Local-scale modelling of the releases of 137-Cs and 90-Sr from Fukushima NPP into the Pacific Ocean

(후쿠시마 사고에서 Cs-137 및 Sr-90 의 태평양 확산 모델링)

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The dispersion of 137-Cs and 90-Sr released from Fukushima nuclear power plant to the sea after the March 11th 2011 tsunami has been studied using a numerical model. The 3D dispersion model consists of an advection/diffusion equation with terms describing uptake/release reactions between water and seabed sediments. The dispersion model has been fed with daily currents provided by JCOPE2 ocean model. Seabed sediment 137-Cs computed patterns have been compared with observations. The impact of tides and of atmospheric deposition on sediment contamination has been evaluated as well. First simulations carried out for Sr-90 are described. An evaluation of the amount of this radionuclide released to the sea has been made using a numerical model for the first time. Calculated vertical profiles of this radionuclide have been compared with measured ones. Finally, the variability in 90-Sr/137-Cs activity ratios has been analysed with the model.