Radiocaesium distribution in the sediment of a Fukushima river estuary

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On fluvial discharge, paticulate fractions are the main carrier of radiocaesium from land to aquatic bodies such as rivers, lakes and the sea [1]. However, within river estuaries, where there is a drastic increase in salinity, fine particles generally flocculate (in the size order of several tens μm) before settling out and being deposited on the river bed [2]. In this study, we investigated the sediment records and the distribution of radiocaesium within the estuary of the Odaka river in January 2014, located approximately 17 km north of the Fukushima Dai-ichi Nuclear Power Plant.

Based on distribution of salinity, the environment of the Odaka river is divided into three areas; the freshwater area, the estuarine marine area that was filled with saline water from surface to bottom and the brackish area between these two. Radiocaesium deposition ranged from 45 to 1070 kBq m-2 with the inventory of radiocaesium in the estuary being significantly greater in the brackish area relative to both the freshwater and estuarine marine areas. Particle size dependency of radiocaesium concentration in the sediments showed that the distribution with relatively higher concentration was expected in the brackish area. The possibility of flocculation in the brackish area will be discussed.

References
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