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## About the character of variation of $^{90}\text{Sr}$ concentration in plants within elementary landscape geochemical system

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A detailed study of  $^{90}\text{Sr}$  distribution in the overground vegetation cover within an elementary landscape geochemical system (top-slope-closing depression, ELGS) was performed in several forested and meadow test sites located in the Eastern Urals Radioactive Trace highly contaminated with this technogenic radionuclide during its release in the Kyshtym accident in 1957 (INES level 6). After selecting the suitable test sites, they were crossed by several lateral profiles along which relative altitude with a step of 1 m and precision of 1 cm was measured using theodolite Boif-DJD10. Averaged plant samples were taken at each point within a standard steel ring (14 cm diameter) later separated into the groups of cereals, legumes and other different herbs. Particular species were also collected if present at no less than seven consequent points. Strontium-90 activity was measured by the portable complex "Colibri" (SKS-08P) developed in the Kurchatov Institute (Potapov et al., 2021). It allowed the measurement of radionuclide activity in field conditions. The determination error did not exceed 15%. Analysis of data obtained revealed the ordered variation of  $^{90}\text{Sr}$  in all groups of plants. This order was presented by the cyclic (periodic) change of  $^{90}\text{Sr}$  activity downslope without definite radionuclide accumulation at the foot of the slope and in depression as usually expected. A similar cyclic pattern was found for  $^{137}\text{Cs}$  variation in moss cover studied in the Chernobyl zone (Dolgushin & Korobova, 2021). We consider it reflects peculiarities of water migration in the soil-plant system at the ELGS scale. Specific  $^{90}\text{Sr}$  activity in forest grasses correlated with biomass volume while plant groups and species with the different activity of radionuclides significantly differed in  $^{90}\text{Sr}$  variation amplitude and its maximum values. The revealed features of variation likely reflect the peculiarities of  $^{90}\text{Sr}$  water migration in soils, the structure of root system, and the plants' ecological demands, such as their hydrophilicity.

### References

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