

DEVELOPMENT OF A METHOD FOR AVERAGED ASSESSMENT OF SOIL MOISTURE IN AREAS WITH TEMPERATURE HETEROGENEITY DURING REMOTE MEASUREMENTS

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Currently, satellite technologies are mainly used to assess soil moisture over large areas. These technologies are divided into microwave, optical and thermal. Microwave technologies allow remote exploration of large areas, but the used methods are characterized by low spatial resolution. This disadvantage is eliminated by using a combination of optical and thermal methods with conducting remote measurements in the visible, near-infrared and infrared spectral regions. The aim of the study was to develop a method for assessing soil moisture during remote sensing of territories with varying temperatures. A method has been developed for an average assessment of soil moisture in relation to a model of a territory composed of a certain number of sites, with the temperature varying from site to site in an orderly manner. Using the well-known Carlson model, a discrete model for calculating the average value of soil moisture has been developed. It was found that for the model under consideration a certain function of a relationship between the relative values of NDVI and T may exist, at which the desired average humidity can reach an extreme. In this case, the specific type of extremum is determined after calculating the three regression coefficients available in the Carlson model. As a result of solving the formulated optimization problem, the presence of an extremum of the average moisture value at the site under consideration has been established. The type of extremum can be clarified after experimental calculation of the three regression coefficients.

Key words: soil, humidity, model, optimization, temperature, remote sensing.