241st Regular Open Seminar（2018 December 19）

Title : Radiocesium dynamics in forests and woods after the Fukushima Dai-ichi Nuclear Power Plant accident

Speaker : Shinta Ohashi（Senior Researcher, Forestry and Forest Products Research Institute）

Related RISH mission : Mission 1 Environmental Diagnosis and Regulation of Circulatory Function

Abstract :

The Fukushima Dai-ichi Nuclear Power Plant accident occurred in March 2011 caused extensive radiocesium (^{137}Cs) contamination in eastern Japan. In particular, forests are the most contaminated part on the land and will be the largest reservoir of ^{137}Cs for decades or more because of their high land coverage rate (ca. 70%), high ^{137}Cs interception efficiency by branches and leaves, and high ^{137}Cs adsorption ability of soils. Transfer of ^{137}Cs into stem woods is also a matter of great concern. While the ^{137}Cs transfer from foliage and bark surfaces can be a main source of the initial ^{137}Cs contamination in woods, the amount of ^{137}Cs transfer via root is the decisive factor for the long-term contamination. Thus, understanding the ^{137}Cs dynamics in the forests and woods is critically important for both human activities in the forests and usage of forest products including woods in the future.

To assess the actual situation of the ^{137}Cs contamination and understand the ^{137}Cs dynamics in forest ecosystems, a monitoring survey have been conducted by FFPRI since 2011. It showed that the ^{137}Cs distribution in the forests changed drastically in the first several years but afterward it was relatively steady and more than 90% of the ^{137}Cs in the forest has come to exist in forest floor (organic and mineral soil layers). Although the percentage of ^{137}Cs distribution in woods is quite small, ^{137}Cs concentration in woods of some tree species showed increasing trends at some study sites. Further monitoring surveys and detailed researches are necessary to predict the ^{137}Cs contamination in woods accurately.

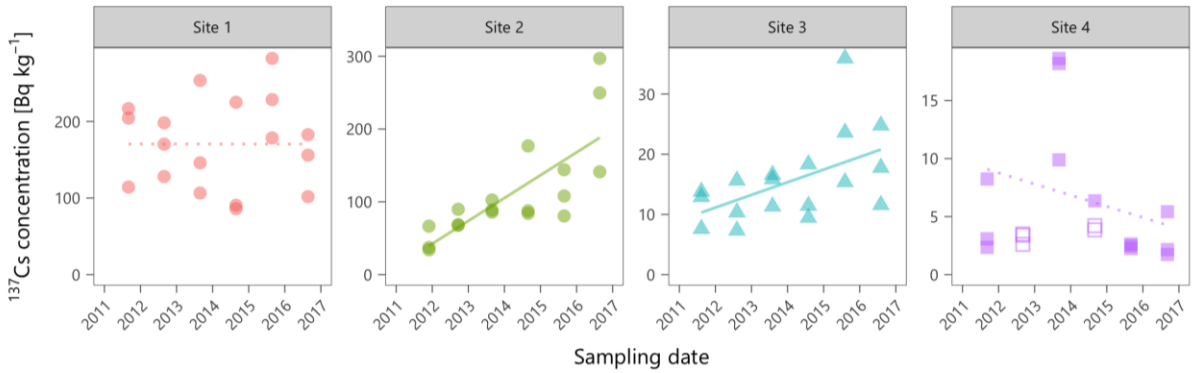

Fig. 1 Temporal trends of ^{137}Cs concentration in cedar woods sampled at four sites (Ohashi et al. 2017).

Ohashi, S., Kuroda, K., Takano, T., Suzuki, Y., Kubojima, Y., Zhang, C., Yamamoto, K., 2017. Temporal trends in ^{137}Cs concentrations in the bark, sapwood, heartwood, and whole wood of four tree species in Japanese forests from 2011 to 2016. J. Environ. Radioact. 178–179, 335–342.