

Title: SPATIALLY DISTRIBUTED MONITORING AND SENSING OF WATER QUALITY IN URBAN LAKES AND RESERVOIRS

Acronym and short title: SATELLITE URBAN WATERS OBSERVATORY INITIATIVE – THE SUWOBI PROJECT

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D-5-SUWOBI.doc

Summary:

Nowadays, in urban settlements lakes and reservoirs are likely to be under pressure. The quality of these water bodies is an important issue to ensure the different water uses. They have high nature conservation and tourist value and are being used for passive recreation, water supply, hydropower generation, or flood control depending on the context. For many urban lakes and reservoirs remote-controlled real-time monitoring stations coupled with sensing techniques would be very useful for helping in water quality restoration and assessment. The SUWOBI project consists of the development of a well spatially distributed monitoring program for urban lakes and reservoirs.

In recent years, previous studies such as the London Lakes Project, PROLIPHYC, and Remote sensing lake water quality in Finland have contributed towards a better understanding about how the lake system works and how the water quality could be monitored. However they rarely take into account social and economical aspects. The main aim of the proposed project and its social added value is to rise accurate data which are able to easily adjust to changes, and provide support for the water policy, and even give information to the public on time in agreement with the local social context.

The new and groundbreaking idea of the proposed project is to combine two different approaches to survey water parameters of urban lakes in a very good spatial and temporal resolution. It is intended to combine optical satellite data of the water body (parameters: organic pollution, sedimentation, water heights) and *in-situ* measurements of the water quality (parameters: ph, conductivity, pressure, dissolved oxygen, ammonia nitrogen, total phosphorous, permanganate index, lead, E coli) at different water depths. The estimation of the concentrations of different optically active water quality constituents is based on the analysis of multispectral data. The monitoring program uses real-time, autonomous, monitoring station controlled remotely by GPS. Also data transmission will be wireless which enables a nearly “real time processing” of data. For the proposed multidisciplinary application three project partners are foreseen in three different continents. These are: the Bourget Lake located in France, the Muña Reservoir in Colombia and the Taihu Lake in China. Partners consist of local universities (Ecole des Ponts Paristech - LEESU in France, Los Andes University in Colombia and in Nanjing University in China) and local institutions. The proposed methodology will be applicable and transferable into other urban lakes under different conditions.

Budget requested from WWW-YES foundation (Euro) + other contributions

In overall the project costs will cover 1.123.190 Euro. We apply for a funding of 649.890 Euro. Our own funding comprises 473.300 Euro. Besides the spatially distributed water parameters the project furthermore supports intercultural exchange, knowledge transfer and networking with developing countries.