



Observations of thermal neutrons near the Earth's crust

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A number of neutron experiments, conducted in the different points, have shown that there are two sources of neutrons near the Earth crust. First of them is well-known and sufficiently studied: it is the cosmic rays, which produce neutrons during the interactions between the high-energy particles and the nuclei of the elements of the atmosphere and the Earth's crust. This source is relatively stable. The second source of the atmospheric neutrons is the Earth crust itself. It produces neutrons due to the interactions between the alfa-particles originated from the radioactive decay of the natural radioactive gases (Radon, Thoron and Actinon) and the nuclei of the elements of the atmosphere. The calculations show that the contribution of the Earth's crust into the total flux of thermal and slow neutrons ($E < 0.5$ eV) strongly depends on concentration of the natural radioactive gases of the locality and can vary from several per cents up to dozens of per cents. It was established that there are variations of the neutron radiation near the Earth's crust analogous to geodynamical variations. The analysis of the experimental data have displayed that the variations of thermal and slow neutrons accompany different phenomena: Full and New Moons, the Earth's crossings of the Interplanetary Magnetic Field sector boundaries. Due to so close link between the neutron variations and the dynamical processes in the Earth's crust it must be possible to develop a method of the earthquakes' prediction on the basis of neutron studies, especially taking into consideration that the experiments in the seismic region of Kamchatka have directly pointed to such possibility.