

## The impact of oceanic circulation and phase transfer on the dispersion of radionuclides from the coast

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The processes behind the dispersion of radionuclides released from the coast of Fukushima are investigated using a numerical ocean model and Lagrangian particle tracking model. This coupled model solves the concentration of radionuclides for those dissolved in seawater and those adsorbed in particulates and bottom sediments while advecting the particles based on the oceanic flow field. Many radionuclides are found to remain near the coast. We find the spatial pattern to depend strongly on the oceanic circulation during the first month of the release because this is when most of the adsorption to bottom sediments occurs. We also find vertical mixing to play an important role since it enables the radionuclides to be carried to the sea floor. This suggests that oceanic dispersion of radionuclides is likely to change with season and whether it was introduced to the ocean through river input or directly into the ocean waters.

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