

X V INTERNATIONAL ESTUARINE BIOGEOCHEMISTRY SYMPOSIUM

VIGO, JUNE 04 - 05, 2019













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Abstracts Volume XV International Estuarine Biogeochemistry Sysposium ISBN: 978-84-120734-0-9 Editorial: Linckia CSIC - Consejo Superior de Investigaciones Científicas



# TAGUS ESTUARY OBSERVATORY: SEASONAL MONITORING OF THE WATER QUALITY

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Abstract: The Tagus estuary (Portugal) supports diverse uses and activities and its ecological value is well recognized. This study aimed to characterize the water quality in the Tagus estuary during one year, as part of the Tagus estuary observatory. Three field campaigns were performed in 2018 covering distinct seasons (Spring - May; Summer -September; Autumn – November). Seven sampling stations were chosen, covering the whole estuary and its water bodies (WB). At each station, physical, chemical and biological data were collected during one semidiurnal tidal cycle (~12 hours). Temperature, salinity, pH and dissolved oxygen were measured *in-situ*. Water samples were collected to determine in laboratory the concentration of nutrients, chlorophyll-a and total suspended solids. Results showed marked spatial gradients, typically with larger concentrations of chlorophyll-a, nitrate and silicate upstream. Silicate and nitrate presented a conservative behaviour, contrarily to ammonium and phosphate. Seasonally, the highest nutrients and suspended solids concentrations were found in Autumn, after a period of rainfall, pointing out to the relevance of land runoff for material supply into the estuary. These conditions were favourable for phytoplankton development, once chlorophyll-a was maximum during this campaign (24  $\mu$ g/l in the upper estuary – WB4). Following Caetano et al. (2016) the Tagus estuary was classified relative to the nutrients concentrations. Both the Tagus WB1 and WB2 presented "Good" status. The Tagus WB3 and WB4 presented "Medium" status due to, respectively, ammonium, and nitrate and phosphate concentrations. The data acquired will be combined with historical data and numerical modelling, to contribute to a better understanding of the biogeochemical buffering capacity of the Tagus estuary and its susceptibility to climate change and anthropogenic pressures.

Key words: Estuarine observatories, nutrients, chlorophyll-a, nutrients status classification

Acknowledgments: Funded by FCT project UBEST (PTDC/AAG-MAA/6899/2014). Participants in the field campaigns: LNEC - A.Azevedo, A.Fortunato, A.Louro,

A.Oliveira, A.Rilo, D.Mendes, F.Brito, J.Rogeiro, J.Teixeira, L.Pedro, P.Lopes, R.Martins; UAlg - C.Correia, J.Jacob, J.Cunha; FCUL - J.Barceló, J.Cruz, R.Cereja, T.Camelo.

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