



## **Analysis on radiocesium concentration in rivers that have catchment areas affected by the fallout from Fukushima Daiichi Nuclear Power Plant**

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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. This study showed the monitoring results of radiocesium concentration in river waters and suspended sediments in Abukuma river basin and smaller coastal river catchments.

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 (for calculation of suspended sediment concentration) were measured at each site, while suspended sediments and river water were collected every one or half month to measure Cs-134 and Cs-137 activity concentrations by gamma spectrometry.

Activity concentrations of Cs-134 and Cs-137 on suspended sediments were generally decreasing at all sites. The decreasing rate changed lower at about one year later from the accident. Activity concentration in river waters also showed the same tendency although there are only few data within 1 year from the accident.

Activity concentrations measured at the same day are proportional to the mean catchment inventory. Therefore, the activity concentration can be normalized by the mean catchment inventory. The normalized activity can be fitted to following double exponential function:

$[A_t] = 1.551 \exp(-5.265t) + 0.069 \exp(-0.266t)$ , where  $t$  [year] is the time from the accident.

There is no time evolution of  $K_d$  between suspended sediments and river water. Instead,  $K_d$  was varied spatially. Although the reason of the spatial variation is not clear for now, geology of the catchment (i.e. mineral composition of suspended particles) seems to relate to the variation.