



Exploring changing environment in wetland national park Kampinos, Poland

Mikołaj Piniewski (1), Jarosław Chormański (1), Lars Gottschalk (2), and Irina Krasovskaia (2)

(1) Department of Hydraulic Engineering, Warsaw University of Life Sciences, Warszawa, Poland
(mpiniewski@levis.sggw.pl), (2) Department of Geosciences, University of Oslo, Oslo, Norway

Valuable wetland areas in the Kampinoski National Park (KNP) are exposed to anthropogenic pressure mainly from the neighbouring Warsaw metropolitan area. Deterioration of hydrogenic soils and swamp vegetation has been observed for many years in KNP. The beginning of change in environmental conditions in this area dates back to the 19th century, when turning wetlands into meadows and pastures started and canals enabling quicker drainage were built. Currently land use change (urbanization) and increasing groundwater intake are regarded as the main threats to KNP wetland ecosystems. The objective of the study is developing an integrated GIS-based tool, that allows cause-effect analysis and prediction for the endangered wetland ecosystems, such as those in KNP. The main background data used are the following raster datasets in 100m resolution: (1) map of groundwater depth for average, dry and wet conditions, (2) soil and vegetation maps reclassified according to hydrological categories, (3) maps of state or dynamics of soils and vegetation. The analysis were carried out for two wetland belts occupying the area of 177 km², drained by Łasica and Olszowiecki Canals. The results indicate that soil and vegetation types vary with the groundwater depth and the level of degradation of habitats corresponds to lowering groundwater levels. The approach allows predicting change in the degree of degradation of soils and vegetation in terms of probabilities conditioned on groundwater depth.