



Exploring the declining trend of the activity concentration of ^{137}Cs of river bottom sediment through particle size correction in Fukushima area

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Radioactive nuclides ^{134}Cs and ^{137}Cs were detected in the surrounding environment of Fukushima due to the Tokyo Electric Power Fukushima Daiichi Nuclear Power Plant accident due to the 2011 Great East Japan Great Earthquake. The Ministry of the Environment has been conducting an environmental monitoring survey on public waters since August 2011. Although sediment samples taken at the Ministry of the Environment in 2011-2012 show decreasing trends at many points, there are also many places where data are highly fluctuated or increases with time. From the results of previous research, it is considered necessary to perform grain size correction when analyzing time series changes of environmental samples such as rivers. Therefore, in this study, by analyzing the particle sizes of these sediment samples, the effective decay rate of sediment in the river sediment was examined after applying the particle size correction.

Any large fluctuation of activity concentration in river sediment can be seen after the grain size correction. In addition, the point where concentration increased with time decreased from 25 points to 7 points. The rate of decline (λ) in the 89 sediments in the sediment has an average of 1.15, and it was possible to elucidate the tendency of the concentration of the river sediment to decrease. In addition, when we set the standard sample size of the suspended sediment, the activity concentration of the bottom sediment may be used to estimate the suspended sediment activity concentration. After the grain size correction to suspended sediment, activity concentration of SS and rate of decline agreed at 14 points out of 24 points. From this, it was estimated that suspended sediment and dissolved state are in equilibrium state at many points due to adsorption/desorption in the river system.