EGU21-15806, updated on 03 Aug 2021
https://doi.org/10.5194/egusphere-egu21-15806
EGU General Assembly 2021

An inventory of dissolved oxygen conditions along the eastern boundary of tropical and subtropical Atlantic: building oxygen monitoring capacity in West African countries, 2013-2019

Paulo Coelho[1], Pedro Tchipalanga[1], Marisa Macuéria[1], Anja van der Plas[2], Benjamin N'Guessan[3], Kanga Desiré[3], Ahmed Makaoui[4], Ismail Bessa[4], Mohamed Idrissi[4], Omar Ettahiri[4], Karim Hilmi[4], Issufo Halo[5], Sunke Schmidtko[6], Marcus Dengler[6], Peter Brandt[6,7], David Cervantes[8], Helene Lødemol[9], Melissa Chierici[9], Marek Ostrowski[8], Mamadou Lamba Bâ[10], and the WG TOMSWA - Ad-Hoc Working Group on Transboundary Oxygen Monitoring Status in West Africa[*]

[1]Instituto Nacional de Investigação Pesqueira e Marinha, Luanda Angola
[2]Ministry of Fisheries & Marine Resources, Swakopmund, Namibia
[3]Centre National de Recherches Océanologiques, Abidjan, Côte d'Ivoire
[4]Institut National de Recherche Halieutique, Casablanca, Morocco
[5]Department of Conservation and Marine Science, Cape Peninsula University of Technology, South Africa
[6]GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany
[7]Kiel University, Kiel, Germany
[8]Institute of Marine Research, Bergen, Norway
[9]Institute of Marine Research, Tromsø, Norway
[10]Institut Mauritanien de Recherches Océanographiques et des Pêches, Nouadhibou, Mauritanie
[*]A full list of authors appears at the end of the abstract

Climate change is expected to result in a reduction of oceanic oxygen concentration and an expansion of oxygen-minimum zones (OMZs) in the tropical ocean. Oxygen is perhaps the principal environmental variable influencing habitat and health of fish populations. In West Africa, where rich fisheries are essential for supporting the livelihood of coastal populations, the prospect of expanding hypoxic conditions into fishable coastal shelf waters is a major concern. A transboundary sharing of information on expanding OMZs could provide valuable operational data for fishers and managers, but the capacity for monitoring oxygen conditions at the trans-regional scale is today limited in many countries of the region. Here, we present an inventory of oxygen content in the coastal fringe off West Africa between 30°N and 30°S. Our aim is to present a unified and fisheries relevant information on oxygen water quality along the entire West African continental boundary. The inventory collates the results of recent international expeditions monitoring trans-regional oxygen data over the shelves of West African countries. The EAF Nansen Programme surveys on board the RV Dr Fridtjof Nansen in 2017 and 2019 provided one source such data. During these surveys, scientists representing regional research fisheries institutes carried out observations on dissolved oxygen conditions within their respective exclusive economic zones (EEZ). These data are complemented by oxygen data collected during different

international expeditions particularly including research cruises with RV Meteor covering the EEZ of West African countries during 2013-2019. The Meteor results have long established the baseline for Oxygen Minimum Zone (OMZ) monitoring. Our inventory attempts to extend this baseline to cover the coastal West African waters. In this presentation, we show the distribution of the mean and extreme oxygen conditions in the coastal fringe along the West African continental boundary, provide insight into the seasonal variability across the region, identify data-poor subregions, and discuss potential impacts of the observed oxygen distributions on local ecosystems and fisheries.

WG TOMSWA - Ad-Hoc Working Group on Transboundary Oxygen Monitoring Status in West Africa: Coelho,P., Tchipalanga, P.,Macuéria, M., van der Plas, A., N'Guessan, B., Desiré, K.,Makaoui, A., Bessa, I., Idrissi, M., Ettahiri, O., Hilmi, K., Halo, I.,Schmidtko, S., Dengler, M., Brandt, P., Cervantes, D., Lødemol, H., Chierici, M., Ostrowski, M., Bâ, M.L., Sarre, A., S., Faye, S..