

5 years monitoring results for the environmental dynamics of radiocesium in mountainous forest of the Abukuma Mountains, Fukushima

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An understanding of long-term environmental dynamics of radiocesium, which is released by the TEPCO's Fukushima Dai-ichi Nuclear Power Plant accident, is a key issue for predicting the future radiocesium distribution and forest products radioactivity in a forested environment, especially ¹³⁷Cs with half-life of 30 years. We compiled the five-years monitoring results of radiocesium input-output budgets in broad-leaved deciduous forests and Japanese cedar evergreen forests of the Abukuma Mountains, Fukushima, Japan. The input-output rates were a few percent of the radiocesium inventory of the monitoring site. In addition, both rates have been decreasing with time. Belowground radiocesium occupied 90% of the total inventory in the Japanese cedar forest on October 2015. The belowground radiocesium was distributed mainly in the topsoil of 0-6 cm depth, approximately 70-80% of the underground inventory on August 2016. These results indicate that the distribution of radiocesium in the forest is similar to the distribution of tree rootlet responsible for absorption of inorganic elements, nutrients, and water. This means long residence time of radiocesium in rooting zone. In the condition of the limited amount of radiocesium input-output rates in the forest, estimation of the migration flux of radiocesium from forest floor to the forest products are considered to be most important issues in the present.

Keywords: TEPCO's Fukushima Dai-ichi Nuclear Power Plant accident, radiocesium, input-output budgets, mountainous forest