Coastal, environmental and ecosystem modelling

Water Quality Simulation Of Lakes At The Kızılırmak Wetland, Black Sea

Kübra KÜÇÜK (1) and Gülfem BAKAN (2)

(1) OMU, 55139 Samsun, Turkey

Telephone: 5446547072 Email: kubrakucuk@outlook.com

(2) OMÜ, 55139 Samsun, Turkey

Telephone: 5367963006 Email: gbakan@omu.edu.tr

Besides playing an important part in both achieving ecological balance and protecting biological diversity, wetlands are ecosystems that make significant contributions to the economy of regions and countries. The Kızılırmak Delta in the Central Black Sea region is defined as a Ramsar Area by virtue of its natural habitats and rich biodiversity. The delta has very important wetlands whose natural features have been well-preserved. One of these wetlands, Lakes Cernek and Balık, constitutes a significant ecosystem in terms of agriculture, tourism and fishing. The ecosystem of the lakes are gradually getting degenerated due to irrigation, sedimentary residues, and contamination by agricultural and domestic waste and therefore the tropic level of the lakes are faced with a serious problem. Environmental models provide a quick evaluation of the relationships between reasons and the impacts of pollution. Therefore the models are in the need of estimation of the effects of eutrophication over the aquatic ecosystems. The permission of generating the future scenarios is the major advantage of models. The eutrophication problem in shallow lakes is different from deep lakes which are more common. In this study, which is one of our country is very important and sensitive ecosystems in the Red River Delta, in order to ensure sustainable management of Cernek and Balık lakes, decision-makers the information necessary for the decision support system is one of the tools that can be used in the design phase, water quality modeling is carried out. The elements which make shallow lake's forms complicated are; interfering the water layers, the sediment which isn't strong completely, is suspended, the nutrient loading which is sediment from water layer and the external load. For this purpose, the water quality simulation model WASP7.2, supported by the US Environmental Protection Agency (EPA), was used and the present and future trophic state of the lakes tried to be modeled and discussed in detail. Keywords: Water quality simulation, Kızılırmak Delta, Cernek and Balık Lakes, WASP 7.5, Trophic State