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A SIMPLE WIRELESS SYSTEM FOR REMOTE SYSTEM FOR REMOTE WATER QUALITY MONITORING IN RURAL AREA RIVERS

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ABSTRACT

The objective of the project to be presented is the development of an in-situ-wireless-river water-quality-monitoring-sensor system equipped with a web server, based on a microcontroller, storing the data locally (local site) and transmitting them on demand through a WiFi point to point local network to a remote internet endpoint - personal computer station. The later includes a wireless transceiver with directional antennas and gateway between the local network and the University networks (UoI, UoV) as well as internet services, user interface etc. Each point to point connection will comprise a number of repeater nodes including antennas, access points and switches. The in-situ-wireless-river water-quality-monitoring-sensor system as well as the repeater nodes are self-powered using solar energy. The system is installed in a number of locations in Vjosë River-Albanian with an internet endpoint at the University of Vlorë, Albania, and in Arachthos River - Greece with an internet endpoint at University of Ioannina. All parts of the system are fixed on the upper part of a small antenna tower including a conical tank filled by fresh river water periodically, 4 times per day by a sling pump (based on Archimedean screw) operated by the water flow. Eight sensors measuring temperature, PH, conductivity, DO, ORP, Ammonium, Nitrate and Chloride are used. Due to the limited sunshine presence in the river gorges the system is active periodically and the data are calibrated locally using lab measurements. Each station is equipped with a GPS receiver to get the proper time and to correct the local real time clocks. The project is financed in the framework of the Greece-Albania IPA cross border programme 2007-2015 with the project title "Wireless Water Quality Monitoring of Arachthos and Vjosë Rivers (wwqm_avr)" and will be completed by the conference time.



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