



Computation and Analysis of the global distribution of the Radioxenon Background based on an Emission inventory of Nuclear Power Plants and other known major sources

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Monitoring of radioactive noble gases, in particular Xenon isotopes, is a crucial activity for the verification of the Comprehensive Nuclear-Test-Ban Treaty. Therefore, the global distribution of these isotopes based on emission and transport patterns need to be understood. It is known from previous studies that a regular low-level background of the isotope ^{133}Xe does exist in the high northern latitudes, for example at the two remote stations Yellowknife and Spitsbergen. An emission inventory of ^{133}Xe has been compiled and presented, which specifies source terms for each power plant and distinguishes between continuous and batch releases. Additional releases are assumed from known medical radioisotope production facilities, in particular from Chalk River, Canada, and Fleurus, Belgium. Emissions from these sites are known to exceed the other source strengths by orders of magnitude. Based on this, the existing studies shall be extended to all other regions on the globe where noble gas monitoring data, in particular ^{133}Xe , do exist.