

PORTUGUESE OCEAN ACIDIFICATION DATA - HARMONIZATION CHALLENGE FOR SEAWATER

pH MEASUREMENTS

Marta Nogueira^{1*}, Bárbara Anes²

¹Instituto Português do Mar e da Atmosfera, IPMA, Av. Alfredo Magalhães Ramalho, n. 6, 1495-165 Algés, Portugal. (*mnogueira@ipma.pt)

²Centro de Química Estrutural, Faculdade de Ciências da Universidade de Lisboa, C8 Campo Grande, 1749-016 Lisboa, Portugal.



The Intersessional Correspondence Group on ocean acidification (ICG-OA) is an international working group under the OSPAR convention (Convention for the Protection of the Marine Environment of the North-East Atlantic), in which Portugal is a member (as a Contracting Party), with the aim to develop a proposal for an ocean acidification assessment and monitoring strategy for OSPAR region. Ultimately, the main goal will be the development of an Ocean Acidification (OA) indicator for the Quality Status Report 2023 (QSR 2023).

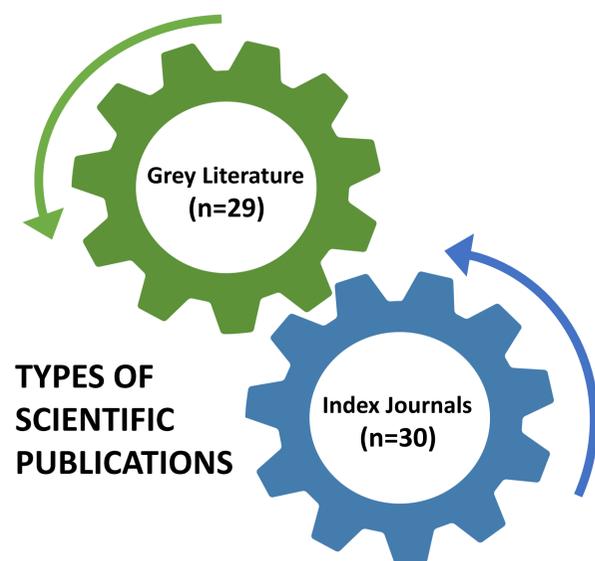
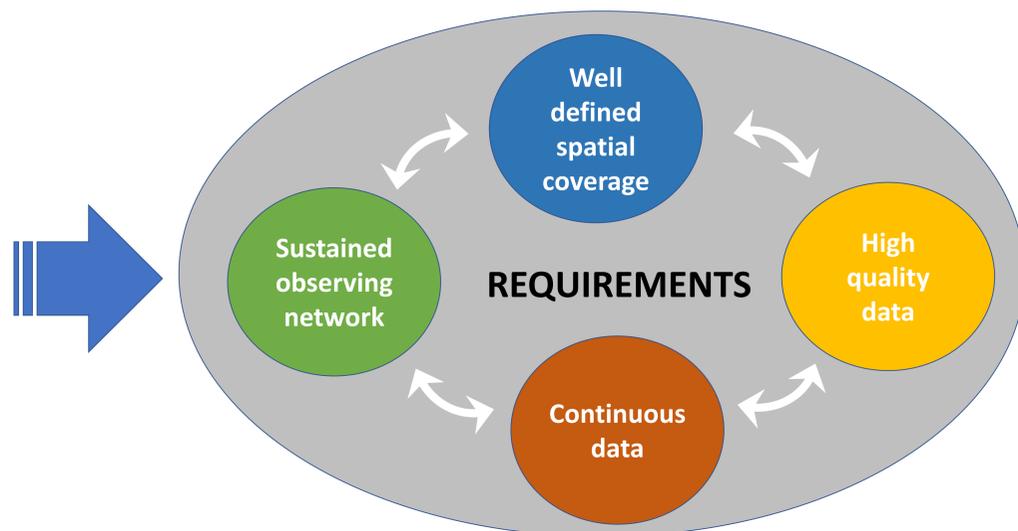
One of the challenging features of this group is to define how to harmonize data for presentation and trend statistics approach (winter, deseasonalised, in situ T, etc...).

THE PROBLEM

Portugal lacks a monitoring program for OA which is fundamental for the assessment of OA in Portuguese Coastal and Oceanic Waters.

The existing monitoring activity is not a part of a sustained observing network although efforts have been made to use short term projects with clear funding stream or plans for continuation to ensure that data can be obtained.

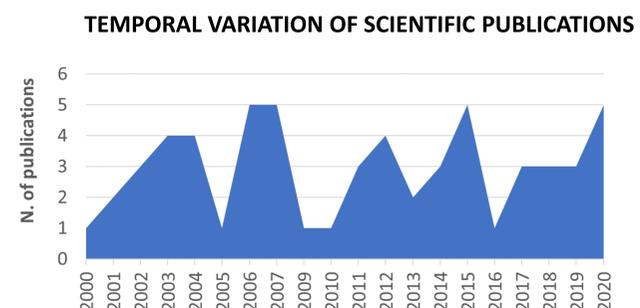
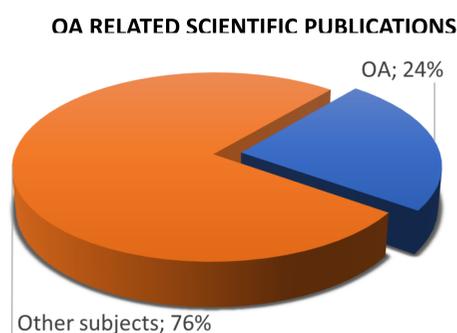
Nevertheless most available and existing data is of discontinuous nature and spatially scattered which makes any Quality assessment a challenge.



TYPES OF SCIENTIFIC PUBLICATIONS

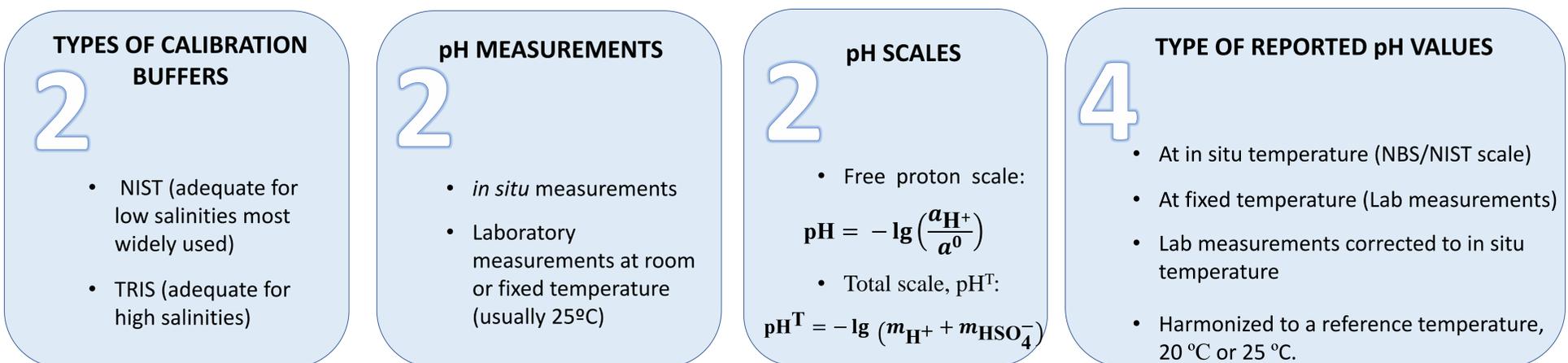
LITERATURE REVIEW (2000 – 2020)

In Portugal, the most common measurement of the OA parameters is pH. Several data have been reported in literature for coastal and oceanic waters but mostly associated with other subjects and not directly related to OA. Although index journals are a validated source of data, Grey Literature, namely: Technical reports, Thesis, Non index journals, Scientific seminars and Book chapters, also plays an important role in gathering OA data.



VARIABLES IN pH REPORT

Data reported in literature differs in terms of different calibration procedures, pH scales used, field and laboratory pH measurements.



CHALLENGES WE FACE

HARMONIZATION – Find a consensual methodology for reporting comparable pH data

REPORTING – high quality data, input data in international databases: World Ocean Database (WOD), to the Global Ocean Acidification Observing Network (GOA-ON), the UN SDG14.3.1 (Intergovernmental Oceanographic Commission), SOCAT (Surface Ocean CO₂ Atlas) and European Marine Observation and Data Network (EMODnet)

MONITORIZATION - temporal and spatial coverage that can allow us to obtain data suitable to trend analysis and identify risk areas

UNANSWERED QUESTIONS

Efforts are being made by researchers, to report good quality data, but:

- Which is the recommended procedure for pH measurements in seawater and which one minimizes analytical errors?

- How to harmonize previous data obtained through different method procedures (using different pH buffer standards) and reported at different temperatures?