Change of sediment sources in suspended sediments due to surface decontamination in the Niida river catchment area affected by the Fukushima Daiichi nuclear power plant accident

*Yuichi Onda[1], Yuki Yamanaka[1], Yoshifumi Wakiyama[2], Keisuke Taniguchi[3], Takaaki Kubo[1]

1. Center for Research on Isotopes and Environmental Dynamics, University of Tsukuba, 2. Institute of Environmental Radioactivity, Fukushima University, 3. Fukushima Prefectural Centre for Environmental Creation

The Fukushima Daiichi Nuclear Power Plant (FDNPP) on March 2011 accident released massive amounts of radiocesium into the terrestrial environment such as Cs-137 and Cs-134. The Niida river basin (265 km ^{2}) on the north eastern part of Fukushima prefecture is indeed a case in point. The river basin has a highly contaminated area on its upstream part and evacuation have been ordered, and the cropland and paddy field becomes grassland in the summer of 2011, but the downstream part has not contaminated so much. The upstream area of the basin had been subject to decontamination works, such as scraping surface soil and reversal tillage and so on, since 2012.

In the Niida river basin, we installed an integrated suspended sediment sampler, turbidity sensor, and water level sensor at the downstream site starting in December 2012, and another three sites, Sakegawa-bashi (SK), Notegami-Kita (NT) and Warabi-daira (WR) in July 2014. The monitoring has been continued until now. During our monitoring period, most of the agricultural land (paddy and cropland), the topsoil up to 5 cm and replaced with lower part of the soil taken from 2014 to 2015.

We found that the flux of suspended sediments has increased with executing rate escalation of decontamination activity. Also after the decontamination activities, the number of counterclockwise hystereses increased compared with other types. In this presentation, we will discuss the effect of decontamination on the fine sediment yield to the downstream, and the use of radiocesium as a tracer of suspendiment sediment sources.

Keywords: Cs-137, suspended sediment, Niida river, Decontamination works

