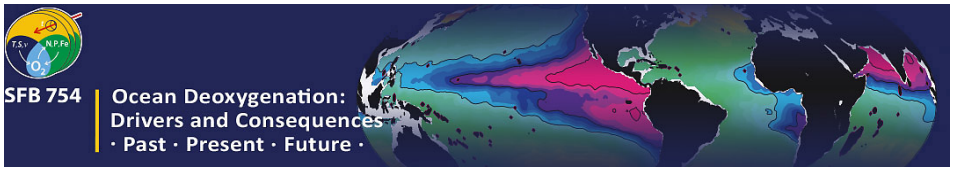

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Demonstrating the value of enhanced multidisciplinary sustained observations for understanding variability in the oxycline and its impacts on the EBUS ecosystems

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Providing critical ocean information to satisfy societies changing socio-economic needs requires a coordinated implementation of multi-disciplinary ocean observing activities. For the past 12 months, building on the Framework for Ocean Observing (FOO), we perform technological readiness level (TRL) assessments for observing the oxycline in highly productive and economically important Eastern Boundary Upwelling systems (EBUS). The upper oxycline being the transition between high and low oxygenated waters is of fundamental importance for the ecosystem structure. The 'Variability in the Oxycline and its ImpaCts on the Ecosystem (VOICE)' initiative demonstrates how societal motivations drive the need for enhanced and optimized integration of physical, biogeochemical and biological components of regional ocean observing and modelling.

VOICE outlines a roadmap towards an observation-model synthesis for a comprehensive observing of oxycline dependent processes. Local, regional and global effects, such as deoxygenation trends, prompt for a better observing of the oxycline. VOICE determines its observing design based on scientific and monitoring activities in selected EBUS regions: the Humboldt Current System, West Africa (Canary and Benguela Current Systems), Northern Indian Ocean, and the California Current System.

To facilitate the process of readiness level assessment, regional champions appointed by VOICE collect information from all relevant stakeholders in their region. Identifying local societal benefits and scientific applications, determines the drivers for enhancing and optimizing the design of the regional observing systems. Analysis of existing observing and data management capabilities with respect to the corresponding requirements for Essential Ocean Variables (EOVs) and key ocean phenomena forms the basis for a comprehensive analysis of gaps in the observing system. VOICE distinguishes between gaps that are correctable through adaptation of existing platform/sensor sampling schemes or data processing chain, and critical gaps which require initiation of new observing elements and schemes.

The readiness level assessment will thus point at system bottlenecks which prevent ocean observations from delivering information products for the societal benefits and applications identified by the users of the observing system. The ultimate goal of VOICE is to provide a globally-applicable blueprint of a multi-disciplinary sustained OMZ observing system, outlining a minimum and optimized set of observational and modelling requirements for a fit-for-purpose system, capable of informing the society about the variability in the oxycline and its impacts on the ecosystem.

In this presentation we provide an overview of the TRL assessment in all VOICE regions and propose an initial gap-analysis and strategy for increasing the readiness levels in the regions.

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