Temporal and spatial variation of radiocaesium in seawater and plankton samples off Fukushima after the Fukushima Nuclear Power Station accident

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The radiocaesium monitoring of seawater and planktonet sample have been started off Fukushima in 2012. The radiocaesium activities in seawater in the coastal area (less than the depth of 100m) were gradually decreased to less than 10 mBq/L near the coastal area, although these in the offshore area have observed the same levels as before the accident. The radiocaesium activities were ranged from 1 Bq/kg-wet to over 100 Bq/kg-wet in the plankton net samples collected in the coastal area in autumn 2012, and these were higher than these in 2013-2015. The apparent concentration ratios (CR)-Cs were estimated using the obtained activities of radiocaesium in seawater and the plankton net samples and they ranged from 34 to 9,400, and their geomean was 420 (n=54). Sediment- seawater distribution coefficients Kd (L/kg) were observed to be from 1,900 to 25,000 in the same area in 2013. The estimated CR-Cs of plankton in 2012-2015 was 10-70 times higher than in 2005-2006. For CR-Cs values, it is necessary to consider the influence by the sediment and suspended particles in seawater than the plankton, as plankton net samples was mixed plankton and caesium-rich particulate matter and sediment in the coastal area.

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