

森林環境中の福島第一原子力発電所由来の放射性セシウムの移行状況 Transfer of the Fukushima reactor accident-derived radionuclides in forest environments

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The Fukushima Daiichi nuclear power plant accident resulted in extensive radioactive contamination of the forest environment in Fukushima and the neighboring prefectures. In this study, we analyzed radiocesium concentrations in rainwater, throughfall, stemflow, and litterfall to characterize the transfer of the deposited radiocesium in various forest stands (evergreen conifers and broad-leaved forests), in Tochigi (Cs-137 fallout < 10 kBq/m²) and Fukushima (Cs-137 fallout = 300-600 kBq/m²) prefectures. Furthermore, in-situ measurement of radiocesium were conducted to delineate spatio-temporal variability of radiocesium in the canopy and forest floor. The result of this study demonstrated that a large proportion of radionuclides which deposited on forest were initially trapped by canopies, and subsequently transferred to forest floor in association with throughfall, stemflow, and litterfall. In the deciduous broad-leaved forest, the highest radioactivity was found at the forest floor; however, 25-40% of the total deposited radiocesium remained in the canopy of evergreen coniferous forests one year after the reactor accident.

キーワード: 福島第一原子力発電所, 放射性セシウム, 森林環境, 樹冠遮断, 移行状況

Keywords: Fukushima Daiichi Nuclear Power Plant, Radiocesium, Forest environment, Canopy interception, Transfer