

Morphometric analysis of Russian Plain's small lakes on the base of accurate digital bathymetric models

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Lake morphometry refers to physical factors (shape, size, structure, etc) that determine the lake depression. Morphology has a great influence on lake ecological characteristics especially on water thermal conditions and mixing depth. Depth analyses, including sediment measurement at various depths, volumes of strata and shoreline characteristics are often critical to the investigation of biological, chemical and physical properties of fresh waters as well as theoretical retention time. Management techniques such as loading capacity for effluents and selective removal of undesirable components of the biota are also dependent on detailed knowledge of the morphometry and flow characteristics. During the recent years a lake bathymetric surveys were carried out by using echo sounder with a high bottom depth resolution and GPS coordinate determination. Few digital bathymetric models have been created with 10*10 m spatial grid for some small lakes of Russian Plain which the areas not exceed 1-2 sq. km. The statistical characteristics of the depth and slopes distribution of these lakes calculated on an equidistant grid. It will provide the level-surface-volume variations of small lakes and reservoirs, calculated through combination of various satellite images. We discuss the methodological aspects of creating of morphometric models of depths and slopes of small lakes as well as the advantages of digital models over traditional methods.