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The analysis of MSL landing site using HEND/Odyssey and GRS/Odyssey data

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In August of 2012 year NASA's Mars Science Laboratory (MSL) with the onboard instrument Dynamic Albedo of Neutrons (DAN) will land on Mars in the Gale crater. This instrument will use the method of neutron-neutron activation analysis to study the abundance and depth distribution of water in Martian subsurface along the path of the MSL rover.
Main purpose of our work is studying of Gale crater area (selected as MSL landing site) using neutron and gamma spectroscopy measurements from the orbit onboard Mars Odyssey mission. We have used the data for gamma-ray lines from the high purity Germanium gamma-ray sensor GRS and the data for neutrons fluxes measured by High Energy Neutron Detector (HEND). We have analyzed average elemental composition (Si, Fe, Al, Ca, Cl and S elements measured by GRS) and tested double-layered model of the distribution of bound water in the Martian subsurface, which includes a H-poor regolith on the top and H-rich regolith at the bottom layer.