

Simulation of dispersion of radionuclides released from the Fukushima Daiichi Nuclear Power-Plants

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We use a numerical model to investigate the dispersion of radioactive water released from the Fukushima Daiichi Nuclear Power-plants (FDNP) on March 2011. The numerical model is based on a three dimensional particle random-walk model and a z-coordinate ocean general circulation model developed at the Earth Simulator Center, JAMSTEC. Radionuclide concentrations are obtained from the density of particles per unit volume water. Experiments have been carried out for ¹³⁷Cs for 4 months and the results show that coastal currents and meso-scale open oceanic eddies having large influence on the behavior of the radionuclides. The radionuclides in coastal currents remain along the coast where as the one in meso-scale open oceanic eddies rapidly escape to the interior of the Pacific along the Kuroshio extension. Most of the sediment accumulations of the radionuclides are found on the continental shelf regions.

Keywords: radioactive water, Fukushima Daiichi Nuclear Power-Plants, radionuclide dispersion model, ocean general circulation model