

The Chernobyl Cs-137 spatial distribution in soil, litter and moss cover in toposequence of the conjugated elementary forest landscapes as a possible marker of water migration

Denis Dolgushin (1), Elena Korobova (1), Victor Berezkin (1), Sergey Romanov (2), and Vladimir Baranchukov (1)

(1) Vernadsky Institute of Geochemistry and Analytical Chemistry, Laboratory of biogeochemistry of environment, Moscow, Russian Federation (dolgushin25@gmail.com), (2) Unitary Enterprise "Geoinformation Systems", Minsk, Belarus

Distribution of Cs-137 in pine forest moss and soil cover was studied in the test plot located in the Chernobyl exclusion zone (Bryansk region, Russian Federation) in the period from 2015 to 2018 [1].

Spatial distribution of Cs-137 in topsoil and mosses exhibited a specific polycentric character showing itself as a cyclic variation along cross-sections. The same character of the radionuclide distribution was registered along a sloping grassland area of the abandoned arable field that proved a similar homogeneous initial aerial fallout of Cs-137 within small plots [2]. The observed stable spatial structure of Cs-137 served the basis for a hypothesis of the relation of the ordered character of the radionuclide redistribution to a mechanism of water migration. To test this hypothesis we measured water content in the studied objects.

According to the obtained data a definite spatial coincidence of the higher and lower Cs-137 activity in soils, litter and mosses with their higher and lower moisture content may be followed in specifically located points along cross-sections and in regular grid. In our opinion, this fact can reflect peculiarities of water migration mechanism of which Cs-137 may be a tracer. Further detailed combined investigation of Cs-137 in plant-soil system and moisture content will prove or reject this hypothesis.

Reference

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2. Korobova E.M., Romanov S.L., Kirov S.S., Beryozkin V.Yu., Baranchukov V.S., Dolgushin D.I. On Distribution of Radionuclides in Cultivated Elementary Landscape-Geochemical Systems Contaminated after the Chernobyl Accident. 7th International Conference on Medical Geology (MedGeo 2017). Conference Materials, 28 August – 01 September 2017, Moscow, Russia/ Publishing House of I.M. Sechenov First MSMU, M.: 2017, 96 ., p. 66.