Proceedings International
Open-Access Journal (ISSN: 2668-6384)

Proceedings, Abstract
Volume 7, Issue 1, 2025, 9
https://doi.org/10.33263/Proceedings71.009

IoT Solutions for Monitoring Water Quality in the St. George Branch of the Danube Delta

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Received: 7.08.2025; Accepted: 21.09.2025; Published: 16.11.2025

Abstract: In the context of dramatic evolutions on climate change, many consequences are encountered that cover a broad area of diversity and the intensity of their impact on the human communities located in different regions of the Globe. One of the very sensitive regions is the so-called Large River – Sea Ecosystems, as it is the Danube Delta Large Ecosystem. The human communities located in the Danube Delta are under continuous pressure from the consequences of climate change, from catastrophic floods to extreme droughts and dramatic changes in the structure of ecosystem services. In this respect, the monitoring of ecosystem parameters in real-time conditions is a necessity that could make the difference in saving lives and minimizing the impact of different disasters. Within the frame of the European project ARSINOE, a dedicated case has been developed for the monitoring of the water quality in the St. George Branch of the Danube. The pilot case consists of two buoys structured in IoT technology, a Metaverse application for multi-user interactions, and a complex model integrating modules for processing satellite data, estimating the parameters, and compiling water quality indicators.

Keywords: Climate Change Pressure; Danube Delta Ecosystem; Real-time Monitoring; ARSINOE Pilot; IoT Buoy & Metaverse System.