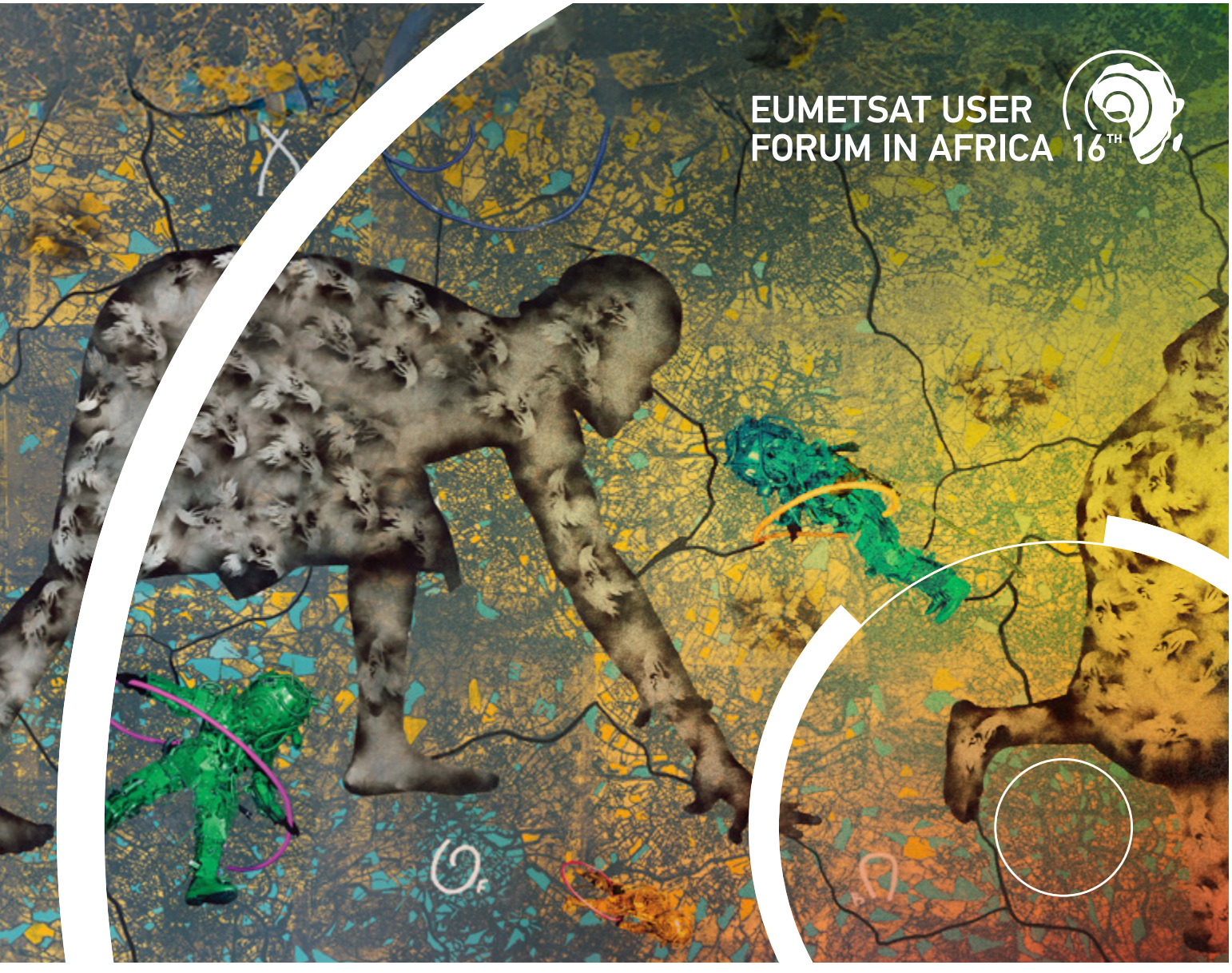
EUMETSAT

Report of the 16th EUMETSAT User Forum in Africa

16-20 September 2024, Cotonou, Benin.

Monitoring weather and climate from space



REPORT OF THE 16TH EUMETSAT USER FORUM IN AFRICA

Organised by EUMETSAT in collaboration with the Météo-Benin, under the Ministry for Living Environment, Transportation responsible for the Sustainable Development of the Republic of Benin

Palais des Congrès, Cotonou, Republic of Benin
16-20 September 2024

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EUM P.69
ISSN 1024-8587
ISBN 978-92-9110-115-3

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INTRODUCTION

The 16th EUMETSAT User Forum in Africa was organised in Cotonou, Republic of Benin, organised with Météo-Benin, under the Ministry for Living Environment, Transportation responsible for Sustainable Development of the Republic of Benin.

The Forum was held from 16 to 20 September 2024 with some 150 participants representing 51 countries, of which 46 were African. This event also comprises Technical sessions organised online prior the Forum the 5th and 6th of June 2024.

The purpose of the EUMETSAT User Forum in Africa is to sustain the well-established dialogue between EUMETSAT and the African user community, in particular the National Meteorological Services and their regional centres, and to provide a platform for these users to discuss about the access and use of EUMETSAT and other satellite data across various applications areas. The overall objective is to facilitate the impact of meteorological satellite data across the continent on sustainable development.

The programme for the Plenary sessions of the 16th EUMETSAT User Forum in Africa included an opening Ceremony, seven plenary sessions, a technical visit, an exhibition area, and a closing ceremony. The Forum provided an opportunity to identify actions and initiatives that EUMETSAT and its partners could undertake to meet the requirements of African users. These actions are captured in the fourteen recommendations included in this report.

Participants

The Plenary sessions of the Forum were attended by representatives of African National Meteorological and Hydrological Services and specialised regional institutions for Meteorology, Climate and Environment. Regional policy institutions were also represented, notably representatives of several Regional Economic Communities, the African Union Commission, the African Space Agency, and the African Ministerial Conference on Meteorology.

In addition to Meteo-Benin and the Ministry for Living Environment, Transportation responsible for the Sustainable Development of the Republic of Benin, several institutions and associations from Benin were represented such as the Institut de Recherche Halieutique et Océanographique du Bénin, the University of Abomey-Calavi and the Sirius Space Association.

Representatives from various European and International institutions took part in the Forum, including the European Commission, the European Centre for Medium-Range Weather Forecasts, European meteorological services, representatives of EUMETSAT Satellite Application Facility (SAFs) and the World Meteorological Organisation. Research institutions from Africa and Europe were also present.

The list of all participants in the plenary sessions is provided in Annex.

OVERVIEW OF THE FORUM

During the Opening Ceremony of the 16th EUMETSAT User Forum in Africa (EUFA), welcome remarks and speeches were delivered by H.E. Sédiko Douka, Commissioner of Infrastructure, Energy, and Digitalization of the ECOWAS Commission; H.E. Tidiane Ouattara, President of the African Space Council of the African Space Agency; Phil Evans, Director General of EUMETSAT; M. Joel Neubert, the representative of the EU Delegation to the Republic of Benin; and H.E José Tonato, the Minister for Living Environment and Transportation responsible for Sustainable Development in the Republic of Benin. These speeches are included in the annex of this report.

The Opening Ceremony was preceded by a report of the main outcomes of the 16th EUFA technical sessions, held online on June 5th and 6th, 2024. As well as, Working Groups sessions around two topics: one on the deployment and training for the PUMA-2025 and ClimSA stations, and the other on EUMETSAT training.

Following the Opening Ceremony, an Introductory Session provided an opportunity to present the status of two African continental strategies: the African Space Policy and Strategy, including the role of the African Space Agency, and the revised Integrated African Strategy on Meteorology (Weather and Climate Services). Together with the Joint EU-Africa Strategy and the EUMETSAT Strategy "Destination 2030", these constitute the main policy framework for EUMETSAT's cooperation with Africa.

The plenary sessions provided participants with information, opportunities for discussion and feedback on EUMETSAT programmes, data access and training activities. A session was specifically dedicated to demonstrate the new PUMA-2025 and ClimSA stations that were under deployment at the time of the Forum.

The programme included sessions on key topics such as Space for Early Warning, the African Meteorological Satellite Application Facility (AMSAF), and the use of Earth Observation for Hydrology, Agrometeorology, Blue Economy and Climate, Air Quality and Greenhouse Gases monitoring. These sessions included presentations on the implementation status and outcomes of EU-funded African Capacity Building Programme projects such as the Intra-ACP ClimSA and GMES&Africa projects as well as the upcoming Space in support to Early Warning System (SEWA) project.

This report provides a detailed summary of all sessions, presentations, recommendations and discussions held during the 16th EUMETSAT User Forum in Africa. Presentations and speeches from the Plenary and online Technical sessions are available on the Forum website (https://ufa.eumetsat.int/).

Météo-Benin organised a technical tour, which was well-attended and included visits to the Glo-Djigbé industrial Zone and the Temple of Pythons in Ouidah.

Cotonou declaration on the use of Satellite data for the monitoring of Greenhouse Gas and Air Quality in Africa

A High-level event on the on the use of Satellite data for the monitoring of Greenhouse Gas and Air Quality in Africa took place on the Monday 16th September 2024. This event was opened by Pr. Constant Houdenou, Advisor representing H.E. José Tonato, Minister of Living Environment and Transport, responsible for Sustainable Development of the Republic of Benin, with the participation of H.E. Sédiko Douka, ECOWAS Commissioner for Infrastructure, Energy and Digitalization, H.E Tidiane Ouattara, the President of the African Space Council of the African Space Agency and Dr Jolly Wasambo, representative of the Department of Agriculture, Rural Development, Blue Economy, and Sustainable Environment of the African Union Commission and representatives of the SADC, IGAD, ACMAD, ECCAS. The WMO, EU and EUMETSAT also attended the event.

This high-level event featured a presentation from EUMETSAT on current and upcoming satellites supporting GHG and air quality monitoring in Africa, as well as a presentation from ACMAD showcasing the current use of satellite data for monitoring atmospheric composition to help prevent meningitis in the Sahel region.

The Cotonou declaration was presented at the end of the event. The declaration was signed by the Minister of Living Environment and Transport, responsible for Sustainable Development of the Republic of Benin, the ECOWAS Commissioner for Infrastructure, Energy and Digitalization, the President of the African Space Council of the African Space Agency and later by the African Union Commissioner for Agriculture, Rural Development, Blue Economy, and Sustainable Environment and the President of the AMCOMET Bureau.

A copy of the Cotonou Declaration is annexed to this report.

The African Space Art Project (ASAP)

On Monday 16th September, Jean-David Nkot, the Ministry of Tourism, Culture and Arts of the Republic of Benin and EUMETSAT presented the Artwork produced by the African Artists of the N.E.T collective (Jean David Nkot, Michel Ekeba and Géraldine Tobe) under the African Space Art Project (ASAP).

The African Space Art Project programme (ASAP) has been conceived in 2017 by the African Artists for Development (AAD-Fund) in partnership with EUMETSAT and Arianespace. Together, they have decided to cover the fairy payload of Ariane 5 with the image of a piece of art created by an African Contemporary Artist to celebrate the launch of the 1st Meteosat Third Generation satellite, which has been launched in December 2022. This satellite will contribute to meteorological observation of the African continent for the next 20 years.payload fairing of the Ariane 5 rocket.

The Artwork, *Memory of today, Memory of the future*, is a monumental canvas that evokes the Africa of yesterday and today committed to a common future. With the collective N.E.T, it is the whole continent that is projected in this canvas.This work reminds us how much the earth and space are in fusion and live together.

Memory of today, Memory of the future by the N.E.T collective

Online Technical sessions

The Forum has been preceded by Technical sessions organised the 5th and 6th June 2024 online. These sessions consisted of one Introductory session, and 4 Technical Sessions on *#1 EUMETSAT Data access and training*, *#2 Space in support to Early Warning System (MTG-AMSAF)*, *#3 Meteosat Third Generation in Africa* with a focus on the new PUMA-2025 stations deployment and *#4 Climate monitoring* with a focus on the new ClimSA Stations deployment.

These sessions allowed experts from African NMHS and Regional Centres to exchange on these topics. All sessions were organised around one to three keynote presentation(s) in plenary and in a splinter group session (5 groups based on Topics and or by African Region). More than 120 Experts participated for these 2 days sessions. The main outcomes of each technical session have been presented during the Plenary session during the Introduction to the 16-EUFA in the Monday morning.

The Plenary Sessions

The full programme of the Forum (Plenary and Online Technical sessions) is presented in Annex.

MAIN OUTCOMES

The Forum discussed the status of implementation of the **Roadmap for the transition from MSG to MTG in Africa** endorsed during the 13th EUFA and supported politically through the Abidjan and Dar-es-Salaam Declarations.

- **Meteosat Third Generation (MTG) is now a reality in Africa**:
  - The first MTG-I data are now available via EUMETCast-Africa, marking a major milestone for satellite meteorology in Africa.
  - The first PUMA-2025 receiving stations have been installed, including at Météo-Benin during the Forum. National Meteorological Services (NMS) know about the deployment schedule for their station and associated training.
  - While waiting for PUMA-2025 installations, users can access MTG data through EUMETView. All users are encouraged to engage with their National Research&Education Network (NREN) to establish a EUMETCast-Terrestrial connection for access to all MTG data.

- **A new "Space for Early Warning in Africa" project is coming:**
  - The European Commission and African Union Commission presented sketch of a new "Space for Early Warning in Africa" project. This initiative will further support the MTG transition, maintain RARS Africa stations, and establish AMSAF Nowcasting (AMSAF-NWC) in each African region.
  - Participants discussed the needs, gaps and processes for setting-up AMSAF-Nowcasting in their region. EUMETSAT and its NWC SAF will engage with all regions to support these efforts.

- **Progress in Climate and Air Quality monitoring**
  - The Forum welcomed the Cotonou Declaration on the use of satellite data for monitoring Greenhouse Gases (GHG) and Air Quality in Africa.
  - The ClimSA station was demonstrated, and Regional Centres highlighted the climate services available in their regions. NMSs expressed strong interest in CM-SAF, H-SAF, and TAMSAT data.

- **Call to strengthen cooperation on EO for Hydrology**
  - River Basin Authorities (RBAs) highlighted the crucial role of EO in supporting their activities, especially given the lack of ground measurements and the vast extent of the large basins. RBAs discussed transition to MTG and leveraging on satellite data to enhance their operations. RBAs shared knowledge and experience on the use of EO in their Basin and encouraged coordination through AUC and AMCOW.

LIST OF RECOMMENDATIONS

The main recommendations of the Forum were presented at the end of the Forum, based on the inputs from the sessions rapporteurs and chairs. They were also submitted to all participants for comments directly after the Forum. All comments were included. The 14 recommendations are **arranged as follows:**

1. Data access and Training - recommendations #1 to #3
2. African Meteorological Satellite Application Facility – recommendations #4 to #6
3. Climate and Air Quality monitoring – recommendations #7 and #11
4. Earth Observation for Hydrology – recommendations #12 and #13
5. Blue economy - recommendation #14

MTG data access and training

#1 - PUMA-2025 and ClimSA Stations Deployment

The Forum acknowledged the progress made by the African Union Commission in deploying the PUMA-2025 and ClimSA Stations across Africa countries, as part of the EU-funded ClimSA programme. To streamline the installation process, the Forum recommended:

- Each NMHS to confirm their EUMETSAT Earth Observation Portal (EOP) Point of Contact;
- AUC to provide NMHS Director copy of the correspondence sent through the Ministry of Foreign Affairs, as well as the list of donated equipment to facilitate preparation of customs clearance;
- NMHSs Director to ensure availability of their IT personnel during the stations deployment and installation.

#2 - PUMA-2025 and ClimSA Stations Training

The Forum welcomed the Training Plan presented by the African Union Commission that will accompany the deployment of the PUMA-2025 and ClimSA Stations. The Forum recommended:

- AUC, in coordination with EUMETSAT, IMTR and EAMAC to continue cooperation to ensure that all NMHS can have at least 2 persons trained as system administrator for the PUMA-2025 and ClimSA stations, as well we at least 2 persons trained as users of the new PUMA-2025 station, in a timely manner;
- AUC, in coordination with JRC and RECs specialised centres (AGRHYMET, ICPAC, CAPC-AC, SADC-CSC) to continue cooperation to ensure that all NMHS can have at least 2 persons trained as users of the new ClimSA Climate station, in a timely manner.

#3 - EUMETCast -Terrestrial and EUMETView

The Forum noted that EUMETCAST-Terrestrial allows potentially access to all MTG data & products. The Forum recommended:

- NMHSs and Regional Centers to take benefits of the AFricaConnect project and engage with their NREN at national level to connect to EUMETCast-Terrestrial;
- NMHS to use EUMETView to visualize MTG data while the new PUMA-2025 are being deployed;
- EUMETSAT to continue assisting NMHS in engaging with NREN and in accessing training materials and information on EUMETView and EUMETCast-Terrestrial.

African Meteorological Satellite Application Facility (AMSAF)

#4 - Establishment of regional AMSAF-Nowcasting (generic)

The Forum noted the role of Regional Specialized Meteorological Centers (RSMCs) and REC's specialized centres (AGRHYMET, ICPAC, CAPC-AC, SADC-CSC) in supporting meteorological and climate services in their respective regions and in engaging with NMHS and regional users. The Forum recommended:

1. RSMCs and REC's centers to act as regional coordinator for the establishment of the AMSAF-Nowcasting in each region (Western, Central, Eastern, Southern incl. Indian Ocean);
2. RSMCs and REC's centers to engage with NMHSs to gather the needs, current capacities and gaps on the use of Nowcasting for Early Warning;
3. EUMETSAT and NWC SAF to share with regional AMSAF-NWC further technical information on the capacities necessary to run the NWC SAF software;
4. EUMETSAT and NWC SAF to engage with the RSMC and REC's centers in each region to support the process and identify the necessary activities and infrastructure to establish and operate a regional AMSAF-Nowcasting.

#5 - Establishment of regional AMSAF-Nowcasting (regional specific)

The Forum acknowledged the discussions that occurred during the regional Working Groups. Based on the outcomes of these working groups, the forum recommended:

1. Western Africa – ANACIM and AGRHYMET to engage with English speaking NMHS having experience with Nowcasting SAF in the region to ease knowledge transfer for English speaking countries;
2. Central Africa – While waiting for a RSMC to be designated for the region, CAPC-AC to coordinate the activities, in cooperation with the other RCC and RSMC, and universities;

3. Eastern Africa – KMD, TMA and ICPAC consider using the NWC-SAF for Polar Orbit, in connection with the RARS station operated by ICPAC;
4. Southern Africa – SAWS and SADC-CSC to ensure coverage of Indian Ocean islands states, taking into account their specific needs;
5. Northern Africa – NMHS to engage with WMO to initiate process for a RSMC for Northern Africa.

#6 – MyDewetra and Situation Rooms

The Forum recommended to CIMA to consider including MTG data&products into the MyDewetra platform, so that AMHEWAS Situation Rooms across the continent can benefit from the new products.

Climate and Air Quality monitoring

#7 – Cotonou Declaration

The Forum welcomed the Cotonou Declaration on Satellite Data for Monitoring Greenhouse Gas and Air Quality and encourage to signatories to ensure a streamlined implementation of the Declaration.

The Forum recommended that the AUC to establish the necessary partnerships to ensure the successful execution of this important initiative.

#8 – Training on Air Quality monitoring

The Forum recommended to EUMETSAT to further organise training events for Africa on space-based Air Quality monitoring and, in consultation with WMO and AUC, to consider promoting establishment of an African Training infrastructure on this topic (e.g. group of African trainers and institutions that can provide training).

#9 – Integration of CM-SAF Products and Tools into the ClimSA Station

The Forum noted with interest the availability of the Climate Monitoring SAF (CM-SAF) products and tools for climate data analysis over Africa. It also recognized the wide variety of datasets available in the ClimSA Station software.

The Forum recommended that EUMETSAT, the CM-SAF and the Joint Research Centre (JRC) collaborate to assess the feasibility of integrating CM-SAF products and tools into the ClimSA Station, enhancing the system's capability to deliver comprehensive space-based climate monitoring and analysis for African users.

#10 – Development of sub-seasonal climate services

The Forum recognized the importance of sub-seasonal forecasts for addressing critical sectors such as agriculture and enhancing Early Warning Systems (EWS) for riverine floods and other applications.

The Forum recommended that RECs specialized centres (e.g. RCC) and AUC to consider pursuing ClimSA efforts on developing services based on Sub-Seasonal Forecasting and consider reinforcing this aspect in a potential ClimSA follow-on activities.

#11 – Climate Agrometeorology

The Forum took note of the H-SAF and TAMSAT products and tools an the work done by the ClimSA partner in the area of agrometeorology. The Forum recommended:

- To ClimSA regional centre to consider to update/upgrade the existing agro-met platform at regional and national level (including the ClimSA stations) so that they can also benefit from the MTG, H-SAF and TAMSAT data;
- To agrometeorologists in NMHS to access on-line training material made available by the H-SAF and TAMSAT on their products for agriculture;
- To agrometeorologist in NMHS to access the Copernicus Climate Change Service (C3S) Climate Data Store platform, via their ClimSA station, and explore the numerous products available on this platform (seasonal forecasting, anomalies, etc).

Earth observation for Hydrology

#12 – Transition to MTG for Water Basin Authorities

The Forum recognized the critical role that River Basin Authorities play in managing water resources. It acknowledged that some of these authorities have been utilizing satellite data from Meteosat for essential operations and decision-making processes. The Forum recommended:

- River Basin Authorities (RBAs) and EUMETSAT to cooperate to facilitate the transition of RBAs to MTG, as well as strengthen use of H-SAF and TAMSAT data and products, in complement to ground observations;
- RBAs to engage with hydrologist at national level to create awareness on the PUMA-2025 and Climate stations, and encourage their use for hydrology applications;
- AUC to engage with AMCOW and RBAs in order to facilitate sharing of knowledge and experience on use of EO to support their respective mandate.

#13: Training and Calibration & Validation activities

The Forum recommended EUMETSAT and H-SAF to continue engaging with African institution for training and activities to strengthen Calibration & Validation of the EO hydrology products. in line with the outcome of the EO –Hydrology workshop from March 2024, co-organised by AUC and EUMETSAT.

Blue economy

#14 – GMES & Africa Marine and Coastal Services

The Forum acknowledged the progress made by the GMES & Africa marine and coastal services consortia in cooperating with meteorological services, especially for the safety-at-sea service. The Forum recommended to the two consortia to continue strengthen collaborations in order to extent the geographic coverage&impact of their services in more countries, and cooperate with NMHS when engaging with user communities at national level.

PLENARY SESSIONS REPORT

INTRODUCTION AND WORKING GROUP SESSIONS

1. Session purpose and Content

The session was organised into two parts. Following welcome messages by Didier Kakpa (DG Météo-Benin) and Phil Evant (DG EUMETSAT) and a review of the status of recommendations from the previous EUFA, the session continued with reports on key outcomes from the online technical sessions held on the 5th and 6th of June. Afterwards, participants split into working groups, with breakout sessions focused on addressing the new PUMA-2025 and Climate Stations, as well as EUMETSAT training.

2. Report of the 16-EUFA Technical sessions (05-06 June 2024, Online)

#1 EUMETSAT data access and training, Sarah Kimani (IMTR)

Session #1 focused on providing participants with an understanding of EUMETSAT's systems for accessing satellite data and related products. The session included presentations on EUMETView and the Data Store, which offer data visualization and download services. There was also an introduction to EUMETCast Terrestrial, a service that delivers satellite data through the NREN .

Training initiatives aimed at African meteorologists were discussed, highlighting efforts coordinated by VLab CoE within ASMET, with a particular focus on preparing for new capabilities related to the MTG. EAMAC presented updates on its satellite imagery analysis course and other training programs.

Contributions from the SAWS emphasized support for Early Warning for All (EW4All) and future uses of MTG data. In Morocco, VLab activities were geared towards maritime forecasting and precipitation monitoring. The session concluded with a Q&A, where participants raised questions about data access and integrating EUMETCast Terrestrial feeds with PUMA stations.

#2 Space in support to Early Warning System (MTG-AMSAF), Mariane Diop Kane (WMO)

Session #2 focused on the role of MTG and African Meteorological Satellite Application Facility (AMSAF), in supporting early warning systems for Africa. The session introduced the upcoming MTG-AMSAF project, which aims to transition Africa to next-generation satellite products and enhance meteorological capacities continent-wide, as outlined in the Abidjan Declaration.

Presentations emphasized the AMSAF concept, which aims to develop Africa-tailored satellite products that will initially focus on nowcasting to support NMHS.

Working groups discussed the current use of NWC SAF products for nowcasting and identified challenges such as the need for more training, improved data access, and the shift from forecasting to nowcasting. Participants stressed the importance of regional collaboration and engagement with social media and local broadcasting channels to improve early warning systems. Expectations from MTG's advanced capabilities were high.

#3 Meteosat Third Generation - PUMA stations deployment, Jolly Wasambo (AUC)

The session #3 outlined the architecture of the new hardware of the PUMA-2025 which will be installed at NMHSs, RCCs and RTCs across sub-Saharan Africa.

Training is a key component of the PUMA-2025 deployment, with plans to train IT administrators and forecasters on maintaining and utilizing the stations, including Training-of-the-Trainer sessions at IMTR in late 2024.

Working groups discussed deployment challenges, such as 5G interference and ensuring the continued operation of PUMA-2015 stations during the transition. There was a focus on the sustainability of the stations beyond their warranty period, and North African countries were urged to continue infrastructure upgrade discussions as they transition to MTG.

#4 Climate monitoring - ClimSA stations deployment, Ali Albani (ACMAD)

Session #4 provided an overview of the ClimSA Climate Station, developed by the Joint Research Centre (JRC), which integrates climate data from multiple sources and provides a single entry point for various datasets. The stations are built on past EU investments, including Copernicus, AMESD, and MESA programs.

The session highlighted the prototype installation of these stations at Regional Climate Centres (RCCs), with plans for broader deployment at the national level, starting in SADC countries. Workshops and training programs have been organised, with more planned to ensure the smooth operation of the stations.

Five working groups, organised by region, gathered feedback on the station's features and deployment progress. Key messages emphasized the importance of these stations in countries with limited climatological databases and the role of RCCs in supporting expertise at the national level. The need for tailored training programs was also discussed to accommodate the varying capabilities of different countries.

INTRODUCTORY SESSION

Chairperson: Didier Kakpa Météo Bénin
Co-rapporteurs: Diane Laourou, Météo Bénin and Vincent Gabaglio, EUMETSAT

1. Session purpose and Content

Following the opening ceremony, this introductory session set the stage for the Forum by focusing on key African policies and strategies related to space and meteorology, as well as the cooperation between the African Union (AU) and the European Union (EU). The session also provided an update on the status of various EUMETSAT programmes and activities, including MSG, EPS, Jason, MTG, EPS-SG, and SAFs. Additionally, Joseph Kagenyi, former Director at IMTR, delivered a keynote presentation on the role of EUMETSAT satellites in supporting early warning systems.

2. Session contributions

African Space Policy (inc. GMES&Africa), Tidiane Ouattara (AUC-ESTI)

Dr. Tidiane Ouattara introduced the African Outer Space Programme, a flagship initiative of the African Union (AU) which plays a pivotal role in driving AU Agenda 2063. It focuses on Earth observation, satellite communication, navigation, and space science to drive development across the continent. The African Space Agency, operational since 2024, is the governing body for these efforts, with the African Space Council overseeing strategic decisions and ensuring alignment with AU's broader goals.

Significant achievements include partnerships with international space agencies, particularly the EU, EUMETSAT, and CNES. These collaborations have advanced data access, technical support, and capacity-building programs, resulting in the training of over 10,000 African experts. Initiatives like GMES & Africa have made tangible impacts in fields such as oil pollution monitoring, flood management, and land degradation assessment.

At last Tidiane stated that the African Outer Space Programme is a testament to the continent's growing presence in the global space arena, leveraging strategic international cooperation and homegrown talent to foster technological advancement and regional development.

Revised Integrated African Strategy on Meteorology (Weather and Climate Services), Jolly Wasambo, (AUC-DARBE)

Dr. Jolly Wasambo presented the Revised Integrated African Strategy on Meteorology (2022-2030) that aims to address Africa's increasing vulnerability to weather, water, and climate risks, which threaten development gains and poverty reduction efforts.

The strategy, aligned with AU Agenda 2063, emphasizes the importance of accurate meteorological services for sustainable development, climate adaptation, and disaster risk reduction. It focuses on enhancing cooperation among African nations and strengthening the capacity of governments to deliver reliable weather and hydrological services. Key pillars include research and innovation, policy integration, data access, and early warning systems, supported by partnerships and capacity building. The strategy also prioritizes gender inclusion and technological advancements. Recent progress includes the development of an implementation plan and a resource mobilization strategy, adopted by the AMCOMET in 2024.

Status of EUMETSAT programmes, Paul Counet (EUMETSAT)

Paul Counet informed the audience about EUMETSAT's strategic priorities for Africa, emphasizing efforts to facilitate access to and use of satellite data, provide training, and maintain regular dialogue with African users at both technical and institutional levels. He then outlined the status of EUMETSAT's current generation of geostationary and polar-orbiting satellites (MSG, METOP, and Jason), explaining their various applications and their significant impact on weather forecasting.

Paul also detailed EUMETSAT's role in the Copernicus program, specifically in the operation of Sentinels-3, 4, and 5, which support marine, atmospheric, and climate services. The focus then shifted to the development of the next-generation satellites, including the Meteosat Third Generation and the EUMETSAT Polar System - Second Generation (EPS-SG), where he provided updates on their respective progress. Finally, Paul highlighted the longstanding cooperation between EUMETSAT and Africa, supported by the European Union. He welcomed the deployment of the new PUMA-2025 stations under the EU-funded Intra-ACP ClimSA programme and introduced the upcoming Space for Early Warning in Africa (SEWA) project, also to be funded by the EU.

Satellite for Early Warning, Joseph Kagenyi (Somali Civil Aviation Authority)

Joseph Kagenyi highlighted the use of satellite data in monitoring droughts, floods, and landslides, critical disasters across Africa. The presentation underscored the value of Early Warning Systems (EWS) in mitigating the impact of these disasters. Droughts, responsible for 95% of disaster-related deaths in Africa, and floods, which incur significant economic losses, were focal points. Enhanced satellite observation and monitoring tools, like those used in predicting floods and landslides in Kenya, were discussed alongside the need for threshold data on rainfall and moisture levels to trigger warnings. Additionally, the integration of weather and climate data supports applications in agriculture, disaster response, and infrastructure planning. Presenters stressed the importance of regional collaboration and technology deployment (e.g., PUMA-2025 stations) to strengthen resilience, particularly in areas prone to extreme events and resource challenges.

SESSION 1 - EUMETSAT PROGRAMMES

Chairperson: Jolly Wasambo, AUC
Rapporteurs: Mariane Diop Kane, AMCOMET and Hervé Trebossen, EUMETSAT

1. Session purpose and Content

The First session was dedicated to presenting the status of the various EUMETSAT programmes and activities: MSG, EPS, Jason, EPS-SG, SAFs. This session also included a special emphasis on the transition to Meteosat Third Generation satellites, access to EUMETSAT data, presentations on the PUMA-2025 and ClimSA stations, and training activities related to their deployment in Africa.

2. Session contributions

MTG status and transition, Sally Wannop (EUMETSAT)

Sally outlined the transition plan from MSG to the MTG. Key points include the start of MTG services, with a phased release of data moving from pre-operational to operational status. The first batch of MTG's FCI (Flexible Combined Imager) products will be released in late 2024, with further releases in 2025. A significant focus is placed on Africa, with plans to release data through EUMETCast Africa starting in October 2024. The transition involves parallel services from MSG and MTG satellites to ensure continuity, especially in Africa, where PUMA2025 stations are being deployed.

Data access and User services, Erdem Erdi (EUMETSAT)

Erdem's presentation provided an overview of EUMETSAT's Data Access Service portfolio and mentioned relevant aspects of those services for accessing the various MTG data and products that are being gradually released. The second part of Erdem's presentation consisted in a short introduction of the new User Portal which is designed to be a one-stop-shop for end users.

EUMETCast-Terrestrial - User case, Nico Kroese (SAWS)

The presentation outlined the roadmap for the SAWS transition to EUMETCast Terrestrial Service. Nico highlighted SAWS's long-standing use of the satellite-based service since 2006 and the challenges encountered in maintaining operations due to satellite re-alignment and interference from 5G. A hybrid terrestrial and satellite system has been implemented, significantly reducing packet loss, thanks to collaboration with EUMETSAT and NREN.

EUMETSAT and CoE Trainings, Vesa Nietosvaara (EUMETSAT)

Vesa's presentation highlighted the collaboration between EUMETSAT and the VLab CoE in Africa within the ASMET programme to provide Satellite meteorologyl

trainings. These trainings focus on practical applications of the upcoming Meteosat Third Generation (MTG) data, with emphasis on nowcasting, fire monitoring, climate, and marine applications. A mix of self-study, online, and in-person sessions is offered. Upcoming events include workshops and PUMA/ClimSA system training starting in late 2024. The aim is to equip meteorologists with the skills to fully utilize MTG products.

Presentation of the PUMA-2025 , Ulrich Diasso (AUC) and Giancarlo Vanoni (Tecnavia)

Ulrich detailed the deployment and training plans for PUMA-2025 and ClimSA stations in Africa under the Intra-ACP ClimSA Programme. The Infrastructure deployment process is underway, with installations expected to be completed by early 2026. Ulrich presented the training program that will accompany this deployment. This plan includes onsite, online, and classroom-based sessions. Training will focus on system administration, operation and applications, with trainees from all SSA NMHSs.

Then, Giancarlo introduced PUMA 2025 system architecture. The design of the station ensures uninterrupted service with automatic failure recovery. The system's redundancy allows continuous data availability, even during failures. It includes a long-term UPS for reliable power management. The system is also designed to handle network access efficiently, ensuring data routing through the most effective pathways.

Introduction to the ClimSA Climate station, Carolina Arias Munoz (JRC)

Carolina introduced the ClimSA Climate Station. The Climate Station is a key contribution of JRC to the ClimSA programme for the implementation of the GFCS in ACP countries. It integrates real-time data with forecasts and projections, providing climate services to regional beneficiaries. It includes features like data acquisition, processing chains, and analysis tools, with a user-friendly interface and integrates Jupyter Notebooks for custom processing. The station aims to streamline tasks, improve reliability, and deliver high-quality datasets.

3. Discussions and Recommendations

After the plenary session, during the discussions, the following points have been raised:

- Discussions went on the the process for AUC to provide NMHS Directors with copies of correspondence sent through the Ministry of Foreign Affairs, along with a list of donated equipment, to streamline customs clearance preparation.
- The NMHSs were very careful to ensure a smooth transition in line with PUMA2025 deployment, avoid any disruption when decommissioning MSG.

- NMS and RSMCs are encouraged to engage their NREN to have a good access of MTG data through EUMETCast-Terrestrial with the support of EUMETSAT
- AUC, in coordination with EUMETSAT, JRC, IMTR, and EAMAC might ensure that all NMHSs have at least two individuals trained as system administrators for the PUMA-2025 and ClimSA stations, as well as at least two individuals trained as users of the new PUMA-2025 station, ensuring timely training and capacity-building efforts.
- NMHSs and Regional Centers should leverage the AfricaConnect project by engaging with their National Research and Education Networks (NREN) to connect to EUMETCast-Terrestrial, allowing access to MTG data and products.
- NMHSs are encouraged to utilize EUMETView to visualize MTG data while awaiting the deployment of the new PUMA-2025 stations.
- EUMETSAT should continue supporting NMHSs in engaging with their NREN and provide training materials and information on using EUMETView and EUMETCast-Terrestrial to maximize access and usage.

Session 1 contributed to recommendations **#1** to **#3**.

SESSION 2 - SPACE FOR EARLY WARNING AND AFRICAN METEOROLOGICAL SATELLITE APPLICATION FACILITY (AMSAF)

Chair: Tidiane Ouattara, African Space Agency and Mahaman Bachir Saley, AUC
Rapporteurs: Ali Abani, ACMAD and Sally Wannop, EUMETSAT

1. Session purpose and Content

The second session centered on the pivotal role of satellites in strengthening Early Warning Systems across Africa. It featured presentations highlighting both regional and national efforts, with a key focus on the establishment of the African Meteorological Application Facility (AMSAF). These initiatives emphasized the contribution of EO data to enhance in particular weather forecasting ultimately improving resilience to climate-related risks throughout the continent.

2. Session contributions

Early Warning for All initiative, Heikki Pohjola and Mariane Diop Kane (WMO)

The "Early Warnings for All" (EW4All) initiative aims to ensure every person on Earth is protected by early warning systems within five years. Currently, only 45% of Africa is covered by early warning services, leaving vulnerable populations at risk. EW4All, led by WMO, focuses on four pillars: disaster risk knowledge, hazard monitoring, warning dissemination, and preparedness. The initiative's rollout began in 2023, targeting 30 high-risk countries, 13 of which are in Africa. Workshops and technical support are being provided to enhance national early warning capabilities, with ongoing assessments to identify gaps and strengthen systems.

AMHEWAS programme, Viola Otieno (AUC)

Viola introduced the Africa Multi-Hazard Early Warning & Early Action Systems (AMHEWAS) programme and the Situation Rooms. She also provided an update on recent developments with the aim of stimulating and strengthening collaboration across the various stakeholders. At last, Viola provided an overview of the Situation room that has been installed at AUC, ACMAD, ECOWAS, SADC and IGAD/ICPAC premises. This equipment has the objectives to increase the availability and access of early warning information to the African public to reduce disaster losses.

Space for Early Warning in Africa, Cecilia Donati (European Commission)

Cecilia provided an overview of the Africa-EU Space Partnership, which aims to strengthen collaboration on space technologies and services for sustainable development. The partnership builds on existing initiatives like GMES & Africa and ClimSA, and emphasizes promoting digital transformation, green transitions, and private sector engagement while supporting the newly created African Space Agency. Within this partnership, one objective is to enhance Africa's capacity to use

space-based data for early warning systems; this will form the upcoming Space for Early Warning in Africa (SEWA) project.

ECMWF NWP products for Africa, Stijn Vermoote (ECMWF)

Stijn presented the ECMWF's Numerical Weather Prediction (NWP) products and their role in supporting Africa's meteorological services. ECMWF supports African countries through partnerships with organisations like WMO, ACMAD, and ICPAC, delivering data products such as GloFAS and ERA5. Recent improvements to ECMWF's models, including upgrades to increase forecast resolution, have enhanced the accuracy of severe weather event predictions, such as tropical cyclones. ECMWF is also working on impact-based forecasting tools, such as heat stress indices, to support decision-making. The organisation is transitioning towards more open access to its data for WMO member countries, with full access for African NMHSs by 2025.

Satellite to enable Early Warning, Sarah Kimani (IMTR)

Sarah highlighted the critical role of satellites in enhancing early warning systems across Africa. EUMETSAT satellite data is widely used for weather forecasting, climate monitoring, and sector-specific applications. Sarah described MTG as a game changer, with capabilities such as fire tracking and lightning imaging, offering improved spatial and temporal resolution to better predict severe weather events. Then Sarah highlighted that AMSAF that aims to further strengthen nowcasting services, will enable Africa not only to use satellite data but also to generate its own tailored products. Tools like EUMETCast Terrestrial, cloud computing, and PUMA 2025 stations are key for improved data access and visualization.

Nowcasting SAF, products and (potential) use in Africa, Llorenç Lliso (NWC-SAF)

In his presentation, Llorenç provided an overview of the NWC SAF, detailing its purpose and the range of products it offers. He also introduced the NWC SAF software for MTG-I FCI and shared insights on the upcoming software for MTG-I LI and MTG-S. The final part of his talk focused on various ways to visualize these products, including a demonstration of the NWC-SAF ADAGUC service hosted on the European Weather Cloud (EWC) for efficient product display and analysis.

RSMC NWC regional approach - WISER-EWSA, Nico Kroese (SAWS)

Nico's presentation focused on the regional approach of advancing satellite-based nowcasting for early warning systems in Africa. He highlighted the role of the RSMC-Pretoria in providing weather guidance and nowcasting products for the NMHSs of the SADC. He provided an overview of the WISER-EWSA project that aims to strengthen regional capacities for nowcasting, focusing on providing short-range

early warnings to vulnerable communities. Satellite-based nowcasting, particularly using MSG and MTG satellites, is seen as a critical solution due to the high costs of weather radar systems. The project aligns with the UN's EW4All initiative and emphasizes collaboration, capacity building, and the expansion of nowcasting services across the region.

SAWIDRA and NWP in Africa, Lawal Kamoru Abiodum (ACMAD)

Lawal presented the results of the EU funded Satellite and Weather Information for Disaster Resilience in Africa (SAWIDRA) project, that has been using a constellation of satellites to improve atmospheric dataset coverage over Africa. By leveraging the Regional Advanced Retransmission Service (RARS), the project has enhanced the NWP (Numerical Weather Prediction) capacity of African NMHSs and RCCs, contributing to both infrastructure improvements and human resource development.

ICPAC situation room, Herbert Misiani (ICPAC)

Herbert introduced the IGAD Disaster Operations Centre (IDOC), established under the IGAD Disaster Risk Management (DRM) Program at ICPAC. He provided an overview of IDOC's goals, core functions, and its approach to the Multi-Hazard Early Warning System (MHEWS). Additionally, he showcased the various platforms dedicated to monitoring hazards affecting the IGAD region and highlight some of the key products generated from the IDOC.

ECOWAS situation room, Konan Raoul Kouame (ECOWAS)

In his presentation, Konan described the ECOWAS Multi-Hazard Early Warning and Action System, including the establishment of a 24/7 Situation Room in Abuja, Nigeria. Launched in June 2023, the system focuses on disaster risk management across West Africa by integrating EO data with national datasets. The situation room provides probabilistic impact-based warnings, improving regional coordination during emergencies.

Contribution of EO data to Multi-Risk EWS in Benin, Jules Azongninhoun and Olga Vignon (Météo-Benin)

The presentation focused on how EO data supports multirisk early warning systems in Benin, addressing climate risks like floods, droughts, and convective weather systems. EUMETSAT provides through EUMETCAST-Africa real-time meteorological data, such as cloud monitoring, dust, and vegetation status (NDVI). EO data allows for accurate forecasting and risk management through tools like satellite imagery for early warning bulletins, protecting lives and property. Case studies from May 2024 demonstrate how EO data effectively tracks and mitigates the impacts of natural disasters.

EO data and Common Allert Protocl of the ClimWeb initiative: the case of Benin, Marta Baraibar (WMO) and Diane Laourou (Météo-Bénin)

The ClimWeb initiative combines EO data and the Common Alerting Protocol (CAP) to enhance early warning systems in Benin. EO data offers real-time weather insights, while the CAP editor facilitates the distribution of precise, localized alerts. The system uses interactive maps and integrates various platforms like social media to improve user engagement. ClimWeb helps transform the climate services value chain by delivering timely, actionable information to communities, ultimately aiming for full coverage of early warnings across Benin by 2027.

Using EWS and Satellite Images to Reduce Traffic Accidents, Ahmed Abdelradi (Egyptian Meteorological Authority (EMA))

Ahmed's presentation discussed on how Early Warning Systems (EWS) and satellite imagery can help reduce traffic accidents caused by weather hazards, particularly fog. A case study from the Cairo-Alexandria road on 28 October 2023 highlights the role of fog in a major collision that resulted in 32 deaths. Satellite data, such as fog monitoring received from EUMETSAT, provides real-time visibility information that can be used to issue warnings. The integration of EWS with traditional media and social platforms like Facebook enhances public awareness and timely action.

Contribution of EUMETSAT products in EWS: Example of flooding and drought events in Tunisia, Mohamed Hajjej (Institut National de la Météorologie (INM) – Tunisia)

Mohamed explained the role of EUMETSAT products in supporting early warning systems for floods and droughts in Tunisia. The INM has been using Meteosat data since the 1980s, progressively upgrading its receiving and exploitation systems. Satellite imagery helps monitor extreme weather events like convective storms, with case studies highlighting historical floods and droughts. Products such as cloud-top alerts are critical for improving nowcasting and real-time risk management. The presentation emphasized the growing need for satellite data to track increasingly severe weather patterns.

Charter for Space for Major Disaster, Sally Wannop (EUMETSAT)

Sally's presentation gave an overview of the activities of the International Charter: Space and Major Disasters. How the Charter can be activated in the case of a major man-made or natural disaster and some examples of the maps and information products generate by the Charter to support the work of the civil protection agencies when a disaster strikes.

Copernicus Climate Change Services and Atmospheric Monitoring Services, Stijn Vermoote (ECMWF)

Stijn's second presentation highlighted the role of Copernicus Climate Change Service (C3S) and Copernicus Atmosphere Monitoring Service (CAMS) in providing real-time climate and air quality data for global monitoring. C3S delivers reanalysis datasets like ERA5, supporting sectors such as renewable energy and infrastructure planning. CAMS focuses on monitoring pollutants, greenhouse gases, and wildfire emissions. The services provide free access to data for climate risk assessments, contributing to sustainable infrastructure investments and climate adaptation policies. Recent advancements in data accessibility and cloud-based tools were also presented.

Space in support to Early Warning System (SEWA), Jolly Wasambo (AUC) and Vincent Gabaglio (EUMETSAT)

This presentation outlines EUMETSAT's contribution to the upcoming SEWA project. The focus on EUMETSAT contribution is on improving data access and early warning capabilities by enhancing real-time weather monitoring and forecasting. The initiative aims also to implement of regional instances of the AMSAF to support African regional centers by providing tailored nowcasting products for severe weather detection. .

3. Discussions and Recommendations

After the presentations there were a number of points that were discussed in plenary including:

- **Role of NMHSs and RCCs in Early Warning Systems**: Discuss the mandated role of National Meteorological and Hydrological Services (NMHSs) in issuing warnings, and how an open dialogue between Regional Climate Centers (RCCs) and NMHSs, as encouraged by the AUC MHEWS, can enhance the entire early warning value chain.

- **NWC SAF Products and Nowcasting**: Explore how NWC-SAF products, as demonstrated in the WISER project, contribute to nowcasting routines. Additionally, discuss the importance of educating stakeholders across the early warning value chain about the future impact of improved nowcasting skills.

- **Building on SAWIDRA's Achievements through SEWA**: Discuss how the SEWA project will build upon the achievements of SAWIDRA, and the opportunities for ACMAD to further support NWP (Numerical Weather Prediction) capabilities regionally. Additionally, explore how ACMAD can contribute to the RARS global NWP data service through WIS 2.0.

- **Use of Social Media for Early Warning**: Reflect on the lessons learned from local early warning use cases presented by the Benin and Egypt NMHSs, particularly the role social media plays in communicating warnings to the public.

Session 2 contributed to recommendations **#4** and **#6.**

SESSION 3 - SPLINTER SESSION: REGIONAL DISCUSSIONS ON SPACE FOR EARLY WARNING (MTG-AMSAF)

1. Session purpose and Content

The third session has been organised in splinter sessions by region (REC) and focused on discussions regarding the regional approach and priorities for implementing AMSAF related activities within the upcoming SEWA project.

2. Results of the Working Groups

AMSAF implementation in Southern Africa

SADC-CS and RSMC-Pretoria (SAWS) will coordinate to implement the regional instance of the AMSAF. Participants emphasized the importance of using NWC-SAF products tailored for local hazards like fire and heatwaves. Challenges include limited infrastructure and training needs, and suggestions include stronger user engagement, feedback mechanisms, and capacity-building initiatives for using AMSAF products. It has been recommended that the regional AMSAF will have to cover and to adapt products to the IOC region.

AMSAF implementation in Central Africa

CAPC-AC will coordinate the activities, in cooperation with other RCC(s) and RSMC(s), and universities while waiting for a RSMC to be designated for the region,

AMSAF implementation in West Africa

The implementation of the regional instance will be coordinated by AGRHYMET and RSMC-Dakar (ANACIM). The discussions demonstrated that some experience exists in West Africa in running the NWC-SAF software. The discussions went on nowcasting platforms, data-sharing between countries, and training needs for accurate predictions of severe weather events.

AMSAF implementation in East Africa

ICPAC and RSMC-Nairobi will coordinate the regional instance of the AMSAF. ICPAC will provide technical guidance and support the regional integration of NWC-SAF products as KMD will be responsible for operationalizing AMSAF and customizing early warning products for specific hazards in their respective regions. ICPAC will also facilitate capacity-building activities and ensure that cloud services are leveraged for efficient product dissemination and management. It has been recommended to consider using the NWC-SAF for Polar Orbit, in connection with the RARS station operated by ICPAC.

MTG for Early Warning System in North African Countries

Discussions centered on current infrastructures, challenges like the lack of automatic weather stations and marine observations, and the need for cooperative frameworks among countries. The recommendation is to engage with the WMO to initiate the process to designate a RSMC for Northern Africa.

Session 3 contributed to recommendations **#5**.

SESSION 4 - CLIMATE, AIR QUALITY AND GREENHOUSE GAS (GHG) MONITORING

Chairperson: Ladislaus Chang'a, TMA, IPCC Vice-Chair
Rapporteurs: Ulrich Diasso, AUC/AESA and Erdem Erdi,EUMETSAT

1. Session purpose and Content

The fourth session focused on the use of EO data for monitoring climate, atmospheric composition, and CO2 emissions. It emphasized the implementation of Climate Services in Africa and explored how EO supports climate monitoring and related services. The session particularly highlighted the role of EO in developing and operating tools and services that provide critical climate information. Two key topics addressed were air quality monitoring and greenhouse gas tracking from space, showcasing how EO data contributes to managing and mitigating environmental challenges across the continent.

2. Session contributions

AU Policies for Climate Change and Air Quality, Caroline Tagwirey (AUC)

Caroline presented the African Union's policies on climate change and air quality, aligned with Agenda 2063. It details the AU Climate Change and Resilient Development Strategy (2022-2032) and the Green Recovery Action Plan (2021-2027), both aimed at building a climate-resilient Africa. The presentation highlighted Africa's commitment to adaptation, sustainable resource management, and green energy transitions. It also emphasized the development of the Africa Clean Air Programme to address the challenges of air quality management across the continent, focusing on data management, policy frameworks, and public awareness.

Support for Monitoring Pollutants and Greenhouse Gases, Dr. Federico Fierli, Dr. Mark Higgins (EUMETSAT)

Mark's presentation covered EUMETSAT's efforts in monitoring air quality and greenhouse gas emissions using satellites like Metop, Sentinel-3, and MTG. It highlighted the capabilities of these satellites in detecting pollutants like nitrogen dioxide, ammonia, and carbon dioxide, with applications for both policy development and emission control. The presentation emphasized the importance of combining satellite observations with in-situ data and models to create comprehensive air quality and emission reports. Examples included monitoring of wildfire emissions and tracking urban air pollution hotspots.

Climate Monitoring by Satellite, Steffen Kothe (Deutscher Wetterdienst (DWD)

This presentation covered the activities of EUMETSAT and its SAFs in the field of climate monitoring. It highlighted the importance of satellite-based climate data and show examples of the status in the development of Climate Data Records. Several

application examples will show how EUMETSAT Climate Data can be valuable for Africa.

ClimSA Climate Station Applications, Carolina Arias Muñoz (JRC)

Carolina introduced the ClimSA Climate Station and its role in supporting climate monitoring in Africa. Her presentation focused on integrating tools like Jupyter Notebooks to generate climate bulletins and reports, improving climate monitoring at both regional and national levels. Key collaborations include work with Regional specialized institutions to enhance capabilities in monitoring precipitation anomalies, temperature extremes, and agricultural conditions. The ClimSA Climate Station supports customized analysis and reporting, with a goal to empower local institutions with better climate services.

3. Discussions and Recommendations

Following the presentations, the following points were raised:

- **Collaboration between EUMETSAT and Africa for Atmospheric Monitoring**: Discussions went on how to enhance collaboration between EUMETSAT and African stakeholders in the areas of Atmospheric Composition and Greenhouse Gas monitoring.

- **Training on Air Quality Monitoring:** Suggestions wer made that EUMETSAT organise additional training events in Africa focused on space-based air quality monitoring, and, in consultation with WMO and AUC, explore the establishment of an African training infrastructure involving local trainers and institutions.

- **Integration of CM-SAF Products into ClimSA Station:** participants recommended that EUMETSAT, CM-SAF, and the Joint Research Centre (JRC) collaborate to evaluate the feasibility of integrating CM-SAF products and tools into the ClimSA Station, enhancing its capability to deliver comprehensive space-based climate monitoring and analysis for African users.

Session 4 contributed to recommendations **#7** to **#9.**

SESSION 5 - BLUE ECONOMY

Chairperson: Mahaman Bachir Saley, AUC
Rapporteurs: Viola Otieno, AUC and Mark Higgins, EUMETSAT

1. Session purpose and Content

This fifth session addressed satellite applications for Marine, and Coastal areas focusing on the access and use of Copernicus and EUMETSAT data and products as well as applications for fisheries, transport and safety at sea.

2. Session contributions

EUMETSAT Support to the Blue Economy, Hayley Evers-King & Mark Higgins

Mark highlighted EUMETSAT's role in supporting the blue economy through marine satellite data, such as altimetry, sea surface temperature, and ocean color. EO data assist in applications like marine spatial planning, climate model assimilation, and fisheries management. EUMETSAT's collaboration with African colleagues focuses on training and providing technical support for users to leverage these satellite products. The presentation emphasizes the socio-economic benefits of marine data for improving safety at sea, coastal resilience, and optimizing marine protected areas, while also promoting environmental monitoring through Copernicus data services.

MarCOSIO: Earth Observation Support for Marine and Coastal Operations in Southern Africa and the Indian Ocean, Lufuno Vhengani, (CSIR)

Lufuno presented on the MarCOSIO project which is funded by GMES & Africa Phase 2 (previously known as MarcoSouth). MarCOSIO focuses on enhancing the management of marine and coastal resources in Southern Africa and the Western Indian Ocean through EO data. The project, led by the CSIR and involving 12 partners from 8 countries, offers 7 services like monitoring fishing zones, aquaculture, coral bleaching, and coastal ecosystems. It supports the blue economy by promoting safety at sea, fisheries management, and maritime surveillance. MarCOSIO uses Sentinel-3 and Sentinel-2 data to deliver these services and address challenges such as data accessibility and infrastructure. MarCOSIO has developed web-services and mobile application to support dissemination of products, including the mobile app Abalobi, is available for download on playstore and targets fishermen providing essential information on potential fishing zones.

Earth Observation Support for Marine and Coastal Operations in North and West Africa, Ignatius Kweku Williams (University of Ghana)

Ignatius introduced the audience about the MarCNoWA project. This project uses EO data to support fisheries, marine meteorology, and coastal ecosystems management in North and West Africa. The project spans 18 countries and focuses on providing 6 services, in particular potential fishing zone mapping, oil spill

monitoring, and coastal vulnerability assessments. It offers critical information to artisanal fishers, navies, and disaster management agencies, improving safety and decision-making. Phase II of GMES & Africa continues to expand these services, incorporating localized ocean state forecasts and community engagement initiatives.

EUMETSAT Data for the Blue Economy in Benin, Adje Christian (Institut des Recherches Halieutiques et Océanologiques du Bénin)

Christian's presentation discussed how EUMETSAT data is utilized in Benin for marine monitoring and supporting the blue economy. Key projects include MESA and GMES-Africa, which focus on oceanographic and coastal zone management. Services provided real-time alerts for fishers, monitoring illegal fishing activities, ocean temperature tracking, and mapping marine ecosystems. The project strengthens capacity among local researchers and fishers by providing access to satellite data and predictive models to improve safety and resource management.

3. Discussions and Recommendations

After the plenary session, during the discussions, the following points have been raised:

- **Cooperation between MarCNoWA and NMHSs:** Discussion occurred on cooperation between MarCNoWA and National Meteorological and Hydrological Services (NMHSs) in providing marine weather forecasts and on how to sustain this cooperation based on the inspiration given by the cooperation between UoG and NMS of Ghana, Benin and Togo.

- **Extension of Services to Central Africa:** Participants outlined that Central Africa is currently not covered by the two GMES&Africa consortia (with the exception of Angola) and asked how these marine and coastal services could be extended to this region.

- **Capacity Transfer Support:** Discussions highlighted the efforts needed to facilitate capacity transfer to countries for the services already implemented by the two GMES&Africa consortia.

- **Erosion Monitoring in Benin:** Discussions went on details on the equipment used, such as cameras, for monitoring coastal erosion along the Benin coastline. The strategy implemented to prevent vandalism of this equipment was also presented.

Session 5 contributed to recommendation **#14**

SPECIAL SESSION - EO FOR HYDROLOGY

Chairperson: Doaa Osman Sayed Osman, AUC
Rapporteur: Vesa Nietosvaara, EUMETSAT

1. Session purpose and Content

This special session aims to explore the role of EO data in hydrology and river basin management across Africa, showcasing recent progress, practical applications, and case studies. By bringing together experts and organisations highlighted the value of EO data in water resources monitoring, disaster risk reduction, and sustainable river basin management.

2. Session contributions

Main outcomes of the workshop on EO for Hydrology and River Basin Management in Africa, Jolly Wasambo (AUC) and Hervé Trebossen (EUMETSAT)

Hervé's presentation was focused on the outcomes of the online webinar organised in August 2023 and the workshop organised at EUMETSAT HQ in March 2024 on the utilization of EO data for hydrology and water basin management in Africa. This workshop brought together participants from various African institutions and from EO data providers. Key discussions included data access, operational applications, and science validation for hydrological products such as rainfall estimates and soil moisture. It highlighted the need for capacity building and collaboration between data producers and African institutions. A roadmap for cooperation between Africa and Europe was proposed, aiming to enhance the use of EO data for hydrology, while also promoting knowledge transfer and engaging with policymakers.

Recent progress in EO for Water Resources Monitoring and Management in Africa, Timothy Dube (University of Western Cape)

Timothy's presentation outlined the critical role of EO data in monitoring water resources across Africa. It highlights key applications such as rainfall estimation, evapotranspiration monitoring, soil moisture analysis, and surface water monitoring, all of which are essential for managing Africa's diverse water systems. He noted that while most of these products are suitable for regional or national monitoring, some of them are too coarse for local studies. He emphasized that numerous studies have been conducted using EO techniques for surface water monitoring in Africa, and new techniques are emerging to monitor groundwater by measuring Earth's gravity field anomalies. Future research is encouraged to focus on integrating multi-source data and applying machine learning for more refined hydrological models.

Contribution of EO data and H-SAF products for Hydrology. Silvia Puca (H-SAF)

Silvia introduced the products of the Hydrology Satellite Application Facility that are available in Near Real Time and cover the African Continent. She detailed the various H-SAF products (i.e Precipitation, Soil Moisture and Snow Cover) in terms of inputs, timelines, historical depth, spatial and temporal resolution. Then Silvia showcased the use of H-SAF products to forecast and monitor extreme events (i.e landslides, floods and drought as well as water body extent). She presented the H-SAF product validation programme which is supported by in-situ measurements mainly from Europe with some contributions from Africa.

TAMSAT Climate Services: Monitoring, Ross Maidment and Emily Black (University of Reading)

In this talk, Emily Black provided an overview of the TAMSAT satellite-derived rainfall and soil moisture products that are designed to support climate monitoring over Africa. While the TAMSAT rainfall product has been established for over 40 years, it has now operationalized production of uncertainty estimates which can be used to provide confidence intervals for daily rainfall estimates. TAMSAT's new root-zone soil moisture product provides daily full-column soil moisture information from 1983-present and can support in monitoring agricultural drought. The soil moisture estimates are consistent with TAMSAT rainfall estimates and the TAMSAT-ALERT agricultural drought forecasting system.

Knowledge and Decision Support Tools for Water Resource Management and Disaster Risk Forecasting Using Satellite Data in the Niger Basin, Bachir Alkali Tanimoun, (Niger Basin Authority (NBA))

This presentation highlights the use of EO data and innovative decision-making tools for managing water resources and forecasting risks in the Niger Basin. The NBA integrates satellite data with hydrological information to monitor water levels, forecast floods, and manage hydropower. The tools developed allow real-time monitoring of the river and its tributaries. Satellite altimetry and rainfall models are used for flood forecasting, while the NBA's hydrological system supports sustainable water management in the face of climate variability.

CICOS' Experience on EO Support to Navigation in the Congo River Basin, Georges Gulemvuga (CICOS)

In his presentation, Georges discussed the role of CICOS in hydrological monitoring and inland waterway navigation in the Congo Basin. CICOS utilizes EO data for applications such as flood modeling, hydropower management, and river navigation, with a particular focus on using spatial altimetry to monitor water levels in the Congo River. The organisation has also developed a mobile app that integrates an

Electronic Nautical Chart of the Congo River, providing real-time water level alerts to support navigation and water management across its member countries.

Space Solutions for Digital Applications, Bridging Data Gaps in Benin, Prudence Ayivi (Sirius Space Association)

The Sirius Space Association, a Beninese group promoting space science, is working to bridge the data gaps in Benin by engaging youth in science and space technologies. The presentation highlights their National Space Strategy Proposal, which aims to launch Benin's first satellite and establish a space agency. Key projects include the BENCUBE-1 CubeSat, designed for environmental monitoring, and the Aqua Explore app, which uses satellite data to track water quality and marine biology in urban and remote areas.

Using Satellite Monitoring for Disaster Risk Reduction: A Case Study of Storm Daniel, Dr. Eman Ibrahim (Egyptian Meteorological Authority)

This presentation discusses the impact of Storm Daniel, one of the most severe tropical storms in the Mediterranean in 2023, responsible for over 10,000 deaths. The storm's formation, progression, and intensity were influenced by high sea surface temperatures in the Mediterranean. Satellite data, including ASCAT METOP-C, monitored wind speeds and storm development from its origin on 4th September to its peak impact in Greece, Libya, and Egypt. The presentation highlights how satellite observations and early warnings from the Libyan National Meteorology helped mitigate the storm's effects. Lessons from Daniel are essential for enhancing disaster risk reduction in the region.

3. Panel discussion

The discussion with the seven presenters focused on several key topics, including the integration of EO data and services in water resource monitoring, challenges related to data access, product validation and scientific accuracy, as well as the importance of capacity building efforts to enhance the effective use of EO technologies.

From this discussion several points raised:

- The challenges to gain access to crucial data. The upcoming new capabilities of MTG and the deployment of PUMA-2025 and ClimSA stations are expected to ensure a better access to EO data. Forum recommends each country to ensure they will have qualified staff to maintain the data access through these stations and use the data within their hydrological services.

- There is a need from NMHSs to foster collaboration and exchange of information between research scientific community, water resource

managers and EO data providers. Strong connections and involvement of decision makers is important.

- The need for the hydrological services and Water Basin Organisations to transition from MSG to MTG. EUMETSAT can advise on the requirements for a successful transition.

- The use of EO data is crucial to mitigate the general lack in ground observations in many countries but complementarities between remote sensing and ground observations

This session contributed to recommendation **#12** and **#13.**

SESSION 6 - AGROMETEOROLOGY

Chairperson: Konan Raoul Kouamé, ECOWAS
Rapporteurs: Seydou Tinni, AGRHYMET and Hervé Trebossen, EUMETSAT

1. Session purpose and Content

The sixth session covered Earth Observation projects and initiatives, more specifically focusing on practical applications for the agricultural sector with a specific emphasis on dedicated Climate services under implementation within CLimSA programme.

2. Session contributions

Climate Services for agriculture at Continental level, Lawal Kamoru Abiodum (ACMAD)

Lawal Kamoru Abiodum outlined ACMAD's work on delivering climate services for agriculture across Africa. It emphasized the need for timely, real-time weather forecasts and early warnings to support agricultural planning. Fundamental issues which prevent the effective uptake of climate information services, for Agriculture, in Africa is identified. Solutions were proposed which involve the extension of short-range (1 to 5 days) forecasts beyond that of medium-range (7 to 15 days), vis-à-vis seasonal (>3 months) timescales through the operational use of current forecast data as well as improve collaboration and communication with forecast users. These measures lead to more smooth delivery and increase in uptake of climate information services for Agriculture in Africa.

ClimSA Climate services in West Africa, Seydou Tinni (AGRHYMET)

Seydou Tinni gave an overview of the ClimSA project activities in West-Africa. The project aims at providing tools for seasonal forecasting and capacity building, including the use of satellite data such as TAMSAT and CHIRPS for agrometeorological applications. The installation of climate data management systems, the support for climate monitoring tools like Climsoft, and the collaboration with institutions like WMO and ACMAD are key elements. Seydou also detailed the activities undertaken at pilot country level in partnership with NMHS from Burkina-Faso. Overall, ClimSA strengthens climate-informed decision-making across 17 countries in West Africa.

ICPAC Agricultural Watch, Allan Oware (ICPAC)

In his talk, Allan highlighted the East Africa Agriculture Watch (EAAW), a comprehensive platform for exploring and analysing EO-derived data for agricultural monitoring. It will discuss the platform's background, main features, how to produce automatic warning classification, and the indicators employed. It will conclude by

demonstrating how to generate statistics at the administrative level and provide some useful links to the platform.

SADC/CSC activities in support to the agricultural sector, Surekha Ramessur (SADC-CSC)

Surekha's presentation outlined the role of the SADC Climate Services Centre in providing operational climate services for agriculture and disaster risk management in Southern Africa. The Centre delivers real-time products like drought indices, seasonal forecasts, and crop monitoring using satellite data. It supports national meteorological services and end-users in agriculture, health, and water management. The SADC Centre also collaborates with international partners to enhance early warning systems and climate resilience in the region.

CAPC-AC activities, Pascal Moudi and Pierre Balomog (CAPC-AC)

Pascal provided an overview of the meteorological forecasting activities at the Central African Application and Climate Forecasting Centre (CAPC-AC). The CAPC-AC activities encompass the production of seasonal, intra-seasonal, and daily time scales, addressing the needs expressed by the member states of the Economic Community of Central African States. Indeed, the forecasts established and disseminated in real-time enable decision-making for both planning and operational purposes. This seamless prediction process offers unique opportunities in agriculture. The data used by the Center come from various channels, among them the C3S database, the eStation, the PUMA 2015 stations. At last, Pascal stated that, it is essential to strengthen the co-production process with countries to develop services that are truly tailored to their actual needs.

Earth observation for water, agriculture and forestry applications. Kossi François Guedje (Université d'Abomey – Calavi)

This presentation discussed the use of EO data for managing water, agriculture, and forestry in Benin. The focus was on how satellite data from platforms like Sentinel-2 and Meteosat aids in monitoring reservoirs, crop health, and deforestation. The research also highlights the role of EO in flood zone mapping and optimizing irrigation practices. The presentation emphasized the importance of building local capacity and international collaboration to enhance the effective use of satellite data for sustainable environmental management.

EUMETSAT H-SAF products applications in agrometeorology, Simone Gabellani (H-SAF)

Simone showcased some products developed by H-SAF and highlight how they support operational activities, such as the creation of agrometeorological bulletins and yield prediction. This presentation focused on soil moisture and precipitation

data. These products are vital for monitoring droughts, floods, and crop conditions. Satellite-derived data from H-SAF are available in near-real-time, supporting decision-making in agriculture and water resource management. Case studies from Africa demonstrate the role of root-zone soil moisture data in drought detection and yield forecasting. The integration of these data into national systems enhances early warning capabilities and disaster preparedness.

TAMSAT Climate Services: Forecasting, Emily Black (University of Reading)

Robust and reliable forecasts are an essential element of drought early warning systems. In her talk, Emily presented TAMSAT-ALERT: a framework for seamlessly integrating satellite-based observations, reanalysis and meteorological forecasts into assessments of drought risk. She illustrated the functionality of TAMSAT-ALERT through three case studies: drought early warning for Nigeria, crop yield forecasting for Malawi and planting date decision support in eastern and southern Africa.

3. Discussions and Recommendations

After the presentations there were a number of points that were discussed in plenary including:

- Numerous data, products and tools to access and analyse them exist and are available to African users to support varied climate services;
- There is need for awareness creation and capacity building among potential users in Africa for H-SAF and TAMSAT products and tools;
- Internet access for end-users to obtain products from Regional Specialized Institutions and the methods used by these institutions to disseminate their products.
- The potential to improve seasonal forecasts for better detection of dry spells during the rainy season.
- Call for closer collaboration between Africa institutions and European institutions (data/tool providers) to optimize utilization of available data/tools to improve climate services in Africa. Strengthened collaboration between the Africa institutions also encouraged to encourage skill/technology exchange.

The Session 6 contributed to recommendations **#9** to **#11**.

MAIN RECOMMENDATIONS AND CLOSING CEREMONY

The 16th EUMETSAT User Forum in Africa ended with a review of the Recommendations from the various Sessions of the Forum (see list of recommendations) and a closing ceremony, which included interventions of Vincent Gabaglio from EUMETSAT, Pr. Constant Houdenou, Advisor for Sustainable Development, representing of H.E. José Tonato, Minister of Living Environment and Transport, responsible for Sustainable Development of the Republic of Benin, Doaa Osman Sayed Osman, AUC representative, and Mariane Diop Kane, WMO representative.

Vincent Gabaglio thanked all the speakers, organisers and participants for their commitment and contribution throughout the various sessions of the 16th EUMETSAT User Forum in Africa. He assured participants that EUMETSAT will have a close look at all 14 recommendations of the Forum and take actions in order to facilitate and follow-up their implementation in the coming years before the 17th Forum that is expected to take place in 3rd Quarter of 2026.

Doaa Osman Sayed Osman expressed her deep gratitude to the co-organisers and each participant of the Forum for their active involvement and valuable contributions. She emphasized that the partnership between EUMETSAT and Africa has been a crucial force in harnessing the full benefits of Earth Observation to tackle key challenges, including climate change and disaster preparedness. She also reiterated the African Union's commitment to fostering community collaboration, with a shared vision for a safer, more resilient, and sustainable future across Africa.

Mariane Diop Kane thanked the Republic of Benin and EUMETSAT for the organisation of the Forum. She particularly welcomed the good spirit of sharing good practices and lesson-learned during the Forum, and indicated to need to keep the same cooperative spirit for the implementation of the recommendation raised during the Forum.

Pr. Constant Houdenou thanked all participants for their commitment and contribution throughout the various sessions of the Forum. He highlighted the need to pursue and consolidate the cooperation with EUMETSAT. He noted that the contribution provided by the participants in the recommendations of the forum will help EUMETSAT to improve its programmes for Africa while enhancing delivery of climate and environmental services in Africa. At last, he congratulated the Organising Committee and the joint secretariat comprising of experts from Benin and EUMETSAT under the coordination of the Ministry of Living Environment and Transport, responsible for Sustainable Development of the Republic of Benin for the well-coordinated preparations of this Forum.

EUMETSAT POINT OF CONTACT

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LIST OF ABBREVIATIONS

ACMAD	African Centre for Meteorological Application for Development
AfSA	African Space Agency
AGRHYMET	Regional Training and Application Centre for Operational Agrometeorology and Hydrology
AMCOMET	African Ministerial Conference on Meteorology
AMESD	African Monitoring of the Environment for Sustainable Development
AMHEWAS	Africa Multi-Hazard Early Warning and Action System
AMSAF	African Meteorological Satellite Application Facility
AMU	Arab Maghreb Union
ASECNA	Agency for Aerial Navigation Safety in Africa and Madagascar
ASMET	African Satellite Meteorology Education and Training
AUC	African Union Commission
C3S	Copernicus Climate Change Service
CAMS	Copernicus Atmosphere Monitoring Service
CAPC-AC	Climate Application and Prediction Centre of Central Africa
CGMS	Coordination Group for Meteorological Satellites
CICOS	International Commission for the Congo-Oubangui-Sangha Basin
CIMA	Centro Internazionale in Monitoraggio Ambientale
CM-SAF	Climate Monitoring SAF
DARBE	Department of Agriculture, Rural Development, Blue Economy, and Sustainable Environment
DRR	Disaster Risk Reduction
DWD	Deutscher Wetterdienst
EAMAC	African School of Meteorology and Civil Aviation
EC	European Commission
ECCAS	Economic Community of the Central Africa States
ECMWF	European Centre for Medium-Range Weather Forecasts
ECOWAS	Economic Community Of Western African States
EMA	Egyptian Meteorological Authority
EO	Earth Observation
EPS-SG	EUMETSAT Polar System – Second Generation
EU	European Union
EUMETCast	EUMETSAT's Broadcast System for Environmental Data
EWC	European Weather Cloud
FCI	Flexible Combined Imager
GFCS	Global Framework for Climate Services
GHG	Greenhouse Gas
GMES	Global Monitoring of the Environment and Security
GMet	Ghana Meteorological Agency
GTS	Global Telecommunication System

ICPAC	IGAD Climate Prediction and Applications Centre
IGAD	Intergovernmental Authority on Development
IMTR	Institute for Meteorological Training and Research
INTPA	Department for International Partnerships (DG INTPA)
IOC	Indian Ocean Commission
JRC	Joint Research Centre, European Commission
KMD	Kenya Meteorological Department
LI	Lightning Imager
MESA	Monitoring of Environment and Security in Africa programme
MHEWS	Multi Hazard Early Warning Systems
MSG	Meteosat Second Generation
MTG	Meteosat Third Generation
NBA	Niger Basin Authority
NMHS	National Meteorological and Hydrological Service
NREN	National Research and Education Network
NWC	Nowcasting
NWP	Numerical Weather Prediction
PR	Permanent Representative
PUMA	Preparation for the Utilisation of Meteosat Second Generation in Africa
RA-I	Regional Association One (WMO)
RAIDEG	RA-I Dissemination Expert Group
RARS	Regional Advanced Retransmission Services
RCC	Regional Climate Centre
RCOF	Regional Climate Outlook Forums
RECs	Regional Economic Communities
SADC-CSC	Southern African Development Community – Climate Services Centre
SAF	Satellite Application Facility
SAWIDRA	Satellite and Weather Information for Disaster Resilience in Africa programme
SEWA	Space for Early Warning in Africa project
SOFF	Systematic Observation Financing Facility
TAMSAT	Tropical Applications of Meteorology using SATellite data and ground-based observations
TMA	Tanzania Meteorological Authority
UPS	Uninterruptible Power Supply
VLab	Virtual Laboratory (WMO)
WEkEO	The EUMETSAT, ECMWF, EEA and MERCATOR OCEAN Copernicus DIAS service
WMO	World Meteorological Organization

ANNEXES

PROGRAMME OF THE FORUM

1. Plenary sessions

DAY 1: MONDAY 16TH SEPTEMBER				
INTRODUCTION AND WORKING GROUP SESSIONS				
08:30	Registration			
09:30	Welcome		Didier Kakpa Phil Evans	Météo-Benin EUMETSAT
09:40	Review of Recommendations from the last Forum		Hervé Trebossen	EUMETSAT
10:00	Outcomes from the online technical sessions:			
	#1 EUMETSAT data access and training (5')		Sarah Kimani	IMTR
	#2 Space in support to Early Warning System (MTG-AMSAF) (5')		Mariane Diop Kane	WMO
	#3 Meteosat Third Generation - PUMA stations deployment (5')		Jolly Wasambo	AUC
	#4 Climate monitoring - ClimSA stations deployment (5')		Ali Albani	ACMAD
10:20	Introduction to the Working Groups		Vincent Gabaglio	EUMETSAT
BREAK (10:30 - 10:45)				
10:45 - 12:30	Break Out Rooms	WG#1- new PUMA-2025 and Climate Stations (EN)	Nico Kroese Erdem Erdi	SAWS EUMETSAT
		WG#2- new PUMA-2025 and Climate Stations (FR)	Maixent Kambi Hervé Trebossen	DMN Congo EUMETSAT
		WG#3- EUMETSAT training (EN)	Sarah Kimani Vesa Nietosvaara	IMTR EUMETSAT
		WG#4- EUMETSAT training (FR)	Kodjo Gboneh Gratien Edoh Mark Higgins	EAMAC EUMETSAT

PUMA / CLimSA Demonstration (14:00 - 15:00)

- PUMA demo (20 min)
- ClimSA demo (20 min
- EUMETView Demo (20 min)

High-Level Event (14:00 - 15:00)

Opening Ceremony (15:00 – 16:00)

INTRODUCTORY SESSION			
CHAIRPERSON		Didier Kakpa	Météo Bénin
CO-RAPPORTEURS		Vincent Gabaglio	EUMETSAT
		Diane Laourou	Météo Bénin
16:20	African Space Policy (incl. GMES & Africa)	Tidiane Ouattara	African Space Agency
16:35	Integrated African Strategy on Meteorology	Jolly Wasambo	AUC
16:50	Status of EUMETSAT programmes	Paul Counet	EUMETSAT

17:10	Satellite for Early Warning	Joseph Kagenyi	Somali Civil Aviation Authority
17:40	Q&A		
18:00	End of Day 1 / Programme overview of Day #2		

DAY 2: TUESDAY 17TH SEPTEMBER			
SESSION #1 - EUMETSAT PROGRAMMES			
CHAIRPERSON		Jolly Wasambo	AUC
RAPPORTEURS		Mariane Diop Kane	AMCOMET
		Hervé Trebossen	EUMETSAT
09:00	MTG status and transition	Sally Wannop	EUMETSAT
09:15	Data access and User services	Erdem Erdi	EUMETSAT
09:30	EUMETCast-Terrestrial - User case	Nico Kroese	SAWS
09:45	EUMETSAT and CoE Trainings	Vesa Nietosvaara	EUMETSAT
10:00	Presentation of the PUMA-2025	Ulrich Diasso Giancarlo Vanoni	AUC Tecnavia
10:30	Introduction to the ClimSA Climate station	Carolina Arias Munoz	JRC
10:45	Q&A		
BREAK (10:45 - 11:00)			
SESSION #2 - SPACE FOR EARLY WARNING AND AFRICAN METEOROLOGICAL SATELLITE APPLICATION FACILITY			
CHAIRPERSON		Tidiane Ouattara	AUC / African Space Agency
RAPPORTEURS		Sally Wannop	EUMETSAT
		Ali Abani	ACMAD
11:00	Early Warning for All initiative	Heikki Pohjola and Mariane Diop Kane	WMO
11:15	AMHEWAS programme	Viola Otieno	AUC
11:30	Space for Early Warning in Africa	Cecilia Donati	European Commission
11:45	ECMWF NWP products for Africa	Stijn Vermoote	ECMWF
12:00	Satellite to enable Early Warning	Sarah Kimani	IMTR
12:15	Q&A	Chairperson	
LUNCH (12:30 - 14:00)			
14:00	Nowcasting SAF, products and (potential) use in Africa	Llorenç Lliso	NWC SAF
14:15	RSMC NWC regional approach - WISER-EWSA	Nico Kroese	SAWS
14:30	SAWIDRA and NWP in Africa	Lawal Kamoru Abiodum	ACMAD
14:45	Q&A	Chairperson	
15:00	ICPAC situation room	Herbert Misiani	ICPAC
15:15	ECOWAS situation room	Konan Raoul Kouame	ECOWAS
15:30	Q&A	Chairperson	
BREAK (16:00 - 16:15)			
16:15	Contribution of EO data to Multi-Risk EWS in Benin	Jules Azongninhoun & Olga Vignon	Météo-Benin
16:30	Using EWS and Satellite Images to Reduce Traffic Accidents	Ahmed Abdelradi	Egyptian Meteorological Authority (EMA)

SESSION #2 - SPACE FOR EARLY WARNING AND AFRICAN METEOROLOGICAL SATELLITE APPLICATION FACILITY			
16:45	Contribution of EUMETSAT products in EWS: Example of flooding and drought events in Tunisia	Mohamed Hajjej	Institut National de la Météorologie - Tunisia
17:00	Charter for Space for Major Disaster	Sally Wannop	EUMETSAT
17:15	Copernicus Climate Change Services and Atmospheric Monitoring Services CAMS	Stijn Vermoote	ECMWF
17:30	Space in support to Early Warning System (MTG-AMSAF)		Jolly Wasambo, Vincent Gabaglio
17:45	Q&A	Chairperson	
18:00	End of Day 2	Chairperson	

DAY 3: WEDNESDAY 18TH SEPTEMBER				
SESSION #3 - SPLINTER SESSION: REGIONAL DISCUSSIONS ON SPACE FOR EARLY WARNING (MTG-AMSAF) PROJECT				
CHAIRPERSON			Jolly Wasambo	AUC
RAPPORTEURS			Jules Azongnihoun	Météo Bénin
			Hervé Trebosen	EUMETSAT
08:00	Introduction to the Working Groups			
08:20	Q&A		Chairperson	
08:40 - 11:10	Break Out Rooms	WG #1 : West Africa (EN/FR)	Seydou Tinni / Abdoulaye Diouf	AGRHYMET/ ANACIM
		WG #2 : Eastern Africa (EN)	Zachary Atheru / David Gikungu Irungu	ICPAC/KMD
		WG #3 : Southern Africa (EN)	Surekha Ramessur / Nico Kroese	SADC-CSC/SAWS
		WG #4 : Central Africa (FR)	Pascal Moudi / Yontchang Gervais Didier	CAPC-AC/Cameroun
		WG #5 : MTG for Early Warning in North AFrica (AR/EN/FR)	Tareq Soubai	Meteo Maroc

Technical visit

DAY 4: THURSDAY 19 SEPTEMBER			
SESSION #4 - CLIMATE, AIR QUALITY AND CO2 MONITORING			
CHAIRPERSON		Ladislaus Chang'a	TMA, IPCC Vice-Chair
RAPPORTEURS		Ulrich Diasso	AUC/AESA
		Erdem Erdi	EUMETSAT
09:00	AU policies for Climate and Air Quality	Carol Tagwireyi	AUC
09:15	EO mission in support to Atmospheric Composition and GHG monitoring	Mark Higgins	EUMETSAT
09:30	Climate Monitoring by Satellite	Steffen Kothe	Deutscher Wetterdienst (DWD)
10:00	ClimSA Climate Station	Carolina Arias Munoz	JRC
10:20	Q&A (15')	Chairperson	
BREAK (10:45 - 11:00)			

SESSION #5 - BLUE ECONOMY			
CHAIRPERSON		Mahaman Bachir Saley	AUC
RAPPORTEURS		Mark Higgins	EUMETSAT
		Ulrich Diasso	AUC
11:00	EUMETSAT and Copernicus products for Blue Economy	Hayley Evers-King, Mark Higgins	EUMETSAT
11:15	EO support for GMES & Africa's Marine and Coastal Operations for Southern Africa and the Indian Ocean	Lufuno Vhengani	CSIR
11:30	Q&A (15')	Chairperson	
11:45	EO support for GMES & Africa's Marine and Coastal Operations for North and West Africa	Ignatius Kweku William	University of Ghana
12:00	EO for blue economy, example in Benin	Zacharie Sohou, Christian Adje	Institut de Recherches Halieutiques et Océanologiques du Bénin (IRHOB)
12:15	Q&A	Chairperson	

SESSION : EO FOR HYDROLOGY			
CHAIRPERSON		Doaa Osman Sayed Osman	AUC
RAPPORTEUR		Vesa Nietosvaara	EUMETSAT
14:15	Main outcomes of the workshop on EO for Hydrology and River Basin Management in Africa	Jolly Wasambo and Hervé Trebossen	AUC and EUMETSAT
14:30	Recent progress in EO for water resources monitoring and management in Africa	Timothy Dube	University of Western Cape
14:50	Contribution of EO data and H-SAF products for Hydrology	Silvia Puca	H-SAF
15:25	TAMSAT Climate Services: Monitoring	Ross Maidment	University of Reading
Use of EO in the African Basin Organisation - user cases			
15:40	Congo Basin	Georges Gulemvuga	CICOS
15:55	Niger Basin	Bachir Tanimoun	NBA
BREAK (16:10 - 16:25)			
16:25	Q&A (20')	Chairperson	
16:45	Projet AquaExplore	Prudence Ayivi	SIRIUS Association
17:00	Using Satellite monitoring for disaster risk reduction: A case study (Daniel Tropical Storm)	Dr. Eman Ibrahim	Egyptian Meteorological Authority
17:30	Panel discussion - Integration of EO data and services in Water resources Monitoring, challenges for data access, products validation and science, capacity building etc.		Panelists
17:30	Conclusions		
18:00	End of Day 4 / programme overview of Day #5	Chairperson	

DAY 5: FRIDAY 20 SEPTEMBER			
SESSION #6 - AGROMETEORLOGY			
CHAIRPERSON		Konan Raoul Kouamé	ECOWAS
RAPPORTEURS		Seydou Tinni	AGRHYMET
		Hervé Trebossen	EUMETSAT
09:00	Climate Services for agriculture at Continental level	Lawal Kamoru Abiodum	ACMAD
09:15	ClimSA Climate services in West Africa	Seydou Tinni	AGRHYMET
09:30	ICPAC Agricultural Watch	Allan Oware	ICPAC
09:45	SADC/CSC activities in support to the agricultural sector	Surekha Ramessur	SADC
10:00	CAPC-AC activities	Pascal Moudi and Pierre Balomog	CAPC-AC
10:15	Earth observation for water, agriculture and forestry applications.	Kossi François Guedje	Université d'Abomey - Calavi
10:30	EUMETSAT H-SAF products applications in agrometeorology	Simone Gabellani	H-SAF
10:45	TAMSAT Climate Services: Forecasting	Emily Black	University of Reading
11:00	Q&A (15')	Chairperson	

SESSION #7 - RECOMMENDATIONS REVIEW & ADOPTION			
CHAIRPERSON		Didier Kakpa	Météo Bénin
RAPPORTEURS		Vincent Gabaglio	EUMETSAT
		Hervé Trebossen	EUMETSAT
11:15	Feedback from 16th EUMETSAT User Forum in Africa	Participants	
11:30	Hosting of the 17th EUMETSAT User Forum in Africa		
12:00	Review and adoption of the main recommendations of the 16th EUMETSAT User Forum in Africa	All	

Closing ceremony (14:00 – 15:00)

2. Interactive sessions

Day 1 : 5th June				
#0 Introductory session				
Moderator			Vincent Gabaglio	EUMETSAT
08:00	Opening remarks (10') / Setting the scene		Paul Counet, Harsen Nyambe, Mariane Diop Kane	EUMETSAT / AUC (DARBE) / WMO
08:10	Introduction to the Interactive sessions and splinter groups (10')		Vincent Gabaglio	EUMETSAT
08:20	Report of RAIDEG activities (10')		Sarah Kimani	IMTR/RAIDEG
08:30	Review of the recommendations from the15-EUFA (10')		Herve Trebossen	EUMETSAT
08:40	Q&A (20')			
#1 EUMETSAT data access and training				
Chairperson			Sarah Kimani	IMTR
Rapporteur			Sally Wannop	EUMETSAT
09:00	EUMETSAT Data access		Erdem Erdi	EUMETSAT
09:15	MTG-Africa: Training aspects		Vesa Nietosvaara	EUMETSAT
09:30 - 09:50	Vlab Training Centres activities for 2023-24		Diakaria Kone	EAMAC
			Jannie Stander	SAWS
			Sarah Kimani	IMTR
			Tareq Soubai	Meteo Maroc
09:50	Q&A (10')			
10:00	End of the Session			
Break (10:00 - 12:00)				
#2 Space in support to Early Warning System (MTG-AMSAF)				
Chairperson			Mariane Diop Kane	WMO
Rapporteur			Hervé Trebossen	EUMETSAT
12:00	Space in support to Early Warning System (MTG-AMSAF) (20')		Jolly Wasambo, Vincent Gabaglio	AUC, EUMETSAT
12:20	Introduction to the WGs		Vincent Gabaglio	EUMETSAT
12:25 - 13:40	**Splinter sessions (WG) - Parallel**	WG #1: West Africa (EN/FR)	Abdoulaye Diouf	ANACIM
			Sally Wannop	EUMETSAT
		WG #2: Eastern Africa (EN)	Sarah Kimani	IMTR
			Erdem Erdi	EUMETSAT
		WG #3: Southern Africa (EN)	Nico Kroese	SAWS
			Herve Trebossen	EUMETSAT
		WG #4: Central Africa (FR)	Maixent Kambi	DMN Congo Brazzavile
			Vincent Gabaglio	EUMETSAT
		WG #5: North Africa	Tareq Soubai	Meteo Maroc
			Natasa Strelec Mahovic / Carla Barroso	EUMETSAT
13:40	Report of the Working Group #1 to #5		Rapporteurs from WG #1 to #5	
14:00	End of the Session			

Day 2 : 6th June				
#3 Meteosat Third Generation - PUMA stations deployment				
Chairperson			Harsen Nyambe	AUC
Rapporteur			Vincent Gabaglio	EUMETSAT
08:00	PUMA-2025 station architecture, SW deployment and training plan		Giancarlo Vanoni Ulrich Diasso	Tecnavia and AUC
08:30 - 09:40	**Splinter session (WG) - Parallel**	WG #1: Deployment of the PUMA stations (EN/FR)	Giancarlo Vanoni	Tecnavia
			Herve Trebossen	EUMETSAT
		WG #2: Deployment of the PUMA stations (EN)	Ulrich Diasso	AUC
			Roberto Colucci	Tecnavia
		WG #3: Training on the PUMA station (EN)	Sarah Kimani	IMTR
			Vesa Nietosvaara	EUMETSAT
		WG #4: Training on the PUMA station (FR)	Diakaria Kone	EAMAC
			Vincent Gabaglio	EUMETSAT
		WG #5: Preparation for transition from MSG to MTG in North Africa (FR and Arabic)	Tareq Soubai	Meteo Maroc
			Sally Wannop Erdem Erdi	EUMETSAT
09:40	Report of the Working Group #1 to #5		Rapporteurs from WG #1 to #5	
10:00	End of the Session			
Break (10:00 - 12:00)				
#4 Climate monitoring - ClimSA stations deployment				
Chairperson			André Kamga	ACMAD
Rapporteur			Hervé Trebossen	EUMETSAT
12:00	Climate Station (20')		Carolina Arias Munoz	JRC
12:25 - 13:30	**Splinter sessions (WG) - Parallel (from 12:25 to 13:40)**	WG #1: West Africa (EN/FR)	Lona Issaka	AGRHYMET
			Hervé Trebossen Baudouin Desclée	EUMETSAT / JRC
		WG #2: Central Africa (FR)	Pascal Moudi	CAPC-AC
			Vincent Gabaglio	EUMETSAT
		WG #3: Southern Africa (EN) and Indian Ocean	Surekha Ramessur	SADC-CSC
			Vijay Venkatachalam Charan	JRC
		WG #4: Eastern Africa (EN)	Anthony Mwanthi	ICPAC
			Carolina Arias Munoz	JRC
		WG #5: North Africa (Arabic/EN) / Technical specification to install ClimSA station for North African NMHSs	Erdem Erdi /Jurriaan van't Klooster	EUMETSAT / JRC
			Tareq Soubai	Meteo Maroc
13:30	Report of the Working Group #1 to #5		Rapporteurs from WG #1 to #5	
14:00	**#5 Concluding remarks**			

OPENING CEREMONY SPEECHES

Statement by Phil Evans, EUMETSAT Director-General

[Protocol observed]

It is a great pleasure and honour for me to be here in Cotonou, Republic of Benin, for the opening of the 16th EUMETSAT User Forum in Africa. I am delighted to meet all of you in person and to continue our shared journey toward enhancing meteorological, climate, and environmental services across the continent.

Allow me to first express my sincere gratitude to our host, Honourable Minister José Didier Tonato, and the Météo Benin, for the warm welcome extended to us all and for their diligent efforts in preparing this important Forum.

The theme of this year's Forum is particularly significant as we mark a major transition in the field of meteorological observation: the advent of the Meteosat Third Generation (MTG). This new generation of satellites represents a significant leap forward in our capacity to observe and understand weather patterns and climate change, particularly here in Africa. I am pleased to announce that the first data from the MTG satellites are already being disseminated across Africa via EUMETCast, our operational data distribution system.

With the MTG satellites, we are entering a new era of high-resolution, rapid, and more frequent observations. These capabilities will provide unprecedented insights into severe weather events, climate monitoring, and environmental phenomena. Such advancements are crucial for strengthening Early Warning Systems in Africa and enhancing the continent's resilience against climate change and natural disasters.

Our commitment to this cause is evident in our efforts to facilitate access to satellite data for every African country, by disseminating a vast array of data and products via EUMETCast and supporting training initiatives across Africa.

We also support the African Union Commission in installing the new PUMA-2025 stations across all sub-Saharan countries. These new stations, capable of accessing and visualizing MTG data, are part of the EU-funded CliMSA project, implemented by the African Union Commission and Regional organisations.

With the MTG data now available and the installation of the PUMA-2025 stations underway across sub-Saharan Africa, we have laid a strong foundation for ensuring that space technology continues to support Early Warning Systems in Africa. This effort directly contributes to the United Nations' "Early Warning for All" initiative and the Africa Multi-Hazard Early Warning System and Action Plan (AMHEWAS).

However, while we celebrate these advancements, we must recognize that much work remains to be done to fully realize the potential of space-based observations in Africa.

The opportunities provided by the MTG and the PUMA-2025 stations also present new challenges. The increasing volume of data demands significant improvements in our current systems and capacities to process and use this information effectively. In both Africa and Europe, we must collaborate to strengthen these capacities and ensure that the benefits of MTG data translate into enhanced services for the people.

We must also acknowledge the advancements in Africa within both the space and meteorological domains. There is a strong will, expressed through the African Space Strategy and the Integrated African Strategy on Meteorology, for Africa to be not only a consumer of space-based products but also an active player in designing, creating, and generating its own products, tailored to the specific needs of African countries and communities.

A relevant example in this area is the need to further enhance nowcasting capabilities, which provide real-time weather predictions and help adjust alert systems to imminent threats.

Based on the principles of the Abidjan Declaration and the Dar es Salaam High-Level Statement on the new generation of satellite products, we are committed to supporting the establishment of an African Meteorological Satellite Application Facility (AMSAF) for Nowcasting in various regions of the continent. We also intend to continue our discussions with the African Union and the African Space Agency to explore integrating MTG data, alongside Copernicus ones, into the various space-based environmental and climate services provided by the GMES&Africa and ClimSA consortia.

In this regard, I am encouraged by the discussions we have been having with our partners, the African Union Commission and the European Union, to shape future cooperation projects. These discussions focus on ensuring that the capacities developed through these projects align with the needs and priorities of African countries and that the outcomes are fully owned by African stakeholders.

Dear participants,

Over the next few days, we will have the opportunity to delve deeper into these challenges and opportunities. We will discuss how to leverage these new satellite systems for various applications, from early warnings to climate resilience, and how to build stronger cooperation between our continents.

EUMETSAT remains committed to supporting our African partners in navigating this transition to the MTG era. Our "Destination 2030" strategy, adopted by our 30

Member States, reaffirms our dedication to easing access to our satellite data and facilitating its use on the African continent. This strategy aligns with Africa's priorities as outlined in the African Union's Agenda 2063, the Integrated African Strategy on Meteorology, and the Africa Space Policy and Strategy.

In addition, we will continue to leverage the Africa-Europe Strategic Partnership, which was reinforced during the EU-AU Summit in February 2022, to support this mission. This partnership has already proven fruitful, particularly through cooperation on the Copernicus programme, which provides valuable data for ocean monitoring, atmospheric composition, and climate analysis—data that is accessible, free, and open to African users.

Today, we have discussed a concrete example of this collaboration: the use of current and forthcoming satellite data to support the African Union Climate Strategy, particularly for monitoring greenhouse gases and advancing the Clean Air initiative. This commitment underlines the importance of integrating satellite data into actionable policies that address air quality and climate challenges across the continent.

Together, we have built a strong foundation of cooperation. Now, let us take it further. I hope this 16th Forum will be a productive platform for sharing experiences, exchanging ideas, and forging new partnerships. I am confident that the recommendations from this Forum will pave the way for improved access and use of satellite data to enhance weather and climate services in Africa.

Honourable Ministers, Dear participants,

I wish you all a successful Forum. Together, we can ensure that Africa continues to fully benefit from satellite data, contributing to the implementation of the African Union Agenda 2063, the joint Europe-Africa Partnership, and the WMO regional plans.

Thank you for your attention.

Speech by H.E Sediko Douka, ECOWAS Commissioner, Infrastructure, Energy and Digitalization

[Protocol observed]

On behalf of Dr Omar Alieu Touray, President of the ECOWAS Commission, and on my own behalf, I would like to express ECOWAS' gratitude to the Beninese authorities, particularly to His Excellency Mr Patrice Talon, President of the Republic, for having agreed for Benin to host this important meeting. Thank you for the warm welcome, for catering to our every need and for providing excellent working conditions throughout this forum.

Mr Talon, I would like to thank you for your involvement in implementing the ECOWAS Environmental Policy and for your much-appreciated support in hosting this important meeting.

Please also allow me to extend my thanks to the African Union, EUMETSAT, the African Special Agency and all the partners who have helped make this forum possible.

Honourable ministers, ladies and gentlemen,

Countries belonging to ECOWAS only make a very small contribution to global warming, with their emissions representing around 1.8% of the global emissions of greenhouse gas. However, these countries are at the heart of the climate change debate, with the region of West Africa having been identified as one of the critical zones because it is home to nine (9) of the thirty (30) world's most vulnerable countries according to the Global Adaptation Index.

This region's vulnerability to climate change calls for urgent adaptative measures, as well as solutions to limit greenhouse gas emissions, which could increase over the next few years. Furthermore, the Paris Agreement, which has been signed by all our member states and whose commitments have been recorded in their nationally determined contributions, calls for the tighter monitoring of greenhouse gas emissions and the implementation of adaptive measures in light of the impacts and effects of climate change.

To achieve this, high-quality hydro-meteorological and climatological data is essential. However, the national bodies responsible for climatology and hydrology in West Africa are far from able to establish and provide the necessary services to support the respective countries with the pursuit of their sustainable development goals.

In order to compensate for this deficit, our region needs to see improved coordination and synergy between partners in terms of the services they provide, as well as greater coordination and synergy between these services and those provided

by the member states. This should also be supported by a strengthened framework for collaboration and partnership between the regional economic community ECOWAS and Centre Régional AGRHYMET (CRA), which is the regional climate centre for West Africa and the Sahel region.

Ladies and gentlemen,

building on these collaborative partnerships, the ECOWAS Commission has put several measures in place to strengthen the regional governance framework for hydro-meteorological services, including the adoption of strategic documents aligned with the Integrated African Strategy on Meteorology. This brought about the adoption of both the ECOWAS Meteorological Programme and the Hydromet Initiative in 2017 and 2021 respectively, with the support of partners, including the World Bank.

In implementing these documents, the Commission, in collaboration with the Secretariat of the World Meteorological Organisation's Global Framework for Climate Services (GFCS), the Centre Régional AGRHYMET (CRA) and the ACMAD, has also undertaken other actions to strengthen the capacities of member states by helping them each establish their National Framework for Climate Services (NFCS).

The main objective of these measures is to reinforce and modernise the national meteorological and hydrological services and to ensure their sustainability by providing them with the necessary resources and appropriate institutional frameworks. This will enable them to fully accomplish their tasks, particularly in terms of observation, forecasting and applications, and also to encourage the efficient use of the products and services available.

Other regional and Africa-wide initiatives and projects such as PUMA, AMESC, MESA, GEMES and Africa, and ClimSA, which are funded by the European Union, have helped support, and are continuing to support, the access to and use of satellite observation data by local and national institutions within Africa.

Ladies and gentlemen,

despite these efforts, there is still much to be done to ensure the collection of meteorological data for our region. This is the reason why it is important to fully exploit the potential that technological progress presents. The Commission therefore welcomes the African Union's efforts to collaborate with the European Union, which, via partnerships with EUMETSAT and Copernicus, operates a range of satellites equipped with essential instruments for monitoring CO2, other greenhouse gases and atmospheric components over Africa.

This beneficial collaboration should enable Africa to gain access to the necessary satellite data for forecasting the weather, as well as for monitoring greenhouse

gases, which is one of the obligations of the member states under the Paris Agreement.

Honourable minister, distinguished guests, ladies and gentlemen,

Before I conclude this speech, I would like to remind you of the support that our countries require to reinforce their capacity for providing better hydro-meteorological services to end users.

On behalf of ECOWAS, I would like to thank the Beninese authorities for agreeing to host this forum. I would also like to extend these thanks to our partners, in particular the European Union, the African Union and AMCOMET, whose support and collaboration facilitated the organisation of this meeting.

I encourage all other partners to become involved in this joint initiative to improve the situation in Africa and to emphasize the importance of climatological and hydro-meteorological products and services in driving sustainable development forwards in our region.

All that is left for me to say is to wish you all a very productive forum.

Thank you for your kind attention.

Obrigado

Speech by M Joel Neubert, Head of Cooperation, European Union Delegation to Benin

[Protocol observed]

It is a great pleasure to be here today and contribute to the opening of this event on behalf of the European Union. I am pleased to see so many climate change specialists, great scientists and meteorologists.

First let me say that the European Union is a long-standing partner of Africa through regional initiatives but we have also a strong partnership at national level, in particular with Benin, cooperating in a number of areas: security, governance, global gateway components covering transport, energy, private sector development. Early this year we signed a programme to support vocational training, energy and an integrated programme in the north of Benin. The sessions tomorrow regarding space services, data access will be very useful for our future programme.

Climate events in recent years have impacted the implementation of development strategies of our African partners. The sustainable economic growth in Benin and in the region is becoming more and more vulnerable to the increasingly frequent devastating weather extremes associated with climate change.

In February 2022, during the last summit, the EU and the African Union recognised the importance to address climate change in our Green Transition and Digitalisation cooperation as part of “the Joint Vision for 2030”. This is also another important key priority of our Global Gateway strategy.

Allow me also to recall we do have a bilateral arrangement with the African Union to share data gathered by the Copernicus programme. This fosters the exchange of Earth observation data between Europe and Africa. This data can be used to develop tools to monitor the environment, crops, water bodies and coastal ecosystems, as well as for disaster management, among many others.

Through various programmes since 2002 (PUMA, AMESD, MESA), the EU has supported the procurement of satellite data reception stations in each sub-Saharan country providing continuous access and exploitation of earth observation data to African national and regional institutions. Satellite observations are an essential input to weather prediction and to analyse long-term time series from space in support of climate change adaptation and mitigation.

The ongoing ClimSA “Climate Services and related Applications Programme” is an important investment aimed at strengthening the entire climate and weather services value chain; one objective of this programme is to strengthen the operations of the 6 African Regional Climate Centres, and for those Centres not yet WMO certified to become so, with the technical assistance of the WMO (World Meteorological Organisation) of the JRC and EUMETSAT. ClimSA is for example providing services

to our African partners to design and implement their agriculture and blue economy strategies or to carry out a disaster risk reduction plan. Climate information is used to inform for instance farmers when to plant certain crops, when to irrigate and when to harvest. It can also help countries and regions to prepare for possible disease outbreaks and make strategic decisions on water and energy infrastructure.

Through the same programme and with the support of EUMETSAT and of the Joint Research Center of the European Commission (the JRC), the African Union Commission is procuring new generation satellite data reception stations and climate stations, compatible with the Meteosat third generation data which will enable more precise monitoring of our changing atmosphere, land surfaces and ocean. This will be an important investment which will help the implementation of a national project in weather- and climate-dependent sectors in Benin, and will be central to the provision of effective and sustainable multi-hazard early warning systems.

Going beyond this programme, I would like to mention the various support we are providing regarding space services to Africa and also what the future plans are.

The Global Monitoring for Environment & Security (GMES) is a EUR 50 million project which focuses on the information services value chain: from access to data, to process data tailor-made to the needs of African countries, to training people on policy development and enabling institutional frameworks. It also involves the private sector and encourages partnerships between private sector companies.

Finally, the last declarations chaired by the African Union, both in Abidjan and in Dar es Salaam, put a strong emphasis on strengthening African capacities to fully benefit from the new generation of satellite services, which is key for climate sensitive socio-economic sectors.

Based on these ongoing programmes, and in response to partners' needs, the EU is preparing an Africa – EU Space partnership programme. The first part will become operational in early next year and will focus on three main components: (i) Space and institutional partnership; (ii) Space for Early warning and (iii) Space and private sector.

The Space for Early Warning component is particularly important for this community and I am sure you will have time to discuss about it during the forum to consolidate the partnership, increase ownership and promote life-changing applications in your organisations.

Obviously, EU-Africa space cooperation also goes beyond earth observation and already includes projects around satellite use (EGNOS) for regulating air traffic (in cooperation with the Agency for the Safety of Air Navigation in Africa [ASECNA]).

To conclude, “Space-based information and services” as a truly global digital tool can certainly be instrumental in achieving the goals of the EU Global Gateway, as well as supporting our partners meeting their objectives.

Our goals are ambitious, and we can achieve them only in collaboration with our partners. All these digital solutions are only useful if designed and implemented together with the right local partners leading to a sustainable uptake of space-based information and services.

I wish you fruitful sessions that will provide you with relevant information on the main activities and benefits of satellite data in Africa for general information or for decision making processes.

In particular, I hope that the Forum will allow you to be updated on the status of related programmes, to identify possibilities of collaboration and also discuss future perspectives linked to the transition to new generation of satellites data & products.

Thank you.

Speech by H.E. José Tonato, Minister of Living Environment and Transport, responsible for Sustainable Development of the Republic of Benin

[Protocole observed]

It is a great pleasure for me to attend the opening ceremony of the 16th edition of the Users' Forum of the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) in Africa, which is taking place in Benin from 16 to 20 September 2024. On behalf of the government and on my own behalf, I would like to welcome you to Benin where you will be able to experience the warm hospitality of our country's people.

Benin is highly honoured to be hosting this year's forum, and we would like to thank all those who have been directly or indirectly involved in the physical organisation of this meeting, including all the technical aspects. The purpose of this forum is to encourage discussion and knowledge-sharing as part of a coordinated initiative to improve international resilience to climate change, the effects of which have a negative impact on the lives of our communities and jeopardise our development programmes. The Beninese government is extremely grateful for having been entrusted with the hosting of this forum in Benin. It goes without saying that IT experts are currently developing a number of measurement tools and diverse data collection technologies aimed at combatting the negative effects of climate change and improving the situation of vulnerable communities. These include the construction of the latest generation of atmospheric satellite surveillance equipment, which is both a remarkable achievement in terms of earth surveillance and a significant step forward in terms of precision. I would like to take this opportunity to congratulate EUMETSAT for its innovative geostationary satellite, METEOSAT Third Generation, whose new PUMA data processing station will be installed while this forum is taking place.

Ladies and gentlemen,

while climate change represents a real and undeniable threat to the whole of the African community, and the extent of this change can be measured by data gathered by satellites such as METEOSAT, there still remains a clear need for climate-focused institutions on the ground to help reduce the vulnerability of the different countries. This has resulted in member states and governments developing reliable policies and programmes and putting structures in place to allow them to adapt to and mitigate climate change.

Dear delegates,

I would like to take this opportunity to remind you of some of the specific measures implemented by the Beninese government in the fields of sustainable development, improvement of people's living environment and climate response. The government

has stepped up its efforts to gradually improve the resilience of our towns and cities with regard to climate change. One example of this is a law on climate change that has been passed and put into force. Benin has also established a national climate change committee, a national sustainable development council, a technical commission responsible for the national climate change adaptation plan process and a national greenhouse gas monitoring system, to name but a few. All of these measures and tools have been put in place to address the issue of climate change and increase the resilience of our communities. As part of its policy to combat climate change, the Beninese government is supporting the national meteorological and climatological services by densifying and modernising the national meteorological observation network by equipping it with a number of synoptic and agro-meteorological stations with the aim of improving the ability to record climate information and warn the community. Another example of the government's commitment to the Sustainable Development Goals includes bold measures to combat climate change and its devastating effects. The government has also undertaken a series of ambitious initiatives that demonstrate its commitment to a more sustainable and resilient future. The renovation of urban roads, in particular the tarmacking project, has considerably improved mobility in our towns and cities, reducing greenhouse gas emissions and encouraging more sustainable modes of transport. One key feature of this initiative is the installation of atmospheric pollutant sensors on major arteries, which not only responds to the issue of public health by reducing the number of zones with high concentrations of climatic pollutants, but also helps ensure that urban traffic flows freely. Similarly, measures taken to improve rainwater drainage in Cotonou and other secondary cities have enabled Benin to reinforce its infrastructure with regard to extreme weather events.

Ladies and gentlemen,

I would also like to mention the critical role that EUMETSAT plays in our fight against climate change by means of its collaboration with national meteorological services. Thanks to EUMETSAT's ongoing work, we now have the data and tools we need to understand the impact of climate change on our society and to develop effective adaptation strategies. The fact that the 16th edition of this EUMETSAT forum is being hosted in Benin provides further encouragement for the country's government, whose commitment to the Sustainable Development Goals includes bold measures to combat climate change and its devastating effects.

Dear delegates,

As you are aware, the EUMETSAT Users' Forum is a unique opportunity for strengthening ties and defining collaborative approaches between EUMETSAT and its African partners. Benin is committed to taking part in this very worthy project, which will no doubt enable member states to benefit from European satellite technology and strengthen their capacity to monitor weather and climate.

Given the delegates attending this forum and the support of the institutes and organisations present, Benin is confident that the objectives of this forum will be achieved.

We need to continue our joint efforts, ensuring that our actions are underpinned by science, and quicken the pace in our drive towards a safer, more sustainable future - a future in which we implement a standard yet nationally differentiated approach in our fight against climate change. I therefore urge all of us here today to multiply our efforts to overcome the challenges of climate change and to exploit synergies to build a more resilient world for future generations.

I hereby declare the 16th edition of the Users' Forum of EUMETSAT at Benin officially open and wish you all a very productive event.

Thank you.

COTONOU DECLARATION
ON THE USE OF SATELLITE DATA FOR THE MONITORING OF GREENHOUSE GAS AND AIR QUALITY IN AFRICA
Cotonou, 16 September 2024

DECLARATION DE COTONOU
SUR L'UTILISATION DES DONNEES SATELLITAIRES POUR LA SURVEILLANCE DES GAZ A EFFET DE SERRE ET DE LA QUALITE DE L'AIR EN AFRIQUE
Cotonou, le 16 septembre 2024

We, representatives of the African Union Commission (AUC) and the African Space Agency (AfSA), the African Ministerial Conference on Meteorology (AMCOMET) and the ECOWAS Commission, met in Cotonou, on the 16th September 2024 upon the invitation of the Ministry for Living Environment, Transportation responsible for the Sustainable Development of the Republic of Benin, in the presence of the representatives of the Regional Economic Communities specialized centre (AGRHYMET, ECCAS/CAPC-AC, IGAD/ICPAC, SADC-CSC), the World Meteorological Organization (WMO), the African Centre of Meteorological Applications for Development (ACMAD), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the European Center for Medium-Range Weather Forecasts (ECMWF) and the European Union (EU), on the eve of the 16th EUMETSAT User Forum in Africa;

Nous, représentants de la Commission de l'Union africaine (CUA) et de l'Agence Spatiale Africaine (AfSA), et de la Conférence ministérielle africaine sur la météorologie (AMCOMET), et de la Commission de la CEDAO, réunis à Cotonou, le 16 septembre 2024, à l'invitation du Ministère du Cadre de Vie et des Transports chargé du Développement Durable de la République du Bénin, en présence des représentants des centres spécialisés des Communautés économiques régionales (AGRHYMET, CEEAC/CAPC-AC, IGAD/ICPAC, SADC-CSC), de l'Organisation météorologique mondiale (OMM), du Centre africain pour les applications de la météorologie au développement (ACMAD), de l'Organisation européenne pour l'exploitation des satellites météorologiques (EUMETSAT), du Centre européen pour les prévisions météorologiques à moyen terme (CEPMMT) et de l'Union européenne (UE), à la veille du 16ème Forum des utilisateurs d'EUMETSAT en Afrique;

Considering that the effective monitoring of greenhouse gases (GHGs) and air pollution is essential for Africa's sustainable development and aligns with continental and global frameworks, including the Agenda 2063 of the African Union, the Paris Agreement and Sustainable Development Goals 3 (Good Health and Well-being) and 13 (Climate Action);

Considérant que la surveillance efficace des gaz à effet de serre (GES) et de la pollution de l'air est essentielle pour le développement durable de l'Afrique et s'inscrit dans les cadres continentaux et mondiaux, notamment l'Agenda 2063 de l'Union Africaine, l'Accord de Paris et les Objectifs N°3 de développement durable : Bonne santé et bien-être, et N°13 : Mesures relatives à la lutte contre les changements climatiques;

Referencing the conclusions of the *Integrated Assessment of Air Pollution and Climate Change for Sustainable Development in Africa* published by the United Nations Environment Programme and the African Union, which identified air pollution as a significant threat to human health in Africa, and which recommended the development of an Africa Clean Air Program, that would aim among other to *'collect and share data, utilize existing data and information sources, and increase capacity and equipment for new data collection and management, with monitoring and evaluation, emissions and air quality modeling, and education and communication';*

Faisant référence aux conclusions de *l'Évaluation intégrée historique de la pollution atmosphérique et du changement climatique pour le développement durable en Afrique* publiée par le Programme des Nations Unies pour l'Environnement et l'Union Africaine, qui a identifié la pollution de l'air comme une menace importante pour la santé humaine en Afrique, et qui a recommandé le développement d'un Programme africain pour un air pur, visant entre autres à '*collecter et partager des données, utiliser les sources de données et d'informations existantes, et augmenter les capacités et l'équipement pour la collecte et la gestion de nouvelles données, avec la surveillance et l'évaluation, la modélisation des émissions et de la qualité de l'air, ainsi que l'éducation et la communication'*;

Noting that successful implementation of the Paris Agreement of the United Framework Convention on Climate Change (UNFCCC) will require sustained, near-real time monitoring of greenhouse gas (GHGs) fluxes and concentrations to assess the impact and overall effectiveness of mitigation efforts undertaken by the Parties to the agreement;

Notant que la mise en œuvre réussie de l'Accord de Paris de la Convention-cadre des Nations Unies sur les changements climatiques (CCNUCC) nécessitera une surveillance soutenue et en temps quasi réel des flux et concentrations de gaz à effet de serre (GES) afin d'évaluer l'impact et l'efficacité globale des efforts d'atténuation entrepris par les Parties à l'accord;

Acknowledging the need for African countries to enhance their capacities to access and utilize GHG monitoring tools and data effectively, contributing efficiently to the Global Stocktake;

Reconnaissant la nécessité pour les pays africains de renforcer leurs capacités à accéder et à utiliser efficacement les données satellitaires et les outils de surveillance des GES, contribuant de manière efficiente au Bilan mondial**;**

Recognizing the role of Regional Economic Communities in improving air quality in Africa and the need to strengthen their cooperation with relevant organizations and centers in the field of air pollution and climate change monitoring;

Reconnaissant le rôle des Communautés économiques régionales dans l'amélioration de la qualité de l'air en Afrique et la nécessité de renforcer leur coopération avec les organisations et centres compétents dans le domaine de la surveillance de la pollution de l'air et des changements climatiques;

Highlighting the persistent demand from decision-makers and end users for Climate, Weather and Environmental Services at continental, regional and national levels, and the need to strengthen these services, notably through initiatives such as ClimSA, GMES&Africa, the new Africa-EU Space partnership programme (inc. Space for Early Warning), and the Innovation Agenda (including green transition);

Soulignant la demande persistante des décideurs et des utilisateurs finaux pour des services climatologiques,. météorologiques, et environnementaux aux niveaux continental, régional et national, ainsi que la nécessité de renforcer ces services, notamment à travers des initiatives UA-UE telles que ClimSA, GMES&Africa, le nouveau programme de partenariat spatial Afrique-UE (y compris le spatial pour l'alerte précoce) et l'Agenda d'innovation (y compris la transition verte) ;

Considering the African Space Policy and Strategy adopted in January 2016, which emphasizes the role of earth observation satellites in addressing climate-related societal needs, and the importance of international partnerships in closing capacity gaps and enhancing expertise within the region;

Considérant la Politique et la Stratégie spatiales africaines adoptées en janvier 2016, qui mettent en avant le rôle des satellites d'observation de la Terre dans la réponse aux besoins sociétaux liés au climat, et l'importance des partenariats internationaux pour combler les lacunes en matière de capacités et renforcer l'expertise dans la région;

Noting the commitment from the last AMCOMET session to prioritize support for WMO programmes relevant to Africa, including the Global Greenhouse Gas Watch (G3W);

Notant l'engagement de la dernière session de l'AMCOMET de donner la priorité au soutien des programmes de l'OMM pertinents pour l'Afrique, y compris le programme Global Greenhouse Gas Watch (G3W);

Appreciating the ongoing support from the EU and EUMETSAT since 2002 through various programmes, including PUMA, AMESD, MESA, GMES&Africa, and ClimSA, which have enabled continuous access to and exploitation of Earth observation satellite data by African continental regional and national institutions;

Appréciant le soutien continu de l'UE et d'EUMETSAT depuis 2002 à travers divers programmes, y compris PUMA, AMESD, MESA, GMES&Africa, et ClimSA, qui ont permis un accès continu et l'exploitation des données satellitaires d'observation de la Terre par les institutions continentales, régionales et nationales africaines;

Recognizing that Europe, through EUMETSAT and the Copernicus Programme, operates a range of satellites (MTG-S, EPS-SG) equipped with instruments crucial for monitoring CO2, other GHGs, and atmospheric components over Africa.

Reconnaissant que l'Europe, à travers EUMETSAT et le programme Copernicus, exploite une gamme de satellites (MTG-S, EPS-SG) équipés d'instruments essentiels pour la surveillance du CO2, d'autres GES, et des composants atmosphériques sur l'Afrique.

Further Noting that future Copernicus Sentinel missions, such as the CO2M satellites, will further enhance GHG monitoring capabilities via satellite;

Notant en outre que les futures missions Sentinel de Copernicus, telles que les satellitesCO2M, renforceront encore les capacités de surveillance des GES via satellite;

Solemnly agreed to:

- Encourage strengthening African capacities at continental, regional and national levels to integrate the use of the above mentioned satellite data for the GHG and Air Quality monitoring in order to ensure African ownership in the development and use of these technologies as well as its sustainability;

- Encourage establishing a network of ground-based stations across Africa to support satellite data access, calibration and validation, and to provide pertinent GHG and Air quality measurements for continental, regional, national and local usage;

- Engage international partners, particularly the European Union, within the framework of the Joint Vision of the 6th EU-AU Summit held in February 2022, in particular in cooperation areas related to AU-EU Innovation Agenda notably the Green Transition and Digitalization, and the Africa-EU Space Partnership programme to explore the possibility to support the implementation of the points mentioned above;

Nous convenons solennellement de:

- Encourager le renforcement des capacités africaines aux niveaux continental, régional et national pour intégrer l'utilisation des données satellitaires mentionnées ci-dessus pour la surveillance des GES et de la qualité de l'air, afin d'assurer la propriété africaine dans le développement et l'utilisation de ces technologies ainsi que leur durabilité;

- Encourager la mise en place d'un réseau de stations au sol à travers l'Afrique pour soutenir l'accès, l'étalonnage et la validation des données satellitaires, et fournir des mesures pertinentes de GES et de qualité de l'air pour une utilisation continentale, régionale, nationale et locale;

- Coopérer avec les partenaires internationaux, en particulier l'Union européenne, dans le cadre de la Vision commune du 6ème Sommet UE-UA tenu en février 2022, en particulier dans les domaines de l'Agenda d'innovation UA-UE, notamment le coopération liés à la Transition Verte et à la Numérisation, ainsi qu'au programme de partenariat spatial Afrique-UE afin d'explorer la possibilité de soutenir la mise en œuvre des points mentionnés ci-dessus;

- Engage with EUMETSAT and the Copernicus programme, notably its Atmospheric Monitoring Service (CAMS) operated by ECMWF to cooperate technically during the implementation of the points mentioned above;

- Develop an action plan and establish a joint working group, composed with the AUC and the RECs, to follow-up and facilitate the implementation of this Declaration;

- Coopérer avec EUMETSAT et le programme Copernicus, notamment son Servies de surveillance de l'atmosphère (CAMS), opéré par le CEPMMT, à coopérer techniquement lors de la mise en œuvre des points mentionnés ci-dessus;

- Élaborer un plan d'action et d'établir un groupe de travail conjoint, composé de la CUA et des CER, pour suivre et faciliter la mise en œuvre de cette Déclaration;

Kindly request:

- the Minister for Living Environment, Transportation responsible for Sustainable Development of the Republic of Benin to bring the Cotonou Statement to the attention of AMCOMET, AMCEN and other relevant African Union organs as well as the Regional Economic Communities in Africa;

- the African Union Commission and ECOWAS to formally engage with the other RECs and the Indian Ocean Commission to seek their endorsement of this declaration;

- the African Union Commission and the Regional Economic Communities to ensure that the content of this Statement is taken into account in the development of the Africa Clean Air and sub-regional Programmes;

- the AUC and AfSA and other relevant stakeholders to draw the Cotonou Statement to the attention of the international community and in particular to the European Union;

- the AMCOMET Bureau Chair to ensure that the content of this Statement is taken into account in the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services).

Nous demandons respectueusement:

- au Ministre du Cadre de Vie et des Transports, chargé du Développement Durable de la République du Bénin de porter la Déclaration de Cotonou à l'attention de l'AMCOMET, de l'AMCEN, d'autres or-ganes pertinents de l'Union africaine et des Communautés économiques régionales de l'Afrique;

- à la Commission de l'Union Africaine et à la CEDEAO de transmettre officiellement cette déclaration aux autres CER et à la Commission de l'Océan Indien afin de solliciter leur approbation de cette déclaration;

- à la Commission de l'Union africaine et les Communautés économiques régionales de veiller à ce que le contenu de cette Déclaration soit pris en compte dans le développement du Programme africain et des programmes sous-régionaux pour un air pur;

- à la CUA, l'AfSA, et les autres parties prenantes concernées de porter la Déclaration de Cotonou à l'attention de la communauté internationale et en particulier de l'Union européenne;

- au Président du Bureau de l'AMCOMET de veiller à ce que le contenu de cette Déclaration soit pris en compte dans la Stratégie intégrée africaine sur la météorologie (services météorologiques et climatologiques).

Done in Cotonou, Republic of Benin, on Monday 16th September 2024, in 5 original copies.

Fait à Cotonou, République du Bénin, le 16 septembre 2024, en 5 exemplaires originaux.

For the Republic of Benin
Pour la République du Bénin

S.E. José Tonato,
Ministre du Cadre de vie, des Transports en charge du Développement Durable

For the AMCOMET
Pour l'AMCOMET

Hon. Sam Cheptoris, AMCOMET Chair, Minister of Water and Environment of the Republic of Uganda

For the African Union Commission
Pour la Commission de l'Union Africaine

H.E. Josefa Leonel Correia Sacko
Commissioner for Agriculture, Rural Development, Blue Economy, and Sustainable Environment

For the ECOWAS Commission
Pour la Commission de la CEDEAO

S.E. Sédiko Douka
Commissioner, Infrastructure, Energy and Digitalization

For the African Space Agency
Pour l'Agence Spatiale Africaine

H.E. Dr. Tidiane Ouattara
President of the African Space Council
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RÉPUBLIQUE DU BÉNIN

MINISTÈRE DU CADRE DE VIE ET DES TRANSPORTS
EN CHARGE DU DÉVELOPPEMENT DURABLE
RÉPUBLIQUE DU BÉNIN

Septembre 2024
EUM P.69
ISSN 1024-8587
ISBN 978-92-9110-115-3