

OPERA
OCEAN PREDICTION
ENHANCEMENT IN
REGIONS OF AFRICA



Presentation IOC Africa

John Ngatia

IOC Sub Commission for Africa and the Adjacent
Island States



Funded by
the European Union



2021
2030
United Nations Decade
of Ocean Science
for Sustainable Development



**MERCATOR
OCEAN**
INTERNATIONAL



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation
la science et la culture

Organización
de las Naciones Unidas
para la Educación
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования
науки и культуры

• Intergovernmental
• Oceanographic
• Commission

• Commission
• océanographique
• intergouvernementale

• Comisión
• Oceanográfica
• Intergubernamental

• Межправительственная
• океанографическая
• комиссия

IOC's Sub Commission for Africa & the Adjacent Island States - IOCAFRICA

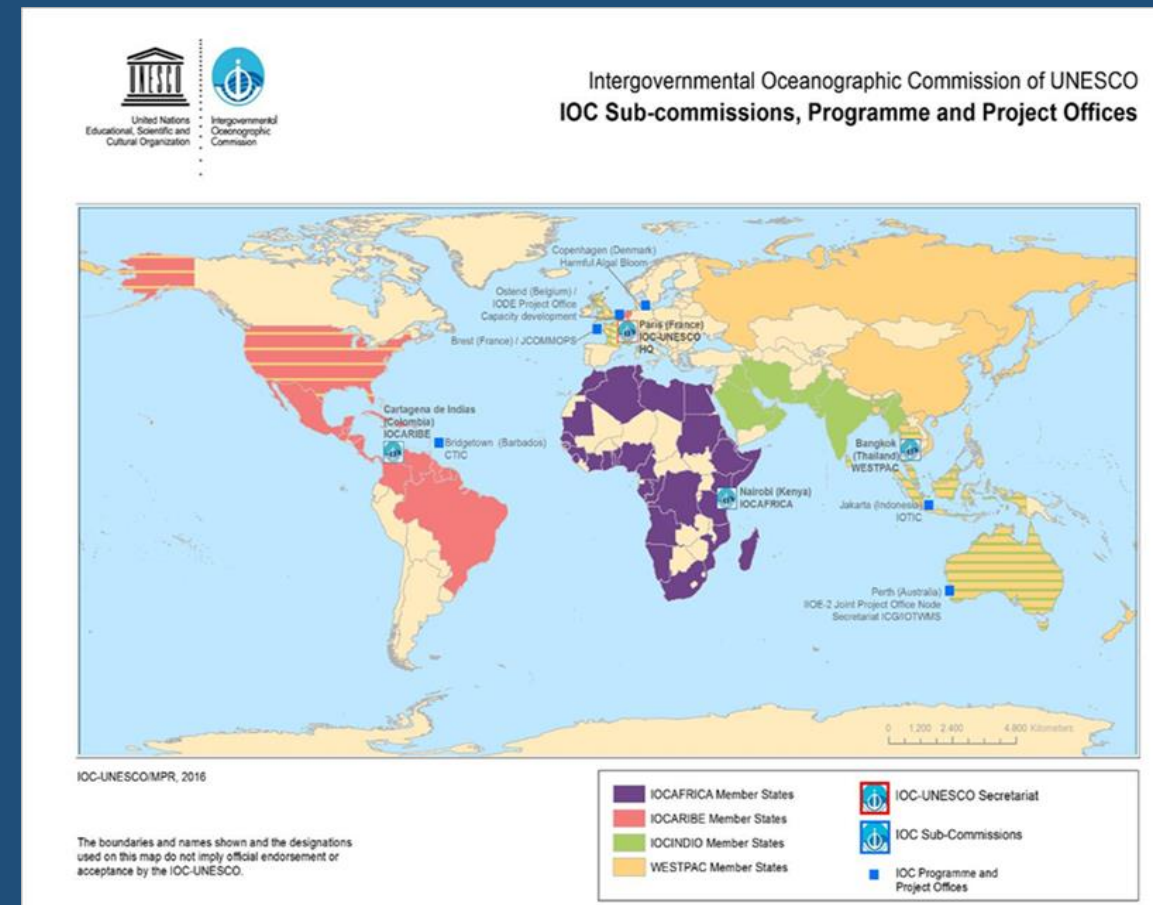
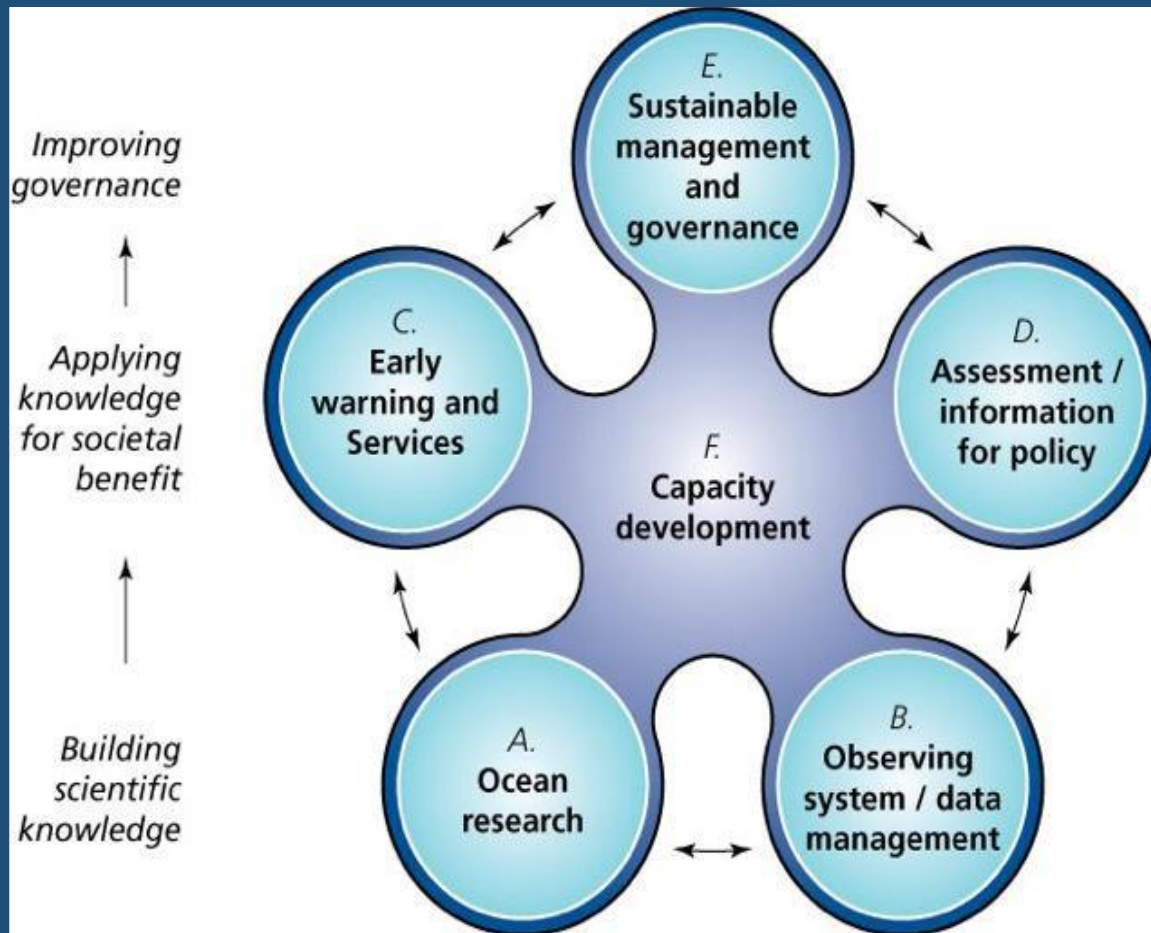
Ocean Prediction Enhancement in Regions of Africa 2025

John Ngatia Ndarathi

IOC's Sub Commission for Africa and the Adjacent Island States

The Intergovernmental Oceanographic Commission (IOC) of UNESCO, 1960->, 150 Member States

- Intergovernmental body of the UN system for ocean science, observations, data exchange, services, capacity development, and science-to-governance work



IOCAFRICA: Biannual Sessions:

- ✓ Review implementation of approved work plans
- ✓ Develop work plans for subsequent inter sessional periods for consideration by IOC Governing Bodies (IOC Assembly and Executive Council)

IOCAFRICA-I: 2-3 May 2012, Nairobi, Kenya	IOCAFRICA-V: 25-27 March 2019, Nairobi, Kenya
IOCAFRICA-II: 3-4 April 2013, Cape Town, South Africa	IOCAFRICA-VI: 13-15 April 2021, online
IOCAFRICA-III: 14-15 April 2015, Nairobi, Kenya	IOCAFRICA – VII: 15–17 March 2023 (Nairobi, Kenya and online)
IOCAFRICA-IV: 6-8 March 2017, Alexandria, Egypt	IOCAFRICA VIII – 7-9 May 2025 (Mombasa, Kenya)

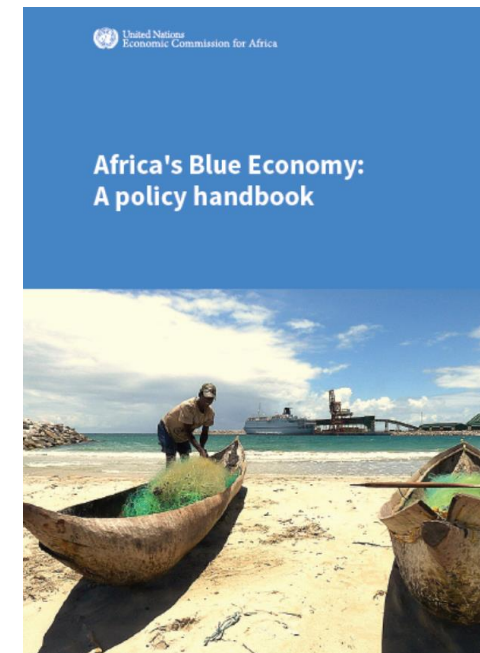
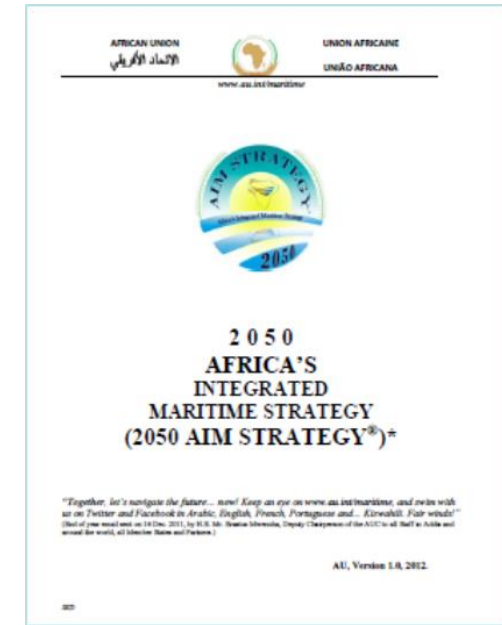
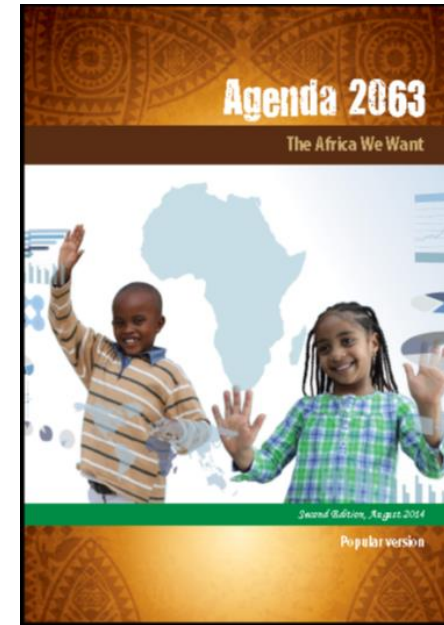
Key IOCAFRICA-VII Recommendations:

1. Work with partners on the strengthening collaboration to improve ocean observations and Forecasting in Africa and the Adjacent Island States..
2. Focus on developing and strengthening collaboration with other organizations/programmes as well as resource mobilization during the intersessional period.



AGENDA 2063: Recognizes *that Africa's Blue economy shall be a major contributor to continental transformation and growth, advancing knowledge on marine and aquatic biotechnology, the growth of an Africa-wide shipping industry, the development of sea, river and lake transport and fishing; and exploitation of and beneficiation from deep sea mineral and other resources*

- ✓ Africa Integrated Maritime Strategy 2050
- ✓ **Declaration of 2015-2025 as the "Decade of African Seas and Oceans"**
- ✓ Declaration of 25 July as the African Day of Seas and Oceans.
- ✓ Preparation by UNECA of the Africa's Blue economy handbook
- ✓ Adoption of the Africa Blue Economy Strategy
- ✓ UN Decade of Ocean Science for Sustainable Development

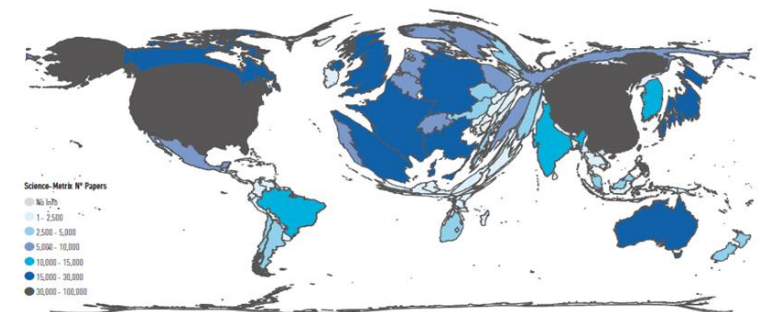


FOCUS AREAS OF IOCAFRICA.

- **Ocean Observations and Data and Information Management:**
 - ✓ Oceanographic Expeditions & Coastal Observation platforms
 - ✓ Climate variability and climate change (weather forecast & extreme events)
 - ✓ Marine Spatial Planning, Coastal/ Marine Atlases, Marine Biodiversity
- **Ocean Science and its Application to Management:**
 - ✓ Modeling and forecasts of ocean state
 - ✓ Assessment of marine and coastal ecosystems in Africa
 - ✓ Vulnerability & adaptation of marine/coastal ecosystems to climate change
 - ✓ Harmful Algal Bloom: Detection and Early Warning
 - ✓ Ocean Acidification: Observation and Research
 - ✓ Marine Pollution: Survey and assessment
- **Capacity Development for Marine Science and Technology and Ocean Literacy:**
 - ✓ Basic training in the ocean sciences (UNESCO Chairs in Universities, Research Institutions, development of portal for training opportunities,)
 - ✓ Continuous Professional Development (Focused workshops, Regional Training Centres, Fellowships,
 - ✓ Ocean Literacy (Artwork/Essay competitions, exhibitions, conferences,
 - ✓ Partnerships and collaboration (WIOMSA, UNEP, National Institutions)

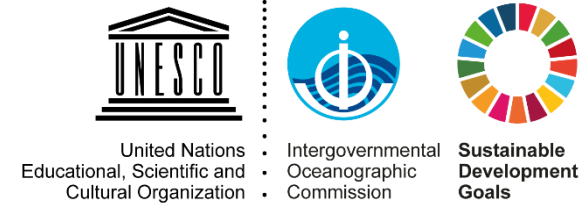
AFRICA BLUE ECONOMY STRATEGY

- PORT AND SHIPPING
- FISHERY
- AQUACULTURE
- SUSTAINABLE BLUE ENERGY
- COASTAL TOURSIM
- BLUE CARBON AND OTHER ECOSYSTEMS





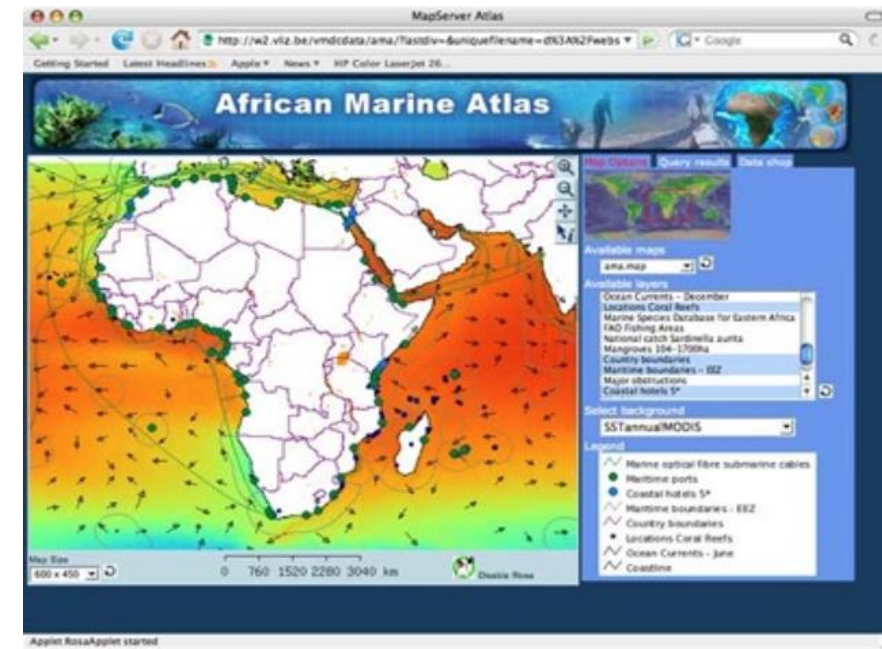
Observations and Data and Information Management



One Planet, One Ocean

- **Coastal and Marine Atlases (improve access to data – online and also the capacity to process and analyze the data)**
 - ✓ Source, collect and format marine geospatial datasets and make them available to marine scientists and managers while building capacity for marine data management.
 - ✓ A digital GIS atlas, and atlas products, containing a broad spectrum of informative marine geo-information about the African coasts and oceans.

https://www.iode.org/index.php?option=com_content&view=article&id=41&Itemid=80





Observations and Data and Information Management



One Planet, One Ocean

- **Ocean Data and Information Hub (develop interoperability between existing information systems, & improve the flow of information to end users).**
 - ✓ Anchor a network of hubs that will contribute to the transfer of marine technology, by enhancing shared scientific and technical capacities to render a wide range of data and information products and services available
 - ✓ Develop a proof-of-concept for an underlying Ocean Data and Information System (ODIS) architecture to enable scalable development of the global Ocean Infohub and interoperability with local, regional and thematic data and information infrastructures.
 - ✓ Promote and foster awareness and collaboration with established organizations and systems providing enabling support to the marine community, connecting contributors and users with the resources to support their efforts.

Initial data types:

1. People & institutions/ organizations
2. Documents
3. Spatial data/maps
4. Training opportunities
5. Vessels (research opportunities)

The Ocean Best Practices System (OBPS)

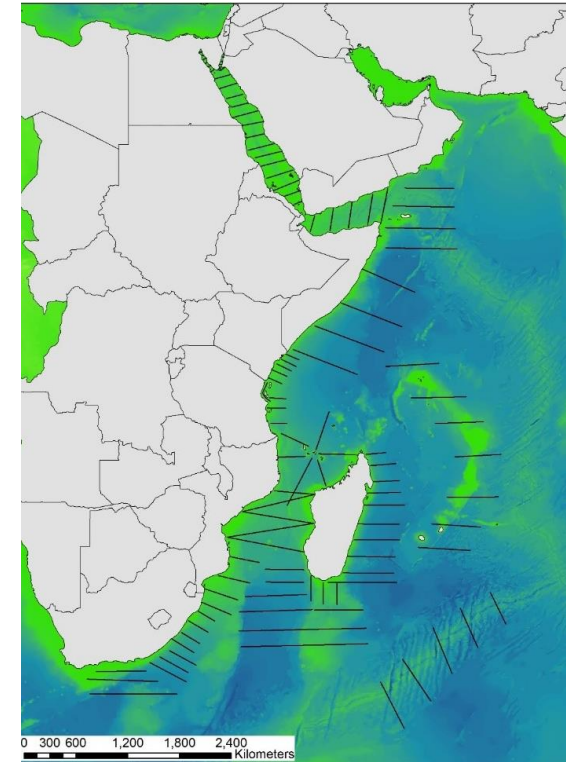
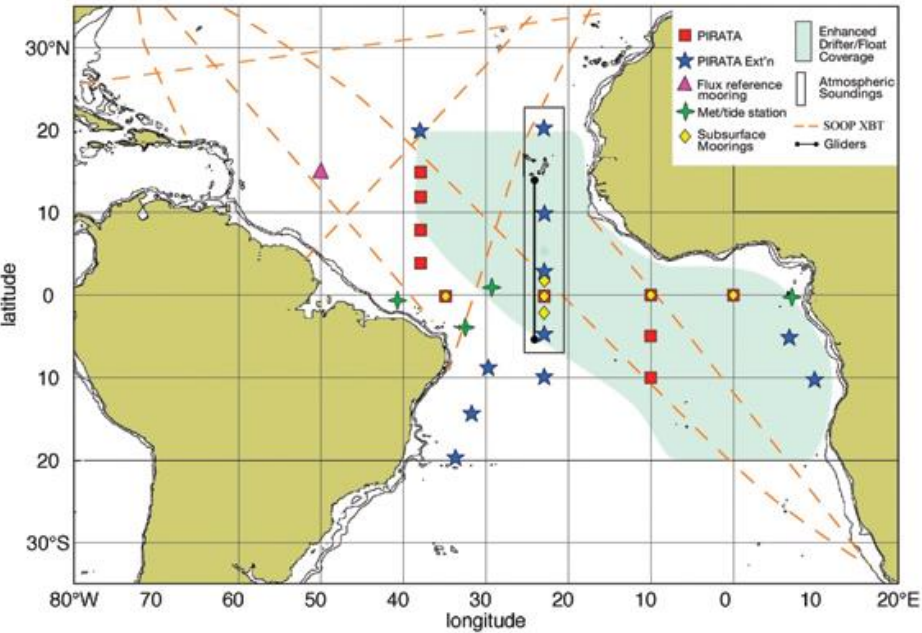
Consists of:

- Repository/Advanced Technology
- Peer Reviewed Publications
- frontiers
- Training
- OceanTeacher
- User Support
- Good, Better and Best

- a permanent OBPS repository hosted by IODE including state-of-the-art semantic discovery and metadata indexing for improved access to best practices (search.oceanbestpractices.org)
- a peer-reviewed Research Topic Journal in Frontiers in Marine Science
- a web-based and in-person Training and Capacity Building capability based on the IODE OceanTeacher Global Academy
- Community outreach and engagement activities to help users integrate OBPS into their routine work.

Observations and Data and Information Management

Survey of Ocean Observations Network



(IIOE-2 Transects)

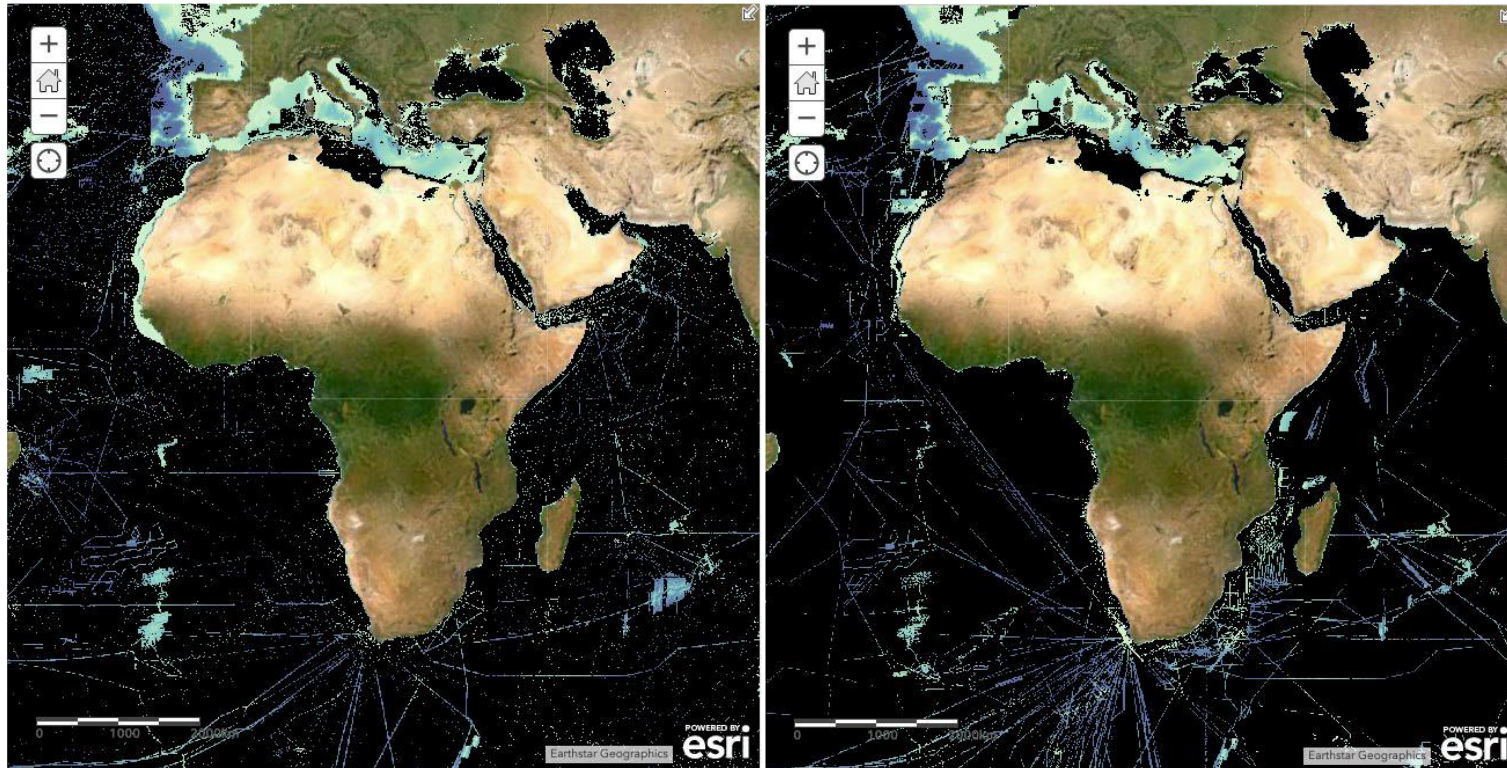


Ocean Sciences and Application to Management

- ✓ Ongoing preparation of policy briefs on climate change adaptation in coastal zones focusing on (i) Sea Level Rise and implications, (ii) Marine Ecosystems and Dependent Communities, (iii) Extremes, Abrupt Changes and Managing Risks and (iv) Climate Change & Ocean Economy
- ✓ Climate Change and productivity in the Canary Current Eastern Boundary Current upwelling system
- ✓ Regional framework on responding to transboundary impacts of climate change in the Western Indian Ocean Islands (with other UN agencies through UNCTs)
- ✓ Seaweed Sargassum workshops: Collaboration with UNEP and IOCARIBE on development of Sargassum Information Hub
- ✓ Harmful Algal Bloom & Ocean Acidification projects.
- ✓ National marine spatial workshops (including environmental pressures that impact on MSP and decision support tools) in Cameroun, Cape Verde, Gabon, Ghana, Kenya, Madagascar, Mauritius, Comoros, Morocco, Mozambique, and Tanzania

Ocean Sciences and Application to Management

- Global Bathymetric Chart of the Oceans (Seabed2030):
 - ✓ Regional workshop on Sea Floor Mapping in Africa with Seabed2030 (Feb 2021).
 - ✓ Map the Gaps Symposium (Nov. 30 - Dec. 3 | 2021)



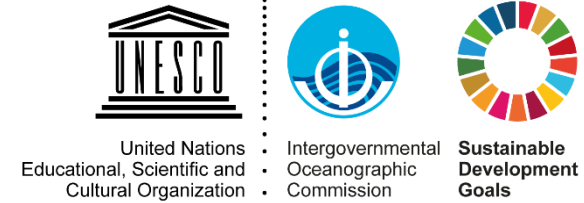
Capacity Development for Marine Science and Technology

- ✓ Designation of Regional Training Centres for the new phase of the Ocean Teacher Academy programme: University of Ghana, Eduardo Mondlane University (Mozambique) and the Kenya Marine and Fisheries Research Institute to host the regional training centres.
- ✓ Regional training courses on wide range of topics: Fundamentals of data and information management, Marine GIS, RS, Marine Spatial Planning, Ocean modeling,
- ✓ Shipboard training and surveys
- ✓ Preparation of materials for online training for the regional training courses: Oceanography Training Manual for the Western Indian Ocean
- ✓ Development of a portal on training opportunities in Africa
- ✓ Capacity assessment, based on the updated OceanExperts database (with more than 1,000 records from Africa) and focusing on the following: (i) statistics on nationality, gender, qualifications, fields of specialization, (ii) identification of gaps in capacity, (iii) identification of capacity development needs and available facilities & infrastructure in the region.





Opportunities to partner with IOC Africa



One Planet, One Ocean

- Capacity development is needed to increase skills and capacity in ocean mapping, and to meet growing needs of big data analysis and visualization.
- Strengthen data collection capacities through the deployment of innovative, and affordable technologies
- Build on National Data centers to act as repositories for the secure consolidation, archiving and sharing of data - ideally provide resources for data discoverability and access.
- Develop ocean mapping applications that support sustainable blue economy, marine spatial planning and SDG implementation
- Strengthen science-to-policy connections, user uptake, and sustainability of the action



One Planet, One Ocean

UNESCO/IOC's Sub Commission for Africa and the Adjacent Island States (IOCAFRICA)

oceans.nairobi@unesco.org

Jn.ndarathi@unesco.org