

Fukushima-derived radiocesium in coniferous forest floor

Teramage Mengistu^{1*}, Yuichi Onda¹

¹University of Tsukuba

We are investigating the time-dependent evolution of Fukushima-derived radiocesium in coniferous forest floor in Tochigi prefecture at Karasawa yama. In our study, we classified the forest floor in to three major components: undergrowth vegetation (UG), litter layer (Ol) and fermented layer (Of). The samples are carefully separated and collected inside a rectangular frame (30 *15 cm) at a stable site in Japanese cypress forest at different season of a year. Radiocesium activities in the soil and litter samples were determined by gamma ray spectrometry. Results revealed that highest fluctuation of radiocesium content were observed in the UG components. Relatively, a slight variation was observed in Ol-layers but showed a general decrease whereas Of-horizon demonstrated a steady increase over time. The swinging of radiocesium content in UG components can be explained by the difference in the dynamic and the growth stage of the herbaceous plants in response to climatic-derived seasonal changes that creates an interface of active exchange. The slight fluctuation and a general decrease in Ol-layer can be partly due to microbial and mechanical decomposition of the litter components and partly due to less contaminated litters tends to fall from canopy in the later period of time. Hence, Ol-layer tends to temporary store radiocesium and feeds Of-horizon in the course of the process. The steady increasing of radiocesium in Of-layer indicates that radiocesium leaves this layer at very slow rate which implying radiocesium tends to stay longer and could be bioavailable to plant roots exploring the horizon. Such kind of study helps to understand the dynamic of radiocesium and assist to design a precaution measures to reduce the risk associated to radiation exposure.

Keywords: Radiocesium, Undergrowth, Ol-layer, Of-layer