ID: Type: **Poster**

1.3-P11. Nuclear test plutonium and radiocaesium dispersion in lakes ecosystems: experimental data and novel modelling approach

In the case of accidental appearance of radionuclides in water ecosystems the one-phase model cannot be properly employed to predict radionuclides migration and their accumulation zones. Application of the correct model of radionuclide behaviour in their build-up environment in water saturated soils is of great concern as well. A novel two-phase mathematical model was created that analytically describes the dynamics of radionuclides migration in water ecosystems and lakes bottom sediments. For model verification the cores of sediments in the shallow lake, flooded and upland forest soils were analysed. Radiochemical, alpha spectrometric and mass spectrometric methods were used for the plutonium determination and gamma spectrometry was used for the radiocaesium evaluation. The obtained values of the 238Pu/239,240Pu activity concentration ratio and the 240Pu/239Pu isotopic ratio indicated that the global fallout was a source of plutonium. The contribution of the Chernobyl event deposits amounted about 2.26, 6.11 and 20.9 % of the total radiocaesium inventory in bottom sediments, the upland soil and flooded soil. Radionuclides migration modelling results reliably resembles with experimental data. This model describes radionuclides behaviour dynamics in water ecosystems and especially could help to sustain the verification regime in lake-rich regions and wetlands.

Primary author: PUZAS, Andrius (Center for Physical Sciences and Technology (FTMC))

Presenter: PUZAS, Andrius (Center for Physical Sciences and Technology (FTMC))

Track Classification: 1. The Earth as a complex system