



Radiocesium fluxes in rivers across the Fukushima fallout region to 2015 and their controlling factors

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Due to Fukushima Daiichi Nuclear Power Plant accident, radioactive materials including Cs-134 and Cs-137 were widely distributed in surrounded area. The radiocesiums have been transported in river networks. The monitoring started at 6 sites from June 2011. Subsequently, additional 24 monitoring sites were installed between October 2012 and January 2013. Flow and turbidity were measured at each site in ten minute intervals, and suspended sediments and river water were collected every one or half month to measure Cs-134 and Cs-137 activity concentrations by gamma spectrometry.

Fluxes of suspended sediment and radiocesium for the period up to October 2014 are summarised for both the longer-term monitoring stations. Fluxes were computed for monthly intervals. Small gaps in flow data were filled based on linear correlations with monthly data from nearby monitoring stations. Gaps in the suspended sediment load record were filled using L-Q (Load-Discharge) equations derived for each monitoring site based on monthly measurements between November 2012 and March 2015. Monthly L-Q equations were used in place of linear rating curves based on SSC-Q data collected at 10 minute intervals.

The total measured flux to the ocean of radiocesium from the Abukuma River at Iwanuma was 14 TBq for the period from August 2011 to October 2014. The transfer of radiocesium with suspended sediment declining until March 2015 and had high correlation with land cover ratio by different land use of the catchments. Also we found positive correlation with radiocesium flux and catchment landuses.