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The role of continuous monitoring as a decision support tool: A Dublin Port deployment.

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Improvement in water quality depends on the availability of precise information that is representative of the water body in question. Emerging sensor technologies can provide additional information on temporal and spatial variability of pollutants as well as early detection of special events [1]. Further work is required to demonstrate the utility and reliability of these tools in field trials.

A successful demonstration project in Dublin Port from September 2010 to May 2011 shows how state of the art technology can be implemented for cost effective continuous monitoring. The site is known to be a dynamic, rapidly changing estuarine environment affected by tidal movement, ship traffic and Liffey river inflow. Data was collected every 15 min using a YSI multi-parameter sonde connected to a telemetry system. The measured parameters were: temperature (^{o}C), conductivity (mScm^{-1}), turbidity (NTU), optical dissolved oxygen (ODO) (mgL^{-1}) and pH. Collected data was processed and analyzed and the temporal fluctuations in the above mention water quality parameters will be discussed. Trends arising from tidal movements, climate conditions, ship traffic and fouling of the sensors will presented, as well as the impact of the intense activity in the port, on the water quality. During this study, wireless sensor technologies have proved to be a reliable and cost effective tool, able to withstand harsh environmental conditions and to give a better understanding of the temporal resolution of the data into a complex and dynamic environment.

References: [1] B O'Flynn, F Regan, A Lawlor et al. (2010) Experiences and recommendations in deploying a real-time, water quality monitoring system. *Measurement Science and Technology* 21 (12).