3. 東京海洋大学、4. 国立研究開発法人産業技術総合研究所、5. 弘前大学、6. 放射線医学総合研究所、7. 北海道大学
1. Kobe University, 2. Central Research Institute of Electric Power Industry, 3. Tokyo University of Marine Science and Technology, 4. National Institute of Advanced Industrial Science and Technology, 5. Hirosaki University, 6. National Institute of Radiological Sciences, 7. Hokkaido University

The Fukushima Nuclear Power Plant (FNPP) accidentally leaked substantial amount of radiocesium to the environment in March 2011. The radiocesium is known to have three input pathways to the marine environment: atmospheric deposition,direct discharge from the FNPP, and river discharges. The last process has lagged behind the accident by occasional floods that have delivered terrestrial deposition through hydrological processes, while the other two processes occurred immediately after the accident. Therefore, the local coastal seas have suffered from continuous contamination due to riverine suspended radiocesium inputs that must be assessed carefully. Niida River,Fukushima,has been a source of riverine suspended radiocesium even after the FNPP accident, as its watershed was prominently covered with the atmospheric deposition at the accident.

In this study, we examined the oceanic dispersal and inventories of the sediments and suspended radiocesium deposited in the ocean floor derived from Niida River byusing a quadruple nested JCOPE2-ROMS 3D oceanic circulation model in a high-resolution configuration at the lateral grid spacing of 50 m.This model is coupled with a 3D multi-class sediment transport model along with a two-layer stratigraphy model of the marine bed,the iRIC-Nays 2DH river sediment transport model,the SWAN spectral wave model,and a static radiocesium absorption model. A particular attention was paid to the storm and subsequent flood event associated with Typhoon 201326 (Wipha)passed off the Fukushima Coast in October 2013,which provoked an enormous amount of precipitation,subsequent increase of the riverine freshwater discharge, and associated sediment and suspended radiocesium fluxes to the ocean. The model results were diagnosed with a guide of several in situ observed data collected in the Fukushima Coast after the storm. We found that the modeled and observed lateral and vertical distributions of sediment grain sizes and attached radiocesium concentrations were reasonably well correlated and consistent each other. We then investigated the accumulation and erosion of the sediments and resultant suspended radiocesium distribution around the river mouth and nearshore areas along the Fukushima Coast.

キーワード：懸濁態放射性セシウム、ROMS
Keywords: suspended radiocesium, ROMS

