



Spatial and temporal distribution of ^{222}Rn concentrations in the atmospheric surface layer over Russia from TROICA experiments

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The analysis of spatial and temporal distribution of ^{222}Rn concentrations in the atmospheric surface layer over continental Russia from the measurements performed on the base of the international mobile railroad observatory TROICA (Transcontinental Observations in the Chemistry of the Atmosphere) along the Trans-Siberian Railroad from Moscow to Vladivostok in 1996-2004 was carried out.

The investigation of the ^{222}Rn concentrations distribution along the Trans-Siberian Railroad was made taking into account the tectonic structure features of the territory (platforms and folded regions) geological structure of which is quite different. The distribution of natural radionuclides in rocks, soils and groundwater, the presence of breakings, residual soils and areas with the uranium ore mineralization were considered. It is shown that all these factors appreciably influence the radon emanation into the atmosphere.

The analysis of daily and seasonal variations of ^{222}Rn concentrations was carried out. The dependence of radon concentrations increase in the atmosphere on the night surface inversions was discovered. It is connected with the ^{222}Rn accumulation in the lower atmosphere under inversion layer.

Greenhouse gases (CH_4 and CO_2) are emanated from soils and accumulated under inversion layer at the night time like radon. Therefore, correlation dependence between ^{222}Rn and greenhouse gases concentrations in the atmospheric surface layer along the

Trans-Siberian Railroad was investigated in order to estimate greenhouse gases fluxes from ^{222}Rn fluxes.