

## Applications Session



**Sives Govender**

MarCOSIO Consortia coordinator

*Council for Scientific and Industrial Research (CSIR)*



Funded by  
the European Union



2021  
2030 United Nations Decade  
of Ocean Science  
for Sustainable Development



**MERCATOR  
OCEAN**  
INTERNATIONAL



# GMES AND AFRICA



## GMES & Africa: The Programme

On Behalf of Dr. Bachir Saley  
AUC





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AND AFRICA**



**African  
Union**



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- A FLAGSHIP PROGRAMME OF AUC

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



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MARINE AND COASTAL OPERATIONS  
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## Objectives of GMES & Africa Support Programme

- **Implement the Earth Observation (EO) segment** of the **African Space Policy** and Strategy.
- **Enhance long-term strategic cooperation** for the integration and deployment of African requirements and needs in Copernicus Services.
- **Promote the development of local capacities (institutional, human and technical)** for the access and exploitation of EO-based services for sustainable development in Africa.
- **Enable the two continents to jointly solve and address specific and global challenges** and contribute to the attainment of their overarching development goals that include the AU Agenda 2063.
- Provide **policymakers, scientists, businesses and the public with EO services**



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## EU Support



**esa**



**JRC**



**EUMETSAT**

- 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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**MarCOSIO**



# GMES at a Glance

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

167 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

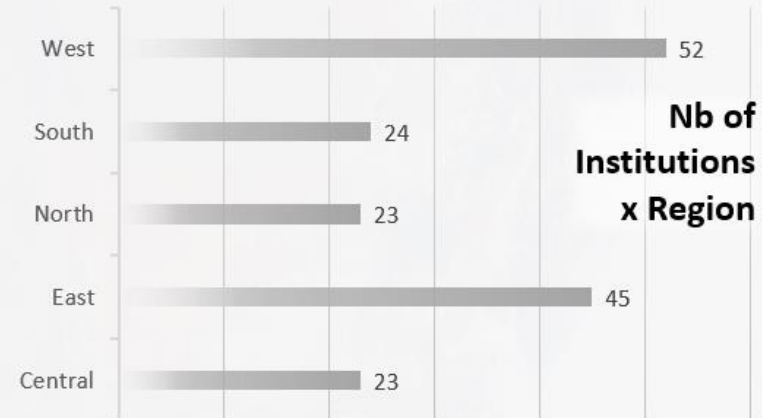
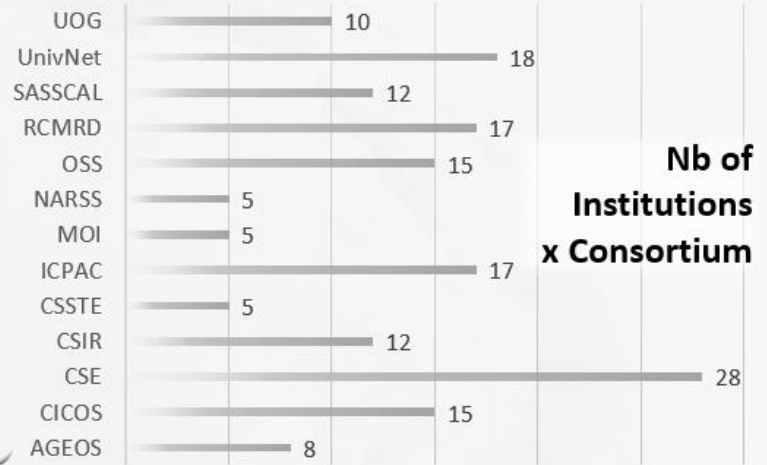
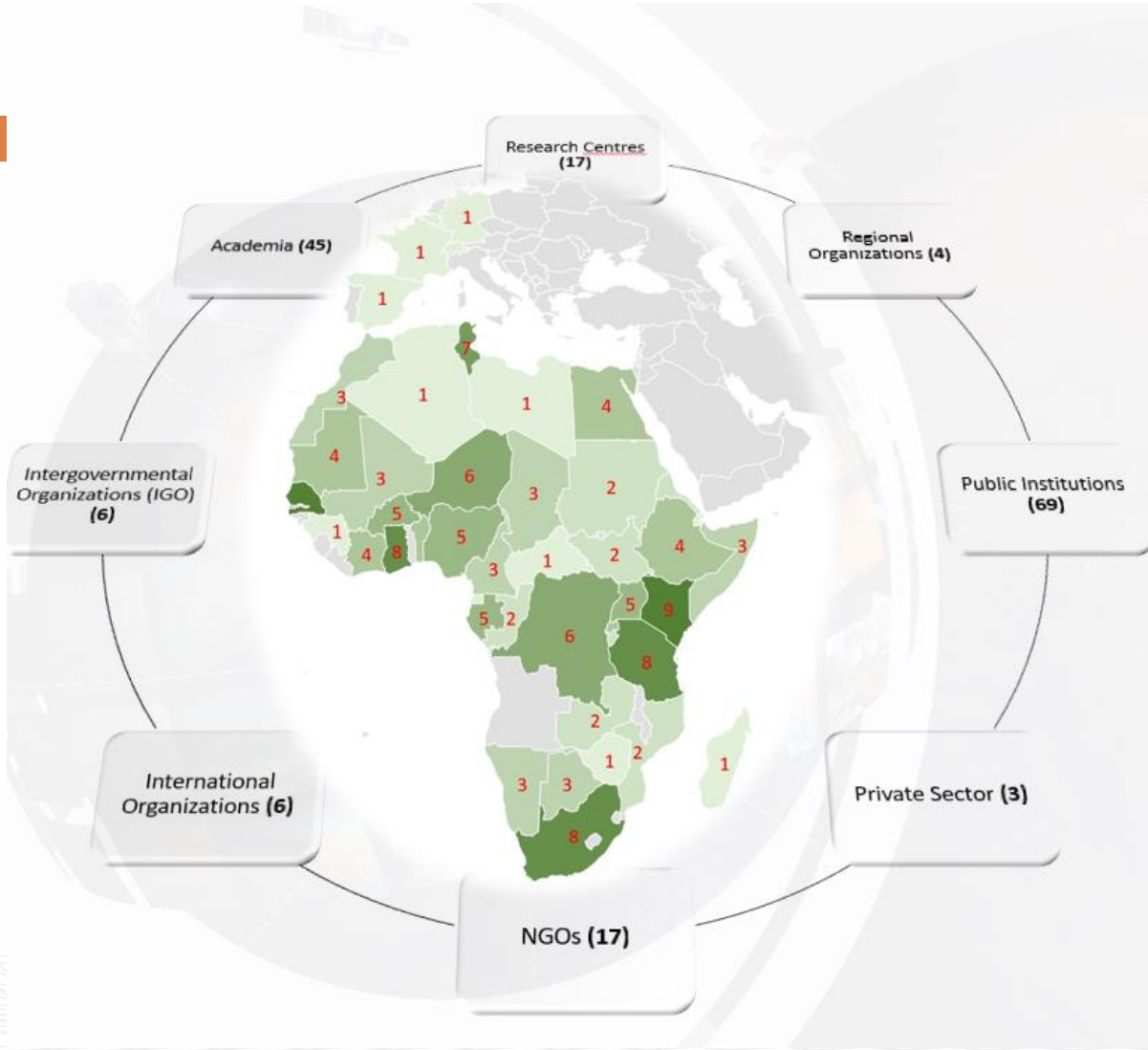


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# GMES & Africa: A Pan African Community

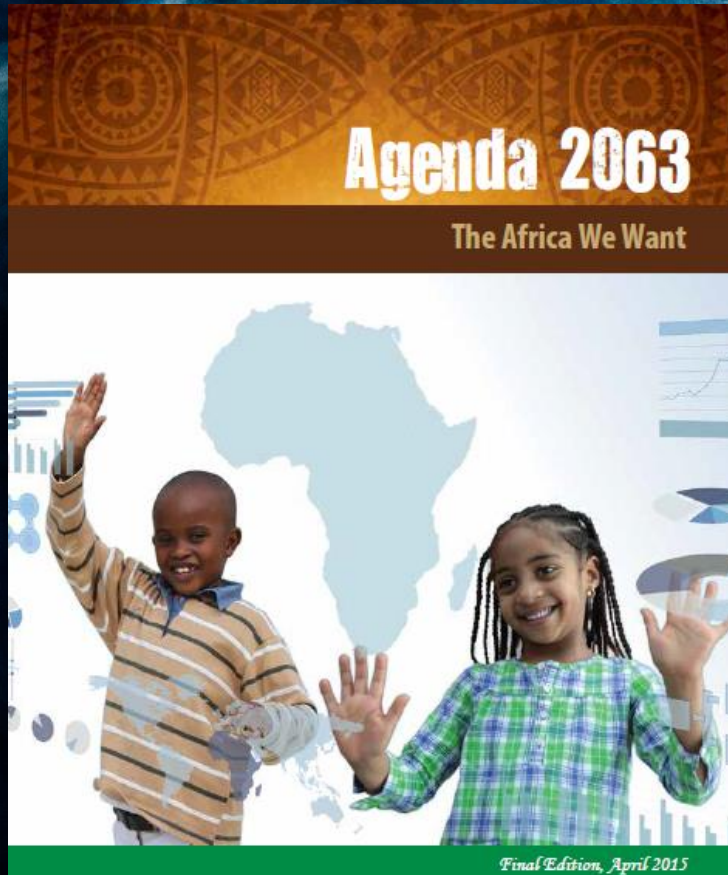


**GMES and Africa :  
Phase 1 and Phase 2:  
167 Institutions**



## 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”.



Agenda 2063 envisions

**Fishing and Food Security:**

- the importance of sustainable fishing practices for food security and nutrition, as well as the economic value of the fishing sector.

**Climate Change Adaptation:**

- vulnerability to climate change impacts and emphasizes the need for adaptation measures, particularly for coastal and island communities.

**Sustainable Development:**

- The agenda aims to conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

**Climate Resilience:**

- promotes environmentally sustainable and climate-resilient economies and communities, including measures to address climate change and natural disasters.

**Cooperation and Data:**

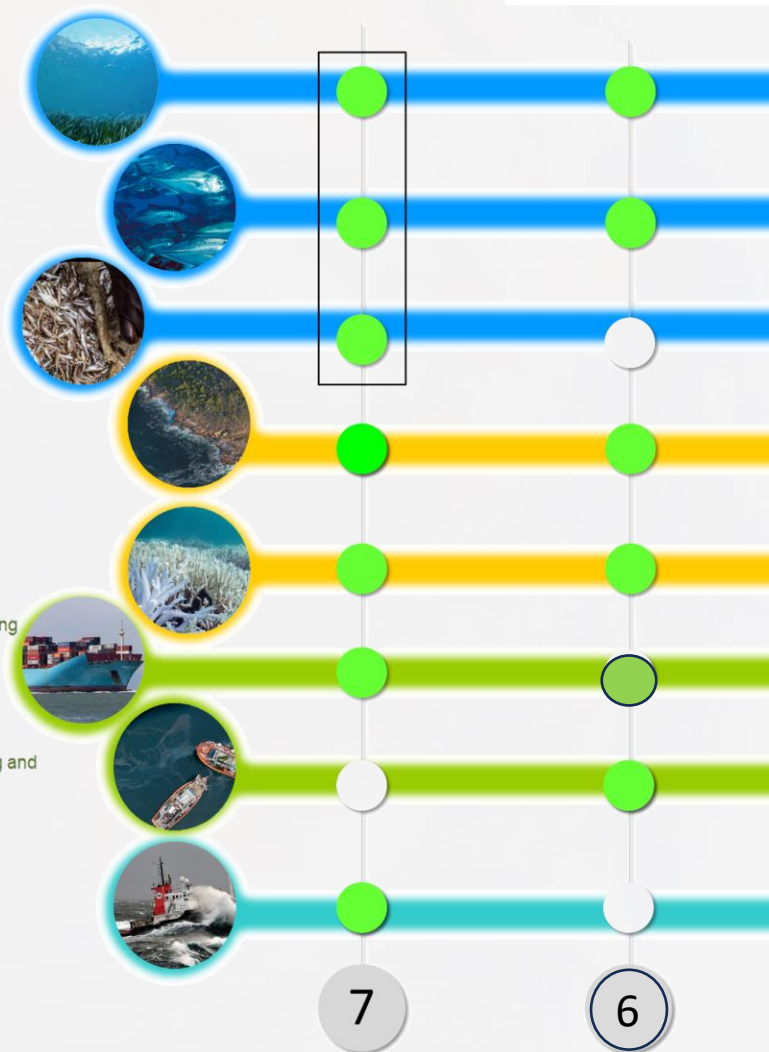
- calls for greater cooperation, data sharing, and coordinated approaches to sustainable development of Africa's blue economies.

**Resilience Building:**

- emphasizes the need to build resilience in Africa's blue economy to withstand exogenous shocks and maximize opportunities

# Services delivered under GMES & Africa:

## Marine & Coastal Areas



# GMES & Africa: For more information



## GMES AND AFRICA



- ❑ GMES & Africa .. The Blog: <https://gmes4africa.blogspot.com/>
- ❑ Agenda 2063 (<https://au.int/en/agenda2063/overview>)
- ❑ Africa Integrated maritime Strategy  
(<https://au.int/en/documents/20130225/2050-aim-strategy>)
- ❑ African Space Strategy [https://au.int/sites/default/files/documents/37433-doc-african\\_space\\_policy\\_isbn\\_electronic.pdf](https://au.int/sites/default/files/documents/37433-doc-african_space_policy_isbn_electronic.pdf)
- ❑ Digital Learning Platform: <http://gmestraining.african-union.org/login/index.php>
- ❑ <https://www.facebook.com/gmesafrica>
- ❑ <https://twitter.com/GMESAfrica>
- ❑ <https://www.youtube.com/channel/UCHmhIEkcyPioyTrf9wLfzFg>



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

OPERA consultation workshop

Sives Govender  
Research Group Leader - CSIR  
Consortia Lead  
GMES and Africa MarCOSIO  
8 April 2025

Cape Town



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MarCOSIO



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

The MarCOSIO consortia **develops applications and services** to support policy and economic drivers for the Oceans economy, was borne out of the OCIMS programme in South Africa (DFFE).

The consortia champions **co-designed and co-developed** (indigenous knowledge) applications and services utilizing the EO data. Accessing Copernicus (Sentinel suite).



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 / WIO

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

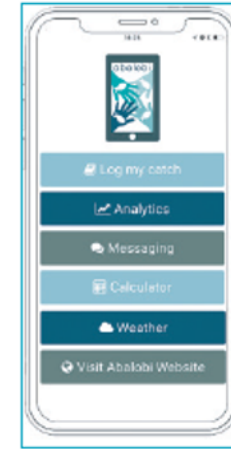


Sea Rescue

## 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

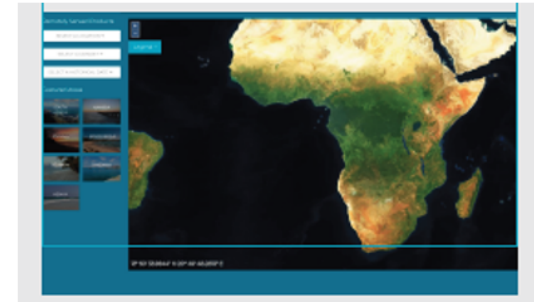
- Provides users with the capability to monitor historical and current harmful algal bloom events along the coastline of Angola, Namibia, South Africa, Mozambique, Tanzania, Kenya and Reunion Islands.
- Decision makers will have the ability to be notified of red-tide occurrences and the ability to predict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



## COASTAL MONITORING SERVICE

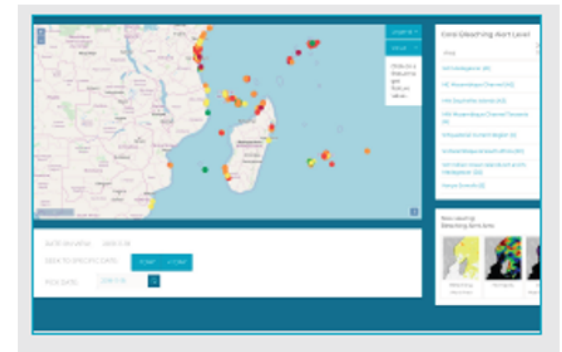
### COASTAL ECOSYSTEMS

- 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

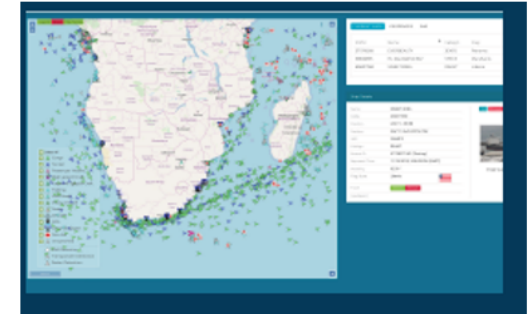
- Provides users with the capability to monitor coral reef bleaching occurrences by building new services based on Copernicus products to detect thermal stress.
- The service will provide the ability to assess historical and real time bleaching alerts.



## 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 ASSESSEMENT,**  
**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.



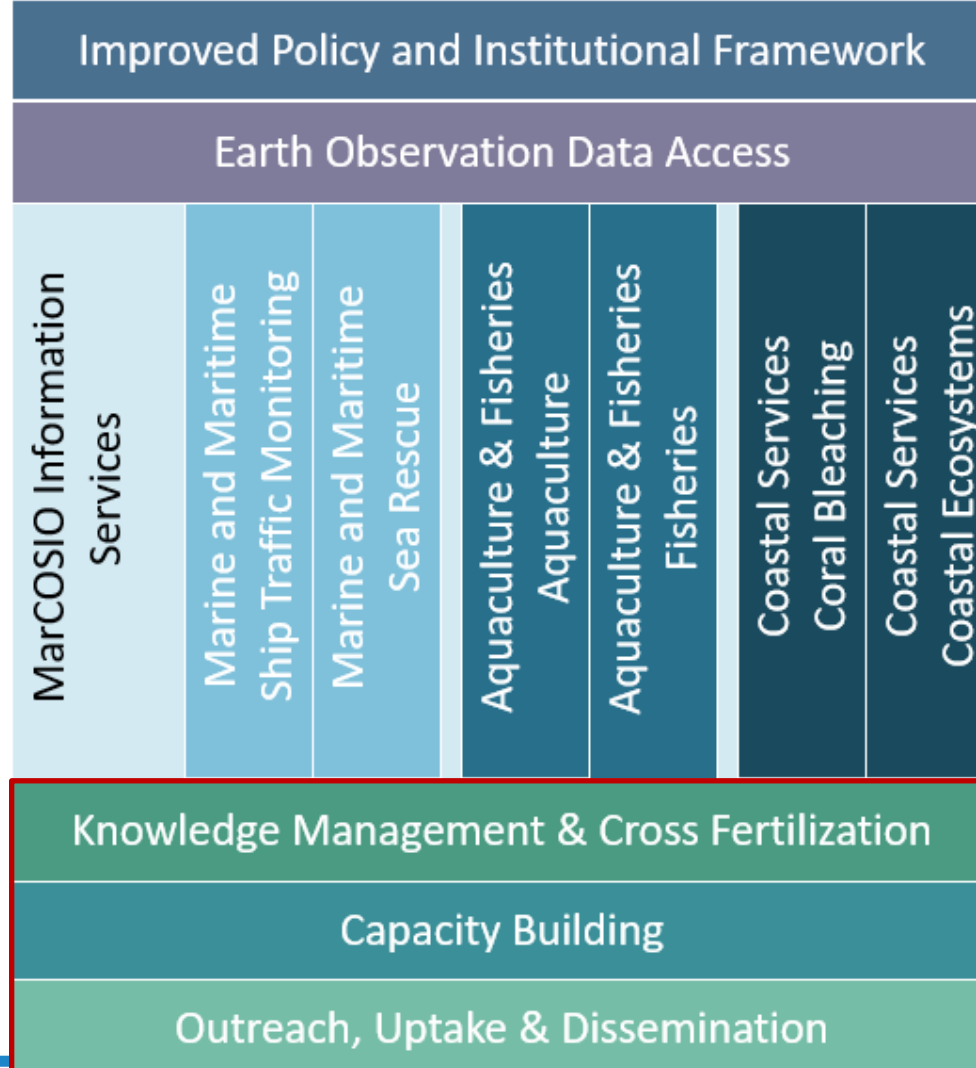
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- Increase **high level awareness** of GMES and Africa and MarCOSIO.
- **Align applications and services to policy and institutional framework** for sustainable management of GMES products and services
- **Sharing knowledge and best practices** among 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.
- SDI and Standards compliance and leveraging ENRENS for data access.



# GMES AND AFRICA

# Outreach and communication



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



**IMPACTING GLOBAL WATER QUALITY** Monday Nov 6th, 14:40-14:50 Orchid Room



### Overall coral bleaching risk in WIO low, February forecast shows

Compiled by Jane Kiguta

Coral bleaching alerts are still 'According to research findings by CORDIO East Africa (International Centre for Oceanographic Research under the Global Monitoring for Environment and Security (GMES) project) and Africa Marine and Coastal Operations for Southern Africa (AMCO) the overall coral bleaching risk in Western Indian Ocean (WIO) region in 2023 is low.

"This latest forecast only however change in the coming weeks and this will be confirmed in updated alerts," says James Mwangi who is the coral bleaching alert manager lead in GMES project. "Year 2023 was a relatively cool and quiet year.

No major bleaching was reported in the WIO and cyclone activity was minimal, aside January, however, the long persistent La Niña conditions in the Pacific that provided a boost for the WIO needs to be monitored closely by the Marine & Fisheries Research Institute (MFRI).

Coral bleaching is brought about by warming oceans, among other factors, which degrade the reefs. Bleaching is triggered by increases in sea surface temperatures, due to climate change, and is exacerbated by marine pollution and other local threats.

"Coral reefs are critical marine ecosystems that provide protection against erosion, storms and flooding, and shelter countless fish from the damaging effects of sea-level rise and tropical storms. They also provide critical habitats and shelter for many marine organisms including fish, hence the need to protect and conserve them," explains James.

According to the findings documented in the **South African Status of Coral Reefs of the World 2020**, coral reefs occur in more than 100 countries and territories. And while they cover only 0.2 per cent of the seabed, they support a quarter of marine species and underpin the safety, coastal protection, wellbeing, food and economic security of hundreds of millions of people.

The findings further reveal that the value of goods and services provided by coral reefs is estimated at US\$2.7 trillion per year globally, including US\$36 billion in coral reef fisheries.

It is against this background that GMES & Africa project in partnership with CORDIO East Africa, is generating 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 has among stakeholders that graced Tanzania Fisheries Research Institute's (TAFIRI) 40th anniversary celebrations held at APC Hotel and Conference Centre, in Bundoa Dar es Salaam.

(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.



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

## ABALOBI HOSTS PARTNER EXCHANGE TRAINING

By Jonathan Kilow and Obakeng Molele

The ABALOBI MarCOSIO GMES & Africa partner exchange training, which was hosted in Matieland, 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, which has been passed down through generations. They spoke about the joys and challenges of being a fisher and how it requires skill, patience and

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544 followers  
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TAFIRI TAFIRI 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 @TAFIRI 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 TAFIRI TAFIRI 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 Mbaru, 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 #TAFIRI #Anniversary



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Council for Scientific and Industrial Research (CSIR) Africa Marine and Coastal Operations for Southern Africa (MarCOSIO) team showcases IEC materials that capture various #EarthObservation #Services #Tools #Apps developed ...see more



## KMFRI hosts GMES & Africa Science-Policy Technical Tour

Compiled by Jane Kiguta



Kenya Marine & Fisheries Research Institute (KMFRI) 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 KMFRI - 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.



## 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 Daniel Barbero.





- GMES MarCOSIO, uses a **consortia approach** in the development of its services.
- Utilizes and **builds upon** the African partner's **expertise** (capacity development)
- Key philosophy is **Co-design, co-creation and co-funding**.
- **Integrates models and data** from multiple sources to address issues around climate change, biodiversity loss and pollution.
- Awareness, capacity building, monitoring and education are key to uptake and sustainability
- MarCOSIO wants to **support presidential level** policy mandates to the safety and the livelihoods **of the artisanal fisher**.



**GMES  
AND AFRICA**

# Consortium Partners



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**Thank you**  
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