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GMES AND AFRICA

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Africa's **Blue Economy** towards Realizing Agenda 2063

Inside this issue

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EDITORIAL

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Information sharing between and among GMES and Africa stakeholders is crucial for the programme's strategic implementation, with various channels deployable in reaching out to target audiences. One of the tools is the periodically published GMES and Africa Newsletter.

As a Pan-African operational publication, the scope of the articles covers achievements and progress made in promoting the applications of Earth Observation satellites to support the management of Africa's land and marine-based resources.

This issue discusses how information derived from Earth Observation satellites contributes to the socio-economic and sustainable development of Africa, how GMES and Africa supports informed decision making in the various sectors.

The cover story on page 8 features the trendy but topical Blue Economy, particularly in regards to how information derived from Earth Observation satellites support the Blue Economy in Africa.

Africa has over 30 thousand kilometers of coastline with enormous potential for a burgeoning Blue Economy. Globally, it is estimated that this sector generates about 2 trillion U.S. Dollars from fishing and aquaculture, shipping and other marine activities.

Spurring and invigorating the realization of such potential are cornerstones of GMES and Africa's mandate, and information derived from Earth Observation satellites is vital for the management of Africa's marine and coastal resources. This is in addition to a myriad of other thematic services being rendered across continental Africa through GMES and Africa under the banner of the African Union Commission. Through the GMES and Africa Programme.

Inside stories delve into the establishment of national networks in four West African countries. The national networks in Niger, Côte d'Ivoire, Burkina Faso and Guinea invoke ownership and support the collective utilization of GMES and Africa services for better livelihoods in local communities.

I invite you to read on, and imbibe the stories of classic African enterprise.

The Case for Geospatial and EO information in Support of **Africa's Sustainable Development**

The African Partnership Panel at the Living Planet Symposium 2019 (LPS19), highlighted the need to create indigenous capacity for Earth Observation services in Africa. This is important in responding to the socio-economic goals stated in the African Agenda 2063. Organized by the European Space Agency, the 2019 Living Planet Symposium was held from 13 to 17 May 2019 in Milan, Italy.

The symposium deliberated on how Earth Observation contributes to science and society. It further delved into how disruptive technologies and actors are changing the traditional Earth Observation landscape and dwelt on creating new opportunities for public and private sectors.

Panellists at the African Partnership Panel included Dr. Tidiane Ouattara, Space Science Expert and Global Monitoring for Environment and Security and Africa (GMES and Africa) Program Coordinator at the African Union Commission; Gina Bonne, Officer in Charge of the Environment and Climate Change Department at the Indian Ocean Commission (IOC); Andiswa Mlisa, Managing Director, Earth Observation at the South African National Space Agency (SANSA); Andre Nonguierma, Chief of GISS section at the UN Economic Commission for Africa (UNECA); and Pierre Sibiry Traore, Director of Research and Development at Manobi.

The African Partnership Panel discussed, among other things, the need for geospatial and EO derived information for policy and socio-economic development in Africa, in light of Agenda 2063 of the African Union and the UN 2030 Agenda for Sustainable Development. The Panel also identified and discussed opportunities, challenges and solutions to facilitate the full user uptake and potential of Earth Observation in Africa including the latest technology such as cloud computing and integration with in-situ observation networks. The deliberations further touched on the possibilities for enhancing outreach to African users, need for capacity development, as well as development and transfer of EO knowledge to African universities and institutions.

The Panel recommended, among other things, the performance of a gap analysis to identify EO products to be developed in the context of the GMES and Africa themes; as well as empowerment of the African research community with access to cloud computing infrastructure to exploit and access available EO data. The strengthening of collaboration with African Institutions to increase uptake of EO related information by policymakers was also recommended by the Panel.

The adoption of the African Space Policy and Strategy by African Heads of State and Government in 2016 marked a new chapter in space research and technology and in the development of the space sector in Africa. In this context, GMES and Africa is a big step forward to establishment of Earth Observation services in Africa using the Copernicus Sentinel data and services. GMES and Africa is a joint initiative of the African Union Commission (AUC) and the European Union (EU).

Panellists at the African Partnership Panel

GMES and Africa's contribution to **Evidence-based Decision Making**

Realizing the benefits of Satellite information for informed decision making for sustainable development in Africa, the African Union Commission (AUC) has expressed its commitment to collaborating with the Digital Earth Africa (DE Africa) on policy and regulatory frameworks for data sharing; analysis-ready data; capacity development; infrastructure and platforms.

The AUC's strategic policy position was revealed during the opening session of a series of back to back Earth Observation events, including the launch of Digital Earth Africa; the 3rd Regional Centre for Mapping and Resources Development (RCMRD) International Conference; and the 4th African Group on Earth Observations (AfriGEOSS) Symposium which was held from 12 to 16 August 2019, in Nairobi, Kenya.

At the event, Kenya's Deputy President, Dr. William Ruto noted how the Government of Kenya would intensify its support to research through increased funding. The theme of the event was " Earth Observation for Evidence-based Decision Making". The events provided opportunities for dialogue among various Earth Observation and Geospatial service providers, academia, policy makers, Earth Observation implementing agencies and end users. The event served as a platform for science and policy exchange, scientific paper and poster presentations in various services offered by the Geospatial domain, academia, implementing agencies and local communities. In 2018, the Assembly of the African Union adopted the Statute to legally establish the African Space Agency, and further in 2019 endorsed Republic of Egypt to host the Agency. The African Space Agency is positioned to support the national space agencies by creating synergies and opportunities.

The African Union Commission through the GMES and Africa Programme is providing Earth Observation derived services for managing land based and marine resources in Africa. These services are serving as input for evidence-based decision making. As a Pan-African Programme, GMES and Africa has developed a Training Strategy that among other things, accentuates the integration of ICT and Earth Observation, blending the academia and private sector in Earth Observation, and further focusing on value-added services that should accurately inform decision-making. The recently concluded survey on African private sector engaged in Earth Observation forms the basis for tapping into the African space industry.

Digital Earth Africa (DE Africa) is a major program within the United Nations Economic Commission for Africa (UNECA). It has a broad and representative Governing Board and Technical Advisory Committee (TAC). A Steering Committee for DE Africa was formed in 2018.

Kenya's Deputy President Dr. William Ruto

Professor Sarah Anayang Agbor, Commissioner for Human Resources, Science and Technology (HRST) at the African Union Commission.

AU makes progress in the implementation of the **African Space Policy and Strategy**

The Commissioner for Human Resources, Science and Technology (HRST) at the African Union Commission, Professor Sarah Anayang Agbor, has spoken to journalists about how the African Space Policy and Strategy is designed to positively impact the lives of people on the continent. Commissioner Agbor was speaking at a press conference as part of media engagement activities designed to bring the Commission's activities closer to the people. The objective was to share information on the programmes and progress in activities being undertaken by various departments of the Commission.

The African Space policy and Strategy was adopted by Heads of State and Government of the African Union to contribute to the realization of the African Union vision of an integrated, prosperous and peaceful continent, driven by its own citizens and representing a dynamic force in the global arena. The policy and strategy is also in response to the aspirations stipulated under Agenda 2063.

The HRST Commissioner described space science as a global good essential in our everyday lives; including for our health, security, education, agriculture, communication and migration, among numerous other needs. She briefed the media on plans to establish an African Space Agency, including the selection of a host country for the body. Three countries have been shortlisted by an independent high level panel; among them, Egypt, Nigeria and Ethiopia and the decision on a host country will be taken at the ongoing Summit.

A joint AU-EU operational programme is the Global Monitoring for Environment and Security and Africa (GMES and Africa), designed to contribute to the implementation of the African Space Policy and Strategy. The HRST Commissioner adduced that GMES and Africa is providing grants to regional and national institutions all over Africa to address water and natural resources, marine and coastal areas, as well as environmental issues, climate change and civil security, among other thematic areas.

Commissioner Agbor also spoke on other important areas under her department's mandate, and concrete steps being taken to introduce and implement key policy measures geared towards Africa's sustainable development. Among these portfolios are the Scientific, Technical and Research Commission (STRC); African Observatory of Science, Technology and Innovation (AOSTI); Pan African University (PAU); International Centre for Girls' and Women's Education in Africa (CIEFFA); and the Pan African Institute for Education for Development (IPED).

Flood monitoring: a key priority for West Africa's CSSTE Consortium

One of GMES and Africa's implementing consortia led by the Centre for Space Science and Technology Education (CSSTE), held its first regional technical workshop in Abidjan, Côte d'Ivoire.

The theme of the regional technical workshop was "Flood Monitoring and Assessment Services at Different Scales for West Africa (MIFMASS)".

The workshop brought together Space and Earth Observation experts, from five countries in the West African sub-region. The experts shared their experiences and views on possible solutions, for the prevention and efficient management of the impact of floods in West Africa.

The consortium is led by the Centre for Space Science and Technology Education in Africa (ARCSSTE), based in the Obafemi Awolowo University in Nigeria.

The event featured how GMES and Africa contributes to managing the impact of floods in West Africa.

CSSTE is specialized in Riverine Floods Monitoring and Assessment and addresses the lack of capacity of Disaster Management Organizations in terms of logistics and knowledge of flood events.

CSSTE is committed to ensuring that an efficient service is established for flood forecasting, mapping, assessment and management in five West African countries as well as selected basins in, or across these countries. It aspires to ensure that earth observation data from multiple sources is combined with state-of-the-art processes to deliver products and services that will improve the management of floods in the concerned countries.

The goal is achievable through the deployment of tools, models, databases and systems that will contribute to enhancing the information and knowledge base of disaster management and associated organizations. The technical expertise of these organizations to manage, maintain and expand the developed systems will be positively impacted, as is their operational capacity. Ultimately, populations and relevant institutions will be made aware of the flood forecasting system and its benefits in improving disaster management.

Four **national networks** to foster EO advocacy and networking in West Africa

Key stakeholders in charge of the management of wetlands in Niger, Côte d'Ivoire, Guinea Conakry, and Burkina Faso have joined forces to support the implementation of the GMES and Africa in the management of wetlands in West Africa.

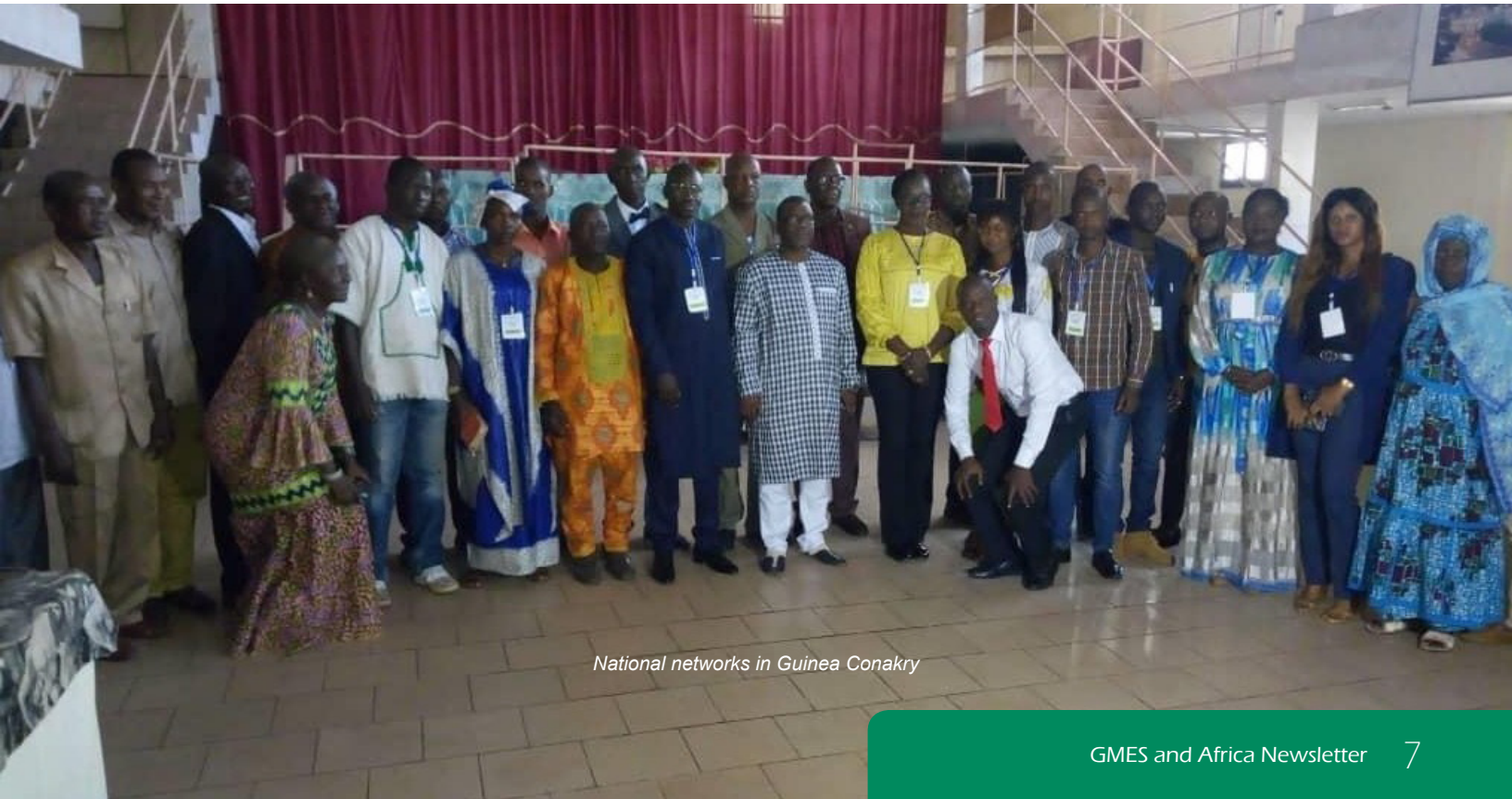
The GMES and Africa lead institution in this consortium, Centre de Suivi Ecologique (CSE), organized four national workshops in Niger, Côte d'Ivoire, Guinea Conakry, and Burkina Faso in September 2019. The four national workshops formally established the networks of experts.

At the level of each country involved in the GMES and Africa Wetlands for West Africa Project, two institutions have been chosen to develop products and services derived from earth observation data for the benefit of the users in the area of wetlands management. In order to implement sustainable wetland management policies in West Africa, a capacity building programmes have been planned for those institutions.

The established national networks in Niger, Côte d'Ivoire, Burkina Faso and Guinea Conakry are composed of government institutions, academia, research institutions and NGOs that are mandated in the management of wetlands in their respective countries. The national networks will serve as a platform for collaboration, experience sharing, learn-from best practices, and for the development of knowledge and expertise in their areas of interest- wetlands management in West Africa.

The Centre de Suivi Ecologique (CSE) consortia was awarded the GMES and Africa grant to implement the Sustainable Management of Wetlands for the Strengthening of Food Security and Resilience of Ecosystems in West Africa for the duration of three years. The aim of the Service is to develop and promote a product portfolio and services based on the exploitation of Earth Observation data (in the fields of water, vegetation and soils) in order to improve knowledge on West African wetlands from a sustainable management perspective, for food security and building the resilience of communities and ecosystems in West Africa.

The GMES and Africa Programme is a joint African Union and European Union operational Earth Observation program, demonstrating how EO data from space serves as a decision support tool for users in managing land, marine and environmental resources in Africa.



National networks in Guinea Conakry

Africa's **Blue Economy** towards Realizing Agenda 2063

Globally, the asset of the Blue Economy is estimated more than 25 trillion USD. It is also estimated that about 2 trillion USD are generated from fishing, aquaculture, shipping, tourism and other marine related activities. The African continent covers over 30 thousand kilometers of coastline that accommodate large Blue Economy sectors. Is Africa maximizing the benefits of the Blue Economy?

The Suez University held its first International Conference under the theme "Blue Economy to achieve the African Agenda 2063 and Sustainable Development" from 10th to 13th of September 2019 in Suez City, Egypt. More than two hundred representatives of African experts, decision makers, research institutions, the media and academia attended the Conference.

For Africa, the Blue Economy is of particular importance, in light of our dependence on the sector for income and employment and as a key source of food, energy, health, leisure, trade and transport said Mr. David Kirugara in his keynote speech delivered on behalf of Dr. Tidiane Ouattara of the African Union Commission. The Blue Economy therefore qualifies as the new frontline for Africa's renaissance, offering huge potential for the continent's growth, diversification, and development added Mr. Kirugara. Information derived from Earth Observation satellites are critical inputs in managing marine and coastal resources. The African Union Commission through the GMES and Africa Programme is providing Earth Observation Marine and Coastal services to Eastern, Western, Northern and Southern Africa's coastal states.

Earth observation satellites (EO) produces a wealth of data and information that support maritime authorities and decision makers to carry out their operations and to take informed decisions. Marine EO applies to a wide range of ocean-related areas covering mapping and detection of potential fishing zones, Marine Protected Areas (MPA), harmful algal blooms, Oil spills etc. The lead consortia, the National Authority for Remote Sensing & Space Sciences (NARSS) is the recipient of the GMES and Africa grant to implement the NafCoast project in Northern Africa.

Upcoming Events

- *70th International Astronautical Congress, 21 - 25 October 2019, Washington, DC, USA*
- *Workshop of the UNESCO / IOC on Global Ocean Observing System in Africa , 28 - 30 October 2019, Abidjan, Cote d' Ivoire*
- *GMES and Africa Workshop - 2 for establishment of collaborative frameworks consortia and academia, 04 - 06 November 2019, Lusaka, Zambia*
- *The Sixteenth Plenary Session (GEO-XVI) and related Side Events of the Group on Earth Observation (GEO), 04 - 07 November 2019, Canberra, Australia*
- *EO4Africa Workshop, 11 - 15 November 2019, Rabat, Morocco*
- *AfriGIS 2019, 18 - 21 November 2019, Kigali, Rwanda*
- *Continental Workshop-2 Marine and Coastal Services, 25 -28 November 2019, Cape Town, South Africa.*
- *Finance Management Workshop, 5-6 December 2019, Addis Ababa, Ethiopia*
- *PCAC Meeting, 09 - 10 December 2019, Addis Ababa, Ethiopia*
- *EO Communications Training, 9 - 12 December 2019, Addis Ababa, Ethiopia*

This project aims at developing the capacity in EO marine services and generating robust marine services to support blue growth in Northern Africa.

During the Blue Economy Conference, NARSS show cased the geoportal under development that will be one of the main sources of dissemination of their EO information products and services. The geoportal will provide a unified online platform for institutions and organizations in the Northern African countries to work collaboratively, exchange data and information on regional level with full data protection and security.

Mapping of environmental indicators for detection of rich potential fishing zones using Earth Observation Satellite was one of the studies presented at the Suez Blue Economy Conference. The study explored the potential of developing robust routine service from satellite data to estimate the sea surface temperature and its effect on chlorophyll concentration that guides potential fishing zones. Such a study will help fishermen save fuel and ship time during their fishing expeditions. . This information will also help experts develop fisheries forecast that will serve as an input in developing strategies for sustainable fisheries management.

Blue Economy includes activities such as fishing, tourism, maritime transport, and exploration of natural resources such as gas and oil, as well as emerging activities such as fish farming, extractive activity of seabed minerals and marine biotechnology among other activities. Blue Economy aims to develop and promote economic growth, fight poverty and improve the quality of life based on the various wealth of the sea with striving for its stainability and preservation.

The African Union Commission has put in place a strategy: the Africa Integrated Maritime Strategy (2050 AIM Strategy). It was conceived as a tool to address Africa's maritime challenges for sustainable development and competitiveness. The Strategy aims to foster more wealth creation from Africa's oceans, seas and inland waterways by developing a thriving maritime economy and realizing the full potential of sea-based activities in an environmentally sustainable manner.

The African Union Blue Economy Strategy, still under development, is the long-term strategy to support sustainable growth in the marine and maritime sectors as a whole. It is the maritime contribution to achieving the goals of the African Union Agenda 2063, whose guiding vision is the AU Vision of "An integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in international arena".

Under its first Aspiration, Agenda 2063 recognizes the huge potential of the Blue Economy as a catalyst of socio-economic transformation and takes into account the marine environmental protection that includes the methods and strategies to combat climate change.

MOI kick starts the GMES and Africa Marine and Coastal Service

The kickoff meeting of the Mauritius Oceanography Institute (MOI) led GMES and Africa consortium was held in Mauritius from 14 to 16 August 2019. MOI is the recipient of the African Union GMES and Africa Marine and Coastal Areas Service grant for Eastern Africa coastal states including the South Western Indian Ocean island states.
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The meeting was officially opened by the Honorable Premdut Koonjoo, Minister for Ocean Economy, Marine Resources, Fisheries and Shipping. Other dignitaries who also delivered statements were Dr. Ruby Moothien Pillay, Director of MOI, Mr. Prem Saddul, Chairman of MOI Board, Mrs. Gina Bonne, Chargée de Mission, Indian Ocean Commission, Mr. Massimiliano Messi, Team Leader and Second Secretary, European Union Delegation to the Republic of Mauritius.

The kick off meeting signifies the beginning of the implementation of the MOI consortium of GMES and Africa, which is a joint African Union-European Union initiative providing information to policymakers, scientists, businesses and the public. The programme is an enabling mechanism designed to support the implementation of the African Space Policy and Strategy in addressing the growing needs of African countries to access and use Earth Observation (EO) data for the implementation of sustainable development policies on the continent. This will impact the management of the environment and natural resources, as well as the monitoring of humanitarian operations through the integration and deployment of African requirements and needs in Copernicus Services.

The participating countries are dependent on their Marine and Coastal resources for their social, economic and ecological value. Fisheries management, better understanding of marine and coastal ecosystems, monitoring and control of illegal fishing, climate change impact monitoring and forecasting of extreme weather events are some of the main regional issues that the project will address.

MOI is committed to delivering Earth Observation (EO) derived Marine and Coastal Services, in partnership with the Tanzania Fisheries and Research Institute, Kenya Marine Fisheries Research Institute, Institut Halieutique et des Sciences Marines of Madagascar, Seychelles Meteorological Authority, and the Western Indian Ocean Marine Science Association.

The GMES and Africa Marine and Coastal Management for East Africa uses both EO and in situ data to generate information; conduct analysis and forecasts that will eventually help institutions and decision/ policy makers to observe, understand, anticipate and make better use of marine related resources. .

The consortium's eventual objectives include providing fishers with early warning information on the state of the ocean to protect lives at sea, as well as making data available to the scientific community and relevant stakeholders for decision making such as in cases of coral bleaching, harmful Algal Bloom and storm surges, amongst others. It seeks to avail periodic potential fishing zone maps and proposed areas for surveillance patrols and warning bulletins for Harmful Algal Blooms as well as providing vulnerability assessment of the coastlines of selected regions through production of shoreline change maps.

About the GMES and Africa

The Global Monitoring for Environment and Security and Africa (GMES and Africa) is a flagship programme of the African Union Commission (AUC) under the African Space Policy and Strategy. It prescribes a pathway for the continent to be globally competitive in space activities, including Earth Observation (EO), and to develop a viable continental space programme. With continent-wide coverage, the programme is implemented through grants to African institutions under the banners of regional consortia. 13 consortia representing a total of 122 African institutions have been awarded grants through open competitive bidding to implement projects in water, natural resources, marine and coastal areas management.

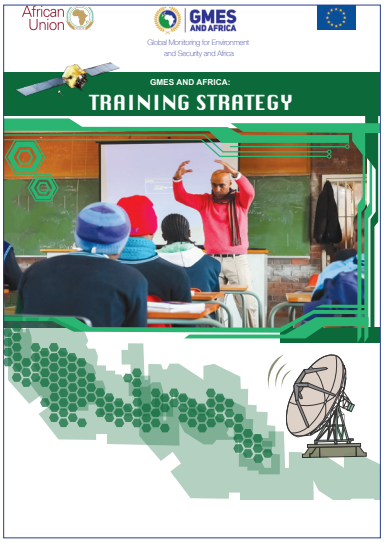
The programme is jointly co-financed by the European Commission and the African Union Commission with a total budget of 30 Million EURO. The Programme uses and adapt the Copernicus Programme data and services to the African context. It is designed to specifically respond to African needs with respect to services related to water, natural resources, marine and coastal areas and to address the global needs to manage the environment, mitigate climate change and ensure civil security. The programme enables the implementation of the African Space Policy and Strategy, and harnesses the continent's capabilities in utilizing space science and technology for economic growth and sustainable development. In the implementation agreement, AUC is the 'delegated authority' responsible for the management of the programme.

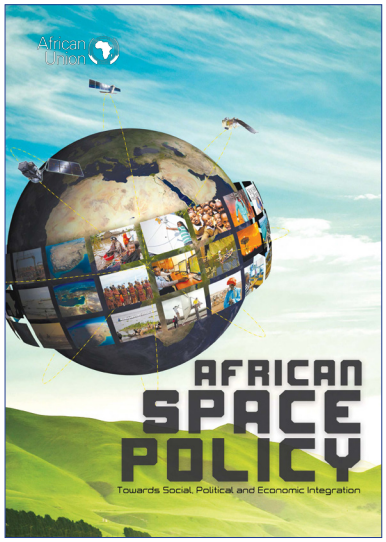
GMES and Africa Programme aimed at improving African policy-makers', planners', scientists', business and private sector and citizens' capacities to design, implement, and monitor national, regional and continental policies and to promote sustainable management of natural resources through the use of Earth Observation data and derived information.

The Programme has five outputs:

- Access to Earth Observation (EO) Data and Maintenance
- Natural and Water Resources Service
- Marine and Coastal Services
- Education and Training in EO
- Outreach and Raising Awareness

Recent publications





The GMES and Africa Implementation Centers/Consortia

Thirteen consortia of African institutions awarded the GMES and Africa grants to implement the GMES and Africa in five regions of Africa.

- **Central Africa**: Agence Gabonaise d'Etudes et d'Observations Spatiale (AGEOS) and Commission Internationale du Bassin Congo-Oubangui-Sangha (CICOS) for **Water and natural resources service.**

- **East Africa:** IGAD Climate Prediction and Application Centre (ICPAC) and Regional Centre for Mapping off Resources for Development (RCMRD) for Water and natural resources service; Mauritius Oceanography Institute (MOI) for Marine and coastal areas service

  North Africa: National Authority for Remote Sensing & Space Sciences (NARSS) for marine and coastal area service; Observatoire du Sahara et du Sahel (OSS) for **water and natural resources service**

- **Southern Africa:** Council for Scientific and Industrial Research (CSIR) for marine and coastal areas service; Southern African Development Community Climate Services Centre (SADC-CSC) and Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) for **water and natural resources service**

- **West Africa:** Centre de Suivi Ecologique (CSE) and Obafemi Awolowo University; Ile-Ife, Nigeria (CSSTE-Obafemi) for water and natural resources service; University of Ghana (UG) **for Marine and coastal areas service**

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