



Studies of seasonal variations on Mars based on orbital and surface observations of neutron radiation

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Starting from February 2002 High Energy Neutron Detector (HEND) onboard Mars Odyssey is performing continuous monitoring of regional and seasonal variations of martian neutron albedo to deconvolve and to map subsurface water distribution at different latitudes and to observe Mars climate cycle processes over a long baseline. In our investigation we have used HEND/Odyssey observations accumulated for seven successive martian years to search for the seasonal and inter annual variations of orbital neutron flux at equatorial latitudes due to seasonal variations of atmospheric thickness and seasonal cycle of subsurface water distribution. The obtained results have been compared with a ground truth measurements of local environment obtained by Dynamic Albedo of Neutrons instrument onboard MSL Curiosity rover during first year of surface operations in vicinity of Gale crater.