

ESTIMATION OF THE POSSIBILITIES OF MAIN FOREST SPECIES RECOGNITION ON THE BASE OF IKONOS SPACE IMAGES

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The high spatial resolution space images in their depictive properties approach to multispectral aerial photographs of the forest management production scale. Experiment on the study of the main species recognition possibilities of Ikonos high resolution images was carried out on the example of Losinyi ostrov national park.

It was carried out the hybrid supervised classification in five versions with the use of Ikonos zone images in ranges 0,45-0,52, 0,52-0,61, 0,64-0,72 and 0,77-0,88. Furthermore it was carried out the classification of derived images - main components, vegetal index NDVI, most common indices of texture. For the classification two algorithms were used: maximum likelihood and minimum distances. Classifier training was carried out on the representative sites from the forest assessment data base, which include the closed crown cover stands with the predominance in the composition about 90-100% birch, linden, pine tree, other land use categories (glades, swamps, areas with open soil, waters).

The classification assessment was carried out according to the control data. Among the separate main forest species best of all were recognized the classes "fir tree" and "birch", the of recognition is higher than 60%, and classes "linden" and "pine tree" is considerably worse - with the certainty less than 50%. The classes of over wooded lands and over land use types are recognize well by all versions of classification with more than 90%.

As a result it is possible to make conclusion about the high recognition certainty of generalized classes "coniferous stands" and "deciduous stands" on the Ikonos images by classification method of maximum likelihood - more than 80%. Among the different versions the best result is obtained by classification of the initial image zones: recognition certainty is 85%. The attraction of textural characteristics somewhat reduces the classification certainty. The use of additional index NDVI increased the recognition of deciduous stands to 89%, but decreased the recognition of class "coniferous stands" to 81%. Thus for recognition of separate species of homogeneous stands which are compactly located on the territory and occupy sufficiently large areas, the use of derived images makes it possible to increase the certainty of their definition. But the use of additional derived characteristics is inexpedient during deciphering of the generalized groups of coniferous and deciduous stands.