

The response of inland reservoirs to increase in anthropogenic catchment area is progressive eutrophication of its waters. Bottom sediments of inland reservoirs are a place of accumulation of nutrients that come from the catchment. Where appropriate aerobic conditions they are permanently bound to the sediment, but can also be released into the water column in the process of re-suspension. This phenomenon is well recognized in the literature, when considered are the processes occurring in inland reservoirs. Slightly different shape processes in river and lake systems, conditions that modify metabolic characteristics are typical components for standing tanks, but also for river systems. Therefore, the release of the components of these systems, especially delta located at the inflow and the outflow from the reservoir is difficult to predict. River-lake systems are systems combining a number of reservoirs, which across is flowing a river. River acting as transport and accumulation role introduced into reservoirs biogenic components, but often performs another role, because it modifies specific conditions: among other things, oxygenation, which can assist change processes. In some reservoirs of the system may occur to the accumulation of material and keep it in the sediments. But in others, may cause it to erode the bottom due to the force action of the water and resuspend it in the water. And here comes the question of what role then played by microorganisms? Well, they are responsible for the transformation of forms of nitrogen and carbon under favorable conditions enabling their detention and exclusion from circulation.

The increase in global air temperature will slow the warming of inland waters, and thus changes the conditions characteristic of the lakes, causing algal blooms often, faster mineralization of the substance, consequently disrupting the processes prevailing at the bottom. The material penetrating the containers can be accumulated at the bottom of deltas located on the river inflow to the lake, but also if the role of the transport of the river will predominate, it may still be accumulated at the bottom of the delta located near the river outflow from the reservoir. An important role is played not only the superficial layers of sediments, which are in constant contact between the water, so susceptible to its physico-chemical properties, but also the subsurface layers of sediments, especially in interstitial spaces. In the literature it is emphasized the role of interstitial water, which is located in these spaces as a better indicator of the identification of pollution than the content of dry matter in the sludge. Analysis of the release of components and their capture in the spaces performed in situ was to impossible to carry out because of the constantly changing conditions in the area of river-lake system. Therefore, the project was planned to carry out an experiment using cells called mesocosms filled with sediment tested, simulating the natural conditions on the bottom, and variable conditions that were to place at global warming, or changes in temperature and oxygenation. In addition, an attempt will be made to estimate microbial activity in different types of bottom sediments in the deltas formed in lakes. For the experiment will be used sediment cores, that is undisturbed vertical profiles of sediment collected from the deltas located: at the inflow of the river to lakes, the outflow from the lakes and cores taken from another part of the lakes, off the flow of the river by the basins. The plan envisages the introduction of groundwater coming from the reservoir basin and the water coming from the reservoir and water mixed with solutions of resazurin and fluorescein to the chambers PVC, which were subsequently entered the settlement. Will be used the knowledge about the changes resazurin in resofurin as a result of oxygen consumption. The water must pass through the entire volume of the sediment, and for each level, that is, the depth of the tube obtained will attempt interstitial water for analysis of oxygen content, temperature and nutrient content: NO_2 , NO_3 , NH_4 , PO_4 using ion chromatograph and organic carbon using TOC analyzer and analyzing the concentration of resazurin, resofurin, and fluorescein using a linear fluorometer. Simulation conditions by modifying the temperature and oxygenation will enable to assess the impact of climate change and conditions in the river-lake systems on microbial activity sediment, and thus the role of deltas in the self-cleaning of the waters of such systems.