

EUMETSAT and Africa

European meteorological satellites
at the service of Africa

Monitoring weather and climate from space



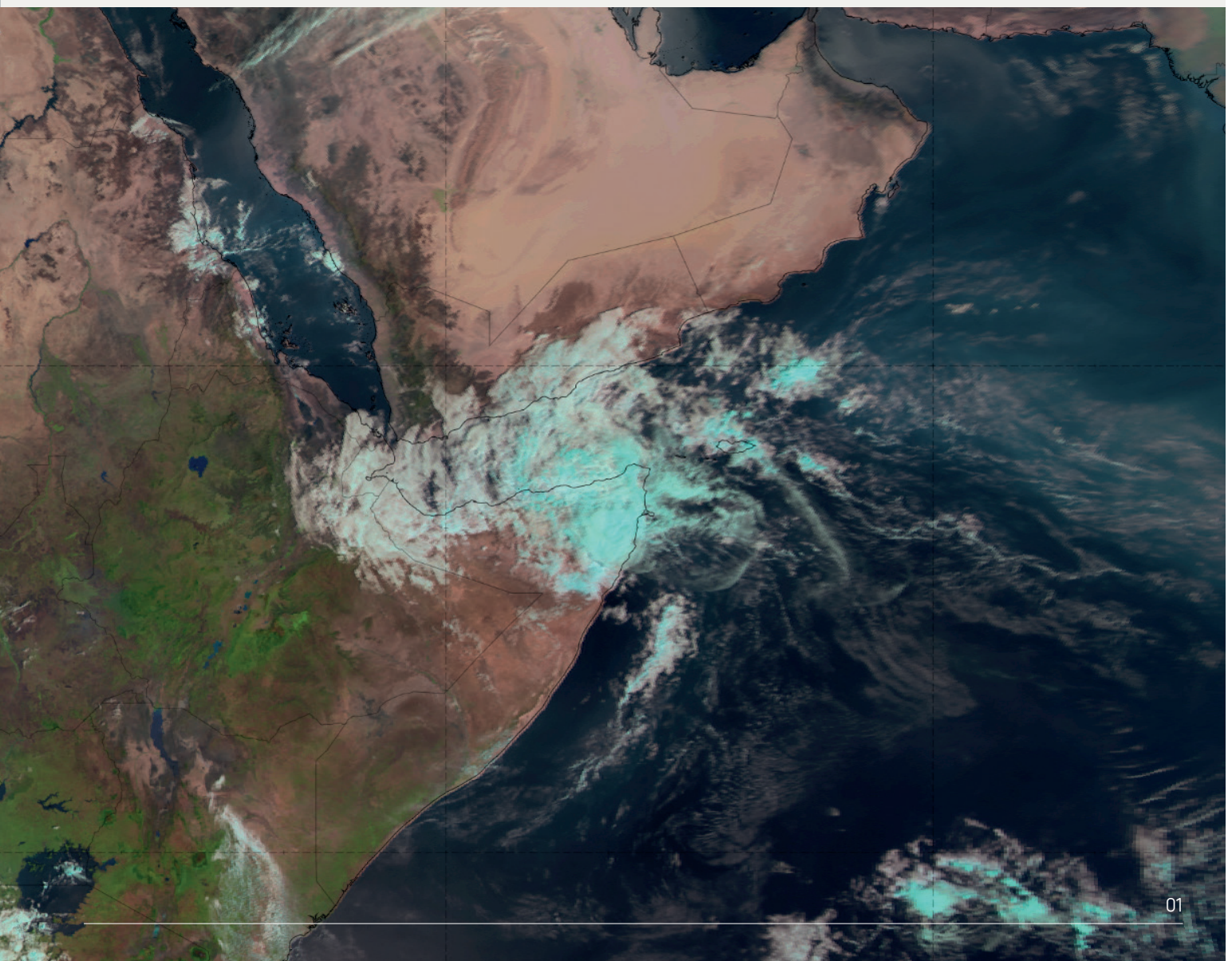
It's a fact

EUMETSAT provides 16 megabits of data per second via its EUMETCast system to African meteorological services, climate researchers and others. EUMETSAT's Meteosat satellites in geostationary orbit have had a continuous view of the continent for 40 years.



Right: Image of Tropical Cyclone Vardah crossing the Gulf of Bengal, as captured by EUMETSAT's Meteosat-8 satellite on 19 December 2016 at 06:00 UTC

Changing rainfall patterns in Africa are predicted to have a negative impact on agriculture and food and water security. Extreme weather events, such as severe storms, droughts and floods, are expected to increase in frequency and intensity. Rising sea levels, combined with storm surges and breaking waves, are predicted to threaten coastal areas, potentially causing major population shifts. Accurate weather forecasts and warnings of severe weather are essential to enable African countries to deal with the impacts of the changing climate. Meteorological satellites have a key role to play.

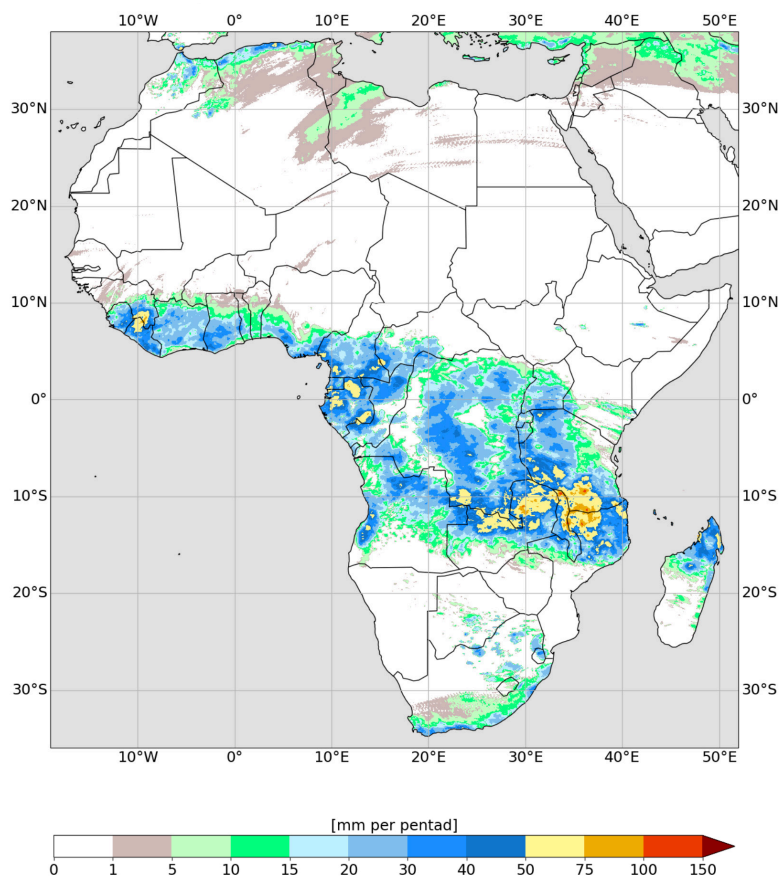


The value of EUMETSAT satellites for Africa

Climate change is a major threat to sustainable growth and development in Africa

Ensuring safety requires the ability to forecast rapidly developing severe weather events accurately. These very-short-range weather forecasts require fast access to high-quality data such as those from Europe's Meteosat satellites. The Meteosat Second Generation (MSG) operational system, which comprises satellites over continental Africa and the Indian Ocean, ensures a regular flow of imagery every 15 minutes from geostationary orbit, 36,000km above the equator.

Period: Year 2021, Month 03, Pentad 2
Theme: Rainfall Estimate (accumulated rainfall in period)
Source: TAMSAT, derived from Meteosat TIR



Left: Accumulated rainfall estimate anomaly in Africa for March 2021 derived from Meteosat thermal infrared imagery (Source: TAMSAT, University of Reading, UK)



Africa is continuously in the field of view of EUMETSAT's Meteosat satellites. Therefore, the data and imagery the satellites provide are crucial for weather forecasting across the African continent and for supporting climate and environmental monitoring. Additional information about the weather, atmosphere and oceans is provided by the Metop polar-orbiting and Jason ocean altimetry satellites which feed digital weather forecasting and seasonal prediction models. Satellite data contribute to seasonal forecasting prepared with the support of regional climate centres in Africa to prepare for agricultural seasons, and to warn of potential severe weather events, such as droughts. This output also is vital for Africa.

EUMETSAT's Member States have made support for Africa a strategic objective. The organisation's efforts are combined with those of the European Union, the African Union and the World Meteorological Organization (WMO).

They have undertaken projects and initiatives to help the African meteorological community meet national and regional requirements in terms of severe weather warnings, water and agriculture management, and mitigation of the effects of natural hazards and climate change.

The next generations of EUMETSAT's Meteosat and Metop satellites will begin to be deployed from 2022, making more, and even higher quality, data available to users, including the African meteorological community.

Top: A fisherman prepares his nets, Maputo, Mozambique (source: V. Gabaglio)

Support for Africa is an integral EUMETSAT objective



"The cooperation between the Directorate-General for International Partnerships and EUMETSAT plays a major role in EU-Africa partnerships, especially in support of sustainable growth, green transition and digital transformation on the African continent. Our joint efforts and EUMETSAT's involvement in Copernicus, GMES and Africa, and ClimSA, just to mention a few, are already enabling our African partners to better tap into the unexploited potential offered by satellite data and digital technologies and to bring benefits to their societies and economies."

Koen Doens

Director General for International Partnership (DG INTPA)
European Commission

EUMETSAT's cooperation with Africa is grounded in the organisation's strategic objective to "expand the user base for EUMETSAT data, products and services in EUMETSAT Member States and among WMO Members". This objective is in line with the Joint Africa-EU Strategy and the Integrated African Strategy on Meteorology.

Helping user communities to easily access and make best use of EUMETSAT data, products and services is the main aim of the strategic objective. EUMETSAT will continue to fulfil its very specific and challenging mission to deliver time-critical data and products to user communities across several continents, with dedicated end-to-end service, and to offer users in Member States and WMO Regional Associations RA-VI (Europe) and RA-I (Africa) the easiest and cheapest access to data.

Contributing to the Joint Africa-EU Strategy

Since 2007, successive action plans adopted by European Union-African Union summits have identified Earth observation as a joint cooperation area. Earth observation is recognised as a tool that supports environmental monitoring and increasing resilience. At the 5th EU-AU Summit held in Abidjan in 2017, the Heads of States and Governments committed to fostering the use of space-based technologies and information for those purposes.



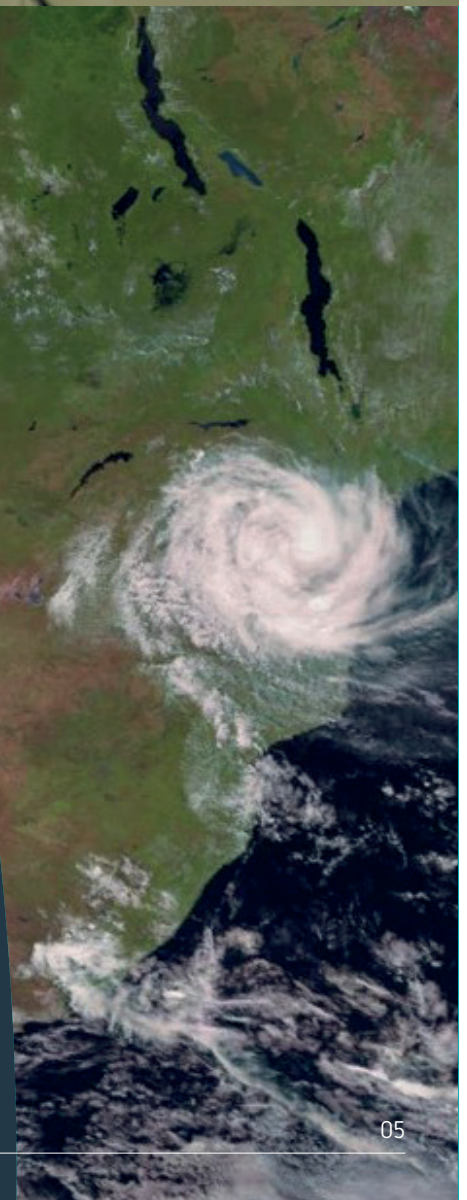
Tropical Cyclone Idai

Satellite:	Metosat-11
Location:	Mozambique
Date:	15 March 2019

Tropical Cyclone Idai was one of the worst tropical cyclones on record to affect Africa and the Southern Hemisphere, causing severe flooding throughout Madagascar, Malawi, Mozambique and Zimbabwe resulting in at least 1,297 deaths and widespread destruction.



Top: Aid workers load medical supplies on to a South African National Defence Force helicopter in the aftermath of Cyclone Idai in Beira, Mozambique, 25 March 2019 (Source: Reuters)





Extract from the Abidjan Summit Declaration

"We agree to undertake efforts to halt and reverse environmental degradation, which has potentially significant implications for sustainable development, including related to security and migration, and for enhancing adaptive capacity to the adverse impacts of climate change and related shocks, and increase resilience to environmental degradation, desertification, health threats and humanitarian crises, and increase resilience by addressing drivers of vulnerability."

The EU's Copernicus Earth observation programme and the Global Monitoring for Environment and Security in Africa (GMES and Africa) initiative will be central to achieving those aims.

Contributing to the Integrated African Strategy on Meteorology

The Integrated African Strategy on Meteorology (Weather and Climate Services) was first adopted during the African Ministerial Conference on Meteorology (AMCOMET) in 2012. The revised strategy was presented and adopted at the March 2021 conference.

The revised strategy highlights the importance of access to global sources of weather and climate data. It states that satellite data, global weather models and climate data are essential for national weather and climate services and will be secured for national meteorological and hydrological services to underpin economic growth and sustainable development.

The strategy also makes explicit references to the importance of satellites operated by EUMETSAT. It aims to ensure sustainable access to and use of data from existing and future geostationary and polar-orbiting satellites, in particular, MTG.

Other aims include:

- To facilitate access to and use of globally available operational oceanography data from ocean-monitoring satellites (for example, Jason or Sentinel-3) and global ocean analysis and forecast centres (for example, the Copernicus Marine Service), as well as the production of African-tailored marine forecast products based on these global data.
- To facilitate access to, use and development of satellite-based meteorological products for aviation (for example, lightning detection, tropopause folding turbulences, fog detection and volcanic ash).
- To increase African capacities to develop tailored products based on satellite data through an African Meteorological Satellite Application Facility as proposed in the Abidjan Declaration, and engage with international partners to combine or assimilate in situ observations, model outputs and satellite-derived products to better address African requirements.

Preparing Africa for the next generation of meteorological satellites

Meteosat Third Generation (MTG) satellites will begin replacing the current second-generation satellites from 2022. The MTG system will provide continuity of the data and information from MSG spacecraft but with more frequent, accurate and higher-quality observations of the weather and climate over the African continent.

MTG geostationary satellites located above the Gulf of Guinea will deliver imagery of the African continent every 10 minutes, in 16 spectral bands, at a resolution of 1km, plus a continuous lightning detection capability. This will provide unique information on fast developing high-impact weather, incoming solar energy, wild fires, sea surface temperature, turbidity of coastal waters, and more.

The Lightning Imager (LI) on MTG spacecraft will be an important source of information for African forecasters, given the relative lack of radar availability. It will be particularly important for aviation safety, and the protection of life and property.

The MTG system will significantly improve monitoring of the weather and climate over Africa until the 2040s. The improved capabilities of the MTG system call for a strengthening of existing capacities in Africa, at regional and national levels, to access, process and make best use of the data.

In addition, more and higher quality data will become available from EUMETSAT's second generation of the polar-orbiting Metop satellites, which will begin to be deployed from 2023, and from the Sentinel missions of the EU's Copernicus Earth observation programme.

This wealth of information will allow for substantial improvements in safety and health-critical early warnings and disaster risk reduction in Africa, as well as public and private decision making in vital weather-sensitive sectors of the economy, such as air traffic management, renewable energy and sustainable use of water, marine and agricultural resources.

In planning for future initiatives in Africa, EUMETSAT will consider the impact of large volumes of data generated by new EUMETSAT missions and those of the EU's Copernicus programme.

Since 2016, EUMETSAT has been regularly discussing with users of its data the opportunities and challenges arising from the transition from the current MSG system to the MTG system, in close cooperation with the WMO RA-I Data Expert Group (RAIDEG). EUMETSAT has developed a roadmap for the transition, taking into account African priorities.

*Below: Signature of the
Abidjan Declaration
in September 2018*



In September 2018, the African Union Commission, Côte d'Ivoire's Transport Minister, the President of the AMCOMET (Cape Verde's minister in charge of meteorology) and representatives of the Regional Economic Communities for western, eastern, central and southern Africa signed the "Abidjan Declaration on next generation of satellites products for weather and climate services in Africa".

The Abidjan Declaration details the strengthening of capacities in Africa in preparation for access to and the exploitation of data from the MTG satellites. It encourages and supports "the strengthening of African capabilities at regional and national levels, in particular the national meteorological and hydrological services, to ensure a smooth transition to MTG, and secure access to, and exploitation of, MTG satellite data and products

in support of the objectives of the Integrated African Strategy on Meteorology (Weather and Climate Services), and in line with the African Space Policy and strategy".

It also encourages the creation of an African Meteorological Satellite Applications Facility (AMSAF) to generate tailored products that meet specific regional needs.

Conscious of the role of satellites in monitoring weather and climate, the AMCOMET Cairo Ministerial Declaration, signed in February 2019, endorsed the Abidjan Declaration and supported the creation of the AMSAF. The transition from MSG to MTG and the establishment of an African Meteorological Satellite Applications Facility are explicitly mentioned in the Integrated African Strategy on Meteorology.



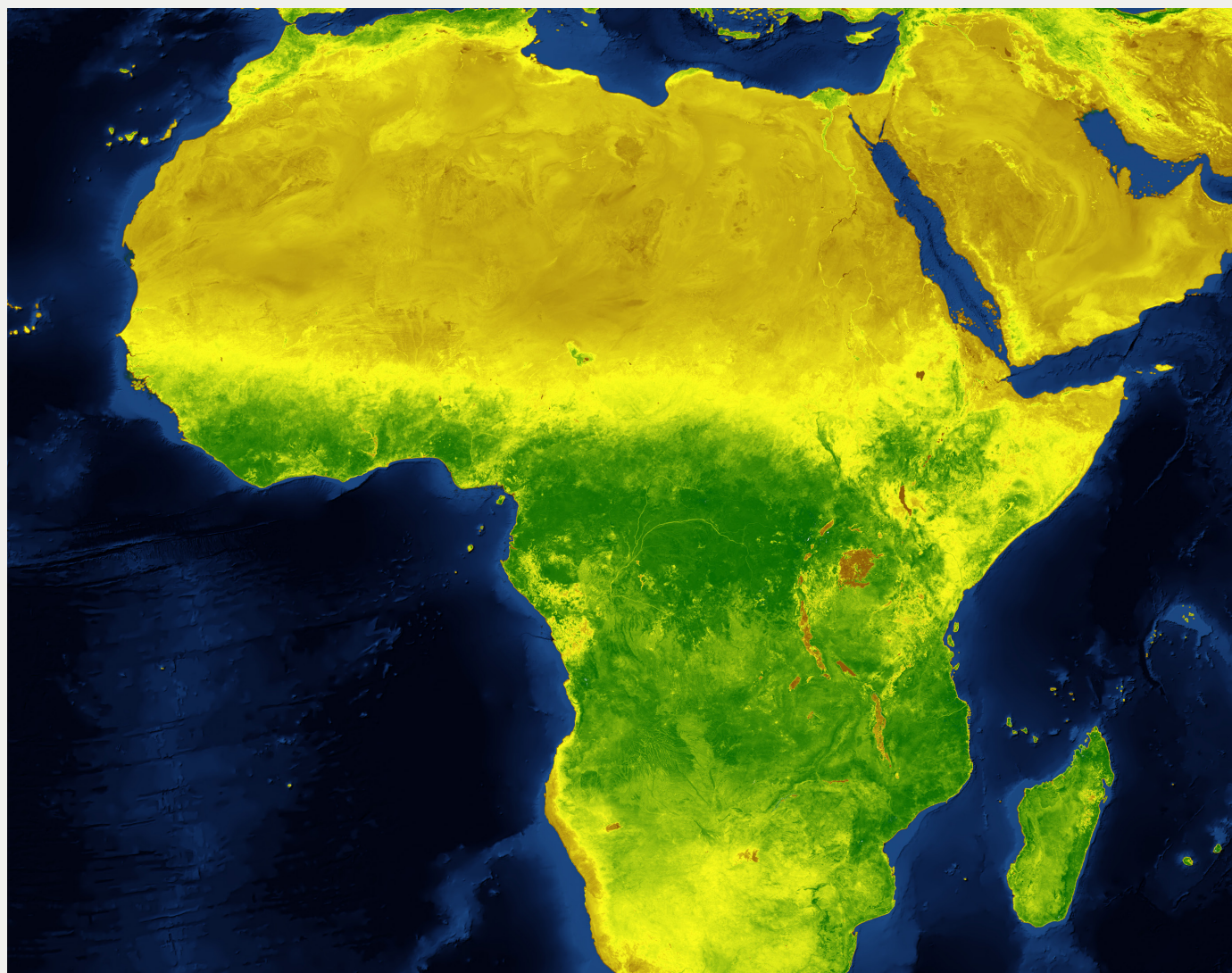
The launch of the first of the next-generation Meteosat satellites in 2022 will feature a celebration of the strong links between EUMETSAT and Africa. EUMETSAT, Arianespace and African Artists for Development have joined forces to make it a launch to remember through the African Space Art Project!

The Arianespace rocket launching MTG-I1 into orbit will be decorated with a unique artwork by an African artist on its fairing.

Supporting joint EU-Africa initiatives

To maximise the benefits of its involvement in projects in Africa, EUMETSAT is linking its activities to existing initiatives related to weather, the climate and environmental monitoring. Through the Joint Africa-EU Strategy, EUMETSAT is involved in several major initiatives: “GMES and Africa”, which aims to strengthen cooperation on Earth observation between Europe and Africa; ClimSA, which supports the implementation of climate services in the African, Caribbean and Pacific regions; and SAWIDRA, which supports early warnings for disaster resilience on the continent.

Below: Normalised Difference Vegetation Index image of the African continent, which is used to monitor changes in, for example, vegetation cover, droughts and desertification. (Source: VGT-VITO)





The GMES and Africa initiative: cooperation between Europe and Africa on Earth observation

The aim of the Global Monitoring for Environment and Security in Africa (GMES and Africa) initiative is to strengthen and further develop infrastructure for exploitation of Earth observation data (from space and in-situ), technologies and services in support of environmental policies for sustainable development in Africa.

The initiative is the flagship of the EU-AU partnership on space, and was launched by the Maputo Declaration in October 2006. In December 2007, during the EU-Africa Summit in Portugal, "The Lisbon Process on GMES and Africa" was approved. The European Commission adopted the "Action Document for the GMES and Africa Support Programme" in November 2015, committing a budget of €26.5 million for its first phase and €25 million in 2020 for its second phase.

The GMES and Africa Support Programme focuses on two main services:

- the monitoring and management of marine and coastal environments ("marine service");
- the management of water resources and natural resources ("land service").

The use of space-based technologies in GMES and Africa makes EUMETSAT satellite data, expertise and infrastructure great assets. The action plan provides continuity and builds on the achievements of previous projects undertaken since 2001, while expanding the geographical scope to northern Africa.

Climate services in the African, Caribbean and Pacific regions

The ClimSA programme contributes to progress on UN sustainable development goal 13, "take urgent action to combat climate change and its impacts". The specific objective is "to support the climate information services value chain with technical assistance, financial assistance, infrastructure and capacity building to improve access to and use of climate information, and to enable and encourage the generation and use of climate services and applications for decision making processes at all levels". Under this programme, regional climate centres that have not already done so will reach the necessary operational capacities to become WMO-certified, and operational climate services will be delivered in support of policy sectors across the regions.

Under the UN Global Framework for Climate Services (GFCS), climate services include the timely production, translation, provision and use of climate data, information and knowledge for informed societal decision making regarding climate risks.

In 2012, the Organisation of African, Caribbean and Pacific States Secretariat, the African Union Commission and regional economic communities convened in Addis Ababa and agreed to join forces for the implementation of the GFCS in Africa. In 2016, the "Intra-ACP Cooperation Strategy" included an explicit priority action to support the development of climate services and related applications in the African, Caribbean and Pacific regions, while strengthening the capacities of regional climate centres". A budget of €85 million was allocated to this priority.

The programme is implemented through regional climate centres under the overall coordination of the Organisation of the ACP States. The African Union Commission coordinates activities at continental level in Africa, including the deployment of key infrastructure to access, process and exploit climate data made available by international partners, such as EUMETSAT and the Copernicus Climate Change Service. EUMETSAT will contribute through the provision of climate data and products, training, and supporting the related infrastructure.



“Through various programmes, our member states obtain critical data and information from EUMETSAT. The added-value services developed from these data allow policy and decision makers to improve the performance of climate and weather sensitive sectors such as agriculture, environment, fisheries, transportation, among others. We cherish the fruitful and long-term partnership that the African Union has with the European Union and EUMETSAT.”

H.E. Ambassador Josefa Leonel Correia Sacko

Commissioner for Agriculture, Rural Development,
Blue Economy and Sustainable Environment
African Union Commission

The Satellite and Weather Information for Disaster Resilience in Africa programme

The African Centre for Meteorological Applications for Development (ACMAD) implemented the Satellite and Weather Information for Disaster Resilience in Africa (SAWIDRA) project to strengthen resilience in sub-Saharan Africa to the impacts of climate change and natural disasters.

The aim is to “improve core capacities of specialised national and regional climate centres, to meet the needs of disaster risk management agencies and socio-economic sectors for effective use of weather and climate services and community-focused and real-time early warning systems”, in line with the ACP-EU Programme on Disaster Risk Reduction.

Five SAWIDRA projects are implemented under the African Development Bank’s ClimDev-Africa Special Fund. The specific aim of these SAWIDRA projects is to improve the capacity of regional climate centres and national meteorological and hydrological services to produce tailored climate and weather information services to disaster risk management agencies for use in early warnings.

As a major achievement, the SAWIDRA-continental project, implemented by ACMAD, installed the Regional Advanced Retransmission Service network (RARS-Africa) composed of four ground stations. This ensures operational access to data from polar-orbiting meteorological satellites, and allows African centres to ingest the data into regional numerical weather prediction models, and potentially for other applications (agriculture, water management, etc).

Another achievement was the establishment of a first team in the Central Africa Regional Climate Centre, and procurement of their basic meteorological and climate infrastructure.

EUMETSAT mainly contributed to SAWIDRA through the provision of technical specifications and expertise for the establishment of the RARS-Africa. It also made data freely available.



Top: This Regional Advanced Retransmission Service (RARS) satellite on the premises of the South African National Space Agency is one of four on the continent enabling the African meteorological community to access data from EUMETSAT's polar-orbiting Metop satellites.

Earth observation in Africa – achievements over the past 20 years

Through close cooperation between the European Commission, African regional economic communities, the Organisation of African, Caribbean and Pacific States Secretariat, the African Union Commission and EUMETSAT, successive projects have improved African countries' access to Earth observation data. The focus of the initial project was to provide access to satellite data for weather forecasting. The subsequent projects addressed provision of data for climate and environmental monitoring.



"Thanks to the PUMA stations, African NMHS can access EUMETSAT data and key meteorological information such as forecast model outputs. This allows the production of improved weather forecasts for our population."

Daouda Konate

President of WMO Regional Association I (Africa)

PUMA: paving the way (2001-2006)

The Preparation for the Use of MSG in Africa initiative (PUMA) was the first pan-African technology project focusing on Earth observation. It was funded by the European Union and has significantly enhanced weather forecasting capabilities across the continent.

Key achievements:

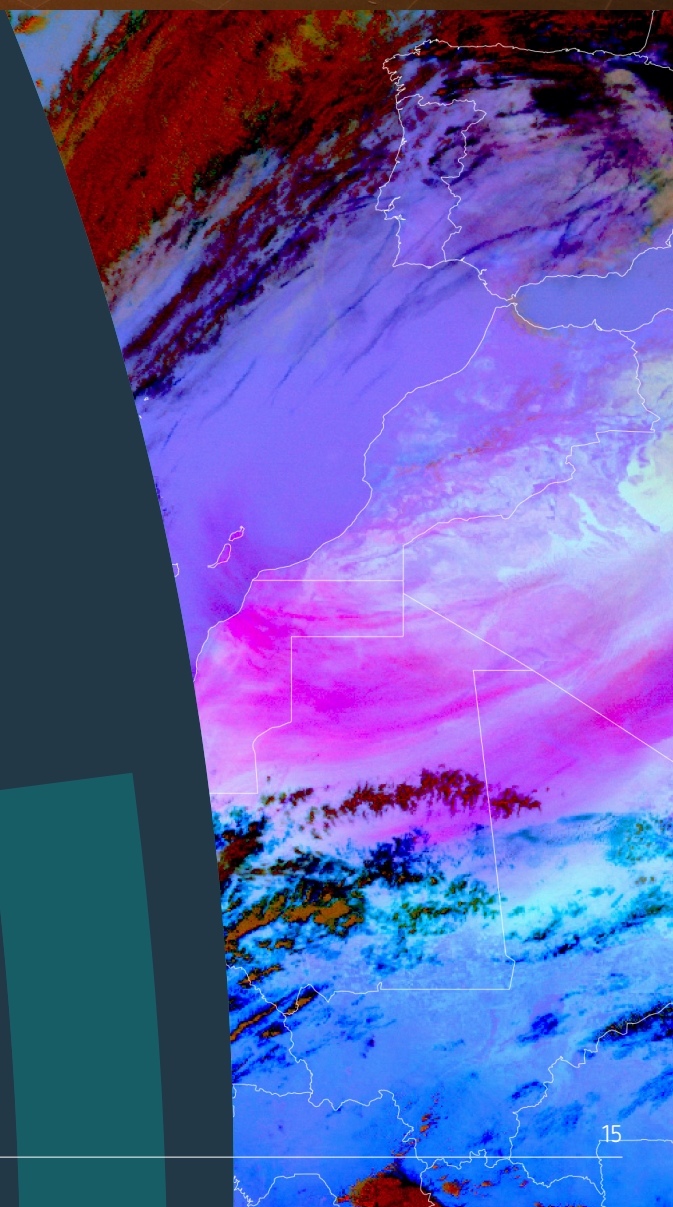
- 51 EUMETCast stations (PUMA stations) and four regional centres were deployed in 47 sub-Saharan countries to ensure operational and real-time access to meteorological observations and products;
- five PUMA stations were deployed for the national meteorological and hydrological services in northern African countries and South Africa;
- more than 350 staff from African national meteorological and hydrological services received training;
- training sessions were conducted in Nairobi, Niamey and Pretoria;
- six pilot projects were launched to foster the use of Meteosat-8 data and products for non-meteorological purposes.



Dust Storm Africa

Satellite:	Metosat-11
Location:	0° Longitude
Date:	15 February 2021

A major dust outbreak over west Africa, which affected the weather in the Canary Islands can be seen in the Dust RGB product. The image shows the outbreak of dust (pink) from a large number of dust sources located in Algeria and Mauritania (so-called dust hot spots), with the biggest source in Algeria, northwest of the Hoggar mountains.



Top: A man covers his face during a sandstorm near the River Nile in Cairo, Egypt 16 January 2019 (source: Reuters)

AMESD: supporting sustainable development (2006-2013)

The African Monitoring of Environment for Sustainable Development (AMESD) programme, financed by the 9th European Development Fund, took PUMA a stage further by significantly extending the use of remote sensing data for environmental and climate monitoring applications.

By extending the operational use of Earth observation technologies and data from meteorological to environmental and climate applications, AMESD enabled African national and regional institutions, as well as the continent's national meteorological and hydrological services, to provide decision makers with the information needed to manage the environment more effectively and ensure long-term sustainable development.

Key achievements:

- installation of 107 EUMETCast stations (57 AMESD stations and 50 PUMA 2010 stations) in 47 sub-Saharan African countries to ensure operational access to Earth observation data;
- equipment of four training centres, enabling the AMESD continental training sessions and continuous training on Earth observation, including satellite meteorology;
- training of more than 1,000 African experts through more than 80 training sessions, which has created a critical mass of technicians with skills in station maintenance and operation, Earth observation data and data processing, satellite meteorology, e-Station software suite, and production of an environmental monitoring bulletin;
- training of 60 African experts as trainers to carry out training sessions at national level;
- production of 12 regional environmental services by the five regional implementation centres, as well as three AMESD continental bulletins;
- the organisation of two AMESD forums and a policy workshop that contributed to creating frameworks for the use of satellite data in support of policy and decision making.

MESA: monitoring environment in Africa (2012-2018)

The Monitoring of Environment and Security in Africa programme (MESA) built on the results of the PUMA and AMESD projects and was a first contribution to the GMES and Africa and ClimDev-Africa initiatives of the Joint Africa-EU Strategy. MESA aimed to consolidate and widen the operational environmental services developed in AMESD, and to add new services, such as African climate services.

The purpose of the MESA project was “to increase the information management, decision-making and planning capacity of African continental, regional and national institutions mandated for environment, climate, food security and related responsibilities by enhancing access to and exploitation of relevant Earth observation applications in Africa”.

The MESA programme comprised three main elements:

- support for meteorological services (with the upgrade of PUMA stations and associated training);
- support for environmental services (implemented through regional centres);
- support for climate services (a €2.5 million grant to ACMAD was fully dedicated to these services).

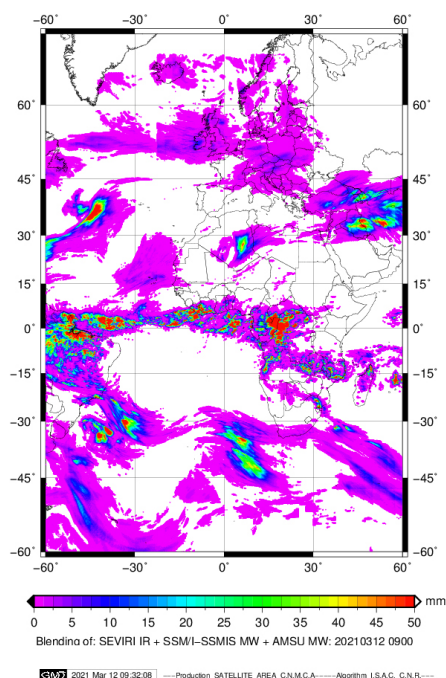
MESA key achievements:

- 2,250 African experts trained;
- 195 EUMETCast stations deployed or upgraded in 49 countries;
- 130 African trainers trained;
- 50 classroom training courses (including six train-the-trainers sessions);
- 43 distance education courses conducted;
- 18 environmental and climate services operational at regional level;
- 12 south-south transfer of know-how and services between regional centres;
- eight technical expert meetings and seven steering committee meetings;
- five continental bulletins on the state of the environment in Africa for decision makers;
- four training centres fully equipped;
- two MESA Forums and two policy dialogue workshops.



EUMETSAT H SAF P-AC-SEVIRI

Accumulated Precipitation in the previous 24 hours



The Satellite Application Facility on Operational Hydrology and Water Management product showing accumulated precipitation over Africa for a 24-hour period 11-12 March 2021
(Source: H SAF)

Overview - EUMETSAT's role in supporting PUMA, AMESD and MESA

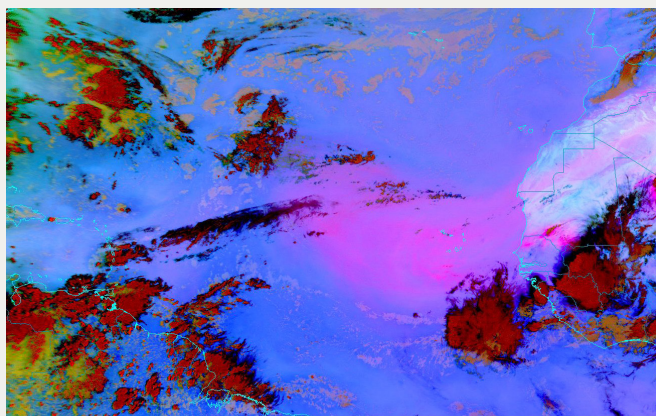
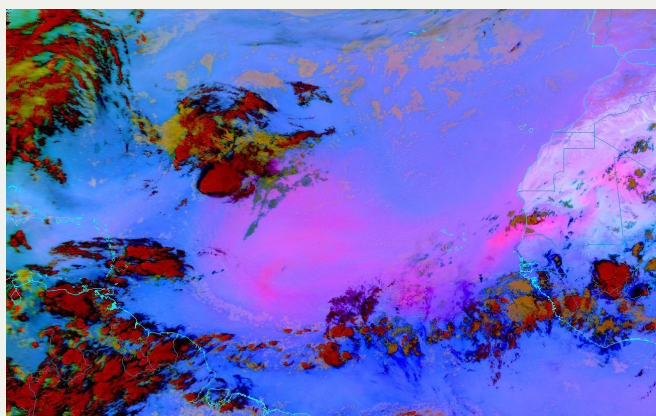
EUMETSAT's contribution was fundamental to the success of the MESA, PUMA and AMESD projects. It encompassed the following:

- the continuous supply of its satellite data and products via the EUMETCast dissemination service;
- the dissemination via EUMETCast of additional meteorological and environmental information;
- support for the maintenance and upgrading of receiving stations and equipment;
- coordination with its training programmes for African national meteorological and hydrological services personnel;
- participation in and contribution to the committee in charge of supervising the project; and
- an opportunity, through its biennial African User Forum and other workshops, for the African user community to meet, discuss and exchange information about the activities of the project.

Top: Meteosat data are made available to users through hundreds of EUMETCast stations deployed across the African continent under projects (PUMA, AMESD, and MESA) established in cooperation with the African Union Commission and the European Development Fund.

EUMETSAT's own activities in Africa

EUMETSAT's activities in Africa focus on providing real-time satellite data and other meteorological and environmental information via EUMETCast, providing training on how to get the most out of the data, and working closely with users through the EUMETSAT Help Desk and biennial user forums. These activities benefit from information produced across the European meteorological infrastructure and by other operators in Europe and Africa.



Meteosat-11 red-green-blue images showing a dust storm off the coast of western Africa, 18-21 June 2020

For more than two decades, EUMETSAT has undertaken activities supporting the organisation's strategic objectives relating to Africa. These activities continue to make a key contribution within the framework of the WMO and Joint Africa-EU strategies.

The activities implemented by EUMETSAT directly or through various projects and initiatives include:

- satellite data coverage of Africa ensured with an appropriate data policy;
- real-time data access for African users via EUMETCast/GEONETCast;
- provision of training to strengthen capacity to exploit satellite data;
- maintaining close links with African users (biennial user forum in Africa, EUMETSAT Help Desk).

The impact of EUMETCast

EUMETSAT's data dissemination system, EUMETCast, delivers data and products to users through inexpensive reception stations. It is the organisation's contribution to GEONETCast, a global network of satellite data dissemination systems, and to the Integrated Global Data Dissemination Service, a component of the World Meteorological Organization Information Service.

Through EUMETCast-Africa, the African component of GEONETCast, all African users have real-time access to a wide variety of satellite data, including WMO basic data, forecast data from the European Centre for Medium-Range Weather Forecasts and the national meteorological services of EUMETSAT Member States, and environmental data from the Group for Earth Observation, distributed by various data providers such as VITO, South Africa, for example.

One of the strengths of the EUMETCast system is its simple user infrastructure and the resulting low cost of obtaining high-quality data. It requires a single receiving station using off-the-shelf components. Currently, about 400 EUMETCast stations are in operation throughout Africa.

Alternative mechanisms to access EUMETSAT data include EUMETCast Terrestrial and cloud computing services.

EUMETCast Terrestrial

EUMETCast Terrestrial delivers satellite data and products in near-real time by using a terrestrial network rather than a satellite one. The network used is the National Research and Education Network (NREN), in combination with Europe's GEANT e-infrastructure. NREN organisations are committed to furthering the development of research and educational communities within their countries by providing high-quality, specialised network connectivity.

The AfricaConnect programme, which is funded by the EU, links GEANT and NREN in Africa. The primary objective of the AfricaConnect project is to support the creation, continued development and use of advanced and consistent internet connectivity within Africa's teaching, learning and research communities. The AfricaConnect-GEANT link enables users in Africa to access weather, climate and environmental data through EUMETCast Terrestrial.



Cloud computing

EUMETSAT established cloud computing services to allow users not only to access data, but also to process them remotely. These services include the European Weather Cloud (EWC), focusing on the meteorological and climate community, and the Copernicus Data and Information Access Service, WEkEO.

Cloud computing technology is becoming increasingly accessible in Africa in various domains. These services will be an important alternative for African users who cannot download and store large volumes of satellite data, but want to create their own products, running their own algorithms, based on these data. A growing number of African data users are participating in training related to the use of cloud computing services to access and process Earth observation data.

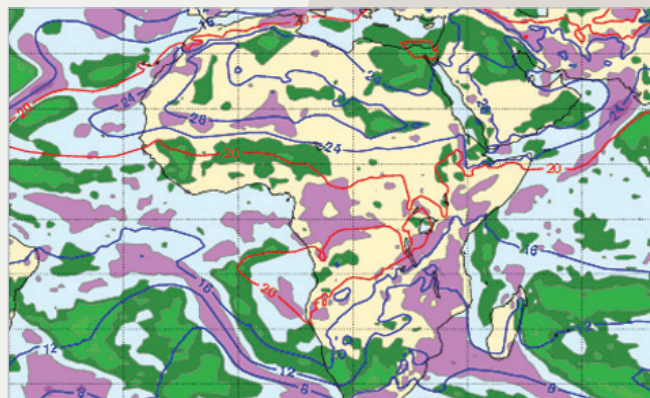
European Weather Cloud

The European Centre for Medium-Range Weather Forecasts and EUMETSAT have joined forces to set up a distributed cloud computing infrastructure, the European Weather Cloud, to serve its community of users. It delivers data access and cloud-based processing capabilities for the ECMWF, EUMETSAT, and the National Meteorological Services of their member states and data users.

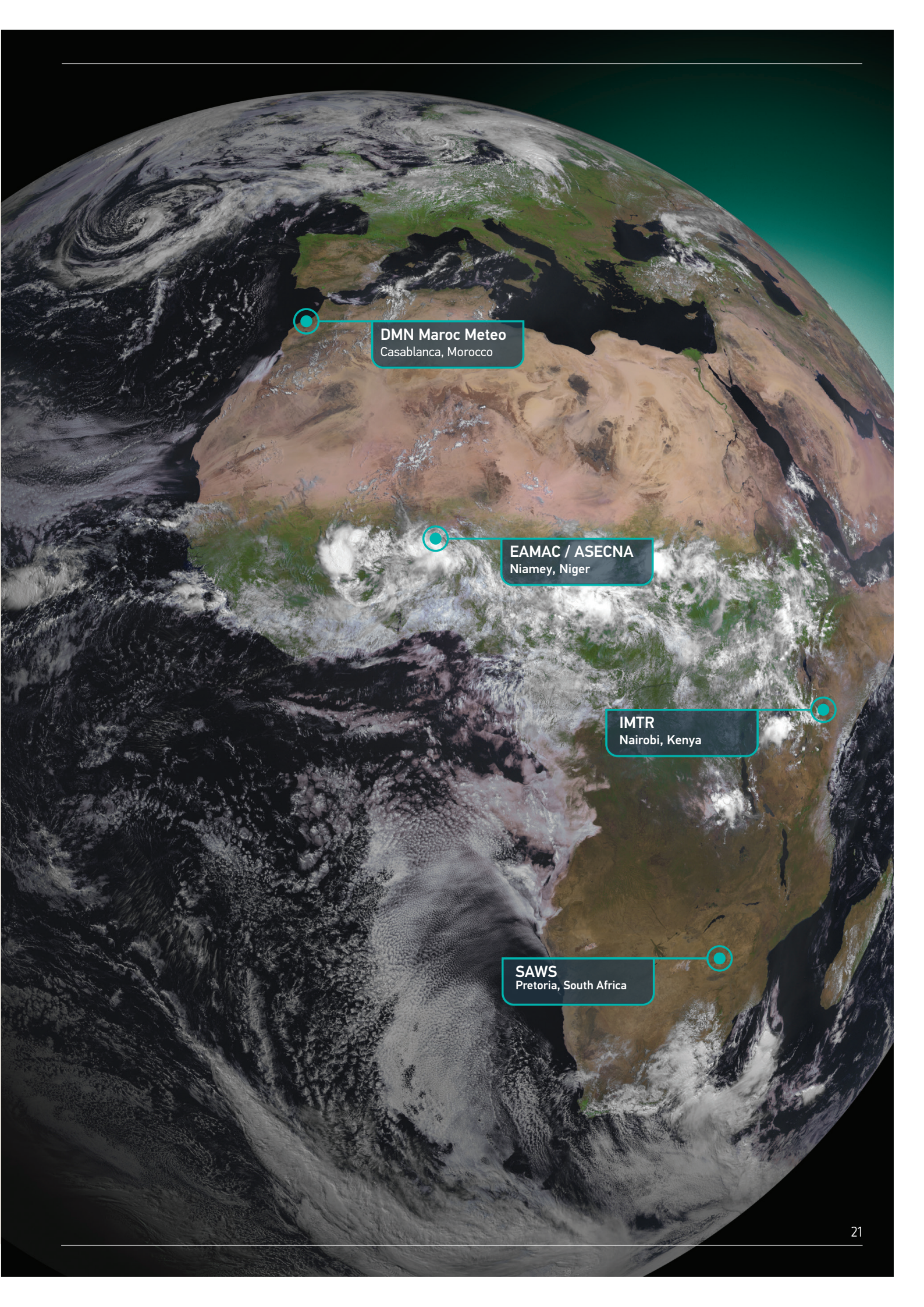
WEkEO

WEkEO is the European Union's Copernicus Data and Information Access Service (DIAS) reference service for environmental data, virtual environments for data processing and skilled user support. WEkEO is a joint EUMETSAT, ECMWF, Mercator Ocean International and European Environment Agency initiative.

WEkEO's strength is its distributed infrastructure. Infrastructure and data from the partners are not duplicated but linked together, reducing costs for the European taxpayer and avoiding the need for new energy-consuming equipment. This approach gives users direct access to the most up-to-date Copernicus data. The federative approach can be extended to other external partners, providing potential for future growth and expansion.



Example of an ECMWF model output disseminated through EUMETCast (five-day temperature forecast)



DMN Maroc Meteo
Casablanca, Morocco

EAMAC / ASECNA
Niamey, Niger

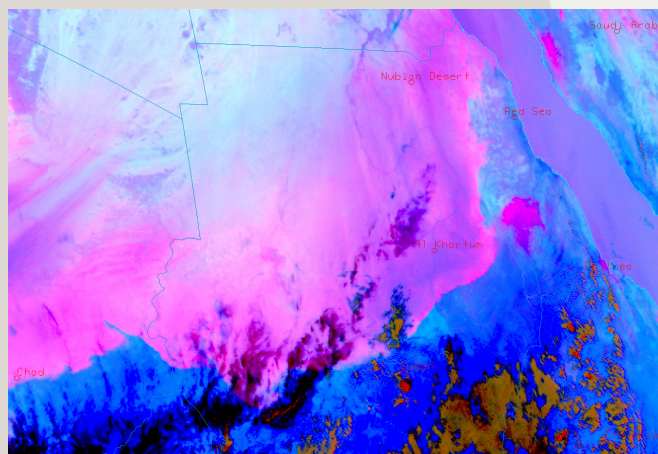
IMTR
Nairobi, Kenya

SAWS
Pretoria, South Africa

Training

Regular training in satellite meteorology is provided through cooperation with training centres in Niger, Morocco, Kenya and South Africa, which are all recognised as centres of excellence by the WMO. Hundreds of African meteorologists and environmental scientists are trained each year in these centres on the use of Earth observation data for meteorological and climate applications.

EUMETSAT also contributes to training organised by other institutions by providing materials, trainers, data and expertise.



Meteosat-10 red-green-blue image over Sudan shows an example of a clash of two air masses: dry, dusty Saharan air against warm, very moist, tropical air

Advancing the application of satellite products through research

Research and development projects aiming to explore the potential use of Earth observation data in Africa and facilitating access to data and products for scientists and researchers are underway.

These projects, funded by the European Commission Framework Programme for Research (H2020), provide a platform for technical exchange between EUMETSAT and its potential and enlarged user community in Africa.



Training session at the South African Weather Service, Pretoria, South Africa

*Right: Fruit packers fill boxes with peaches at Epping Market near Cape Town, South Africa
20 January 2020
(source: Reuters)*

Engagement with users

African national meteorological and hydrological services (NMHS) are the direct beneficiaries of EUMETSAT activities in Africa. EUMETSAT maintains frequent contact with this community, either directly or through the WMO. African NMHS are also involved in specific activities such as training, the biennial user forum and the Expert Group for EUMETCast Data Dissemination.

Ensuring close links with African users: user forum, RAIDEG and help desk

Maintaining close links with users all over the world is a high priority for EUMETSAT. In the case of Africa, this means not only day-to-day support provided by the EUMETSAT Help Desk, but also the organisation of a biennial user forum in Africa. Typically, about 150 participants, from all African countries and Europe, attend this forum. The RA-I Dissemination Expert Group (RAIDEG) was established by the WMO in cooperation with EUMETSAT, and is part of the strategy to improve access to satellite data and user awareness in developing countries.



Cooperation with regional technical centres

In support of policies relating to issues such as agriculture, desertification, food security and water management, EUMETSAT has established close cooperation with African regional technical centres with the mandate to undertake weather, climate and environmental monitoring.

These include:

- the African Centre for Meteorological Applications for Development (ACMAD) which contributes to the sustainable development of African socio-economic sectors through the use of information related to weather, climate and the environment as resources for development;
- the Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle (AGRHYMET), a specialised institution of the Permanent Inter-State Committee for Drought Control in the Sahel with the mission of promoting information and training related to food security, desertification control and the management of natural and water resources;
- the Intergovernmental Authority on Development Climate Prediction and Applications Centre, the Southern African Development Community Climate Service Centre, and the Climate Application and Prediction Centre for Central Africa. These institutions are mandated to provide climate and seasonal forecasting services in their respective regions.

Cooperative training activities

EUMETSAT cooperates with four African WMO Centres of Excellence on training in satellite meteorology

- the Direction de la Météorologie Nationale, in Casablanca, Morocco;
- the Ecole Africaine de la Météorologie et de l'Aviation Civile of the Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar, in Niamey, Niger;
- the Institute for Meteorological Training and Research in Nairobi, Kenya; and
- the South African Weather Service training centre in Pretoria, South Africa.

Cooperation with policy institutions

EUMETSAT works with African policy institutions providing input for projects and initiatives and ensuring they are properly aligned with national, regional and continental policies:

- the African Union Commission, which is the executive and administrative branch of the African Union;
- the African regional economic communities and the Secretariat of the Organisation of African, Caribbean and Pacific States; and
- the African Development Bank.





Eumetsat-Allee 1
64295 Darmstadt
Germany
Tel: +49 6151 807 3660/3770
Email: press@eumetsat.int
www.eumetsat.int

