

Radiocesium distribution along the slope in the Iput river basin as a tracer of the contaminant secondary migration

Elena Korobova (1), Sergey Romanov (2), Victor Beriozkin (1), and Nikolay Dogadkin (1)

(1) Vernadsky Institute of Geochemistry and Analytical Chemistry, Russian Academy of Sciences (GEOKHI RAS), Geochemical Dept., Moscow, Russian Federation (korobova@geokhi.ru), (2) UE "Geoinformation systems", Belarus Nat. Ac. of Sci.

The main goal of the study performed in 2014-2015 at the test site located in the abandoned zone of the Iput river basin was to study detailed patterns of Cs-137 redistribution along the terrace slope and the adjacent floodplain depression almost 30 years after the Chernobyl accident.

Cs-137 surface activity was measured with the help of modified field gamma-spectrometer Violinist III (USA) in a grid 2 m x 2 m within the test plot sized 10 m x 24 m. Gamma-spectrometry was accompanied by topographical survey. Cs-137 depth distribution was studied by soil core sampling in increments of 2 cm and 5 cm down to 40 cm depth. Cs-137 activity in soil samples was measured in laboratory conditions by Nokia gamma-spectrometer. The results showed distinct natural dissimilarity of Cs-137 surface activity within the undisturbed soil of slope. Cs-137 depth migration in successive soil cores marked different patterns correlated with the position in relief. In particular cores Cs-137 depth variation correlated with water regime that shows that the processes of secondary distribution of Cs-137 along the slope obviously depend upon water migration. The finding is important for understanding of regularities in patterns of radiocesium spatial distribution.