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Possibility of remote sensing data application for the independent estimation of upper soil layer waterstorage for arid territories of the world.

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Are revealed the possibilities and perspectives of estimation of soil humidity by the means of remote sensing data with help of the passive methods, based on the variety of reflecting and heat physical characteristics of dry and humid soils and also with the active radio location, i.e. according to the data of intensity of reflected radiolocation signal measurements, which is to be defined by the value of coefficient of waves back disperse σ^0. In consequence of high dielectric constant of water in microwave rate the raise of soil waterstorage follows the raise of σ^0, which depends also on the presence of vegetation and kind of surface. Optimal frequency‘ rate for active microwave sounding in consequence of lowest looses of energy in atmosphere are 0.4 – 20 GGc.

Is given the description of European Aeronautic System of remote sensing of the Earth ERS the works according to which were begun by European Aeronautic Agency in 1981.

Are shown the possibilities of radiolocation altimeter data use for the estimation of water store in upper 10-sm soil layer. Apparatus showed its good sensitivity for the large-scale seasonal changes of watering of continents surfaces, qualitative estimation of which is given with the use of satellite data being received during the tandem work of ERS-1 and ERS-2 over the 3 continents – Australia, Africa and South America.

Is shown method of calculation of waterstorage in upper 10-sm soil layer according to the radiolocation altimeter. With this purpose there were fulfilled the analysis of regression consequence between the soil waterstorage and radiolocation altimeter data on the example of the station Asunsion, 2 stations on the State Illinois and in Australia,

which are indicated by different climatic and agrometeorological characteristics.

Soil, which has its start low level of waterstorage, after rainfall reaches the level of saturation and then dries to its first start condition during several days. There were made the suggestion that radiolocation altimeter is very sensitive apparatus, which allows to measure the changes of soil humidity of the arid territories. There were fulfilled the analysis of regression consequence between the soil waterstorage and $\Delta\sigma^0$ on the example of the territory of Australia.

During the elaboration of the algorithm of soil waterstorage estimation S according to the measured values of the coefficient of back disperse and its calculated deviations $\Delta\sigma^0$ from characterized values we made and research double-space function of validity probability of the values S è $\Delta\sigma^0$.

Given regression equations are recommended to use for the zones with the low soil waterstorage, to which arid zones belong.

Decreased estimation of them shows the fields of high values of soil waterstorage.

We fulfilled comparative analysis of climatic and agrometeorological characteristics of arid territories with the aim of search of the fields for which we are could apply the suggested method. The ideal fields of application are the territories of the deserts of Northern and Southern Sahara, Northern Arabia, Iranian hills so as they are characterized by similar soil types, are located in tropical climatic belts where we could find the conditions with warm and draught weather conditions, with high day amplitude of air and soil temperature, annual sum of precipitation no more than 250 mm, occurs negative values of precipitation and evapouration delta per year – near 1600 mm. During the analysis we came to the hypothetical idea of the possibility of application of our method for the conditions of the territory of the desert Kara-Kum (Turkmenistan).