

## Migration of radiocaesium in forests with water flow through canopy, litter layer, and mineral soil

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After the accident of the Fukushima Daiichi Nuclear Power Plant, a huge amount of radionuclides deposited over a wide range in Japan. In forested area, radiocaesium which has long half-life, first trapped mainly at the canopy and the litter layer, then will move to the mineral soil. The objective of this study is to clarify the migration of radiocaesium in forests with water flow through the canopy, litter layer, and mineral soil.

Throughfall (TF), litter leachate (LL), and soil water (SW) were collected in forested catchments in Ibaraki and Fukushima prefectures. The sampling plots were located in a conifer plantation in Ibaraki, and conifer plantation and deciduous secondary forest in Fukushima. Radiocaesium (Cs-134, Cs-137) of the water samples were measured by the gamma-ray spectroscopy using germanium detectors. The radioactivity measurements were made essentially without filtrations.

The concentrations of Cs-137 of the TF collected at the Ibaraki site in March and April 2011, immediately after the accident, were 14 - 60 Bq/L while the LL in the same period showed the concentration less than 10 Bq/L. A large proportion of deposited radiocaesium was thought to be trapped and held in the litter layer in the early stage after the accident. Then the concentration of TF and LL both increased in summer and decreased in winter.

In the Fukushima site, in which the sampling started from 2012, the radiocaesium concentrations (Cs-134, Cs-137) of TF and LL also tended to increase in summer. In late July, the concentration of LL from conifer plantation has once exceeded 100 Bq/L. This sample contained a noticeable amount of suspended particulate matter, and the radiocaesium concentration markedly decreased to 3 Bq/L after filtration.

The radiocaesium concentrations for SW samples were all under detection limit, suggesting strong capture of caesium by the mineral soil.

Keywords: Forest, Radiocaesium, Water flow, Litter layer