OPERA
OCEAN PREDICTION ENHANCEMENT IN REGIONS OF AFRICA

The Global Ocean Observing Systems in Africa (GOOS-AFRICA) as the Pioneering Framework for Ocean Forecasting and Predictions in Africa.

Justin Ahanhanzo

Founder & Coordinator

GOOS Africa

Funded by the European Union

Ocean Prediction UN DECADE COLLABORATIVE CENTRE

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

MERCATOR OCEAN INTERNATIONAL

Funded by the European Union

OPERA Kick Off Meeting
Cape Town, South Africa, 08-10 April, 2025

The Global Ocean Observing Systems in Africa (GOOS-AFRICA) as the Pioneering Framework for Ocean Forecasting and Predictions in Africa.

Justin Ahanhanzo, Initiator, Promoter and Founding Coordinator, GOOS-AFRICA
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The elephant inhales O_2, exhales CO_2 . Plants do the reverse, provided they have sunlight and water. The water on land comes in clouds, fall as rain or snow, and flows back to the ocean. Earth is habitable because of this recycling of water, carbon, dioxide and numerous other chemicals

EARTH is Habitable because ALL LIVING THINGS INTERDEPENDENT

Brief History of GOOS AFRICA

GOOS-AFRICA INSTITUTIONAL BUILDING: 3 KEY GUIDING PRINCIPLES:

African Grassroots Approach, Ownership and Leadership

1998: Formal establishment at African Ministerial conf.

1999: Adopted at IOC Assembly

2000: Resolution of UNESCO General Conference

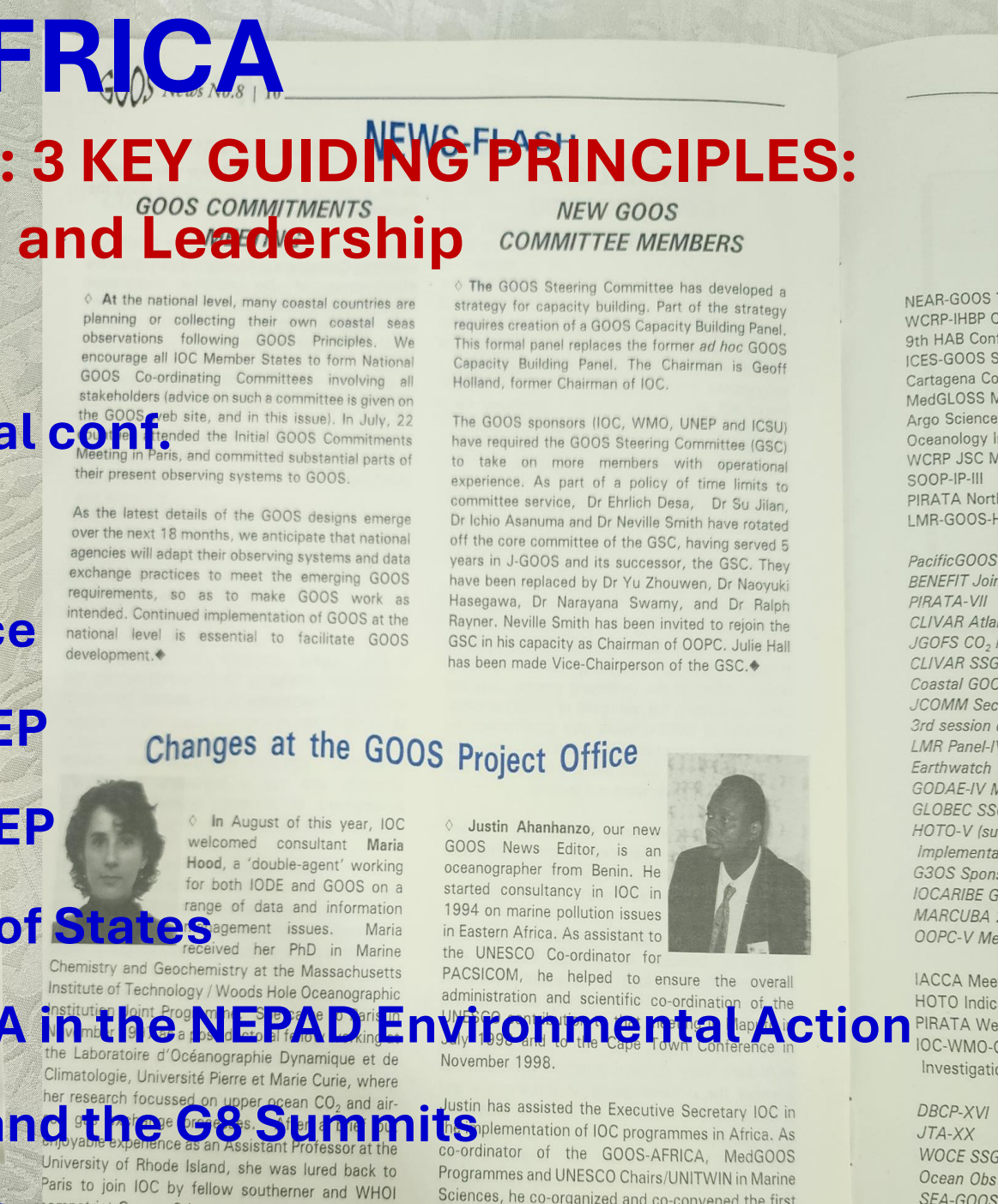
2001: Integration of the Nairobi Convention, UNEP

2002: Integration of the Abidjan Convention, UNEP

2002: Adoption by the Summit of African Heads of States

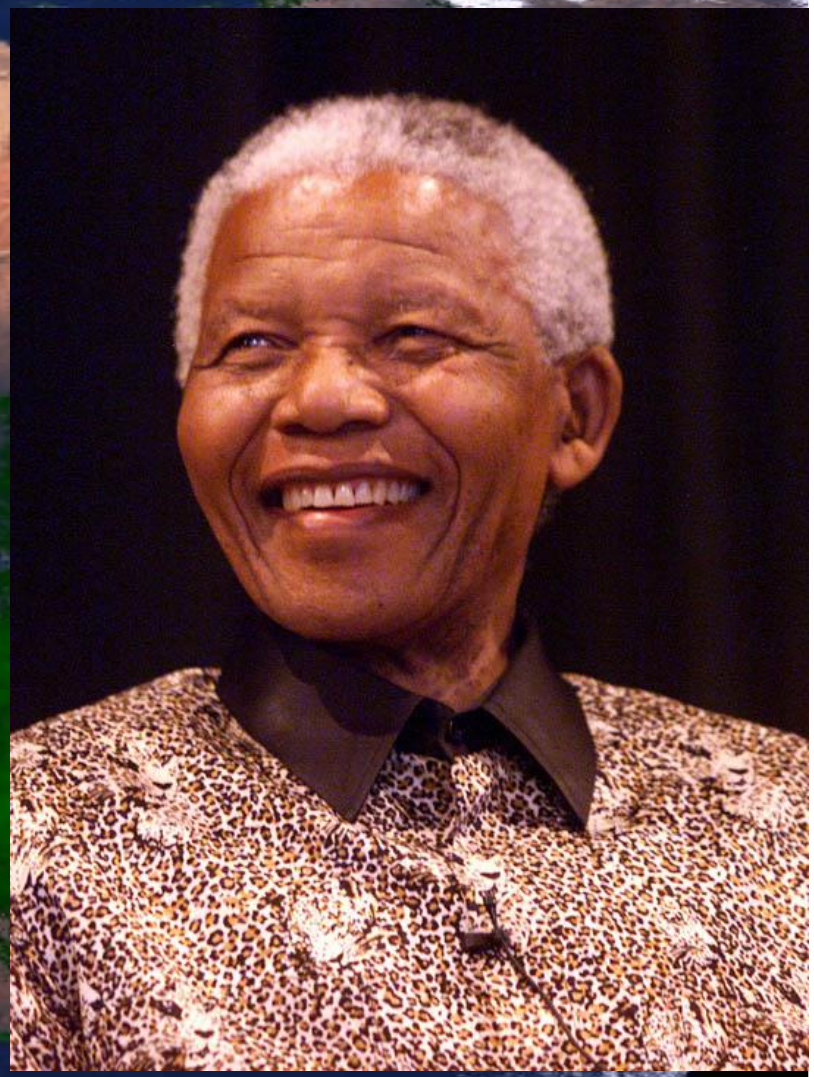
2003: Inclusion of GOOS-AFRICA/ROOFS-AFRICA in the NEPAD Environmental Action Plan, Algiers and at the UN–General Assembly and the G8 Summits

22 March, 2006: African Union Resolution: A/RES/60/222



Cape Town Conference in 1998: Political and Legal Framework

“Africa ’s long and beautiful coasts and the abundance of marine resources can contribute to improve economic, food and environmental security for the continent. These coastal and marine resources, like the rest of Africa ’s environmental resources, continue to be exploited in a manner that does not benefit AFRICA and her PEOPLE. This is a paradox of a people dying from hunger, starvation and poverty when they are potentially so rich and well endowed”.



Priority Ocean Decade Actions for Africa

- 1. Sustainable ocean management in Africa
- 2. Ocean and human health in Africa
- 3. Unlocking the blue carbon potential of Africa
- 4. Fisheries and IUU in Africa
- 5. Strengthening multi-hazard early warning systems and community resilience
- 6. Ocean observations and forecasting systems for Africa
- 7. Digital twin for Africa - Establishing an African ocean knowledge hub
- 8. Strengthening capacities and skills of African Early Career Ocean Professionals (ECOPs)
- 9. Regional ocean literacy programme for Africa

Take Home Message

Triple Principal Foundation Pilars: GOOS-AFRICA TRIAD

African grassroots-Ownership-Leadership

These founding principles are essential to build trust amongst African partners within and outside the continent, as the primary support, contributors and beneficiaries of GOOS-AFRICA efforts.

- Activities conducted in Africa with grassroots approach under the ownership and leadership of African relevant institutions and competent experts, help to mobilize required resources within Africa, from the African Diaspora and beyond with Overseas partners.

Essential for the IOC Sub-Commission for Africa and Adjacent Island States to build on existing mechanisms and programmatic structures already in place in Africa.

OPERA: Governance mechanism to include African stakeholders for convening power

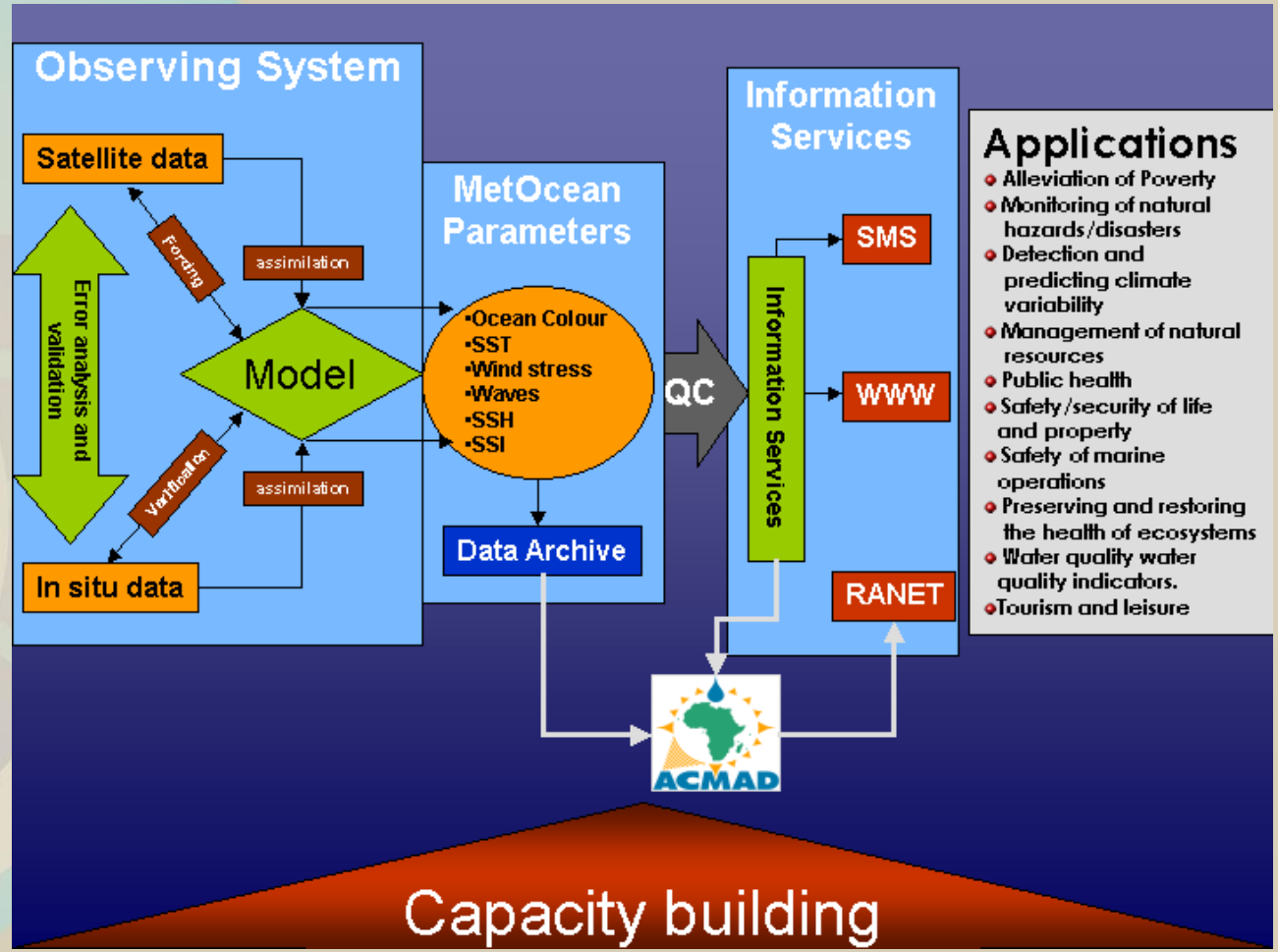
IOCAFRICA, GOOS-AFRICA, WIOMSA.

UNDERSTANDING GOOS-AFRICA

OUR RESOLUTION TOWARDS ACHIEVING

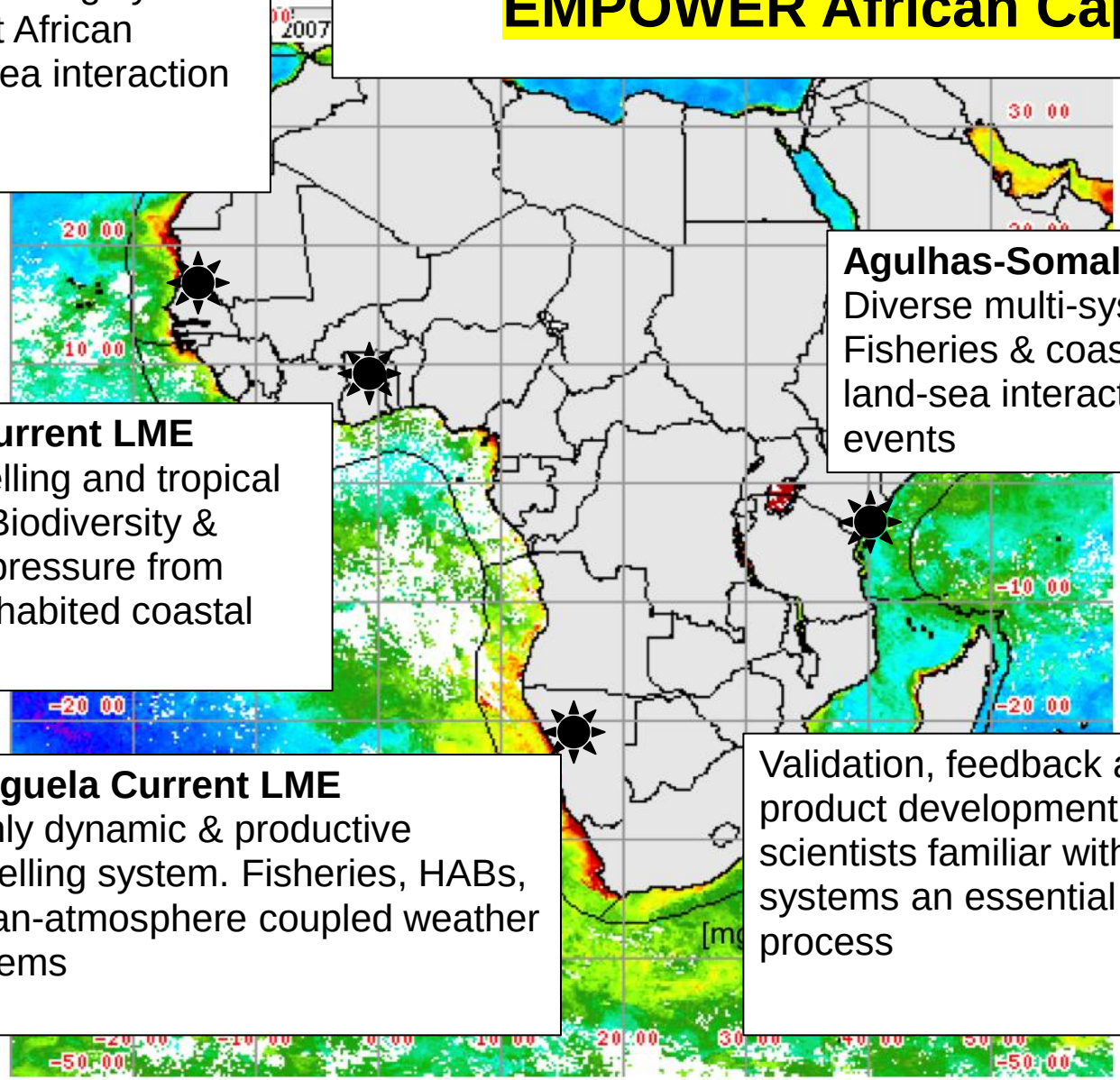
- NEPAD Action Plans
- African Union VISION & Strategic Frameworks
- WSSD Implementation Plan
- The Millennium Development Goals
- The UN SDGs
- The Decade of African Oceans and Seas
- The UN Ocean Decade
- The UN FCCC
- UN CBD

GOOS-AFRICA Vision & Strategy for Capacity Development in support to OPERA towards AFRICA's Development



GOOS-AFRICA/African Large Marine Ecosystems Connection EMPOWER African Capacity

Canary Current LME
Major boundary-current upwelling system. Highly productive West African fisheries, land-sea interaction



Agulhas-Somali Current LME
Diverse multi-system LME. Fisheries & coastal ecosystems, land-sea interactions, extreme events

Guinea Current LME
Both upwelling and tropical systems. Biodiversity & fisheries, pressure from densely inhabited coastal zone

Benguela Current LME
Highly dynamic & productive upwelling system. Fisheries, HABs, ocean-atmosphere coupled weather systems

Validation, feedback and ongoing product development from scientists familiar with regional systems an essential part of the process

GOOS AFRICA Mandate CLAIMS TO

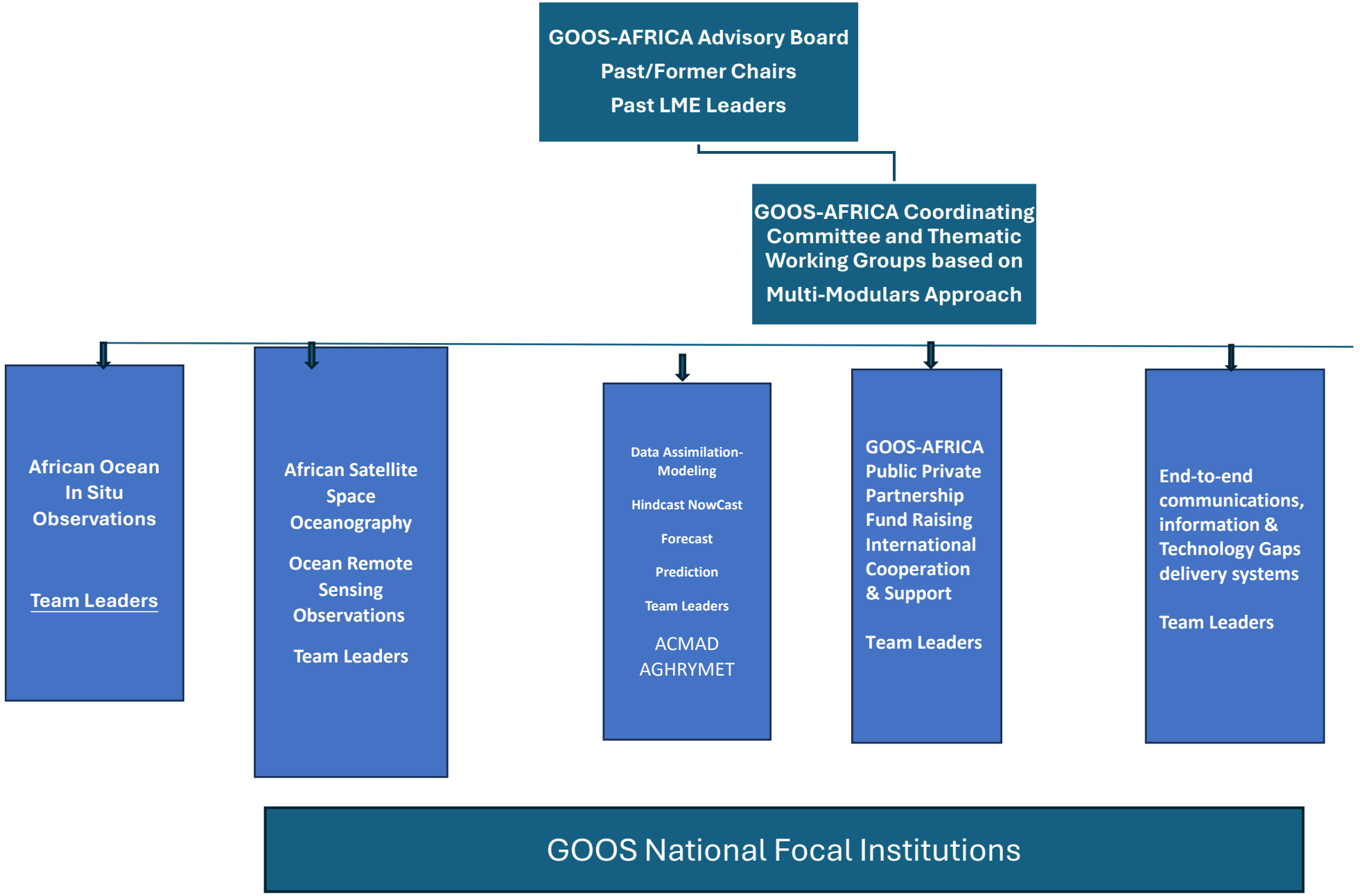
1- Be an African Union Programme for the integration of African Oceans and Coasts.

2- Contribute to the institutional building of the IOCAFRICA Sub-Commission.

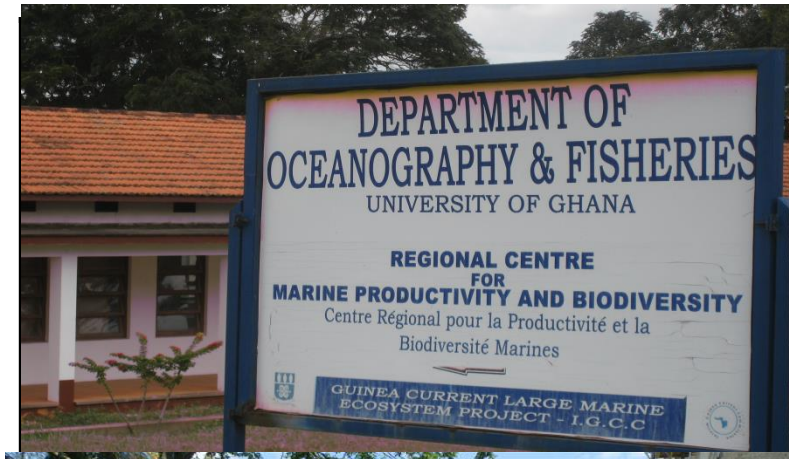
3-Go towards to the Operational Sustainability of the Sub-Commission.

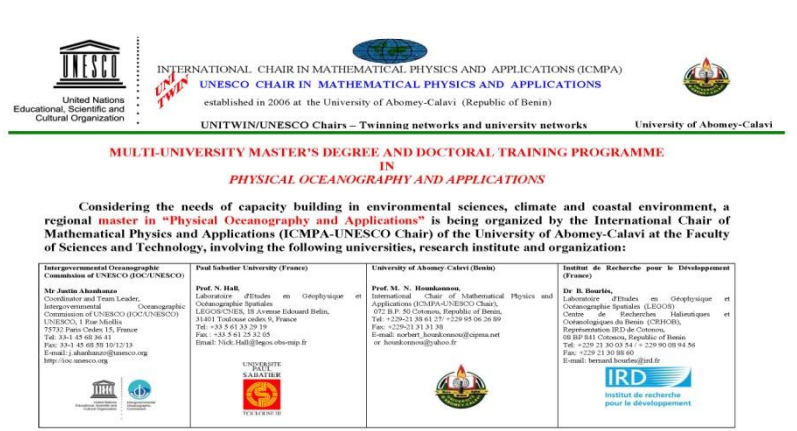
WHY Ocean Observation Systems & Predictions Needed in AFRICA?

- Offshore and Coastal OIL & GAS
- Shipping and trade
- Offshore and Coastal Mining
- Coastal and offshore Fisheries
- Integrated Coastal Zone Management
- Seaside tourism
- Public Safety/Health & protection of properties
- Early Warning Systems


GOOS-AFRICA Advisory Board
Past/Former Chairs
Past LME Leaders
GOOS-AFRICA Coordinating Committee and Thematic Working Groups based on
Multi-Modulars Approach
African Ocean In Situ Observations
Team Leaders
African Satellite Space Oceanography
Ocean Remote Sensing Observations
Team Leaders
Data Assimilation-Modeling
Hindcast NowCast
Forecast
Prediction
Team Leaders
ACMAD
AGHRYMET
GOOS-AFRICA Public Private Partnership Fund Raising International Cooperation & Support
Team Leaders
End-to-end communications, information & Technology Gaps delivery systems
Team Leaders
GOOS National Focal Institutions

BEST PRACTICES
RAISING THE SCIENTIFIC LEVEL AND NETWORKING IN AFRICA
(January 2011, Physics Today)
LET'S DO IT AT HOME TO BRING TOP SCIENTISTS TO AFRICA MENTORING





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SYMPOSIUM INTERNATIONAL ENTRE L'AFRIQUE ET LA REPUBLIQUE DE COREE SUR LES SCIENCES
LES TECHNOLOGIES ET LES INNOVATIONS RELATIVES A L'OCEAN ET A LA ZONE COTIERE,
COTONOU, CHANT D'OISEAU, 8 AU 10 AOÛT 2012
KIOST
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교육과학기술부

AFRICA–Wide Initiative Entirely Country-Driven Process

National Experts have been nominated by their countries.

GOOS-AFRICA Project Identification Meeting, Nairobi, 2001

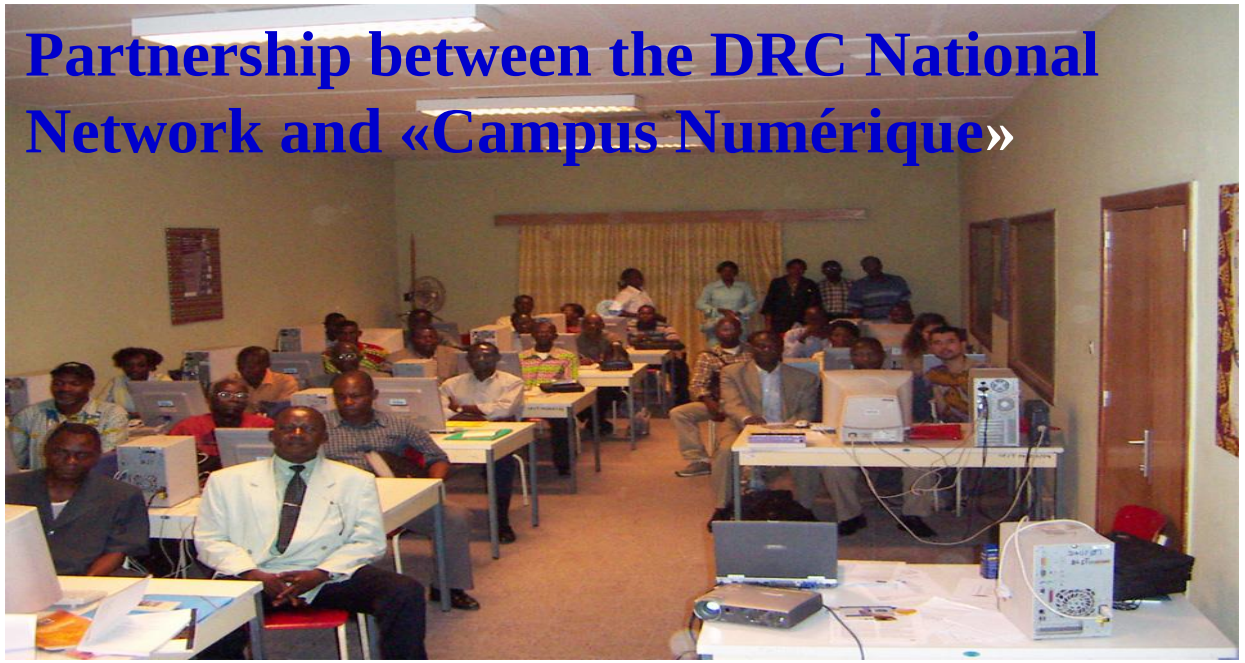
GOOS-AFRICA Preoperational workshops with international partners

Cape Town June 2011: Accra March 2012 and Zanzibar, next

- **The African Marine Atlas Team**

APPLICATIONS OF THE REMOTE SENSING FOR INTEGRATED MANAGEMENT OF ECOSYSTEMS AND WATER RESOURCES IN AFRICA

Activity: Developing Learning and Users Networks



Operational Oceanography Research Program

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

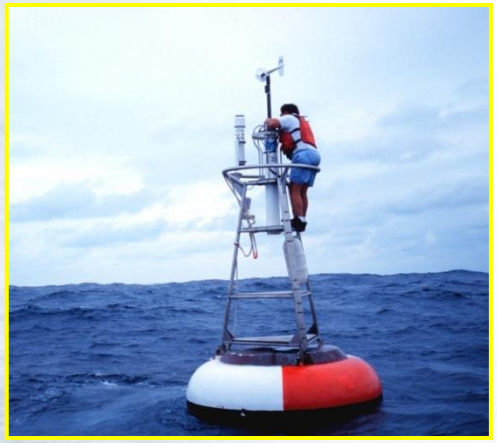
GOOS AFRICA

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Cape Peninsula University of Technology

UNIVERSITEIT STELLENBOSCH UNIVERSITY

INTECHMER



OPERATIONAL OCEANOGRAPHY

- PIRATA extension –Kizomba Buoy
- HAB's monitoring buoy
- Satellite remote sensing
  - chlorophyll a, SST, upwelling indices
- Weather stations; tide guages
- Moored sensors: temperature, current, salinity, oxygen
- CPR's and TUOR (Aquashuttle)
- Routine monitoring lines- zooplankton

BCLME

GOOS-AFRICA contribution to OPERA to overcome multidimensional Challenges

1- Governance challenge: Connecting global goals to local priorities: IOCAFRICA & GOOS-AFRICA continental players

- Socio-economic importance and benefits (studies) of bilateral/global programmes to local priorities
- Networking between scientists and policy makers

2- Coordination challenge

- Fragmentation of initiatives in Africa: regional coordination efforts to be sustained
- Networking Research facilities and expertise across the continent and beyond

3- Academic and Research challenge: POWER in Education

- Education systems with adequate research facilities
- Recognition of the role and place of African Universities and specialised centers
- Regional Training Programmes (M.Sc/Ph. D) and on-job training

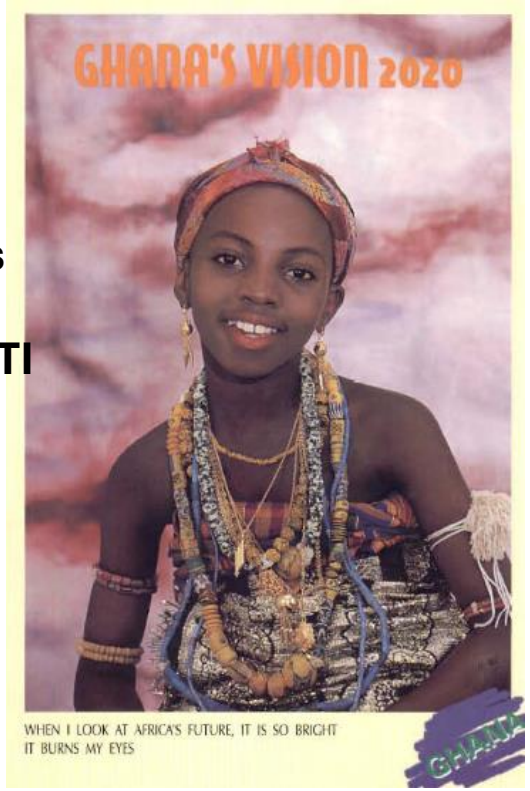
4- Sustained investment in research facilities and innovation

- Human and financial resources
- Operational support
- Utilisation & Retention of available human resources
- Strategic policy to attract the youth and female scientists in Earth and Climate Systems Sciences

WHAT IMPACTS AND LEGACIES DO YOU WANT TO MAKE IN AFRICA with OPERA?

THE BRIGHTEST FUTURE IN Ocean Predictions in AFRICA

When I look at Africa's future, it is so bright that I am excited and truly COMMITTED to the efforts towards the Brightest future in Ocean STI in Africa including OPERATIONAL OCEANOGRAPHY



WHAT WOULD BE YOUR STRATEGY FOR AFRICA?

Ciència i caritat? P. Picasso, Barcelona, 1897

It is Possible said Prof Geoff Brundit, founding Chair and GOOS-AFRICA Pioneer: Work together, building on and reinforcing existing African capacities and capabilities