



“Gheorghe Asachi” Technical University of Iasi, Romania



FLUCTUATION OF RIVER NETWORK WATER ENVIRONMENTAL CARRYING CAPACITY IN A COMPLICATED RIVER-LAKE SYSTEM

Hua Wang^{1,2*}, Fengqiang Ji¹, Yong Pang^{1,2}

*Key Laboratory of Integrated Regulation and Resource Development on Shallow Lake of Ministry of Education,
College of Environment, Hohai University, Nanjing 210098, China*

Abstract

Aiming at river network in a complicated river-lake system, a new water environmental carrying capacity (WECC) calculation method was presented based on multi-objectives including water quality objectives for rivers, water quality objectives for control sections, pollution zones length at the sewage outlets and pollution zones area at the external lake inlets. The river network to the northwest of Lake Taihu was selected as the study area. Based on this new method, the WECC fluctuation was analyzed by 1-2D coupled numerical model which had been validated against the field data. Results showed that WECC changes obviously among different hydrological years, and the WECC for COD is 68938.8 metric tons in high flow year, which is 15.4% and 35.0% higher than that in normal flow year and low flow year. The WECC variation with time in different hydrological years is basically similar that the WECC in flood (May-October) season is markedly larger than that in dry season. While the fluctuation range of the WECC varies with hydrological conditions, which is higher in high flow year than that in normal flow year and low flow year.

Key words: water environmental carrying capacity, fluctuation, coupled model, river network, river-lake system

Received: April, 2013; Revised final: July, 2014; Accepted: August, 2014

* Author to whom all correspondence should be addressed: e-mail: wanghua543543@163.com; Phone:+86 18066068868