

# TAGUS ESTUARY OBSERVATORY: SEASONAL MONITORING OF THE WATER QUALITY

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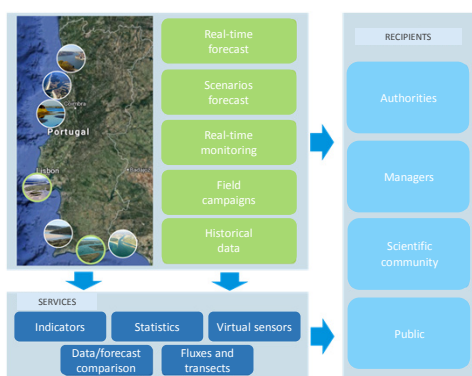
## Motivation

Climate change represents a major threat to the world's coastal ecosystems. Water observatories support both their daily and long-term management, by allowing the:

- continuous surveillance of coastal zones;
- anticipation of events of contamination;
- tuning of management plans.

In project UBEST we demonstrate the use of water observatories to understand the biogeochemical buffering capacity of the Tagus estuary and of the Ria Formosa relative to climate change.

This study aimed to characterize the water quality in the Tagus estuary during one year, as part of the Tagus estuary observatory.



**Water observatory.** Comprehensive web-portals that integrate historical and real-time observations, forecasts, scenarios analysis and indicators.

## Methods

Three field campaigns were performed in 2018 covering distinct seasons (Spring – May 10; Summer – September 26; Autumn – November 6) and the whole Tagus estuary.



Station	Sampling period	Variables	
		In situ	Water samples
P1 - Valada	Semidiurnal tidal cycle (~ 13 hours)	Temperature	Nutrients (NH <sub>4</sub> <sup>+</sup> , NO <sub>3</sub> <sup>-</sup> , PO <sub>4</sub> <sup>3-</sup> , SiO <sub>2</sub> )
P2 - Vila Franca de Xira		Salinity	Chlorophyll-a
P3 - P. Sta. Iria		pH	TSS
P4 - Channel 2		Dissolved oxygen (concentration and %)	Dissolved oxygen (Winkler)
P5 - Channel 1	Sampling at 2 hours intervals		
P6 - Algés			
P7 - Cascais			

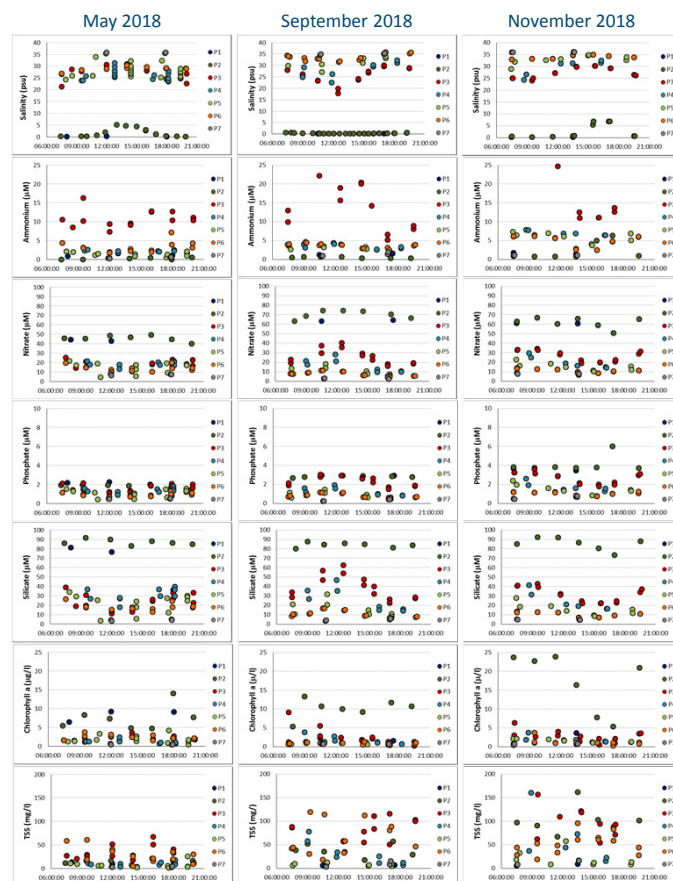


**Field campaigns.** Location of the sampling stations, sampling period and variables measured.

## Water quality in the Tagus estuary - 2018

Main findings:

- Marked spatial gradients -> larger concentrations of chlorophyll-a, nitrate and silicate upstream
- Silicate and nitrate presented a conservative behaviour, contrarily to ammonium and phosphate
- Highest nutrients and suspended solids concentrations found in Autumn, after a period of rainfall -> relevance of land runoff for material supply into the estuary
- Following Caetano et al. (2016) the Tagus estuary water bodies were classified relative to the nutrients concentrations: the Tagus WB1 and WB2 presented "High" status, and the Tagus WB3 and WB4 presented "Medium" status



**Observations.** Salinity, ammonium, nitrate, phosphate, silicate, chlorophyll-a and total suspended solids concentrations in the Tagus estuary on May, September and November 2018.

WB1	WB2	WB3	WB4
		M (NH <sub>4</sub> )	M (PO <sub>4</sub> , NO <sub>3</sub> )

**Nutrients status.** Nutrients status of the Tagus estuary water bodies (WB) based on the 2018 observations using the classification proposed by Caetano et al. (2016)

Status
High
Medium
Low

## Acknowledgments

This study was partially funded by Fundação para a Ciência e Tecnologia project UBEST (PTDC/AAG-AA/6899/2014).