## Temporal changes of radiocesium transfer and ambient dose rate in forest of Fukushima Prefecture

\*Hiroaki Kato<sup>1</sup>, Yuichi Onda<sup>1</sup>, Zul Hilmi Saidin<sup>1</sup>, Toshiro Yamaguchi<sup>1</sup>

1. Center for Research in Isotopes and Environmental Dynamics, University of Tsukuba

We investigated the transfer of canopy-intercepted radiocesium to the forest floor during 6 years following the Fukushima Daiichi Nuclear Power Plant accident. The cesium-137 (Cs-137) contents in throughfall, stemflow, and litterfall were monitored in two coniferous stands (plantation of Japanese cedar) and a mixed deciduous broad-leaved forest stand (Japanese oak with red pine). Temporal changes of radiocesium deposition flux onto forest floor have been determined based on the analysis of radiocesium concentration in collected samples. We also measured the ambient dose rate (ADR) at different heights in the forest using a survey meter and a portable Ge gamma-ray detector. The ambient dose rate in forest exhibited height dependency and its vertical distribution varied with forest type and stand age. The ambient dose rate showed an exponential decrease with time for all the forest sites, however the decreasing trend differed depending on the height of dose measurement and forest type. The ambient dose rate at the canopy (approx. 10 m-height) decreased faster than that expected from physical decay of the two radiocesium isotopes, whereas those at the forest floor varied between the three forest stands. Our monitoring results suggested that the ambient dose rate in forest environment varied both spatially and temporally reflecting the transfer of radiocesium from canopy to forest floor. In addition to that, the measured ambient dose rate within forest showed different decreasing trend between initial 4 years (2011-2014) and the following 2 years (2014-2016). The results of our monitoring experiment suggested that understanding the mechanism of radiocesium transfer and spatio-temporal evolution of radiocesium distribution in forest must be essential for predicting long-term trend of ambient dose rate in forest environment.

Keywords: Fukushima Dai-ichi Nuclear Power Plant accident, Forest Environment, Radiocesium, Ambient dose rate