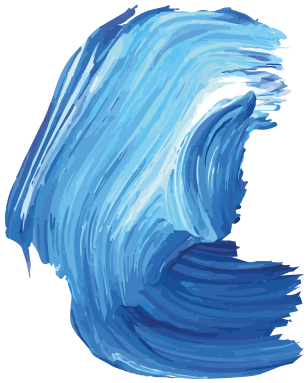

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DISSOLVED OXYGEN DYNAMICS IN RIA FORMOSA LAGOON - AN *IN SITU* HIGH RESOLUTION MONITORING APPROACH

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Abstract: Coastal lagoons are tightly interlinked ecosystem between the land-ocean interfaces where complex interactions of physical-chemical-biological-geological parameters occur over a variety of scales. This highlights the need of conducting observations at appropriate or relevant spatial and temporal resolution, ranging from short to large scales. In this context, the deployment of *in situ* sensors for measurements of biogeochemical parameters is helping a lot the knowledge and understanding of the functioning of coastal systems. This is the case of Ria Formosa lagoon, the most important coastal system in the south coast of Portugal and a productive ecosystem highly valuable in terms of ecological and socio-economical viewpoint, representing the most important national center of bivalves. Within the scope of UBEST project (PTDC/AAG-MAA/6899/2014) an EXO-2 multiparameter sonde (YSI) was deployed on a real-time monitoring station, as part of an observatory, installed in an inner area representative of a water body (WB2). This sonde is acquiring temperature, salinity, pH, dissolved oxygen, chlorophyll-*a* and turbidity data continuously for almost 2 years since May 2017. Sensors have been checked and calibrated every month with specific standard solutions. The acquired data and particularly those of dissolved oxygen, represent a benefit, allowing to look at complex issues and questions, traditionally difficult to address, since conventional campaigns cannot cover such a high sampling frequency and long period. This is a key water quality parameter showing how this ecosystem behave in terms of photosynthesis *vs*. respiration, its metabolism along different temporal scales: semidiurnal and fortnightly tides, daily, seasonally, interanually and in response to oceanographic/meterorological mesoscale conditions. This study aims to demonstrate how dissolved oxygen, in this inner area of Ria Formosa, is highly variable in time (*ca.* 30- 125%). It reflects short to long term time scales, highlighting the relevance of conducting high temporal *in situ*/online observations to better understand its functioning.

Key words: Ria Formosa, online data acquisition, deployment of *in situ* sensors, coastal lagoons

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