TOWARDS REAL TIME MONITORING OF WATER QUALITY IN RIVER BASINS

Florina Ungureanu[1]*, Robert Gabriel Lupu[1], Andrei Stan[1], Ioan Craciun[2], Carmen Teodosiu[3]

[1]*"Gheorghe Asachi" Technical University of Iasi, Faculty of Automatic Control and Computer Engineering, Department of Computer Engineering, 27 Prof. Dr. Doc. Dimitrie Mangeron Street, 700050 Iasi, Romania*
[2]*"Gheorghe Asachi" Technical University of Iasi, Faculty of Hydrotechnical Engineering, Geodesy and Environmental Engineering, 65 Prof. Dr. Doc. Dimitrie Mangeron Street, 700050 Iasi, Romania*
[3]*"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, Department of Environmental Engineering and Management, 73 Prof. Dr. Doc. Dimitrie Mangeron Street, 700050 Iasi, Romania*

Abstract

The remote monitoring of river water quality plays an important role in the integrated water resources management. Among the most inconvenient features encountered in the development of a real time system for monitoring river water quality, there are: variability and uncertainty in river basins, the nonlinearity of the ecological systems, the problems of high costs and low reliability caused by online sensors deployment. A global monitoring system of a hydrologic basin has a distributed (in space and functionally) and hierarchical architecture involving different mobile or static devices, various types of communication, software applications, data base and friendly interfaces with the users. This paper presents a reliable solution for a real time monitoring system for a river basin, involving multiparameters measurement instruments with local data acquisition and processing embedded devices, wireless communication system and a central server for information management. Energy constraint, routing protocols, memory restriction, data accuracy, sensor localization and not at least the cost minimization were the most challenging goals of this research. Taking into account that in the next steps of the water resources management system development, all data should be integrated and visualized by using a Geographical Information System (GIS), the generated database was a special task of this work. The design hardware and software were tested and validated in laboratory and real deployment environment.

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* Author to whom all correspondence should be addressed: e-mail: fungurea@cs.tuiasi.ro; Phone: +40-232 232430