
Design and field-test of an operational low-cost and open-source system for river water quality monitoring

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Abstract

The paper aims at presenting a Low-Cost and Open-Source (LCOS) electronic prototyping platforms based on Arduino® for river water quality monitoring. Temperature, turbidity and colour (RGB) sensors were tested at lab and on the field. A seven-step lab procedure was applied to test the sensor performances. LCOS turbidity sensor for instance was compared to a professional reference system (WTW®) for suspended sediment monitoring. WTW® system is known as reliable, and robust, but 60 times more expensive than the LCOS solution. Lab results from LCOS turbidity and temperature sensors are linearly correlated with turbidity and temperature measurements from WTW® system. A home-made encapsulated probe was next designed and placed 11 months in a river in the Southern French Alps. Field results show that this first prototyping provides reliable results in comparison with costly solutions; it is robust and it resists in harsh environment.

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