DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

The proposed project has an interdisciplinary character, combining issues of hydromorphology, hydraulic modeling and aquatic ecosystems protection. The main objective of the research is an analysis of reed vegetation impact on discharge distribution in lowland, low energy anastomosing rivers on the example of the river Narew. Conditions of anastomosing rivers development are still not clearly distinguished. Such rivers are characterised by existence of multi channels, divided by vegetated islands composed of organic soils. Given the great number of factors controlling the avulsion processes (basic process of creating new channels), anastomosing systems are deemed to be equfinal (characteristic determining the consistent response of system under different driving forces and conditions). Among the anastomosing rivers worldwide, despite the significant differences, some similarities are reported and postulated as mutual controlling factors i.e. low valley gradients, low stream energy, vegetation causing damming effect. This project is focused on assessment of vegetation impact on discharge distribution and maintenance of anastomosing character of river using one-dimensional hydraulic model. This is a big challenge, due to the difficulties in reconstructing the complex structure where the flow rate distribution between the anabranches is typically unknown. Presently, one of the most essential problems in protection of such ecosystems is a gradual extinction of side channels which leads to slow degradation of the unique anastomosing character of the river Narew. The real threat resulting mainly from human activity within the river valley, but also from a number of natural factors determined the necessity of implementing the protective measures in order to reverse the degradation of the system. The most significant element necessary to maintain the anastomosing character of the fluvial system is to maintain the constant flow in side-channels and the flow velocity preventing from intensive sedimentation and gradual cutting-off the channels. The key element is to fully investigate the role of vegetation in that process. It requires a detailed knowledge concerning the hydrography, geometry, vegetation structure and especially the discharge distribution coefficient at junctions of the system. For this purpose, it is justified to create a hydraulic model describing the conditions of water flow in the river system. The validated model will be a perfect tool for assessing the impact of vegetation on the distribution coefficient between the anabranches in complex anastomosing system of the river Narew.