# Differences in the radiocesium deposition between evergreen coniferous and deciduous broad-leaved forests

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Radiocesium ($^{137}$Cs) have been released to the atmosphere by the Fukushima Daiichi Nuclear Power Plant (FDNPP) accident in 2011, and the $^{137}$Cs contaminated the forest area. In the area where dry deposition is relatively large, the canopy in coniferous forests efficiently intercept the atmospheric aerosols of dry deposition. It is reported that the total dry deposition of Chernobyl-derived $^{137}$Cs in coniferous forests was consequently higher than that in the other land use area. In March, when the FDNPP accident occurred, there was a difference in presence or absence of needles/leaves between evergreen coniferous and deciduous broad-leaved forests. Thus, it is assumed that there was a difference in the initial dry deposition of $^{137}$Cs between these two forests. However, the quantitative assessment for this difference have not been conducted. In this study, the total inventories of $^{137}$Cs during 2015–2019 were investigated at both hinoki cypress forest (ECF) and the nearby deciduous broad-leaved forest (DBF) in Kawauchi Village in Fukushima Prefecture, where the dry deposition is thought to be main. Our results revealed that the median of total inventory of $^{137}$Cs at ECF and DBF was 838 and 454 kBq/m$^2$, respectively, indicating that the total inventory at ECF was significantly larger than that at DBF. This difference of the total inventory suggests that the initial dry deposition of $^{137}$Cs at evergreen coniferous forest was larger than that at deciduous broad-leaved forest, and this difference can be applied for the reconstruction of the past dry deposition of $^{137}$Cs in the forest areas. Further studies about spatial distribution of these differences are expected to contribute to improving the model simulation of the past plume dynamics after the FDNPP accident.

Keywords: Radiocesium, Fukushima Daiichi Nuclear Power Plant accident, Initial deposition, Evergreen coniferous forest, Deciduous broad-leaved forest