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GMES & Africa: An overview of the Marine & Coastal Operations for Southern Africa and Indian Ocean States (MarCOSIO)

Reef Conservation Webinar Introducing GMES and Africa

Sives Govender
Research Group Leader - CSIR
Consortia Lead AUC GMES and Africa
5 November 2024
Mauritius



<https://marcosio.org/>

MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN


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Africa's oceans and coasts

The African Union “estimates that the *Blue Economy* currently generates nearly US\$300 billion for the continent, creating 49 million jobs in the process. These and other crucial benefits—most notably food security, livelihoods, and biodiversity—are entirely dependent on the ocean’s health. Africa has 38 coastal and island states and a coastline of over 47,000 km, and hence presents an enormous opportunity for the continent to develop the sectors typically associated with the *blue economy*”.

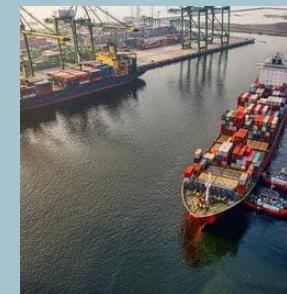
AFRICA'S BLUE ECONOMY STRATEGY

A template for protecting Africa's maritime and aquatic resources, and utilizing them in a sustainable way that benefits our people

5 PILLARS



FISHERIES,
AQUACULTURE
CONSERVATION &
SUSTAINABLE
AQUATIC
ECOSYSTEMS;



SHIPPING,
TRANSPORT,
TRADE, PORTS,
MARITIME
SECURITY, SAFETY
AND
ENFORCEMENT;



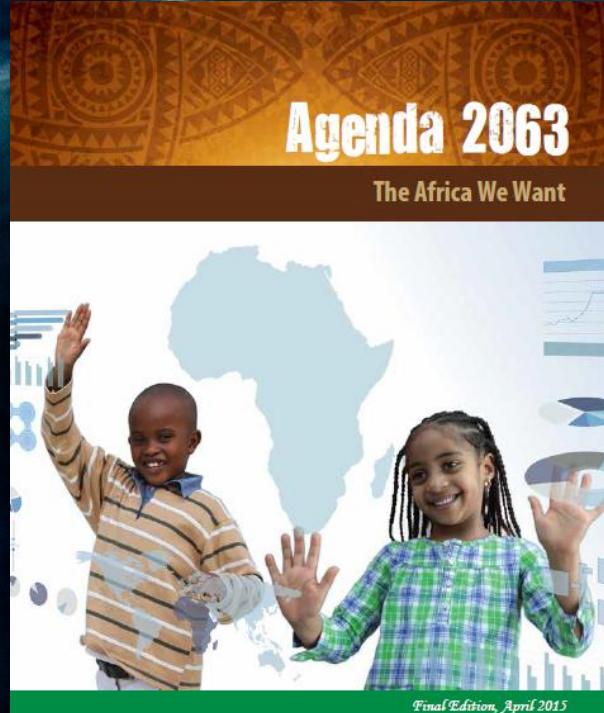
COASTAL AND
MARITIME
TOURISM,
CLIMATE
CHANGE,
RESILIENCE,
ENVIRONMENT &
INFRA-
STRUCTURE;



SUSTAINABLE
ENERGY AND
MINERAL
RESOURCES, AND
INNOVATIVE
INDUSTRIES;



POLICIES,
INSTITUTIONAL &
GOVERNANCE
FRAMEWORKS,
EMPLOYMENT, JOB
CREATION AND
POVERTY
ERADICATION,
INNOVATIVE
FINANCING



6. Blue/ocean economy for accelerated economic growth.

- Marine resources and energy
- Port operations and marine transport

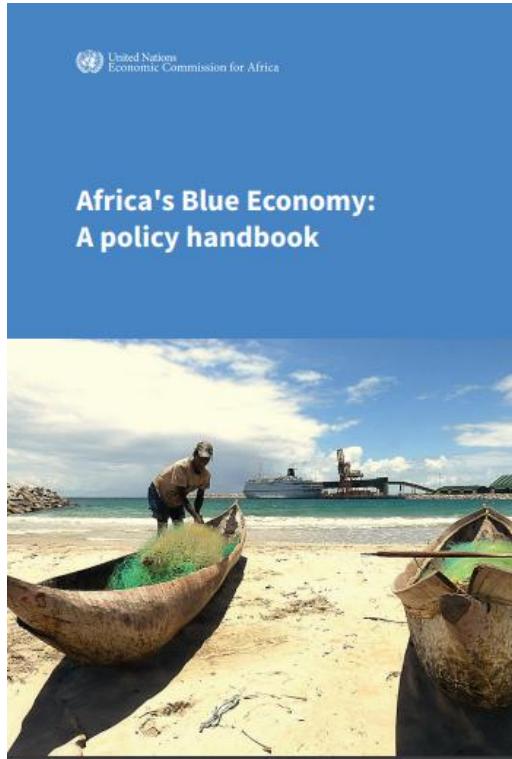
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.



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RELATED POLICY IMPERATIVES



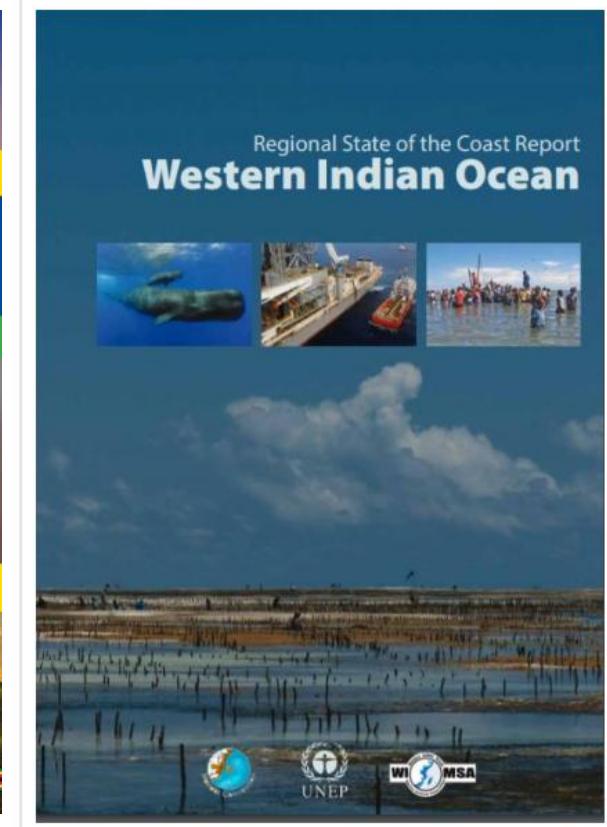
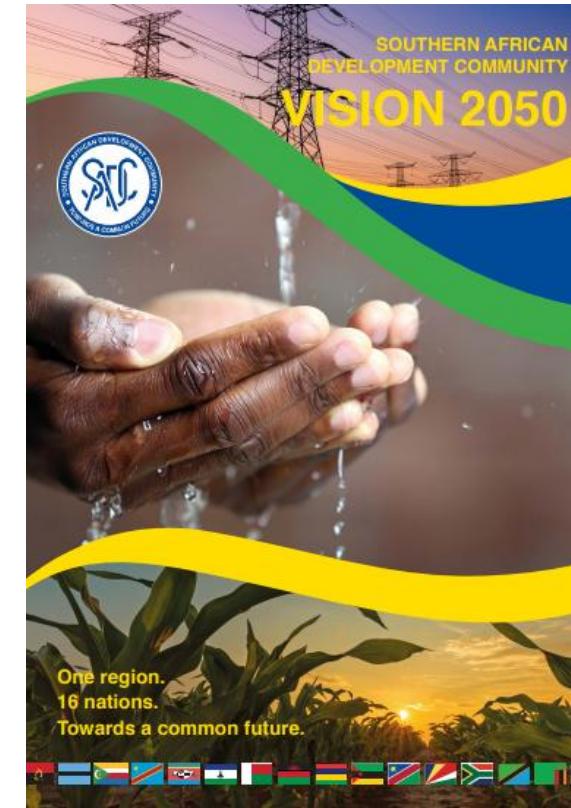
AFRICAN UNION



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2050
AFRICA'S INTEGRATED MARITIME STRATEGY
(2050 AIM STRATEGY)



<https://marcosio.org/>

MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN

 MarCOSIO



Key AIMS and Blue Economy Services and sectors for Africa

Seeking to assess and realize the economic multiple co-benefits potential of Africa's millions of hectares of marine area;

Promoting the sustainable development of marine industry through strategic funding programmes and essential scientific services;

Safeguarding Africa's marine environment through research and environmental monitoring;

Type of ecosystem services	Blue Economy sectors
Harvesting of living aquatic resources (seafood, plant marine organisms, and marine-biotechnological products)	Fishing (inland, coastal, and deep seas) Aquaculture Mariculture Pharmaceuticals, chemicals, cosmetics, genetic research
Extraction of nonliving resources and generation of new energy resources	Deep-sea and seabed mining Offshore oil and gas Renewable energy Marine salt harvesting Coastal mining of sand, gravel, and other construction materials
Commerce and trade in and around the ocean and rivers	Maritime transport and services Port infrastructure Shipbuilding and repairs River transport Tourism and recreation
Protection	Coastal protection Marine ecosystem protection Water resource protection



Key to the goals of MarCOSIO consortia

14.2

By 2020, sustainably manage and **protect marine and coastal ecosystems** to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.4

By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.7

By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

The Western Indian Ocean Large Marine Ecosystems Strategic Action Programme Policy Harmonisation and Institutional Reforms (WIO LME SAPPHIRE)



17.14

Enhance policy coherence for sustainable development

14.a

Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.b

Provide access for small-scale artisanal fishers to marine resources and markets

14.c

Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want"



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- A FLAGSHIP PROGRAMME OF AUC

- AU-EU Collaboration on Space applications
- A unique historical continuity



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EU Support



- Use of the Cloud computing Platforms (**esa, JRC**)
- Service Design (**JRC, EUMETSAT**)
- On job the Training (**JRC**)
- Installation of E Station (**EUMETSAT, JRC**)
- Maintenance and use of E Station (**EUMETSAT, JRC**)
- Training on the use of JRC-BDAP Platforms
- Accessing EO-Data : **Full, Free and Open Access to Copernicus Data**



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GMES at a Glance

8 consortia leads (CSIR, UoG, ICPAC, RCMRD, SASCAL, OSS, CSE, CICOS)

122 institutions in 45 African countries

12 e-Stations delivered 10 regional geoportals (7 terrestrial and 3 marine)

+100 training delivered / + 10,000 trainees and trainers / for 25,000 training days

Distance Learning Platform (DLP) <https://gmestraining.Africa-union.org>

GMES Network of Universities

Women in GMES & Africa

Youth hackathons



<https://marcosio.org/>

MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN


MarCOSIO

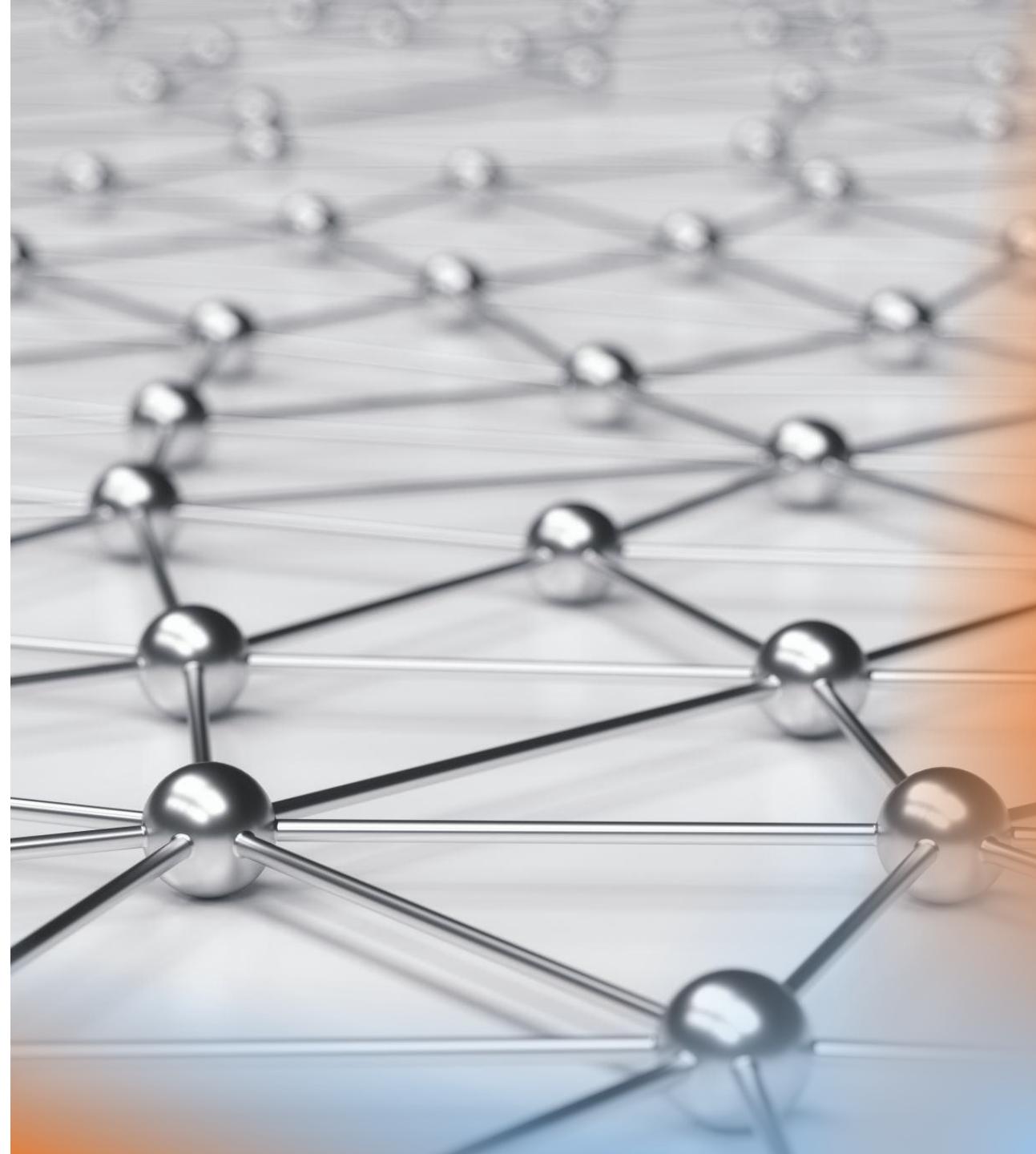
The GMES and Africa's Marine and Coastal Operations for Southern, Eastern Africa and the West Indian Ocean Island states, is coordinated by the CSIR.

The MarCOSIO consortia develops applications and services to support policy and economic drivers for the Oceans economy.

The consortia champions co-designed and co-developed (indigenous knowledge) decision-supporting services utilizing the EO data accessed through the EU Copernicus (Sentinel suite).

MarCOSIO Objectives

- Understand local ocean and coastal systems (bespoke offerings).
- Understand **user needs through the networks and expertise of the consortia partners.**
- Promote the sustainable management of marine resources.
- Support marine governance and protection (Africa is policy rich).
- Stimulate the utilization of EO based services and applications to promote the growth of the blue economy.
- **Build and strengthen sustainable expertise and institutions.**





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MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN



Organization	Country
CSIR (Lead)	South Africa
ABALOBI	South Africa
Benguela Current Convention	Namibia, Angola
Coastal Oceans Research Indian Ocean East Africa	Kenya
Institute of Marine Sciences, University of Dar es Salaam	Tanzania
Institut Halieutique et des Sciences Marines	Madagascar
Kenya Marine Fisheries Institute	Kenya
National Sea Rescue Institute	South Africa
Tanzania Fisheries and Research Institute	Tanzania
University of Eduardo Mondlane	Mozambique
Western Indian Ocean Marine Science Association	Tanzania



Sub-consultants	Country
Reef Conservation	Mauritius and the Indian Island Ocean States
Cyanolakes	South Africa

Partner	Countries	Technical	Policy	Academic	Domain
Abalobi (NPO)	South Africa	X			Artisanal Fishers App
BCC	Angola, Namibia, South Africa		X		
CSIR	South Africa	X		X	
CORDIO-EA	Kenya	X	X	X	Coral Reef
IH.SM	Madagascar		X	X	
IMS	Tanzania	X		X	
KMFRI	Kenya	X	X		
NSRI (NPO)	South Africa		X		Sea Rescue
TAFIRI	Tanzania	X	X		PFZs
UEM	Mozambique			X	
WIOMSA	Tanzania (WIO Region)		X	X	
Cyanolakes (sub-consultant)	South Africa	X			Water quality
Reef Conservation (sub-consultant)	Mauritius	X	X	X	Coral Reef, Fisheries User engagement



MarCOSIO Services

**Fisheries
and
Aquaculture
Service**



Fisheries



Aquaculture

**Coastal
Service**



Coral Bleaching
Monitoring



Coastal
Ecosystems

**Marine and
Maritime
Service**



Ship Traffic
Monitoring

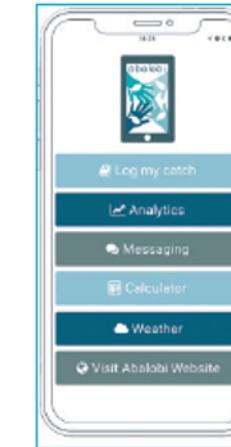


Sea Rescue

FISHERIES AND AQUACULTURE SERVICE

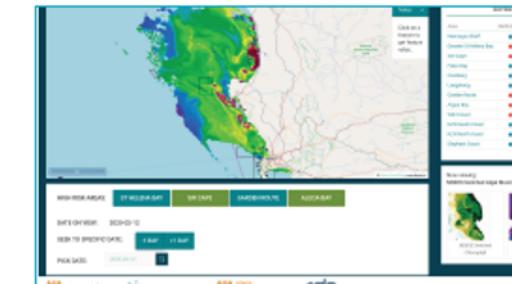
FISHERIES SUPPORT

- Provides fishers and regulators with the tools to optimise fishing effort, improve safety at sea, better understand environmental variability, and monitor Illegal, Unreported and Unregulated (IUU) fisheries.
- Supporting small scale fishing communities through the ABALOBI (Non-profit) partnership.
- “tech” and “touch” approach.



AQUACULTURE SUPPORT

- Provides users with the capability to monitor historical and current harmful algal bloom events along the coastline of Angola, Namibia, South Africa, Mozambique, Tanzania, Kenya and Reunion Islands.
- Decision makers will have the ability to be notified of red-tide occurrences and the ability to predict rock lobster walkouts

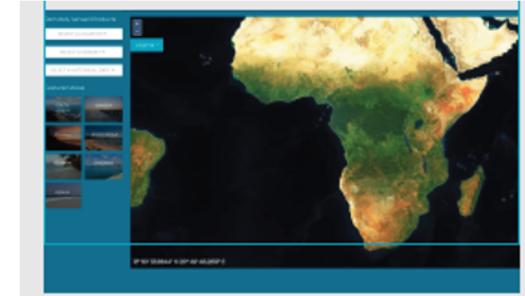




COASTAL MONITORING SERVICE

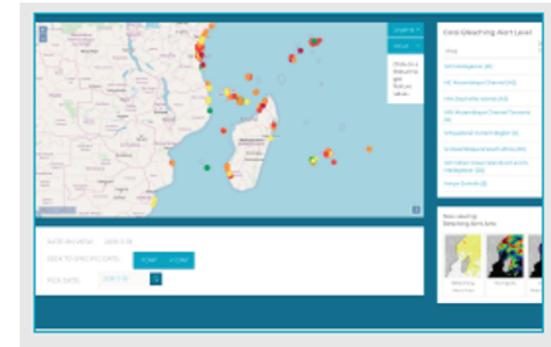
COASTAL ECOSYSTEMS

- Provides decision makers with an accurate mapping of coastal ecosystems as well as the monitoring of their changes, be it seasonal or man-made.



CORAL BLEACHING MONITORING

- Provides users with the capability to monitor coral reef bleaching occurrences by building new services based on Copernicus products to detect thermal stress.
- The service will provide the ability to assess historical and real time bleaching alerts.

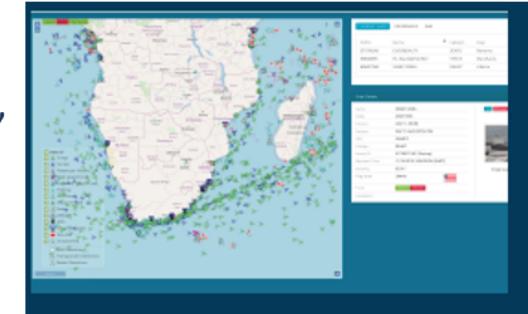




MARINE & MARITIME SERVICE

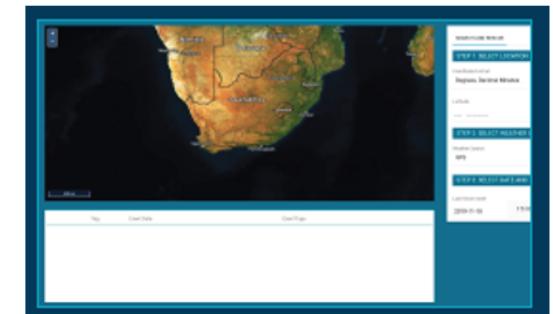
SHIP TRAFFIC MONITORING APPLICATION

- Provides **authorised users** with the capability to monitor vessels near real time 24/7, 365
- Decision makers will have the ability to monitor co-operative vessels (PAN reports etc).
- Derive strategic information on non-co-operative vessels.



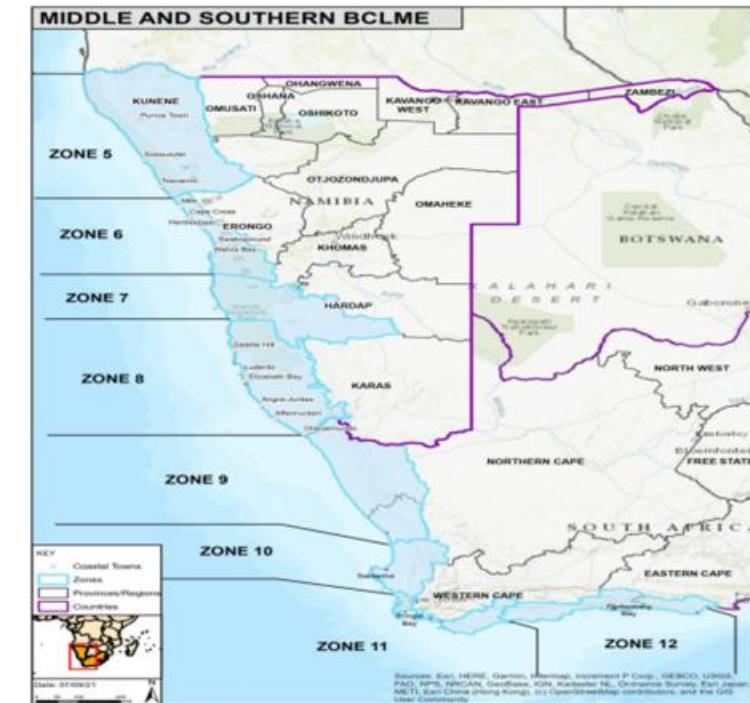
SAFETY AT SEA APPLICATION

- Provides users with the capability to monitor and predict ocean and sea state variables such as wind, currents and waves.
- Sea search and rescue organisations can make use of this service to assist with the planning of sea search and rescue operations.
- Less search more rescue.





BENGUELA CURRENT LARGE MARINE ECOSYSTEM OIL SPILL RISK ASSESSMENT, PREPAREDNESS AND RESPONSE (NAMIBIA & SOUTH AFRICA)



MarCOSIO supports BCC risk assessment model that addresses the likelihood of an incident, and the potential consequence should the incident materialise in a specific area in the region.



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Improved Policy and Institutional Framework

Earth Observation Data Access

MarCOSIO Information Services

Marine and Maritime
Ship Traffic Monitoring

Marine and Maritime
Sea Rescue

Aquaculture & Fisheries
Aquaculture

Aquaculture & Fisheries
Fisheries

Coastal Services
Coral Bleaching

Coastal Services
Coastal Ecosystems

Knowledge Management & Cross Fertilization

Capacity Building

Outreach, Uptake & Dissemination



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MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN


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- Marine and Ocean workshop (May – Cape Town)
- Madagascar Stakeholders Event (June) (Nairobi Convention)
- Southern African Regional student exchange workshop (September Kenya)
 - More than 30 students from Madagascar, South Africa, Kenya, Tanzania and Mozambique are attended the workshop.
- Southern African Regional Workshop (September Kenya)
- EO4Africa symposium in Frascati-Italy in September (JRC/ESA/EUMETSAT, AUC) event
- Namibia Stakeholder Event (2025) (Support Abidjan Convention)
- Award studentships to African students 2024/25 ongoing

- Increase high level awareness of GMES and Africa and MarCOSIO.
- Align services to policy and institutional framework for sustainable management of GMES products and services
- Sharing knowledge and best practices among consortia as well as among all GMES & Africa programme's stakeholders and partners
- Involve policy experts and senior technical experts from relevant African stakeholders (public institutions), academia, and private sector.

Africa Marine and Coastal Operations for Southern Africa
430 followers
3mo • 0

Are you attending #GEOWeek2023 in #CapeTown? To learn more about @geoauawatch and #waterquality activities, be sure to check out Monday's flashligh by Africa Marine and Coastal Operations for Southern Africa ...see more



**IMPACTING GLOBAL
WATER QUALITY**

Monday Nov 6th,
14:40-14:50
Orchid Room

Africa Marine and Coastal Operations for Southern Africa
544 followers
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TAIFIRI Director General Dr Ishmael at the #Anniversary #celebrations says the Institute stands tall because of what it has achieved for the past 40 years. He attributed @TAIFIRI milestones to collaborations and partnerships with like-minded organizations, support and collaborative projects such as Africa Marine and Coastal Operations for Southern Africa GMES & Africa 2021 WIOMSA - Western Indian Ocean Marine Science Association among others. By using #EarthObservation #Fisheries services, tools and apps developed under #MarCOSIO TAIFIRI will boost constant flow of relevant research data and information to continually aid policy making and inform strategic environmental assessment African Union Commission European Commission Dr. Tidiane Ouattara Hamdi KACEM Sives Govender Riette Pretorius Dr. Emmanuel Mbari, PhD ABALOBI Benguela Current Commission (BCC) CORDIO East Africa Kenya Marine and Fisheries Research Institute Council for Scientific and Industrial Research (CSIR) Universidade Eduardo Mondlane #TAIFIRI #Anniversary



Overall coral bleaching risk in WIO low, February forecast shows



Coral bleaching alert is out. According to research findings by CORDIO East Africa, the Global Environment Monitoring System (GEMS) and Africa Marine and Coastal Operations for Southern Africa (GMES & Africa) project, the overall coral bleaching risk in the Western Indian Ocean (WIO) region is rated as quite low.

"These latest findings may however change in the coming weeks as with the coming of the El Niño, " says James Mbigua who is the coral bleaching alert thematic lead at GMES & Africa. "Year 2023 was a relatively cool and quiet year."

No major bleaching was reported in the WIO and probably only minor bleaching was reported in the Indian Ocean. The projected La Niña conditions in the Pacific that provided a reprieve from the bleaching event in 2022, may qualify to a neutral El Niño-Southern Oscillation (ENSO).

Coral bleaching is brought about by warming ocean waters and is triggered by a variety of factors. It is triggered by increases in sea surface temperature, due to climate change, and is exacerbated by marine pollution and other local threats.

According to the findings documented in *The Sixth GMES Status of Environment of the WIO*, 30% coral reefs in the WIO are less than 100 km from the coast. And while they cover only 0.2 per cent of the seafloor, they provide critical ecosystem services, including the safety, coastal protection, well-being, food and revenue for millions of people in the region.

The findings further reveal that the value of goods and services provided by coral reefs is estimated at US\$7.7 million per year, equivalent to 1.5% of the WIO tourism.

It is against this background that GMES & Africa project in partnership with CORDIO East Africa, is preparing critical data aimed at combating coral reef bleaching. See

TAFIRI set to use GMES & Africa data following the launch of fishing app

BY JANE KIGUTA
The Africa Marine and Coastal Operations for Southern Africa and Indian Ocean (MarCOSIO) consortium was among stakeholders that graced Tanzania Fisheries Research Institute's (TAFIRI) 40th anniversary celebrations held at APC Hotel and Conference Centre, in Dar es Salaam.

"Coral reefs are critical marine ecosystems that provide protection against coastal erosion and flooding, and reduce the damage caused by the effects of severe weather conditions. They also provide critical habitat for many species of fish and other marine life, hence the need to protect and conserve them,"

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The two Earth Observation technologies by TAFIRI are aimed at helping fishers identify and potential zones to boost fisheries output and hopefully make aquaculture the mainstay of Tanzanian citizens. According to PS Livestock and Fisheries, Republic of Tanzania, about

(AUC) and the European Union Commission (EUC).



Under the project, 15 mobile applications on marine and coastal areas have been developed by 28 African institutions. TAFIRI is among 12 consortia institutions from eight countries that comprise MarCOSIO.

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WIOMSA & PARTNERS NEWS ABALOBI HOSTS PARTNER EXCHANGE TRAINING

By Jonathan Killow and Obakeng Malela

The ABALOBI MarCOSIO GMES & Africa partner exchange training, which was hosted in Muizenberg, South Africa, in October, was an active engagement involving partners and stakeholders from southern and eastern Africa. Delegates from the Benguela Current Convention, WIOMSA, CORDIO East Africa, Oceanographic Institute of Mozambique, Hanganani Artisanal Fishers Association, the Wildlife Conservation Society and the Kenya Marine and Fisheries Research Institute, were in attendance.



Participants in the exchange were presented with an in-depth overview of ABALOBI's co-design approach and fisher-driven methodology and a tour to Struis Baai, a coastal town in the Western Cape region, provided an opportunity to engage with the fishers and their assistants, in most cases

The fishers were welcoming and hospitable, sharing valuable insights into their way of life. They explained how fishing is not just a job, but a tradition that has been passed down through generations. They spoke about the joys and challenges of being a fisher and how it requires skill, patience and

KMFRI hosts GMES & Africa Science-Policy Technical Tour

COMPILED BY JANE KIGUTA



Kenya Marine & Fisheries Research Institute (KMFR) on September, 27, 2023, hosted African Union Commission (AUC) delegation attending a three-day regional workshop under the auspices of the Global Monitoring for Environment and Security and Africa (GMES and Africa) project. The Blue Economy Science-Policy Interface workshop was held at Pride Inn Paradise Resort in Mombasa, Kenya.

The three-day meet that ran from September 25-27, 2023, culminated in a technical tour at KMFR - a partner organization under GMES and Africa Marine and Coastal Operations for Southern Africa and Indian Ocean (MarCOSIO) consortium comprised of Southern and Eastern African countries.

GMES and Africa project is co-funded by the African Union Commission and the European Commission.

The workshop brought together 54 participants drawn from 22 countries from across Africa comprising African Union member states, Regional Economic Communities, marine and coastal areas, as well as GMES & Africa partners and implementing institutions.



MarCOSIO Lead Mr Sives Govender Signs the Visitors Book During Courtesy Call

CSIR puts best foot forward in Angola GMES & Africa workshop

BY JANE KIGUTA



(MarCOSIO) project presented products and technical services developed under the GMES & Africa programme.

The workshop which was themed "Earth Observation bridging the gap between science and policy" was sponsored by the African Union Commission and the European Union. EU was represented by Mr Danilo Barbers.



- GMES MarCOSIO, uses a consortia approach in the development of its services.
- Utilizes and builds upon the African partner expertise (capacity development)
- Key philosophy is Co-design, co-create and co-fund.
- Integrates data from multiple sources to address issues around climate change, biodiversity loss and pollution.
- MarCOSIO wants to support presidential level policy mandates to the safety and livelihoods of the artisanal fisher.
- Awareness, capacity building, monitoring and education are key!
- success of MarcoSIO and your partnership with other west Indian ocean island states.
- GMES Phase 3 opportunities.



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