# Context

The 2021–2030 UN Decade of Ocean Science for Sustainable Development, the IOC Medium-Term Strategy, the African Union’s Agenda 2063, and the AU Blue Economy Strategy all underscore the imperative of sustained ocean observations to address climate change, protect marine ecosystems, improve maritime safety, and foster the sustainable use of ocean resources. These frameworks collectively recognize ocean observations as foundational to achieving Sustainable Development Goal 14 (Life Below Water) and broader resilience and development goals in Africa.

Because of the critical importance of ocean observations for Africa, GOOS-Africa was established in 2003 during the Twenty-second Session of the IOC Assembly. It serves as the African regional node of the Global Ocean Observing System (GOOS), with the aim of advancing sustained and integrated ocean monitoring efforts across the continent. GOOS-Africa is administered through the IOC Sub-Commission for Africa and the Adjacent Island States, whose officers serve de facto as representatives of African Member States to the GOOS Regional Alliances. This structure enables African priorities and needs to be directly reflected and advocated for in global ocean observing frameworks and initiatives.

Despite these high-level mandates, Africa’s vast and diverse ocean territories—spanning multiple basins—remain among the least observed and least equipped for sustained, integrated marine monitoring. The region faces numerous challenges, including limited national investments in observing infrastructure, insufficient capacity for system maintenance and data analysis, fragmented institutional coordination, and inadequate access to advanced technologies and data-sharing mechanisms. These gaps hinder Africa’s ability to develop reliable early warning systems, plan and implement coastal resilience strategies, support fisheries and marine ecosystem management, or engage effectively in global ocean science collaboration.

This guidance note supports IOCAFRICA’s strategic role in reversing these trends by establishing a coherent and forward-looking regional agenda. It encourages Member States and partners to scale up ocean observation efforts, strengthen regional integration into global frameworks like GOOS, and prioritize investment in tools, training, partnerships, and inclusive innovation. Ocean observation is not only a scientific necessity—it is a foundational tool for protecting lives, ecosystems, and economies in Africa’s coastal and island states.

# Purpose

To guide discussions and outputs of the sessional working group on Ocean Observations and Monitoring during IOCAFRICA-VIII, with a focus on actionable, results-oriented contributions to the 2026–2027 work plan.

# 1. Theme Overview

This working group will address efforts to enhance Africa’s capacity for sustained ocean observations and monitoring—a foundational pillar for ocean science, ecosystem protection, disaster preparedness, and sustainable blue economy development. Ocean observations are vital for understanding sea level rise, ocean warming, acidification, marine pollution, and biodiversity trends, yet Africa’s ocean observing infrastructure remains fragmented and under-resourced. Many countries lack the technical equipment, real-time data networks, and human resources to maintain consistent marine observations. Coastal and island states, in particular, face increased vulnerability to ocean-related hazards like storm surges and tsunamis without reliable monitoring systems.

This theme is essential to inform climate change adaptation and mitigation, support early warning systems for disaster risk reduction, and underpin oceanographic research and marine spatial planning. Importantly, Africa is not starting from a vacuum. There are several national and regional institutions with recognized expertise in different domains of ocean observation, These institutions have contributed significantly to oceanographic research, data collection, and regional coordination efforts. However, many of them operate under serious resource and infrastructure constraints, which limit their ability to function optimally and expand their scope of services. Targeted support—both technical and financial—is needed to strengthen these existing centers of excellence, enhance coordination among them, and enable them to lead future observation and monitoring initiatives at the regional and continental levels. It also supports data-driven decision-making across sectors, from fisheries to tourism, maritime safety, and ocean education. Enhancing Africa’s ocean observing systems presents an opportunity to localize global initiatives like the Global Ocean Observing System (GOOS), develop homegrown ocean forecasting services, and foster regional cooperation in data sharing, innovation, and capacity development. This group is therefore tasked with identifying practical strategies, partnerships, and investments to bridge critical observation gaps and integrate African priorities into the broader global ocean observing framework.

# 2. Sub-Themes to Cover

* Ocean observing infrastructure and GOOS-Africa integration
* Climate and sea-level change monitoring
* Marine hazards and early warning systems
* Coastal and open-ocean forecasting
* Monitoring marine pollution

# 3. Guiding Questions

* How can artificial intelligence and earth observation technologies be leveraged to enhance ocean monitoring systems in Africa?
* What opportunities exist for integrating satellite data with in-situ observations to improve forecasting and decision-making?
* What are the major gaps in observation infrastructure in Africa’s coastal and EEZ zones?
* How can we strengthen the integration of African nodes into GOOS and related initiatives?
* What technical capacities and training are needed to improve data collection and use?
* How can observational data be used for DRR and climate adaptation in Africa?
* Which partnerships and platforms can be leveraged or created?

# 4. Proposed Activities for 2026–2027

## In recognition of the transformative role of technology in advancing ocean observations, proposed actions should incorporate the use of artificial intelligence (AI) and earth observation technologies, particularly in complementing and integrating in-situ data collection. AI applications can support real-time data analytics, anomaly detection, and predictive modeling for early warnings. Similarly, integrating satellite and remote sensing data with ocean-based sensors can enhance spatial and temporal coverage of observations across Africa’s marine zones.

## Infrastructure & Equipment Procurement

* Develop a regional procurement plan to support the acquisition and maintenance of ocean observing tools such as tide gauges, ADCPs, gliders, coastal buoys, and sensors for temperature, salinity, and pollutants.
* Facilitate joint procurement mechanisms or pooled resources across Member States to reduce costs and improve access to specialized equipment.
* Conduct/update an inventory and gap analysis of ocean observing infrastructure and associated operational needs.
* Identify standards and technical specifications for ocean observation equipment to ensure interoperability and integration with GOOS.

## Training & Capacity Building

* Regional workshop on ocean observation platforms (buoys, gliders, remote sensing).
* Training program on operational oceanography and integration with national DRR systems.

## Pilot Projects & Research

* Pilot project on community-based ocean observing in West, Central, and Indian Ocean coasts.
* Research initiative on linkages between sea-level variability, marine pollution, and coastal vulnerability.

## Tools & Products

* Integrate earth observation data from satellites with in-situ platforms to develop composite marine monitoring systems.
* Deploy AI-enabled tools for ocean forecasting, anomaly detection, and ecosystem health analysis.
* Development of a coastal and open-ocean forecasting toolkit for African nations.
* Interactive ocean observation dashboard integrated into national platforms.

## Outreach & Education

* Create educational toolkits and visualizations on ocean monitoring for schools and communities.
* Develop ocean literacy campaigns linked to citizen science observing efforts.

## Policy Support & Reports

* Prepare a regional status report on ocean observations, gaps, and national capacities.
* Recommend policies for sustained investment in ocean observations and data infrastructure.

# 5. Coordination with Other WGs

* Link to WG 5.2.3 on data sharing protocols and platform development.
* Collaborate with WG 5.2.2 for ecosystem health assessments.
* Coordinate with WG 5.2.4 on capacity development and funding strategies.

# 6. Monitoring & Evaluation Considerations

The WG should define key performance indicators to monitor progress, such as:

* Number of observing stations installed or upgraded.
* Number of trained personnel across priority coastal countries.
* Operationalization of national ocean observing dashboards.