REPORT OF THE 12TH EUMETSAT USER FORUM IN AFRICA

KIGALI, RWANDA,
12-16 SEPTEMBER 2016

12th EUMETSAT User Forum in Africa
Forum des Usagers d'EUMETSAT en Afrique

Rwanda Meteorology Agency

EUMETSAT

REPORT OF THE 12TH EUMETSAT USER FORUM IN AFRICA

Organised by EUMETSAT in collaboration with the
Rwanda Meteorology Agency
under the Ministry of Natural Resources

Lemigo Hotel
Kigali, Rwanda
12-16 September 2016

Coordination and Secretariat:
EUMETSAT:
Vincent Gabaglio
Sylwia Miechurska
Stéphane Flasse

Rwanda Meteorology Agency:
John Ntaganda
Anthony Twahirwa
Fidèle Kamanzi

Report edited by:

EUMETSAT
Eumetsat-Allee 1
D-64295 Darmstadt
Germany
Tel +49-6151-807-7
Fax +49-6151-807 6150
Web site: www.eumetsat.int

EUM P.65
ISSN 1024-8587
ISBN 978-92-9110-103-0

TABLE OF CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

The 12th EUMETSAT User Forum in Africa was organised in Kigali, Rwanda, by EUMETSAT, in collaboration with the Rwanda Meteorology Agency (Meteo Rwanda), under the Ministry of Natural Resources. The Forum was held from 12 to 16 September 2016 with some 165 participants representing 56 countries, of which 49 were African.

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 use of EUMETSAT and other satellite data in various applications areas. The overall objective is to facilitate the use of EUMETSAT satellite data throughout the continent.

The programme of the 12th EUMETSAT User Forum in Africa included an Opening Ceremony, eight plenary sessions, two working group sessions, a technical visit, an exhibition area and a closing ceremony. The Forum was the opportunity to identify actions and initiatives that could be taken by EUMETSAT and its partners to meet the requirements of the African users. These actions are captured in twenty nine recommendations, sorted out by topics (see next section).

PARTICIPANTS

The Forum was attended by representatives of African National Meteorological and Hydrological Services (NMHSs) and specialised regional institutions for Meteorology, Climate and Environment. Regional policy institutions were also represented at the Forum, notably representative of several Regional Economic Communities (RECs), from the African Union Commission (AUC), the Secretariat of the African Ministerial Conference on Meteorology (AMCOMET) and the Secretariat of the African, Caribbean and Pacific Group of States (ACP Secretariat).

In addition to the Ministry of Natural Resources and Meteo Rwanda, several Rwandese entities were also represented such as the Rwanda Environmental Management Authority (REMA), the National Science and Technology Commission, the Rwanda Agriculture Board (RAB), the Rwanda Civil Aviation Authority (RCAA) and the Rwanda Transport Development Authority (RTDA) and the Ministry of Infrastructure, as well as several researchers.

Finally, representatives of the various European and international institutions also took part of the Forum. This includes representatives from the European Commission (JRC, DG DEVCO and EU Delegation to Rwanda), the German, UK and French NMHS, the World Meteorological Organization (WMO) and the Group on Earth Observation (GEO). Research institutions were also present such as the Vlaamse Instelling voor Technologisch Onderzoek (VITO), the International Institute for Geo-Information Science and Earth Observation (ITC), the University of Reading.

The list of all participants is provided in Annex.

OVERVIEW OF THE FORUM

The full programme of the Forum is presented in Annex.

During the Opening Ceremony, representatives of EUMETSAT, the EU Delegation to Rwanda, the WMO, the AUC, the ECCAS and the Republic of Rwanda delivered speeches, which are included in the annex of this report. The introductory session which followed was the opportunity to present the status of two African strategies: the African Integrated Strategy on Meteorology (Weather and Climate Services) and the African Union Space Strategy. These two, together with the Joint EU-Africa Strategy, constitute the main policy framework for EUMETSAT activities in cooperation with Africa.

Plenary and working group sessions allowed participants to get information and provide feedback on EUMETSAT programmes, data access (inc. PUMA 2015 stations) and training activities. A session was specifically dedicated to the Meteosat Third Generation (MTG) and to Climate applications. Other sessions informed on the status of African projects funded by European Development Funds, such as MESA, SAWIDRA and GMES and Africa. Furthermore, a session introduced the Copernicus programme and the use of Earth observations for marine and land (more specifically agriculture) applications.

A summary of all sessions and presentations is presented in this report. All presentations and speeches delivered during the 12th EUMETSAT User Forum in Africa are included on the CD ROM.

Meteo Rwanda organised a technical and cultural tour. This well-attended excursion included a visit to the Doppler radar station operated by Meteo Rwanda and located at Maranyundo Hill, in Bugesera District. Participants could also honour the memory of the victims of the 1994 Genocide, through the visit of the Kigali Genocide Memorial.

An exhibition area was jointly set up by EUMETSAT, MeteoRwanda and the MESA programme. The exhibition included a PUMA 2015 and MESA stations connected to a EUMETCast reception station, providing a live stream of data and products that could be displayed. This provided many participants the opportunity to interact with the company in charge of the deployment of these stations, and to have an overview of the new capabilities. The exhibition included various posters and presentation of MESA outcomes in several region. Posters and flyers of various projects were also available.

A High-level Event on the Regional Climate Centre for Central Africa took place on the eve of the Opening ceremony. The Event was hosted by Mr Vincent Biruta, Minister for Natural Resources of the Republic of Rwanda, with the participation of the CEMAC Commissioner in charge of Infrastructure and sustainable development, the Assistant Secretary General of ECCAS and the Senior Advisor to the African Union Commissioner for Rural Economy and Agriculture. The four persons signed the Kigali Declaration in support to the Climate Application and Prediction Centre of Central Africa (CAPC-AC) reaffirming their support to the establishment of this Centre, and requesting the International community to fully take into account the existence, the capacities and the needs of the CAPC-AC in their respective projects and initiatives.

MAIN OUTCOMES

The main outcomes of the Forum are captured in the recommendations listed in the next section. They are related either to EUMETSAT Programmes, to data access and training activities, to the MESA, SAWIDRA and GMES and Africa programmes, or more broadly to continental approach to foster Space and Earth observation.

The main outcomes are:

- The Forum welcomed EUMETSAT decision to position Meteosat-8 at 41.5 degree East, ensuring not only continuity of the **IODC**, but also improved observation over the IODC and Easter Africa region;

- The Forum provided guidelines and priorities for the use of **MTG in Africa**. This will allow the drafting within the next two years of a roadmap to ensure smooth transition from MSG to MTG, with the support of the RAIDEG;

- The Forum provided mainly positive feedbacks on the **PUMA 2015** and MESA stations. The Forum noted the need to have an upgrade of the station software to allow visualisation of products newly added to EUMETCast, notably the Meteosat-8 over Indian Ocean, Climate SAF data, and soon Sentinel-3 marine data;

- The NMHS were informed about the new **SAWIDRA** projects. The Forum noted that this will constitute an important initial step forward for Numerical Weather Prevision in Africa, which will required complementary efforts, such as specialised educational curriculum in NWP, to ensure sustainability;

- The Forum encouraged the MESA and SAWIDRA projects to continue to work in close coordination with the NMHS, in order to **ensure impact at national level**, and compliance with national mandate, notably in the area of issuing warnings;

- The Forum noted the recent efforts by EUMETSAT to include climate related data in EUMETCast and to organise associated training, and the positive results of the MESA Climate Service Thema. The Forum noted that this is a good basis for **the development of Climate Service in Africa** and discussed activities and priorities for future projects such as GFCS ACP.

- The Forum discussed current training activities and methodologies (e.g. on-line and integrated training), and identified **new training needs** in area such as Marine, Climate and NWP, in addition to training courses currently provided through the Regional Centre of Excellence on training;

- Finally, the Forum welcomed current coordination efforts at AU level on the various initiative (e.g. AMCOMET, Space strategy, GMES and Africa, AfriGEOSS) and indicated that this should result on (i) improving **data acquisition, dissemination and sharing**, as well as (ii) strengthening indigenous capacity to generate **"african-made" added-value products**.

LIST OF RECOMMENDATIONS

The recommendations of the 12th EUMETSAT User Forum in Africa are sorted into the following categories:

1. EUMETSAT programme
2. PUMA 2015, Data and RAIDEG
3. Climate and SAWIDRA
4. MESA and GMES and Africa
5. Training activities
6. Space and Earth Observation
7. Other

They were generated in the various sessions and reviewed and approved during the last session.

EUMETSAT programme

Recommendation #1
Roadmap for MTG Africa

The Forum noted and discussed the results of the MTG Africa Preliminary Study (MAPS). The Forum recommended EUMETSAT, in close coordination with the RAIDEG, to:

- Consolidate the results of MAPS, notably the definition of the "African data sets" and "transition scenario" in line with the discussion held during the MTG Africa session of the Forum, in order to optimise both temporal and spatial resolutions of MTG data, within the current identified bandwidth allocation;
- Present at the next EUMETSAT User Forum in Africa a roadmap for the transition from MSG to MTG, highlighting the actions to be taken at NMHS level to prepare for and implement the transition. This roadmap shall also include user preparedness activities (inc. training on MTG data and products which will be disseminated on EUMETCast Africa).

Recommendation #2
MTG Africa and AMCOMET

The Forum recommended AMCOMET Secretariat and AMCOMET Space Task Team, as part of their respective mandate to take into account the increase in capacity required for Africa to fully benefit from MTG (i.e. training, user station, EUMETCast bandwidth for data access) and to consider the MTG Africa roadmap that will be proposed by EUMETSAT and RAIDEG (see previous recommendation).

Recommendation #3
MTG Africa – Resources mobilisation

The Forum noted the bandwidth limitations and the efforts made by EUMETSAT to guarantee the continuity of an optimum satellite geostationary service to Africa.

The Forum recommended

- to the NMHS to mobilise resources for upgrade of their user stations (e.g. PUMA), the related infrastructure (e.g. processing chains) and the EUMETCast bandwidth, all required to access broader data sets and make best use of MTG data when available;
- to AMCOMET and AUC to support the NMHS in their resources mobilisation to prepare for the reception of MTG data in Africa;
- to EU and ACP Secretariat to include the relevant components in future EC-funded projects such as GMES and Africa or GFCS ACP.

Recommendation #4
MTG and North Africa

The Forum recommended EUMETSAT to support NMHSs of North Africa to be ready for the acquisition of MTG data, products and services in a timeframe simultaneous to that of the European NMHSs by creating links between NMHSs North Africa and the preparatory programme focused on European NMHSs (MTG-Up).

PUMA 2015, Data and RAIDEG

Recommendation #5
MET-8 image display on PUMA 2015

The Forum noted the move of MET-8 over the Indian Ocean (41.5 degree East), which will provide improved services over a large part of Africa. It recommended EUMETSAT and AUC (MESA) to ensure that the PUMA 2015 stations will be able to display the MET-8 images over the Indian Ocean.

Recommendation #6
PUMA 2015 upgrade for new products

The Forum noted the improvement provided by the PUMA 2015 station with respect to the PUMA 2010. It noted also that products provided through EUMETCast are continuously enhaned. The Forum also noted that some of the new products are not processed neither displayed by the PUMA 2015 station. The Forum therefore recommended AUC to explore timely upgrade of the PUMA 2015 stations, in order to integrate the news products or to improve the production tools for forecasters, through the MESA project, or, if not feasible, through the follow-on GMES and Africa project.

Recommendation #7
Deployment of PUMA 2015 stations

Noting the difficulties in some countries with regards to custom formalities for the importation of new PUMA 2015 stations, despite the renewed efforts of the national beneficiaries, the Forum recommended MESA programme (AUC and RICs) to contact again the concerned countries to remind them about the Cotonou agreement ruling the import rules, insisting on the importance of the station for those countries.

Recommendation #8
PUMA 2015 displayed information

The Forum recommended AUC to ensure that the contractor in charge of deployment of the PUMA 2015 stations verifies that all contractual products/data can be displayed immediately as of first day of installation.

In addition, the Forum recommended NMHS to strengthen their communication network to ensure that data received through the PUMA 2015 stations are also made available to other national institutions.

Recommendation #9
Togo Antenna

The Forum recommended AGRHYMET to support Togo NMHS to acquire and install a new antenna and LNB that will allow their new PUMA 2015 station to receive EUMETCast data.

Recommendation #10
RAIDEG focal points

Noting the formal adoption by the WMO Regional Association of RAIDEG to coordinate regional data requirements[1], the Forum recommended RA-I Permanent Representatives with WMO to nominate Focal points, as already invited by the Regional Association I President, to interact with their RAIDEG regional representative in order to better address the African community user's needs. In particular, Focal points will be asked to comment on the access and utilisation of data currently disseminated to and within Africa, on any training requirements and recommendations to WMO regional association I, and on programme implementation structure. This should be done by December 2016 to enable RAIDEG to consult regions prior to the next RAIDEG meeting.

The Forum further recommended AUC and RAIDEG to ensure that data needs of the MESA RICs and future GMES and Africa RICs, are also identified during the RAIDEG processes.

[1] http://www.wmo.int/pages/prog/sat/ra1-expertgroup-intro.php

Climate and SAWIDRA

Recommendation #11
Implementation of SAWIDRA

The Forum noted the delays taking place in the formalisation of the agreements for the implementation of the SAWIDRA continental and regional projects. The Forum recommended AfDB and AUC to expedite the signature of the contracts with the SAWIDRA implementation centres: ACMAD, ICPAC, AGRHYMET, SADC-CSC and ECCAS (for the SAWDIRA Central Africa). The Forum further recommended ECCAS to focus the SAWIDRA resources exclusively on project-related activities, aiming at increasing technical capacities within the centre and delivering information and services to the Member States, through their NMHSs.

Recommendation #12
Climate Regional Centre – Central Africa and SAWIDRA

The Forum noted the Kigali Declaration in support to the Climatic Application and Prediction Centre for Central Africa (CAPC-AC), signed on the eve of the 12th EUMETSAT User Forum in Africa, recommended to the Forum participants, notably those form the ECCAS and CEMAC member states to bring this declaration to the attention of their Ministers in charge of meteorology.

The Forum acknowledged the efforts of ECCAS in setting up the CAPC-AC and further calls upon ECCAS and its Member states to continue providing the necessary human and financial resources for the operationalisation of the centre.

The Forum requests the Africa Development Bank and other partners to enhance their support to ECCAS to make so that the centre becomes operational as soon as possible.

Recommendation #13
Benefits of climate services

The Forum took note that the NMHSs and service providers in the context of MESA start to take steps in working on measuring the socio-economic benefits of different services they are providing including through the availability of new Earth observation products.

The Forum recommended EUMETSAT to invite at the next upcoming Forum countries, that have implemented climate services for any specific application, to share their experience in the implementation process and to describe the impacts on the respective service beneficiaries.

Recommendation #14
Climate related projects

The Forum recommended that climate related projects should support the implementation of regional and global targets, such as the integrated African Strategy on Meteorology (Climate and weather services), the Paris agreement, the African regional strategy for Disaster Risk Reduction and its programme of action, the Sendai Framework for disaster risk reduction, the draft Africa Climate Change strategy, the High level work programme on Climate Action in Africa, and the SDGs and agenda 2063.

MESA and GMES and Africa

Recommendation #15
Transition between MESA and GMES and Africa

The Forum recommended AUC and EC to expedite the signature of the GMES and Africa agreement to ensure a smooth transition between the MESA and the GMES and Africa project, without gaps at regional level. The Forum also recommended AUC to expedite the setting up of the GMES and Africa regional Grants, and to ensure that the MESA achievement are consolidated, that the network already developed are strengthen and that they build on existing capacities and further strengthen the existing African expertise, institutional memory, systems organisation, etc., essential to a successful start and implementation of the GMES and Africa, and long term sustainability.

The Forum also recommended the AUC, in charge of implementing GMES and Africa, to ensure that all relevant AU departments are involved in the implementation and coordination of GMES and Africa, depending of the thematic areas.

Forum noted that GMES and Africa does not include weather and climate services. The Forum recommended to EC and ACP Secretariat to ensure that the MESA Climate Services achievement are consolidated and further strengthened as part of the GFCS ACP project to be formulated in the coming months.

Recommendation #16
NMHSs involvement into MESA National Networks

The Forum recommended the MESA RICs to consolidate the MESA national networks including optimal integration of NMHS's technical, weather and climate expertise; so that countries are in a position to sustain these MESA national networks once the MESA project is finished.

Recommendation #17
In-situ data for validation of EO products

The Forum recommended future projects to take into account the needs in validation of satellite products/services, in particular the in-situ equipment required for this validation.

Recommendation #18
Regional and National Services

The Forum recommended to project such as MESA and SAWIDRA to fully take into account the national mandate of the NMHS notably in the area of issuing warnings. It therefore recommended to project implementation centre, with the support of AUC and AMCOMET, to involve NMHS in the project activities in order to ensure projects impact at national level, and to properly define boundaries between regional activities, and national mandates.

The Forum recommended NMHS to ensure that support from these projects to setting-up or strengthening national warning systems are sustained at national level.

The Forum also recommended the intra-ACP project Disaster Resilience for sub-Saharan Africa (coordinated by AUC) to ensure, in close coordination with SADC, that Comoros can benefit from the SAWIDRA project.

Recommendation #19
Development tools for climate data sets

The Forum recommends that future projects, such as GFCS-ACP, related to Africa Climate services includes the development of tools to better distribute, disseminate, receive and interpret climate data sets.

Training activities

Recommendation #20
On-line training

The Forum noted that the satellite online training tends to be aimed at a higher level of skill than what most participants have. The Forum recommended EUMETSAT and training partners to consider how to bridge this learning gap. This might include training local experts to support people to bridge the gap.

Recommendation #21
Integrated training

Noting that (i) data sets are used in combination in the forecasting process; (ii) the requirement for more training on NWP and (iii) the existing training programs such as those

facilitated by collaborating NMHSs, VLab and SWFDP, the Forum recommended WMO Secretariat to facilitate a process to enable the relevant parties to engage with each other and move to more integrated training, which must be practically focused.

Recommendation #22
Specialised training for NWP

The Forum noted that the new technologies implemented within initiatives for the use of EPS meteorological satellite data in support to the production of numerical weather prevision (NWP), e.g. the SAWIDRA project, require a substantial update of African expertise. The Forum recommended AMCOMET, WMO and AUC, in the framework of their own mandate of capacity building, to rapidly put in place a specialised training programme (e.g., masters) involving African training centres, in close relationship with relevant international partners.

Recommendation #23
Copernicus Marine Products training

The Forum noted the interest in the Copernicus marine data, and recommended EUMETSAT to facilitate access to Copernicus marine data and to provide training in the use of Copernicus marine products in both the English and French languages.

Recommendation #24
Climate SAF training

The Forum noted the interest in Climate SAF, and recommended EUMETSAT, in close collaboration with the Regional training centres and Regional climate centres to provide training in the use of climate products in both the English and French languages.

Space and Earth Observation

Recommendation #25
African Space Strategy Implementation Plan and existing initiatives

The Forum recommended to AU Space Working Group and AMCOMET Space Task Team to take into account, during the drafting and implementation of the African Space Strategy Implementation Plan, existing initiatives and projects such as RAIDEG, AfriGEOSS, MESA, GMES and Africa and SAWIDRA, in order to ensure technological and thematic coherence, in particular in the area of meteorology and climate, and optimise mutual benefits and synergies and ensuring contribution of Earth observation to development goals.

The Forum recommended that the plan ensure synergies between Earth observation initiatives and other continental priorities and programme (e.g. food security and PIDA).

Recommendation #26
EO data acquisition, dissemination and sharing

The Forum recommended AUC, AMCOMET, WMO and GEO, in the framework of the African Space Policy and Strategy, to come up with a continental policy for the acquisition, dissemination and sharing of EO data and other in-situ relevant data.

Recommendation #27
Development of African-made added-value products

The Forum noted that the current and the future EUMETSAT programmes (e.g. MTG, EPS-SG, etc.) would provide continuous satellite data coverage of African until 2040. This long-term perspective is also an opportunity for the user community in Africa to invest in the development of African-made derived added-value products, which will benefit all African countries. Such development should be made building on existing African regional and national capacities, in line with the Integrated African strategy on Meteorology and the African Space Policy and Strategy. The Forum therefore recommended AMCOMET Secretariat, its Space Task Team and AUC to further explore this possibility and report at the next EUMETSAT user Forum in Africa.

Other

Recommendation #28
Participations to Fora

The Forum recommended EUMETSAT, with the support of RIC and PR with WMO, to encourage Universities, other institutions, and users to take part in the next EUMETSAT User Forum in Africa and other relevant Forum (e.g. the MESA Forum) in order for them to share their experiences and requirements in using EO products.

Recommendation #29
Hydromet Africa programme

Noting the opportunity provided by the Africa Hydromet Programme Framework, signed in June 2015 during WMO Congress-17 between the World Bank, African Development Bank and the WMO; the Forum recommended that the partnership make the necessary consultations to ensure that the needs of NMHSs and RCC are taken into consideration.

SESSIONS REPORT

INTRODUCTORY SESSION

1. Session purpose and Content

Following the Opening ceremony, this introductory session set the scene for the 12th EUMETSAT Forum in Africa. It included presentation of two major African strategies (on Meteorology and on Space), which provided a pan-african framework for the Forum discussion. The session included also a presentation of the Forum objective as well as a presentation of the status of implementation of the recommendations from the 11th Forum.

Introductory remarks (J. Ntaganda, Director General Meteo Rwanda and Permanent Representative of Rwanda with WMO)

John welcomed all participants and provided information about the local organisation, to ensure that all participants will have a safe stay in Rwanda. He also introduced the local organisation team, to whom participants shall direct all their questions related to their stay in the country.

WMO RA-I & AMCOMET - Status and way forward (J. Mukabana, WMO)

Joseph reminded the participants about AMCOMET, and the Integrated African Strategy on Meteorology (Weather and Climate Services). He then focused on the links between the AMCOMET and the African Space Programme, explaining the importance of space-based observation for Africa. He explained that inputs are currently provided by the meteorological community to the Africa Space Implementation Plan, through the AMCOMET Task Force on the African Space Programme, which met the day before the start of the Forum. He finally presented the result of the WMO Survey on the use of satellite data.

African Union Space Policy and Strategy (H. Masheleni, AUC)

Hambani introduced the Africa Space Policy and Strategy, which is the step towards an African Space Programme, under the long-term AU Agenda 2063. He stated that the two main goals are, first, to use space science and technology to derive optimal socio-economic benefits and, second, develop and maintain indigenous infrastructure and capabilities in Africa. He mentioned that Earth observation is one of the strategic focus, and presented the methodology adopted to address the wide user needs over the continent.

Objectives and programme of the 12th EUMETSAT User Forum in Africa (P. Counet and V. Gabaglio, EUMETSAT)

Paul presented the main objectives of the Forum, which is to reinforce the dialogue between EUMETSAT and the African user communities in order to optimise the use of satellite data and products in Africa, and to provide a platform for the users to discuss and present achievement and challenges in the access and use of satellite data. Vincent then presented the programme of the Forum and provided logistics information.

Review of Recommendations from the 11th EUMETSAT User Forum in Africa (V. Gabaglio, EUMETSAT)

Vincent provided a brief overview of the status of implementation of the recommendations raised during the 11th EUMETSAT User Forum in Africa. The detailed status was distributed to all participants by email in advance to the Forum. He presented a summary of the status for each group of recommendation. Of the 34 recommendations raised, implementation was completed for 30 of them, and still on-going for 4.The 4 recommendations were discussed again during the pertinent session of this Forum.

SESSION 1 - OVERVIEW OF EUMETSAT PROGRAMMES

Chairperson: J. Ntaganda, Meteo Rwanda
Rapporteurs: V. Gabaglio, EUMETSAT + A. Twahirwa, Meteo Rwanda

1. Session purpose and Content

The first session was dedicated to the presentation of the status of the various EUMETSAT programmes and activities: MSG, EPS, Jason, MTG, EPS-SG, SAFs. It also included presentations related to training and access to EUMETSAT data (inc. EUMETCast). This session was complemented by the report of the RAIDEG activities.

2. Session contributions

Status of EUMETSAT programmes MSG, MTG, EPS, Jason and future programmes (A. Ratier, EUMETSAT)

Alain Ratier presented the latest status of EUMETSAT current and future satellite programmes. He informed the meeting about the EUMETSAT Council decision in June 2016 to move Meteosat-8 over the Indian Ocean at 41.5 degree East, as the EUMETSAT contribution to Indian Ocean Data Coverage (IODC). He then presented the current generation of geostationary and polar-orbiting satellites and their applications in Africa and explained the status of the future satellites' programme that will take over the current generation at the beginning of the 2020's. He also presented the Jason programme, as well the EUMETSAT's contribution to Copernicus. He provided then a brif overview of EUMTESAT ground segment and performance of current data delivery mechanism.

EUMETSAT User and Climate services (J. Saalmueller, EUMETSAT)

Joachim presented EUMETSAT activities pertaining to its mandate to Contribute to the operational monitoring of the climate and the detection of global climatic changes. This included the long-term commitment to deliver satellite programmes, maintaining a unique archive of decades of space-based observation, producing consistent climate records and supporting climate-related capacity building initiative. He provided concrete example of climate records produced recently. His presentation then focused on ways for user to subscribe to EUMETSAT data services, on the Data Centre and on how users can request help through the Help Desk. He concluded by showing a movie of Meteosat-8 moving from 0 to its 41.5 degree east final destination.

Training activities (M. Higgins, EUMETSAT)

Mark initiated its presentation by introducing the various training resources that are available on-line and the four training centres (WMO-CGMS Vlab) located in Africa, who provided regularly class-room training but also blended and distance learning. He then described the target audience and application area of EUMETSAT support to training in Africa, and which elements are considered when preparing for training: candidate selection, collecting training needs; as well as elements of success. He then invited participants to subscribe to the MOOC – Ocean from Space, which started at the end of October 2016.

EUMETCast Africa and its future evolution (S. Wannop, EUMETSAT)

Sally presented the current status of EUMETCast Africa, to which 344 users are connected, and the updates currently planned: increase of bandwidth to include new data sets (IODC, Sentinel-3), possible move to DVB-S2 technology as of 2018, with possible change of telecommunication satellite. She summarised the products evolution since last Forum, including the "information" and the "training" channel, and the support to the "International Charter Space and Major Disasters Disaster". She then focused on the status of the Data Collection Platform (DCP) and its evolution notably the High Rate services offered soon over the Indian Ocean.

Report of RAIDEG activities (M. Diop Kané, RAIDEG Chairperson)

After reminding participants about the RAIDEG mandate, Mariane presented the status of work of the RAIDEG, as well as the five recommendations from the 7th meeting of the RAIDEG, which took place on the Saturday and Sunday just before the 12th EUMETSAT User Forum in Africa. The first recommendation requests the WMO PR to nominate a focal person in each NMHS to interact with the RAIDEG regional representative. The second related to the challenge of disseminating the data from the MTG programme, due to the large increase of the quantity of information with respect to MSG. The third recommendation is about the concept of African Satellite Application Facility, and requests that regional centres explore further this concept. The fourth and fifth recommendation focus on the need to update and fine-tune the PUMA 2015 stations for visualisation of existing and new products.

3. Discussions and Recommendations

The Session 1 contributed to recommendations #5 to #8, #10 and #27.

SESSION 2 - PUMA 2015

Chairperson: A. Kanga, Congo
Rapporteurs: M. Higgins, EUMETSAT + M. Diop Kané, Senegal

1. Session purpose and Content

The second Session focused on the new EUMETCast PUMA 2015 stations, which were being installed in the NMHS in Africa at the time of the Forum. It included presentations from MESA (strategy and training), the contractor in charge of the stations procurement and deployment, as well as initial feedback from users.

2. Session contributions

MESA: Access to Earth Observation Data (J. Wasambo, AUC and R. Brown, MESA TAT)

Robert Brown presented the current data access situation for the MESA programme, covering both the PUMA2015 and MESA systems and the EUMETCast infrastructure. Continuity of meteorological infrastructure and data has been assured through the PUMA, AMESD and MESA programmes. The systems are being deployed through the continent at Continental, regional and National levels. The delivery takes place through the infrastructure supply contract. The technical assistance team welcomes questions.

Presentation of PUMA 2015 station (P. Riera, TPZ and MFI)

Philippe Riera, presented the PUMA2015 system. The system is furnished by MFI and is based on the Synergie system. As before the system architecture is based on three PCs for reception, data treatment and display. The system is designed to be resilient in the operational environment with a degraded mode and maintainable locally. The system has some options for configuration to local circumstances. The DVB card is compatible for DVB-S and DVB-S2, making it resilient to changes in EUMETCast. The software has been updated and is at ISO version 1.0.3 at June 2016.

MESA Training related to PUMA 2015 (B. Maathuis, ITC-Particip)

Ben Maathuis presented the training component of MESA project. The training has a distance learning component to enable the participants to be better prepared for each course. Ben outlined the administrator and applications training curriculum and the technical infrastructure that were implemented in the training centres. The set up in the training centres is able to fully simulate the situation as found in the local installations. The training curriculum for the later administration and user training was refined and developed during the initial training of trainers. More training material is under preparation and will be available for download.

Initial User Feedback (L. G. Razafindrakoto, ACMAD)

Leon Razafindfakoto presented some feedback on the preparation and utilisation for the PUMA2015 system. Both the MESA and PUMA2015 systems were successfully installed at EAMAC. Leon presented a number of cases of meteorological analysis and forecast including presenting application of observation (including lightning), NWP and satellite data.

Initial User Feedback – S. Muiruri, Kenya Meteorological Service

Sospeter Muirui presented the usage of the PUMA2015 at the Kenya Meteorological Department. He presented an overview of the system and noted that it is easy to use for forecasters. He also indicated that this process system helps in developing and strengthen forecasters' competences.

Status of deployment, User support and warranty – P. Riera, TPZ

To conclude the presentations of this Session, Philippe Riera presented the status of systems deployment so far, indicating that the latter and related issues can be tracked in the TULEAP system, and that enquires should be made to TULEAP by email at orops@eumetsat.int. The installation is covered by a 1 year software warranty and a 3 year hardware warranty.

3. Discussions and Recommendations

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

- The status of the installations in Togo and Niger.
- The difference between PUMA2010 and PUMA2015, and benefits of the latter. It is possible to run the systems in parallel if required and the PUMA2010 is maintained locally.
- The approach for system support, i.e. through the helpdesk and TULEAP system.

The Session 2 contributed to recommendation #9.

The EUMETSAT Secretariat distributed a questionnaire to be completed during the forum on the PUMA2015 system and training.

SESSION 3 - METEOSAT THIRD GENERATION

Chairperson: J. Mukabana, WMO
Rapporteurs: P. Counet, EUMETSAT + D. Kone, EAMAC

1. Session purpose and Content

The third Session was dedicated to the Meteosat Third Generation (MTG) programme and its benefit for Africa. It allowed the participant to discuss priorities in term of MTG data sets to be made available in near real time to Africa, as wells as transition from MSG to MTG. During the session A. Ratier, EUMETSAT Director General, gave an introductory remark followed by three presentations mainly focusing on RAIDEG contribution to MTG Africa, MTG for Africa Concept and MTG added Value respectively delivered by Mariane Diop Kane (chair of RAIDEG), D. Fayard, V. Gabaglio and V. Nietosvaara.

2. Session contributions

Introductory remarks (A. Ratier, EUMETSAT)

Alain Ratier, Director-General of EUMETSAT, introduced the session by recalling that at the last Forum there was a recommendation to initiate a study with RAIDEG to discuss the transition towards MTG. The study showed that there is some time as the MTG programme is delayed by 1 year. The MSG satellites are in good health and interactions with users in Africa will therefore continue to define the best possible transition scenario.

RAIDEG contribution to MTG Africa (M. Diop Kané, Chair of RAIDEG)

Mrs. Mariane Kane, Chair of RAIDEG, started her presentation by an overview on MTG and its benefits for Africa. She then made a review of the main current and upcoming actions of this group of experts, which actions obviously aim at permitting a maximum optimal access to the future MTG products in Africa. She finally highlighted the main outcomes of the RAIDEG Group last year's meetings, which mainly focused on discussing the MTG dissemination scenario and the transition between MSG and MTG.

MTG for Africa Concept (D. Fayard and V. Gabaglio, EUMETSAT)

D. Fayard and V. Gabaglio, EUMETSAT, highlighted in their presentation the main technical specifications of MTG and the new specificities of this new satellite. They insisted on the breakthrough that these new capacities will bring to operational forecasting and climate and environmental monitoring. They continued by presenting the MTG Africa Concept and the need to identify and prioritize the MTG datasets which should be made available in Africa, as well as training needs in order to help African users to be fully ready for the use MTG products. They finally introduced the scenario supported by RAIDEG as the initial baseline for MTG data and products dissemination in Africa and provided more details on the transition plan from MSG to MTG. Considering that MSG will still be available for a long time and that MTG might only become fully operational around 2022-2023, the discussion should continue with African users, through RAIDEG, to ensure that the baseline and the transition plan are continuously kept up to date.

MTG added value -FCI and Lightening Imager (V. Nietosvaara, EUMETSAT)

Mr V. Nietosvaara, EUMETSAT, introduced briefly some aspects and benefits of MTG Flexible Combined Imager (FCI) and Lightning Imager (LI). In particularly LI as a new instrument will have an impact on the capabilities to monitor lightning in real time from space. He also highlighted the new channels of MTG with details on their related specificities and improvements in earth observation.

Following the presentations in Plenary three splinter groups discussed access to MTG data for North Africa, LI and FCI instruments.

Working Group 3.1. North Africa (Facilitators: V. Gabaglio, EUMETSAT + T. Saouri, Maroc)

In the discussion of North African countries, participants underlined that North Africa countries will have access to EUMETCast-Europe and observations over their countries will be covered by all MTG-I and –S instruments, including the Rapid Scanning Service. Therefore, NMHSs of North Africa will need to be prepared for the reception of MTG data simultaneously as the European NMHSs. A short transition period is expected and early information of necessary equipment is required from EUMETSAT. Specific training on new instruments and services would be needed.

Working Group 3.2. Lightening Imager (Facilitators: V. Nietosvaara, EUMETSAT + D. Kone, EAMAC)

In the discussion on the LI instrument, participants were provided with a brief introduction to the MTG LI system. Participants were also invited to briefly present their existing ground-based lightening detection infrastructure (i.e. in ASECNA countries –project planned, in South Africa,…). A general request from the group is to ensure complementarity between ground and space-based lightening detection systems to elaborate the best possible LI product. In general, users are very pleased with the new capability offered by the LI mission on MTG. This is reflected in the priorities expressed through the RAIDEG discussions.

Working Group 3.3. FCI and Level 2 products (Facilitators: M. Higgins, EUMETSAT + J. Kagen, IMTR)

In the discussion on the FCI instrument, data requirements were addressed. The timeframe for the NMHSs to be ready to access FCI data is 2022-2023. The group had an initial discussion on priorities for L1 and L2 products, in application area such as agriculture,... In defining these products, timeliness is an issue to be addressed, as all products might not be needed with the same timeliness.

3. Discussions and Recommendations

During the discussion, African users were encouraged to provide feedback on the utilisation of the PUMA 2010 and 2015 stations, so that training activities could be adapted accordingly. This would also be very important in the transition towards MTG.

Participants requested clarification on the bandwidth which will be available for disseminating MTG data to Africa. EUMETSAT indicated that the organisation is committed to provide and pay at least for the same bandwidth as for MSG today, eventually with a slight

increase (expected today to be up to up to 2.8 Mb/s). Within this bandwidth, it will be important, through interactions with RAIDEG, to optimise the set of data and products disseminated to respond as good as possible to user requirements. Should the African users want to access more data and products, it will be necessary to seek for other sources of funding than EUMETSAT to pay for the additional bandwidth.

The African Union Commission highlighted the need to ensure sustainability of infrastructures after the end of the MESA. EUMETSAT insisted on the responsibility of each NMHS to ensure this sustainability by clearly expressing requirements and informing the need for maintaining the infrastructure in national, regional and African Fora (AMCOMET, AUC in the context of the implementation of the African space strategy,...). The EC is also planning a number of projects such as GMES and Africa and GFCS-ACP. However, African users shall clearly express to the EC that these projects should have a component to maintain infrastructures.

Following a request from Mauritius, EUMETSAT confirmed that LI does not distinguish between cloud to ground, ground to cloud and intra clouds lightening. The instrument, providing a total LI observation, will therefore be very useful for aviation, but will need to be complemented by ground observations for DRR.

The need for having dedicated training on all data and products foreseen to be distributed on EUMETCast Africa was underlined, to ensure maximum uptake by users in Africa.

Session 3 contributed to recommendations #1, #3, #4, and #10.

SESSION 4 - SATELLITE AND WEATHER INFOMATION FOR DISASTER RESILIENCE

Chairperson: O. Sodeko, AUC
Rapporteurs: E. Barisano, EUMETSAT + L. Razafindrakoto, ACMAD

1. Session purpose and Content

The fourth Session presented the new "Satellite and Weather Information in support to Disaster Resilience in Africa" (SAWIDRA) programme. It included presentation of the various regional component of SAWIDRA. The session allowed presenting the expected outcomes of this programme and the expected benefits for the NMHS.

2. Session contributions

Disaster resilience in Africa (L. Naess Wanambwa, AUC)

Poverty, environmental degradation, weak governance and poorly planned urbanization continue to be the main drivers of risk to disasters. Extreme weather events such as droughts, floods and storms are increasing in frequency and intensity with significant consequences on communities – and as climate change continues unabated, economic loses are expected to increase in the future.

Africa recorded 120 disasters, 4,544 deaths and over 28 million people affected during the year 2015 while global economic losses from disasters are recorded to be on an average of between USD 250 billion to USD 300 billion annually. When these disasters occur, they have the potential to set back development gains by potentially increasing the incidence and increasing the severity of poverty. The stresses these events put on vulnerable regions significantly diminish their ability to cope and recover from subsequent events.

Building the resilience to disasters involves building the capacity of individuals, communities and societies to adapt and 'bounce back better' from hazards shocks or stress without jeopardizing sound development. Building resilience also calls for the inclusion of DRR development programmes and agenda as sound development reduces vulnerability to disasters.

Efforts at global, continental, regional and national levels exist to build the resilience of communities to disasters however much more needs to be done.

Overview of SAWIDRA (RARS/DRR) Programme (J. Kabyemera, AfDB)

SAWIDRA responds to results area number three of the ACP-EU programme which focuses on improving the core capacities of the specialized national and regional climate centres (RCCs) to meet the needs of Disaster Risk Management (DRM) agencies and socio-economic sectors for effective use of weather and climate services and community-focused and real-time Early Warning Systems (EWS). This component is to be implemented through the African Development Bank by the ClimDev Africa Special Fund (CDSF). Under this result area, five sub-projects will be supported with one being a continental-wide project and the other four being regional projects for West, Central, Southern and East African regions.

SAWIDRA is a programme on Severe Weather forecasting in support of Disaster Resilience in Africa. The programme will be implemented by the African Centre of Meteorological Applications for Development (ACMAD) and four regional centres. The intention is to ultimately have the NMHSs run high-resolution Limited Area models at four-kilometre (4 km) spatial resolution over their respective countries with minimum computing facilities. The plan is to have ACMAD run the Weather Research and Forecast (WRF) model at 10 km horizontal resolution and generate initial/boundary conditions to be used by Regional Climate Centres and NMHSs to driving their relatively higher resolution model. Both in-situ and remotely sensed data would be assimilated into the continental model. A network of four Regional Advanced Retransmission Service (RARS) receiving stations would be installed in Africa. RARS is for receiving data from polar orbiting satellites. The satellite data received from the RARS system would be included in data to be assimilated into the continental model.

The objectives of SAWIDRA are to improve regional and national capacities in using improved weather prediction model and use the output of these models as input into early warning systems, in close cooperation with disaster risk management agencies.

Today, one of the regional project (AGRHYMET) is already approved. ECCAS center project is appraised and the three other projects (ACMAD, ICPAC and SADC) are under approval process.

SAWIDRA–RARS Africa Continental (B. Lamptey, ACMAD)

The aim of the project is to ultimately contribute to building resilience towards disasters. For the NMHSs services to make the desired impact in the countries require a coordinated effort from continental and sub-regional meteorological institutions to effectively work in a seamless manner with them.

This project proposes a Numerical Weather Prediction System being established at ACMAD at about 10km horizontal resolution and generating initial and boundary conditions for the RCCs/NMHSs to run models at 4 km horizontal resolution over their respective regions and countries. ACMAD will at the same time generate products at a relatively coarse resolution for use by institutions at the continental level. A full range of data (both In-situ and satellite) would be assimilated into the models at continental, regional and national levels. The Polar Orbiting Satellite data would be obtained from a network of four Regional Advanced Retransmission Systems (RARS) receivers that are to be installed in Africa.

The relevant Disaster Risk Management (DRM) products would be generated at the continental, regional and national level in collaboration with the Disaster Risk managers at the appropriate scale. This is to ensure the products are relevant (i.e. demand-driven). The project would leverage on existing DRM structures at the different levels.

SAWIDRA Eastern Africa (Z. Atheru, ICPAC)

Hydro-meteorological hazards account for over 70% of disasters of natural origin in Eastern Africa region, impacting most socio-economic sectors and nearly every country. These hazards have several unique characteristics, including being recurrent and trans-boundary in

nature; hence regional impacts. They are caused or aggravated by climate and therefore are highly sensitive to climate variability and change.

This project has been prepared with a regional wide coverage to provide NMHSs with relevant data and numerical prediction capability to facilitate provision of severe weather early warning in order to meet the needs of Disaster Risk Management.

The project has five major components including to Enhance Regional and National Capacities in Numerical Weather Prediction (NWP); Applications of severe weather early warning in Disaster Risk Management; Regional Climate Outlook Forums (RCOFs); Support to National Meteorological and Hydrological Services; and the project management.

The five main outcomes expected at the end of project implementation include: Core capacities of ICPAC to provide severe weather forecasts are improved, to meet the needs of NMHSs and DRM; Effective use of hydro-meteorological services and real-time early warning systems (EWS); Greater Horn of Africa Climate Outlook Forums (GHACOF) reinforced as world class climate risk & mitigation platform; Improved core capacities of NMHSs to provide early warning of severe weather to meet the needs of DRM agencies; and Successful project implemented according to the project implementation plan.

SAWIDRA Southern Africa (F. Nsadisa, SADC-CSC)

SAWIDRA project for Southern Africa will be implemented by SADC Climate Services Centre. This project will be implemented in 36 months and will provide technical assistance to SADC CSC and SADC NMHSs. It will develop the capacity to use Numerical Weather Prediction (NWP) models and Regional Climate Models for seasonal climate prediction.

The project has four major components: the improvement of meteorological infrastructure equipment for catering early warning system in Member States countries; generation and dissemination of extreme weather and climate information services for disaster risk reduction; capacity building in early warning at national and regional levels and the project management.

The expected outputs of the project are: upgrading of Regional Telecommunication and observational Network equipment; improvement of forecast capacity and products accuracy; an operational early warning system; and capacity building in risk management. The outcome of the project will be measured in the improvement of the preparedness to risk reduction and socio-economic gains in SADC member states.

SAWIDRA Central Africa (D. Kuitsouc, ECCAS)

"SAWIDRA Central Africa" falls within the framework of the Climate Application and Prediction Centre of Central Africa (CAPC-AC).

The SAWIDRA project can be implemented effectively in Central Africa only by taking into account the fact that it is the only region with no centre. It is therefore important for ECCAS to adopt not a reinforcement approach, but a development approach that should lead first and foremost to institutional support to make CAPC-AC operational.

The creation of this regional centre is the outcome of a process that began during the seasonal forecast forums jointly organized by ACMAD and the risk managers. This process was consolidated by the various ministerial declarations and supported by the WMO, CEMAC and ECCAS.

ECCAS has been proactive in mobilizing resources to support the project. This can be seen by successive advocacy actions via the various meetings in Brussels of the ACP-EU Natural Disaster Risk Reduction Programme Steering Committee, of which it is a member alongside other RECs. This made it possible to include, within the various priorities of the 10th EDF Programme, capacity building for the specialized climate centres in Africa. This need exists due to the very high level of exposure of African countries to climate and meteorological events.

Use of NWP and Satellite for Disaster Resilience (M. Diop Kané, Sénégal)

Marianne presented how satellite and NWP can be used for disaster risks reduction. Better weather forecasts, warning and alerts both in terms of accuracy and lead time can now be made because of better access to satellite data with increased temporal and spatial resolution. These improvements are mainly due to the improvements of numerical models because of the assimilation of satellite data and advanced computing facilities. She provided a series of examples spanning from West Africa to Southern Africa. She stressed the necessity to combine both satellite data and NWP in order to make accurate forecasts. The risk in using a single model was also illustrated.

Senegal runs the atmospheric model WRF and wave models Wave watch and SWAN locally. The outputs of these models together with global outputs from ECMWF, ARPEGE, UKMO, GFS, together with satellite images, are used to elaborate forecast bulletin and alerts for agriculture and food security, civil protection authorities, hydrology and water resources, fisheries and marine transportation, health and tourism in line with GFCS. The alerts are currently transmitted via SMS messages, and may be transmitted by voice messages in the future.

Use of NWP and Satellite for Disaster Resilience (L.A. Simpson, South Africa)

The combination of NWP data and satellite data provides the South African Weather Service with the opportunity to create derived products which aid in Disaster Risk Reduction (DRR) in not only South Africa but in the SADC region as well. These products are focussed mainly on Convection related weather and hazards, as well as flash flood guidance.

The Web Portal for the RSMC in Pretoria is used as a means for SADC members to have direct access to the products. Products such as seasonal outlooks, medium term forecasts, short range forecasts and now casting products are available on the Web Portal. The Now casting products include the Convective Rainfall Rate (CRR), The Convective Instability Index (CII), Rapidly Developing Thunderstorms (RDT), Lightning Threat Index (LTI) and the Flash Flood Guidance (FFG) products.

As many African countries do not have access to reliable NWP, by being able to disseminate products derived from an NWP and satellite output, the South African Weather Service can contribute to the efforts of regional Disaster Risk Reduction for SADC.

3. Discussions and Recommendations

The "novelty" of NWP production by African teams raised a series of questions and comments by representatives of Niger, Mali, Tanzania, Ethiopia, Djibouti and EUMETSAT. The discussions covered a question on a certain fear about Africa's capacity in the area as well as about the risk of dissipating efforts, although the importance of NWP was acknowledged. On a more positive note, the discussions focused on the African meteorological community's very keen interest in these new methodological approaches, with attention being drawn to issues regarding both satellite and in-situ data. However, these discussions also brought up the pressing need to set up NWP capacity building in Africa very quickly, and to establish better data organization (acquisition, dissemination and sharing).

Session 4 contributed to recommendations #11, #12, #18, #22, #25.

SESSION 5 - MESA

Chairperson: E. Jackson, ACP Secretariat
Rapporteurs: S. Flasse, EUMETSAT + R. Brown, MESA

1. Session purpose and Content

The fifth Session concentrated on the MESA programme, dedicated to climate and environmental monitoring. It included presentations of the overall status of the MESA, as well as of the regional activities from the Regional Centres dealing with *Land* related themes (agriculture, forestry, soil, water, etc). A presentation of the GMES and Africa programme punctuated the session. It should be noted that presentations of MESA marine related activities were included in Session 6, and of MESA climate activities in Session 7.

2. Session contributions

MESA status of implementation (J. Wasambo, AUC)

Jolly presented the background of the MESA programme, the objectives, the partners involved and gave an overview of the current status. Data access was highlighted as being of particular importance for the Forum audience, and the contribution of RAIDEG and others was noted. This included being part of the tender assessment and the factory acceptance testing for the supply of EUMETCast receiving stations - PUMA 2015 and MESA Stations. Jolly also highlighted the problems being experienced in customs clearance in order to deliver these stations, and requested assistance from the institutions involved.

The 18 services of MESA were described, and the progress of the 5 result areas reviewed. The grant agreements for the regional and continental implementation centres have all been adjusted and extended to finish together in September 2007. Major partners include JRC, EUMETSAT, the WMO Regional Training Centres and RAIDEG.

MESA main successes within CEMAC (G. Gulemvuga, CICOS)

Halilou Aboubakar gave this presentation on behave of Georges Gulemvuga. He explained that the thematic action being delivered by CICOS covers the CEMAC region, plus the Democratic Republic of Congo. The Congo Basin covers 10 countries, CICOS itself has 6 member countries and is a specialist institution of CEMAC with 6 member countries, with responsibility for water resources. River navigation is very important in this area with 25,000 km of navigable waterway, and this is being affected by effects of climate change such as reduced water flow and silting up. The 2 MESA services on water levels – with regular daily bulletins - and hydrological balance of the river basins – with regular monthly bulletins - were described. The MESA and PUMA 2015 Stations are being delivered, with a particular emphasis on using universities for environmental monitoring. It was highlighted that the Société d'Exploitation Pétrolière uses the river bulletins to adjust the loading of oil on their boats. CICOS are also starting to work with the University of Ghana to transfer marine and coastal services to the coastal countries of central Africa. National and regional steering committees have been established except in the Central African Republic.

MESA main successes within SADC (I. Kusane, SADC-CSC)

Isaac KUSANE is the Manager of the MESA Thematic Action in BDMS/SADC-CSC, based in Gaborone.

Isaac focused on moving "towards sustaining the legacy of MESA", looking beyond the end of the programme. A short video was shown describing the work in MESA-SADC, and outputs were on display at the stand with technical staff. There are 4 services (Agriculture, Drought, Wildfire and Flood) which target the mandated institution for the thematic area in each country and a national network in each of the member states. With a view to long term sustainability the target is for 21 universities to be involved, so far there are 17, using different sources of funding. This way the universities get access to MESA training materials, and are deeply involved in the regional training. This is expected to be more successful than using national focal points. MESA SADC considers the universities to be critical to carry on the work beyond MESA, both on GMES and Africa and as a source of human potential for EO and related professions.

MESA main successes within IGAD (Z. Atheru, ICPAC)

Zachary indicated that the regional MESA programme covers 8 IGAD countries plus Rwanda and Burundi, and has been extended to September 2017, a total of 4 years. There are three services which were chosen on the basis of it being an arid region subject to degradation, and the lack of both data and the infrastructure to manage this. The Forest Monitoring service is new to MESA, adding to Land Degradation and Natural Habitat. The forest statistics have shown that 25% of forest cover has been lost since 1990. The overall objective of these services is to create better capacity for informed decision making. MESA and PUMA Stations are being upgraded, with some new stations also. Key successes include the integration of MESA products into national reporting such as state of the environment and habitat reports, using land cover change maps to decide on the fencing of Mount Kenya National Park, as well as the creation of national networks.

MESA training programme (T. Kormé, Particip)

Ben Maathuis gave the presentation on behave of Tesfay Kormé. He provided an outline of the Continental Training Programme, with support to regional training. This is guided by the overall MESA Strategy for Capacity Building and Training, which incorporated lessons from AMESD, and identified nine training themes. The contractor carried out a detailed Training Needs Analysis to detail this. The resulting curriculum has a lot of technical training, but also incorporates training on how to communicate the technical information. The approach to implementation involves a mix of distance education, classroom and blended courses, in both English and French. A pool of some 113 classroom trainers has now been trained, they were also involved in the development of the curriculum. The user training in system administration and thematic applications is now under way, using the 4 MESA Training Centres based at WMO centres which have been equipped with MESA infrastructure. To date more than 600 people have been trained using the different formats, and training is scheduled until July 2017. A digital learning environment (LMS) based on Moodle is being used both to provide materials, including those from AMESD, and to track courses and trainees. Allowance is made for limited bandwidth, and the EUMETCast Training Channel is

also in use for downloading materials. Evaluation of the training and its impact is an integral part of the programme.

JRC MESA e-station (M. Clerici and Antoine Royer, JRC)

Antoine indicated that the key contribution of JRC to MESA is the eStation software which is integrated into the MESA Station, the eStation is an EO processing server with the aim of producing thematic analysis from Earth Observation data. By doing this processing more time is freed up for analysis rather than dealing with complex data, by producing thematic maps and graphs to be used in other bulletins or applications. The station can use data obtained from EUMETCast and from the internet, and is designed to be open, co-operative, flexible and customisable. It can also be used as a virtual machine on other computers, and a Windows 10 version is in development. The datasets cover all the MESA thematic areas, and have been defined in collaboration with RICs during on the job training. JRC is also contributing to training, to the development of the MESA Geoportal which includes a data feed from the eStation, supports the production of the Continental Environmental Bulletin, and provides other technical support. Examples of this include informing food security with AGRHYMET in the Sahel (the "Cadre Harmonisé"), and using Google Earth Engine to map water bodies.

GMES and Africa initiative: status of next steps (M. Kinyua Ndiritu, AUC)

Meshack underlined that GMES and Africa was initiated in 2007 to extend the European GMES programme, now Copernicus, to Africa. A background of the programme was given, this falls within the AU Space Strategy, specifically in the EO sector. Nine (9) thematic areas were identified. The first implementation phase concentrates on 3 areas – natural resources, water resources and marine and coastal areas. These 3 areas have been combined to make 2 services – Water and Natural Resources, and Marine and Coastal. These cover 23 applications, distributed over the whole of Africa with the marine service covering the full coastline. Each service will include 3 segments, consolidating existing (MESA) services, extending with applications from other regions, and development of new applications. The implementation methodology, the structure and principles of concept notes and proposals was outlined.

3. Discussions and Recommendations

During the discussion that followed, the role of universities as opposed to decision making institutions was discussed, in SADC it is considered that developing capacity in universities can be more effective than doing this with national focal points, but the information is still used at a national level. Nevertheless, in SADC the national focal points are selected based on mandate not capacity, because capacity can be developed later. Universities could be involved more in next fora; it is up to the WMO representatives to invite universities who are users of EUMETSAT data to invite suitable papers. It was highlighted that meteorological services are not always fully involved in MESA activities, but they have a responsibility to be involved and active in the national networks which MESA has created. This could be through validation of EO data with ground stations. The RECs and RICs were advised to collaborate on sharing the training information which the RICs have access to.

Referring to the status of GMES and Africa, it was confirmed that JRC will again be involved, that the call for proposals will be open and not just restricted to the providers of concept notes, and that the money for grants will divided into the 2 service areas rather than on a regional basis. It was also noted that meteorological applications are not included in the first phase, but the AUC is consulting with AMCOMET on whether to include these in later phases.

Session 5 contributed to recommendations #16 to #18 and #28.

SESSION 6 - COPERNICUS

1. Session purpose and Content

The sixth Session focused on the Copernicus programme (its data and products). It was splinted in two sub-sessions: Session 6A was dedicated to Copernicus marine data and related applications in Africa (notably those implemented under the MESA programme), and Session 6B was dedicated to Copernicus Land data and related projects in Africa.

Presentation of the Copernicus Programme - M. Massart, EC

D. Zdenka presented on behalf of M. Massart an overview of the Copernicus Programme. Copernicus is a European system for monitoring the Earth.

Copernicus consists of a complex set of systems which collect data from multiple sources: earth observation satellites and in situ such as ground stations, airborne and sea-borne sensors. It processes these data and provides users with reliable and up-to-date information through a set of services related to environmental and security issues.

The services address six thematic areas: land, marine, atmosphere, climate change, emergency management and security. They support a wide range of applications, including environment protection, management of urban areas, regional and local planning, agriculture, forestry, fisheries, health, transport, climate change, sustainable development, civil protection and tourism.

Within the family of Sentinel satellites already launched, the Sentinel-1 satellite provides radar data, valuable to see through clouds, with 20m spatial resolution and a 6-day repeat cycle, Sentinel-2 offers very high resolution image data at 10m resolution with a 5 day repeat cycle and Sentinel-3 offering data from three instruments which together monitor land and oceans with a 1-2 day repeat cycle.

The Copernicus data are available without charge and restriction. Data from Sentinel-1 and Sentinel-2, in addition to the Sentinel-3 land products, are available through ESA's Science Hub. Sentinel-3 marine products will shortly be provided on EUMETCast Africa and via a new download service provided by EUMETSAT.

SESSION 6A - COPERNICUS DATA AND MARINE APPLICATIONS

Chairperson: H. Masheleni, AUC
Rapporteurs: S. Wannop, EUMETSAT + K.A. Agyekum, University of Ghana

1. Session contributions

Sentinel-3 Marine products (M. Higgins, EUMETSAT)

The Sentinel-3A satellite was launched in February 2016. EUMETSAT is mandated by the EC to operate the Sentinel-3A satellite in partnership with the European Space Agency. In addition to providing level 1 altimetry and brightness temperatures and radiances. EUMETSAT is responsible for the derived level 2 marine product generation which includes sea surface temperature, ocean colour and ocean surface topography. Further information on the products can be found on the EUMETSAT website.

EUMETSAT with Copernicus partners is providing marine training to support the utilisation of these new data for those centres providing marine forecasting, coastal and marine monitoring and maritime safety. The Forum was reminded on the upcoming MOOC which will commence on 24 October 2016.

MESA - ECOWAS Marine Thema (K. A. Agyekum and G. Wiafe, University of Ghana)

The declining marine fishery resources in West Africa is a growing concern as fishing grounds are being degraded and stocks are lost to illegal, unregulated and unreported (IUU) fishing activities. The use of technology by fishing vessels to locate and scoop out fish has made it imperative for coastal countries in the sub-region to adopt appropriate management tools to ensure sustainability of fishery resources. This paper describes methods for understanding fishing behaviour from fishing vessel trajectories and delineating the major fishing grounds in the eastern equatorial Atlantic from ocean surface parameters – sea surface temperature, sea surface height, sea surface salinity and currents. Daily to weekly average maps of fishing grounds were analyzed alongside industrial fishing fleets trajectories derived from Automatic Identification System (AIS). Brier Scores are calculated to measure the accuracy of probabilistic predictions of fishing activities to ascertain whether fishing behavior was influenced by changes associated with variation in the oceanic processes that influence biological production. Fishing activity was aggregated into 25km^2 cell to help demarcate fishing areas. The most active fishing zones stretched over the broad continental shelves of Senegal – Mauritania and Ghana, which are upwelling zones. The study discusses innovative approaches to carrying out monitoring and surveillance from fusion of potential fishing zone maps and Automatic Identification System (AIS) data.

It was noted that ECOWAS marine products are disseminated on the EUMETCat Africa service.

MESA - Indian Ocean Marine Thema (J. Mosaheb, MOI)

The Mauritius Oceanography Institute has developed marine products in the framework of the Monitoring for Environment and Security in Africa (MESA) programme for the Indian Ocean Commission region. Earth Observation and in-situ data are used to support the information requirements and decision-making processes for Marine Resources Management and the Monitoring of the Coastal Environment in the South West Indian Ocean region. By using Sea Surface Temperature and Chlorophyll images, Potential Fishing Zones may be identified. PFZ maps are important for resource management and also of benefit to pelagic fishermen. Physical oceanographic parameters such as waves, currents, and temperature and sea surface height have an effect on the biological productivity and have a strong influence on the coastline and the coastal zones.

Observation of the ocean's physical properties from space coupled with in-situ data help to better understand and describe these oceanographic parameters. Operational marine information from wave data buoys can be very useful in the monitoring, prevision and mitigation of oceanographic risks such as sea level rise, swells and storm surges that may lead to coastal hazards. The two services being developed in the context of the Indian Ocean Commission (IOC) Thema "Marine and Coastal Management" are illustrated with

examples of the different products and the targeted users. The IOC Thema goals and activities were highlighted.

Lake forecasting (K. Muwembe, Uganda NMHS)

Khalid gave an overview of the ongoing enhancements in the forecasting the Lake Victoria region in Uganda. The frequent recurrence of severe storms continues to threaten the safety of marine navigation over Lake Victoria since a large number of boats use the lake on a daily basis to sustain a thriving fishing industry. Hundreds of people lose their lives on the lake each year, with a proportion of these related to severe storm conditions. The significant improvement in weather monitoring, forecasting and communication technology in recent years makes it possible to access necessary tools to routinely deliver forecasts/alerts when dangerous weather is forecast over the lake.

Uganda Meteorological Authority set-up severe weather alert service aimed at utilising mobile phone technology to develop a sustainable warning service that reduces the vulnerability of communities in the Lake Victoria Region to weather hazards.

In this presentation, the diurnal cycle of convective storms over Lake Victoria is presented, as well as how the satellite data is applied in forecasting using both single channel images and RGBs. Application of NWP models and satellite data is also presented, coupled with Model-derived sounding parameters associated with severe convective storms. Other critical applications of the satellite products are presented including among others preparation of Aviation products such as SIGMETs as well as daily forecasts verifications. A case study of a devastating severe storm over the lake is also presented.

2. Discussions and Recommendations

The following key points were raised during the discussion session, namely the importance of the sustainability of the work carried out within the MESA projects, the need to foster cross-cutting collaboration and to transition from research opportunities into operationally resilient services.

The Forum noted that the Copernicus programme already builds upon a heritage of instruments and services and has agreed plans for future satellites to come. It also took note of current collaboration between the MESA Thema, RICs and national agencies within the full value chain of the services provided. The Forum welcomed the news that services like the MESA marine Thema will be continued and enhanced in the future GMES and Africa project.

Session 6A contributed to recommendation #23.

SESSION 6B - COPERNICUS DATA AND LAND APPLICATIONS

Chairperson: A. Nmiri, Tunisia
Rapporteurs: M. Higgins, EUMETSAT+ I. Kusane SADC-CSC

1. Session contributions

Copernicus Global Land data & products (T. Jacobs, VITO)

Tim presented a summary of the Copernicus Global Land data & products. Tim stressed the importance of the long heritage of the data sets and the importance of validation, and encouraged participants to participate in validation exercises throughout the region. There is a huge number of land products available. Tim outlined the mechanisms to gain access to the data and information about the data. The core website, which contains most information, is: www.land.copernicus.int/global. There is also a product ordering interface and a data viewer. The product ordering interface includes an option to re-format the data making is easier to use. The underlying data format is moving to NCDF to make use easier. The data can be used easily in SNAP, SPIRITS, ILWIS, e-Station and your local GIS system. The Copernicus Land Service is now looking at providing training opportunities. There will be a global land service in 2017.

Sentinel-2 applications in Africa, a cooperative approach (M. Leroy, CNES)

Marc presented a collaborative approach for Sentinel-2 applications in Africa. CNES is working to facilitate access to the Sentinel-2 data. Sentinel 2 is global with data every 5 days and 10m sampling. Data are provided on 100kmx100km tiles. Data is available as from the beginning of 2016 at the moment via the ESA Sentinel-2 data hub and the CNES portal http://peps.cnes.fr. There will be more options in the future. CNES is also generating level 2 atmospherically-corrected products for land applications. The cloud mask is used to assist in the generation of monthly composite images (level 3). Data access is free and open for these derived products at www.theia-land.fr. There are at present 11 areas in Africa covered at level 2 and 3. Cooperation with African national institutions can be initiated to develop operational applications with level 2 and 3 data on other areas.

EUMETSAT Land Surface Analysis SAF (J.-L: Roujean, Meteo France)

Jean-Louis presented the catalogue of Land-SAF products for Africa that are now available more than 10 years ago with some reprocessing soon available. These are for land, land-atmosphere and biospheric applications. Surface radiative flux (including Albedo and LST), land surface state and vegetation parameters) (including NDVI), water stress and fire products are available. All products have product handbooks and error information. There has been extensive activity to cross calibrate the products between different satellite systems and with in situ observations. The products are available at 3km sub satellite sampling ranging from 15 minutes to daily and are on EUMETCast. With EUMETSAT a course is arranged every two years in Africa. Trials have been done on synthetic MTG and true HIMAWARI-8 data to start preparation for the next set of products while ensuring the necessary transition with MSG. Actually, Land SAF Consortium is looking after some partnerships with African users to both reinforce the product validation and their exploitation. More information about the project is available at landsaf.ipma.pt.

SIGMA, a contribution to the Global Agricultural Geo-Monitoring – GEOGLAM (S. Gilliams, VITO)

Sven presented the Stimulating Innovation for Global Monitoring of Agriculture (SIGMA) concept, which is a contribution to the Global Agricultural Geo-Monitoring (GEOGLAM) project. The objective is to support sustainable expansion and intensification of agriculture through the application of remotely sensed data. Information is available at www.geoglam-sigma.info. The core areas are: (i) land cover and crop assessment, (ii) agriculture productivity and (iii) environmental impact assessment of land use change. A geo-portal; is available on the website, along with and analysis and validation facility and an archive. Products include:

Aggregation of country level cropland maps to produce validated regional cropland maps. A priority map for land cover mapping is available,

- Yield gap assessments
- Environmental parameter trends: such as changes in season start and end, vegetation indices etc.

Training is organised with RCMRD.

3. Discussions and Recommendations

After the presentations there was a short question and answer session. The key issues raised were:

- It was explained that the number of pilot sites for the Sentinel-2 level-2 products had to be limited due to limited data resources and that 28 proposals were submitted by the science community.
- The cloud clearing is needed as the products are focused on the land, so clouds are noise.
- Transpiration is needed in the models and some validation has taken place over West Africa, but more is needed. A partnership with institutions in Niamey is envisaged.
- In future version of geo-land one will be able to make a selection of the area of interest.
- Over the long term it will be possible to use the products presented to improve insurance services for agriculture, depending on the local marketplace and the availability of information.

Session 6B contributed to recommendations #15 to #17.

SESSION 7 - CLIMATE SERVICES

Chairperson: J. Ntanganda, Meteo Rwanda
Rapporteurs: V. Nietosvaara, EUMETSAT + J. Wasambo, AUC

1. Session purpose and Content

This session was dedicated to climate services and applications within the African continent to support climate monitoring activities. This session included six presentations combining institutional and scientific elements, mainly related to the establishment of Climate Services in Africa.

2. Session contributions

Rwanda Green Growth and Climate Resilience Strategy (D. Rugege, MINIRENA)

Denis introduced the Rwanda Green Growth and Climate Resilience Strategy. The strategy aims at sustainable growth and planning the economic activities so that the negative effects of climate change are minimised. Denis mentioned particularly the Climate Data and Projections: enhancing Climate Data Collection, Climate Change projection, Capacity Building and Climate Change Disease Research.

GFCS status (J. Mukabana, WMO)

Joseph in his talk introduced the vision and status of WMO Global Framework for Climate Services (GFCS) programme and its future strategy. He stated that we need a global, regional and a local network climate services. The climate hazards and their intensity are increasing. The pillars of GFCS are: User Interface Platform, Climate Monitoring, Research Modelling and Prediction and Capacity Development. Seamless hydrometeorological and climate services are able to combine the weather, climate variability and climate change scenarios. The climate services need to be available, dependable, usable, credible, authentic, responsive, flexible and sustainable.

Satellite-based climate data records and their applications in Africa (S. Kothe, Climate Monitoring SAF, DWD)

Steffen introduced CM SAF, some of its datasets and its applications. The basis is in using more and more satellite-based data. CM SAF focuses on Global energy and water cycle. The CLAAS-2, CLARA-A2, HOAPS, SARAH-2 datasets were introduced. Steffen gave some examples of the applications using these datasets, for example sunshine duration, sunny days and Microphysical cloud properties. Another example was about Solar Atlas for South Africa for example for solar energy purposes. One more example was on Agricultural application for Ethiopia. In conclusion, Steffen told about how to access and manipulate the CM SAF data, and how they arrange training workshops for climatologists.

MESA Climate Services (B. Lamptey, ACMAD)

ACMAD has two services: Climate Assessment and Drought and Seasonal Climate Forecast Services. ACMAD provides technical bulletins and reports on both of these services. Benjamin stated that the change in the temperature in Africa is notable, and that ACMAD has been successful in reaching its delivery goals.

ENACTS / Rwanda Climate Services for Agriculture (D. Kagabo, Meteo Rwanda)

Désiré told that Enhancing National Climate Services (ENACTS) has in place a mechanism for delivering the weather, climate and climate variability information and services. Also the agro-weather advisory packages and agricultural model extension information are delivered to the population using this delivery channel. ENACTS aims at improving the availability, access and use of climate information. They also are introducing gridded rainfall information, as well as local seasonal forecasts in probability-of-exceedance format. Participatory Integrated Climate Services for Agriculture (PICSA) is bringing benefits to the agriculture through crops and livestock guidance. They develop an interactive and effective rural radio and mobile phone delivery for reaching the population in the country.

TAMSAT Long term rain monitoring across Africa (R. Maidment, Uni. Of Reading)

TAMSAT provides locally calibrated satellite-based rainfall estimates for Africa since 1983 to the present day at 4 km resolution. In the talk, Ross presented the latest developments to TAMSAT's primary rainfall dataset. TAMSAT data are based on two primary inputs: METEOSAT Thermal IR imagery to create the cold cloud duration (CCD) and rain gauges to calibrate the CCD. In the latest developments the TAMSAT algorithm has been modified to minimise spatial artefacts and a dry bias that were present in the previous version of Africa-wide long-term rainfall dataset. In the latest version (v3), the primary product is pentadal rainfall estimates, from which daily, dekadal, monthly and seasonal rainfall estimates are created. The TAMSAT Group is keen to collaborate with Met Services or other organisations on all aspects of satellite rainfall estimation.

3. Discussions and Recommendations

A remark was made that it would be important to measure and present the actual socio-economic benefits of the every service we provide. Some models are available on how to address putting a value for different services we provide. This cannot be done in isolation, but needs to be done with the feedback from the users.

Question was made to Dr Mukabana whether he has examples of countries in Africa having implemented the GFCS: he gave some examples of Burkina Faso, Malawi, etc on how they are coming up with Actions Plans. These plans will give rise to national implementations for climate services.

Another question was on how the climate training can be accessed: the climate courses organised by EUMETSAT and the CM SAF are open to staff from NMHSs, universities and service providers. All PRs are informed of the courses. In the last course more than 80 applications were received for the 20 places. Applications are judged on the role of the application and their ability to complete the course.

Session 7 contributed to recommendations #13, #14, #19 and #24.

PARALLEL SESSION - WG 1 – REGIONAL DATA AND TRAINING NEEDS

Chairpersons: L. A. Simpson, SAWS and M. Diop Kané, RAIDEG
Rapporteurs: M. Higgins and S. Wannop, EUMETSAT

1. Session purpose and Content

The purpose of the session was to discuss the data and training opportunities and challenges in the region. The session was also an opportunity for participants to engage with the representative on the RA-I Data Expert Group.

2. Session contributions

Introduction to the WMO RA-I Data Dissemination Experts Group (M. Diop Kané – RAIDEG Chair)

Marianne presented the RAIDEG terms of reference and activities, and recalled the importance of information coming from each country to inform the RAIDEG decisions; each country is invited to provide a focal point.

Data access evolution: opportunities and constrains (S. Wannop, EUMETSAT)

Sally recalled the importance of RAIDEG recommendations in EUMETSAT and regional intervention (e.g., MESA) planning, and asked people to share what experiences they have of data access and utilisation.

Introduction to Regional Satellite Application Training (L-A Simpson, SAWS, M. Higgins EUMETSAT)

Lee-Ann presented the regional training activities of the (South African Weather Service) SAWS and recalled the importance of getting information from users in order to define what training is done.

3. Discussions and Recommendations

The group work covered a wide range of issues which included data access and visualisation training, and the current status of training for meteorology and within the MESA project.

Key points raised were:

- Feedback for the MESA training team on the roll out and training for the PUMA2015 system.
    - The training of administrators can occur a long time before the system installation – this generates a requirement for update training.
    - The PUMA2015 system install should be tested to ensure it is fully able to display all products at the end of the installation.
    - Stricter criteria should be applied on participant selection to support the correct people being sent on the training.
    - There is a requirement for training on how to archive cases (software and hardware) and extract the data for local research. This includes manipulation of the extracted data.

  - The supplied UPS is not strong enough for some operating environments, having a solar charger may be an interesting idea.
  - Feedback for the satellite training partners including EUMETSAT on the training that is currently offered, noting that the online training is a significant challenge for some partners. The criteria for participant selection should also be reviewed to ensure the correct people are trained. The idea of an Africa Desk at EUMETSAT was also suggested.
- The use of any particular dataset does not happen in isolation. Satellite data is used with NWP and derived products. There is a requirement to training the combined data stream in forecasting applications.
- There is a requirement for a station setup to complement the PUMA2015 station so that services can cover more than one office. It will help is people can share their experiences of using different reception set-ups and software.
- Few of the participants are aware of their RAIDEG member. Once points of contact are established, close communication and collaboration between points of contact and RAIDEG members will be essential if this relationship is going to work.

Parallel Session WG 1 contributed to recommendations #20 and #21.

PARALLEL SESSION - WG 2 – EO POLICIES IN AFRICA AND GMES AND AFRICA INITIATIVE

Chairperson: H. Masheleni, AUC
Rapporteur: E. Barisano, EUMETSAT

1. Session purpose and Content

This session discussed the place of Earth Observation within the Africa Union Space Policy and Strategy and how the various initiatives (such as MESA, GMES and Africa, AfriGEOSS and the AMCOMET Regional Space Programme) contributed to its implementation. The second part of the Session discussed more specifically the status of implementation of the GMES and Africa programme.

2. Session contributions

African Space Strategy and Policy (Val Munsami, Adviser at the HRTS/AUC Department)

Val reminded the goals of the African Space Strategy and Policy and how they address the user needs (14) identified by the AUSWG (including Weather thematic area). For each user needs, a summary of the technical requirements on Earth Observation spatial resolution was presented, including relevant positioning and telecommunication requests. Val reminded the main benefit of space applications and described the minimum condition to access to space service. Finally he introduced the concept of space mission and its complexity.

The core of his presentation described the space strategy and policy for Africa by African with regards to:

- The expected technologies to be put in place on spatial segment payload;
- The space mission operation themselves;
- The development of industrial framework

- Good governance and management;
- The coordination of the Africa space arena including the development of the EO African regional market;
- Securing necessary infrastructure among the different African region;
- The development and promotion of international cooperation and partnerships;
- The promotion of Space in Africa, for Africa and by Africans.

AMCOMET and the African Space Programme (J. Mukabana, WMO)

Joseph reminded the main component of AMCOMET, together with the importance of space-based observation for Africa.

A recent AMCOMET survey revealed that The actual regional capacity in satellite meteorology are still a limiting factor and the need to leverage current satellite-related activities. To overcome this situation, it is proposed to build an EO Ground segment for data access and dissemination; to strengthen an application segment, and to consider also the development of an EO Space segment.

In that perspective an AMCOMET Task Force on the African Space Programme has been put in place in order to provide support to the AUSWG to undertake capacity development and to improve data infrastructure.

Finally an action plan is proposed on the following point:

- To upgrade Ground segment;
- To enhance dynamic modelling and forecasting;
- To deliver Products and Services;
- To mobilize resources;
- To build a Spatial segment;
- To foster strategic partnerships.

AFRIGEOSS progress in support of the African Space Programme (A. Mlisa, GEO Secretariat)

Andiswa reminded the concept of AfriGEOSS which was created to implement GEOSS in Africa and based essentially on the coordination of Earth Observation effort in Africa. She emphasised the "Value" of Coordination.

The actions areas of coordination of AfriGEOSS are:

- User needs and application;
- Data and infrastructure;
- Human capital development;
- Resources contribution coordination;
- Communication and outreach;

Andiswa also reminded:

- The GEO data sharing principles;

- The existing capabilities in Africa on Earth Observation;
- The users requirements linked to space missions;
- The contribution of AfriGEOSS into the African Space programme.

Finally she emphasised the importance of AfriGEOSS with regards to

- Strengthening partnerships and coordination;
- Improve and coordinate observation systems nationally, regionally and globally, both in space t-base and in-situ;
- Advancing broad open data policies and practices;
- Contributing to regional and global efforts and open for partnership.

Contribution of MESA to African Space strategy (J. Wasambo, AUC)

Jolly provided the context and objectives of MESA and particularly the access to EO data and their exploitation for thematic purposes. He indicated also the policy aspects of MESA and highlighted the already of convergence with the African Space Strategy developed by the AUSWG.

This MESA Strategy is already spread through the African continent for:

- Facilitating EO Data access;
- Developing Capacity enhancement;
- Building Regional and national network;
- Developing appropriate products and Services.

Those developments are operationalized and used to inform Policy and decision makers, and to develop an Continental Climate Thema (ACMAD). MESA provides also some EO policy issues ant regional level (IGAD).

MESA is a perfect tool for implementing the African Space Strategy. A critical partnership is already putted in place, and a GEOPORTAL for EO data is developed for data sharing.

GMES and Africa state of play (M. K. Ndiritu, AUC-HRST)

Meshack gave the background of GMES and Africa with the Maputo Declaration in 2006 and at Lisbon for the 2nd EU-Africa summit (2007) where was decided to launch the response for a GMES and Africa programme. To sustain the process, a GMES and Africa Coordination Team was created (2011). The latter decided (due of lack of budget) to start the programme with only three thematic area (on the ten originally identified) and a capacity building cross-cutting activities.

Meshack presented the first GMES and Africa project and concluded that, considering all the elements of GMES and Africa programme, this programme fit closely the Africa Space Policy and Strategy and will be an important element for its Implementation plan.

3. Discussions and Recommendations

The session ended up with a large discussion.

Parallel Session WG2 contributed to recommendations #2, #3, #15, #25 and #26.

CLOSING REMARKS

The 12th EUMETSAT User's Forum in Africa was closed through the interventions of Paul Counet (EUMETSAT), Olushola Olayide (AUC), and John Ntaganda, (Rwanda Meteo).

The good work and collaboration was acknowledge, and in particular the dedication and commitment to continue the collaboration between EUMETSAT and all its partners in Africa. It was also acknowledge that the usage of EO is reaching seriously improving, reaching an excellent level of expertise throughout Africa. The interesting and challenging coming times of an increase usage of the EO information into real life is backed up by a number of excellent recommendations that commit both EUMETSAT and its users.

Rwanda, the hosting country, EUMETSAT, all participants, translators and organisation committees were warming thanked, in particular for their hard work, commitment, but also good friendship and enthusiasm.

EUMETSAT POINT OF CONTACT

Organisation of the 12th EUMETSAT User Forum in Africa

Strategy, Communication and International Relations

Mr Vincent Gabaglio, International Relations Officer
Ms Sylwia Miechurska, Administrative Assistant

Eumetsat-Allee 1
64295 Darmstadt
Germany
Tel: +49 6151 807 7360 / 6740
Fax: +49 6151 807 615
Email: Vincent.gabaglio@eumetsat.int / Sylwia.miechurska@eumetsat.int

EUMETAT User Service

For any operational matters please contact in English or French:

Operations Department

Eumetsat-Allee 1
64295 Darmstadt
Germany
Tel: +49 6151 807 366 / 377
Fax: +49 6151 807 304
Email: ops@eumetsat.int

EUMETSAT Data Centre

Eumetsat-Allee 1
64295 Darmstadt
Germany
Tel: +49 6151 807 377
Fax: +49 6151 807 379
Email: archive@eumetsat.int

LIST OF ABBREVIATIONS

ACMAD	African Centre for Meteorological Application for Development
ACP	African, Caribbean and Pacific Group of States
AfDB	African Development Bank
AfriGEOSS	African Global Earth Observation System of Systems
AGRHYMET	Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AIS	Automatic Identification System
AMCOMET	African Ministerial Conference on Meteorology
AMESD	African Monitoring of the Environment for Sustainable Development
ARPEGE	Action de Recherche Petite Echelle Grande Echelle
ASECNA	Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar
AUC	African Union Commission
AUSWG	African Union Member State Working Group
BDMS	Botswana Department of Meteorological Services
CAPC-AC	Climate Application and Prediction Centre of Central Africa
CCD	Cold Cloud Duration
CDSF	ClimDev Africa Special Fund
CEMAC	Central African Economic and Monetary Community
CGMS	Coordination Group for Meteorological Satellites
CICOS	Commission Internationale du bassin Congo-Oubangi-Sangha
CII	Convective Instability Index
ClimDev	Climate Information for Development in Africa
CM SAF	Climate Monitoring SAF
CNES	Centre national d'études spatiales
CRR	Convective Rainfall Rate
DCP	Data Collection Platform
DEVCO	International Cooperation and Development – European Commission
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DVB	Digital Video Broadcasting
DWD	German Weather Service (Deutscher Wetterdienst)
EAMAC	Ecole Africaine de la Météorologie et de l'Aviation Civile
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
EDF	European Development Fund
ENACTS	Enhancing National Climate Services
EO	Earth Observation
EPS	EUMETSAT Polar System
EPS-SG	EUMETSAT Polar System – Second Generation
ESA	European Space Agency
EU	European Union

EUMETCast	EUMETSAT's Broadcast System for Environmental Data
EWS	Early Warning System
FCI	Flexible Combined Imager
FFG	Flash Flood Guidance
GEO	Group on Earth Observation
GEOGLAM	Global Agricultural Geo-Monitoring
GEOSS	Global Earth Observation System of Systems
GFCS	Global Framework for Climate Services
GFCS-ACP	Global Framework for Climate Services – African, Caribbean and Pacific
GFS	Global Forecast System
GGWSSI	Great Green Wall for the Sahara and the Sahel Initiative
GHACOF	Greater Horn of Africa Climate Outlook Forums
GIS	Geographical Information System
GMES	Global Monitoring of the Environment and Security
HRST	Human Resources, Sciences and Technology
ICPAC	IGAD Climate Prediction and Applications Centre
IGAD	Intergovernmental Authority on Development
ILWIS	Integrated Land and Water Information System
IMTR	Institute for Meteorological Training and Research
IOC	Indian Ocean Commission
IODC	Indian Ocean Data Coverage
IPCC	Intergovernmental Panel on Climate Change
ITC	International Institute for Geo-Information Science and Earth
IUU	Illegal, Unreported and Unregulated
JRC	Joint Research Centre, European Commission
LDC	Least Developed Countries
LI	Lightning Imager
LMS	learning management system
LNB	Low Noise Block
LST	Land Surface Temperature
LTI	Lightning Threat Index
MAPS	MTG Africa Preliminary Study
MEA	Multilateral Environment Agreement
MESA	Monitoring of Environment and Security in Africa programme
MET-8	Meteosat-8
MINIRENA	Ministry of Natural Resources – Rwanda
MOI	Mauritius Oceanographic Institute
MOOC	Massive Open Online Courses
MSG	Meteosat Second Generation
MTG	Meteosat Third Generation
NCDF	Network Common Data Form
NDVI	Normalized difference vegetation index
NMHS	National Meteorological and Hydrological Service
NWP	Numerical Weather Prediction
PFZ	Potential Fishing Zone
PICSA	Participatory Integrated Climate Services for Agriculture

PIDA	Programme for Infrastructure Development in Africa
PR	Permanent Representative
PRESAC	Prévisions Saisonnières Climatiques
PUMA	Preparation for the Utilisation of Meteosat Second Generation in Africa
RAB	Rwanda Agriculture Board
RA-I	Regional Association One (WMO)
RAIDEG	RA-I Dissemination Expert Group
RARS	Regional Advanced Retransmission Services
RARS-DRR	Regional Advanced Retransmission Services – Disaster Risk Reduction
RCAA	Rwanda Transport Development Authority
RCC	Regional Climate Centre
RCMRD	Regional Centre for Mapping of Resources for Development
RCOF	Regional Climate Outlook Forums
RDT	Rapidly Developing Thunderstorms
REA	Rural Economy Agriculture
RECs	Regional Economic Communities
REMA	Rwanda Environmental Management Authority
RGB	Red Green Blue
RIC	Regional Implementation Centre
RSMC	Regional Specialized Meteorological Centres
SADC	Southern African Development Community
SADC-CSC	Southern African Development Community – Climate Services Centre
SAF	Satellite Application Facility
SATURN	Satellite User Readiness Navigator Portal
SAWIDRA	Satellite and Weather Information for Disaster Resilience in Africa programme
SIGMA	Stimulating Innovation for Global Monitoring of Agriculture
SIGMET	Significant Meteorological Information
SNAP	Sentinel Application Platform
SPIRITS	Software for the Processing and Interpretation of Remotely sensed Image Time Series
SWAN	Simulating WAves Nearshore
SWFDP	Severe Weather Forecast Demonstration Programme
TAMSAT	Tropical Applications of Meteorology using SATellite data and ground-based observations
UKMO	UK Met Office
UPS	Uninterruptible Power Supply
VITO	Vlaamse Instelling voor Technologisch Onderzoek, Belgium
VLab	Virtual Laboratory (WMO)
WIS	WMO Information System
WMO	World Meteorological Organization
WRF	Weather Research and Forecast

ANNEXES

PROGRAMME OF THE FORUM

MONDAY 12 SEPTEMBER 2016		
08:00	Chairpersons and rapporteurs briefing meeting	
08:30	Registration	
09:00	Introductory words, presentation of Working Groups and Technical Visit	
WORKING GROUPS		
09:30-12:00	WG#1 - Regional data and training needs	WG#2 - EO policies in Africa and the GMES&Africa initiative
Chairperson:	L. A. Simpson, SAWS and M. Diop Kané, RAIDEG	H. Masheleni, AUC
Rapporteur:	M. Higgins and S. Wannop, EUMETSAT	E. Barisano, EUMETSAT
	Coffee break (20 minutes) as per Working Group separate agendas	
12:00	*Lunch break*	
TECHNICAL VISIT		
13:00	*Departure for the Technical Visit (from Lemigo Hotel)*	
	Group I: Visit of Radar Site, then Memorial	
	Group II: Visit Memorial, then Radar Site	
18:00	*Back to Lemigo Hotel - End of Day 1*	
19:30	*Cocktail dinner, hosted by EUMETSAT - Lemigo Hotel*	

TUESDAY 13 SEPTEMBER 2016	
OPENING OF THE FORUM	
09:00	Opening ceremony
	Statement by Alain RATIER, Director-General, EUMETSAT
	Statement by Mr Wenjian ZHANG, Assistant Secretary-General, World Meteorological Organisation
	Statement by H.E. Marie Thérèse Chantal MFOULA, Assistant Secretary General, ECCAS
	Statement by Ondrej SIMEK on behalf of Michael RYAN, Head of the European Union Delegation to Rwanda
	Statement by Dr. Josue DIONE on behave of H.E. Rhoda Peace TUMUSIIME, Commissioner for Rural Economy and Agriculture, African Union Commission
	Opening statement by Fatina MUKARUBIBI, Permanent Secretary of the Ministry of Natural Resources
10:30 - 11:00	*Group Photo and coffee break*
10:40	Media interviews (upon invitation)
INTRODUCTION TO THE 12TH EUMETSAT USER FORUM IN AFRICA	
11:00	Introductory remarks - J. Ntaganda, Director General Meteo Rwanda and Permanent Representative of Rwanda with WMO
11:15	WMO RA-I & AMCOMET - Status and way forward - J. Mukabana, WMO
11:35	African Union Space Policy and Strategy - H. Masheleni, AUC
11:55	Objectives and programme of the 12th EUMETSAT User Forum in Africa - P. Counet and V. Gabaglio, EUMETSAT
12:10	Review of Recommendations from the 11th EUMETSAT User Forum in Africa - V. Gabaglio, EUMETSAT
12:30 - 14:00	*Lunch break*

PROGRAMME OF THE FORUM

SESSION 1 - OVERVIEW OF EUMETSAT PROGRAMMES	
Chairperson:	J. Ntaganda, Meteo Rwanda
Rapporteurs:	V. Gabaglio, EUMETSAT + A. Twahirwa, Meteo Rwanda
14:00	Status of EUMETSAT programmes MSG, MTG, EPS, Jason and future programmes - A. Ratier, EUMETSAT
14:45	EUMETSAT User and Climate services - J. Saalmueller, EUMETSAT
15:00	Training activities - M. Higgins, EUMETSAT
15:15	EUMETCast Africa and its future evolution - S. Wannop, EUMETSAT
15:30	Report of RAIDEG activities - M. Diop Kané, RAIDEG Chairperson
15:45	Q&A, discussion
16:00 - 16:30	*End of Session 1 & Coffee break*
SESSION 2 - PUMA 2015	
Chairperson:	A. Kanga, Congo
Rapporteurs:	M. Higgins, EUMETSAT + M. Diop Kané, Senegal
16:30	MESA: Access to Earth Observation Data - J. Wasambo, AUC and R. Brown, MESA TAT
16:40	Presentation of PUMA 2015 station - P. Riera, TPZ and MFI
17:00	MESA Training related to PUMA 2015 - B. Maathuis, ITC-Particip
17:20	Initial User Feedback - L. G. Razafindrakoto, ACMAD
17:30	Initial User Feedback - S. Muiruri, Kenya Meteorological Service
17:40	Status of deployment, User support and warranty - P. Riera, TPZ
18:00	Q&A, discussion
16:00	*End of Session 2 - End of Day 2*
18:30	*Gala dinner, hosted by Meteo Rwanda*

WEDNESDAY 14 SEPTEMBER 2016	
SESSION 3 - METEOSAT THIRD GENERATION	
Chairperson:	J. Mukabana, WMO
Rapporteurs:	P. Counet, EUMETSAT + D. Kone, EAMAC
09:00	Introductory remarks - A. Ratier, EUMETSAT
09:10	RAIDEG contribution to MTG Africa - M. Diop Kané, Chair of RAIDEG
09:25	MTG for Africa Concept - D. Fayard, V. Gabaglio, EUMETSAT
10:10	MTG added value (FCI and Lightening Imager) - V. Nietosvaara, EUMETSAT
10:30 - 11:00	*Coffee break*
11:00	Group discussions
	North Africa - Facilitators: V. Gabaglio, EUMETSAT + T. Saouri, Maroc
	Lightening Imager - Facilitators: V. Nietosvaara, EUMETSAT + D. Kone, EAMAC
	- FCI and Level 2 products - Facilitators: M. Higgins, EUMETSAT + J. Kageny, IMTR
12:30 - 14:00	*Lunch break*
14:00	Report from group discussions
14:30	Discussion on Transition programme for Africa
15:00	*End of session 3*

PROGRAMME OF THE FORUM

SESSION 4 - SATELLITE AND WEATHER INFOMATION FOR DISASTER RESILIENCE	
Chairperson:	O. Olayide, AUC
Rapporteurs:	E. Barisano, EUMETSAT + L. Razafindrakoto, ACMAD
15:00	Disaster resilience in Africa - L. Naess Wanambwa, AUC
15:10	Overview of RARS/DRR project - J. Kabyemera, AfDB
15:20	SAWIDRA–RARS Africa - B. Lamptey, ACMAD
15:45 - 16:15	*Coffee break*
16:15	(CANCELLED) SAWIDRA Western Africa - I. Alfari, AGRHYMET
16:30	SAWIDRA Eastern Africa - Z. Atheru, ICPAC
16:45	SAWIDRA Southern Africa - F. Nsadisa, SADC-CSC
17:00	SAWIDRA Central Africa - D. Kuitsouc, ECCAS
17:15	Use of NWP and Satellite for Disaster Resilience - M. Diop Kané, Sénégal
17:25	Use of NWP and Satellite for Disaster Resilience - L.A. Simpson, South Africa
17:35	Q&A, discussion
18:00	*End of session 4 & End of day 3*

THURSDAY 15 SEPTEMBER 2016	
SESSION 5 - MESA	
Chairperson:	E. Jackson, ACP Secretariat
Rapporteurs:	S. Flasse, EUMETSAT + R. Brown, MESA
09:00	MESA status of implementation - J. Wasambo, AUC
09:20	(CANCELLED) MESA main successes within ECOWAS - I. Alfari, AGRHYMET
09:40	MESA main successes within CEMAC - G. Gulemvuga, CICOS
10:00	MESA main successes within SADC - I. Kusane, SADC-CSC
10:20	MESA main successes within IGAD - Z. Atheru, ICPAC
10:40 - 11:10	*Coffee break*
11:10	MESA training programme - T. Kormé, Particip
11:30	JRC MESA e-station - M. Clerici, JRC
11:50	GMES&Africa initiative: status of next steps - M. Kinyua Ndiritu, AUC
12:10	Q&A, discussion
12:30 - 14:00	*End of Session 5 & Lunch break*
SESSION 6 - COPERNICUS	
Chairperson:	H. Masheleni, AUC
Rapporteurs:	S. Wannop, EUMETSAT + K.A. Agyekum, UoG
14:00	Presentation of the Copernicus Programme - M. Massart, EC
SESSION 6A - COPERNICUS DATA AND MARINE APPLICATIONS	
14:20	Sentinel-3 Marine products - M. Higgins, EUMETSAT
14:40	MESA - ECOWAS Marine Thema - K.A. Agyekum, G. Wiafe, University of Ghana
15:00	MESA - Indian Ocean Marine Thema - J. Mosaheb, MOI
15:20	Lake forecasting - K. Muwembe, Uganda NMHS
15:40	Q&A, discussion
16:00 -16:30	*End of Session 6A - Coffee break*

PROGRAMME OF THE FORUM

SESSION 6B - COPERNICUS DATA AND LAND APPLICATIONS	
Chairperson:	A. Nmiri, Tunisia
Rapporteurs:	M. Higgins, EUMETSAT+ I. Kusane SADC-CSC
16:30	Copernicus Global Land data & products - T. Jacobs, VITO
16:50	Sentinel-2 applications in Africa, a cooperative approach - M. Leroy, CNES
17:10	EUMETSAT Land Surface Analysis SAF, J-L Roujean, Meteo France
17:30	SIGMA, a contribution to the Global Agricultural Geo-Monitoring (GEOGLAM) - S. Gilliams, VITO
17:50	Q&A, discussion
18:00	*End of session 6B & End of day 4*
Dinner, hosted by EUMETSAT	
18:30	*Bus departure from Lemigo Hotel*
19:00	*Dinner*
21:30	*Bus departure from restaurant. Arrival at Lemigo Hotel 21:45.*

FRIDAY 16 SEPTEMBER 2016	
SESSION 7 - CLIMATE SERVICES	
Chairperson:	J. Ntanganda, Meteo Rwanda
Rapporteurs:	V. Nietosvaara, EUMETSAT + J. Wasambo, AUC
09:00	Rwanda Green Growth and Climate Resilience Strategy - D. Rugege, MINIRENA
09:15	GFCS status - J. Mukabana, WMO
09:30	Satellite-based climate data records and their applications in Africa - S. Kothe, Climate Monitoring SAF, DWD
10:00	MESA Climate Services - B. Lamptey, ACMAD
10:20	ENACTS / Rwanda Climate Services for Agriculture - D. Kagabo, Meteo Rwanda
10:40	TAMSAT Long term rain monitoring across africa - R. Maidment, Uni. of Reading
11:00 - 11:30	*End of Session 7 & Coffee break*
SESSION 8 - REVIEW OF THE MAIN RECOMMENDATIONS	
Chairperson:	V. Gabaglio, EUMETSAT
Rapporteurs:	S. Flasse, EUMETSAT + A. Twahirwa, Meteo Rwanda
11:30	Review of the recommendations of 12th EUMETSAT User Forum
12:30 - 14:00	*Lunch break*
14:00	Review of the recommendations of 12th EUMETSAT User Forum (cont')
14:30	Feedback form - 12th EUMETSAT User Forum in Africa
14:45	Adoption of the 12th EUMETSAT User Forum recommendations - English and French
15:00	*End of Session 8*
15:00	Closing remarks
15:30	*End of Forum*

OPENING CEREMONY SPEECHES

Statement by Alain Ratier, EUMETSAT Director-General

[Protocol observed]

It is an honour and a pleasure for me to be here with you in Kigali and take part in the 12th EUMETSAT User Forum in Africa.

Since the last User Forum, which took place in 2014 in Benoni, South Africa, a couple of important decisions and milestones have taken place on the EUMETSAT that I believe will further strengthen our relationship with Africa.

Let me first mention the approval of a new strategy by our Council last June. This strategy, named "Challenge 2025", provides the general framework and guidance for EUMETSAT activities in the decade to come. One important element for this Forum is that Challenge 2025 reaffirms the commitment of our 30 Member States to the cooperation with Africa.

Our first commitment to Africa will remain to facilitate access to EUMETSAT satellite products, but also to environmental, climate and meteorological information, and to help the African user communities best exploit this information to fulfil the needs at continental, regional and national level, in areas such as disaster risk reduction and resilience, agriculture, transport, water management, and adaptation to climate change.

This means in particular that we will continue our EUMETCast- Africa service and to support training programmes in Africa in cooperation with regional Training Centres, as part of capacity building initiatives supported by the African Union, the European Union and the World Meteorological Organisation.

However, we are aware that our contribution alone cannot ensure that the benefits from our satellite data to Africa are sustained and maximised. This can only be achieved with the strong involvement and commitment from the user communities, and your presence at this Forum is a very positive signal in this respect. But this is not enough. We also need to make sure that our activities and projects are aligned with institutional framework and policies such as the Integrated African Strategy on Meteorology and the Joint EU-Africa Strategy. This is indeed necessary to give full confidence that our activities and projects will deliver socio-economic benefits at continental, regional and national level, and will attract the necessary institutional and funding support from Africa and Europe.

This being said, EUMETSAT has no political ambition in Africa, and we are fully aware that our scientific, technical and operational contribution is quite modest, in view of the challenges in front of Africa. Our only ambition is to be and remain a trusted and committed partner, building on our operational capacities and on the relationship we have established and developed with you over the years.

Our cooperation can only be sustained and meaningful in the long term if EUMETSAT can commit to secure the continuity of satellite systems and services to users over the next

decades. And I wish to inform you that this prerequisite condition is now fulfilled as a result of a number of achievements and decisions in the last two years.

First, in 2015 we launched and successfully commissioned our last Meteosat Second Generation satellite, MSG-4, now renamed Meteosat-11, and stored it in orbit. This means that we have now four operational MSG satellites in orbit, enabling operations from 0° at least until 2025, and that, as a result, we are in the best possible situation for a safe transition with the Meteosat Third Generation system to be deployed from 2021 onwards.

The successful commissioning of MSG-4 allowed our Council to decide in June 2016 to move Meteosat-8 to 41°5 East, over the Indian Ocean, to replace Meteosat-7, the last first generation satellite, at the end of its record long lifetime of 19-years. This fulfils one major recommendation of our last user Forum, and offers not only service continuity but also a better service, based on a much more capable satellite, creating new opportunities for improvements in cyclone tracking and nowcasting of high impact weather.

For the polar orbit, we are planning to launch our last Metop satellite – Metop-C – in October 2018, and we are confident we will be able to continue exploiting Metop-A at least until 2020. This means that, subject to the successful commissioning of Metop-C, we will be able to maintain and exploit two Metop satellites in orbit, and even three for a couple of years.

This is of course excellent news for the development of a Numerical Weather Prediction capability in Africa, that you are developing under the SAWIDRA continental project led by ACMAD, as one key element of a strategy for improving Early Warning Systems in support to disaster risk reduction.. This means indeed that the RARS-Africa network of ground stations to be deployed as part of SAWIDRA will access in near real time data broadcast by up to three Metop satellites to deliver relevant products to be assimilated by your NWP models.

Another important decision of our Council was the approval of the EPS Second Generation programme in June 2015, which formalised EUMETSAT's commitment to deliver more and better data from the mid-morning polar orbit in the 2021-2042 timeframe. The Metop-SG satellites will be much more capable than the current generation of Metop, and you can be assured that they will broadcast data to the four X band stations of your RARS-Africa network.

Another major achievement is that we are now exploiting two more ocean satellites on behalf of the EU Copernicus programme, Jason-3, launched on 17 January 2016, and Sentinel-3A launched on 16 February. In addition, our Council has approved in September 2015 the Jason-CS/sentinel-6 programme, thus securing the continuity of Jason-class ocean altimetry measurements until 2030.

So as you can see, the future of our cooperation is established on solid foundations and very promising, in view of the successful launches of the last satellites from the current generation and of the enhanced capabilities expected from the next generation satellite systems currently under development, in particular MTG and EPS-SG.

From a user perspective access to and use of data from the current generation of satellites has certainly priority in the coming years, as this will determine the success of the MESA,

SAWIDRA and GMES and Africa projects, that are all challenges in themselves and strategic investments for the future.

What is at stake is the further improve weather services at regional and national levels, in particular forecasting of extreme events and early warnings, and to develop climate services in Africa, as foreseen by the strategy adopted by the AMCOMET ministers - but also to develop other applications that are key for sustainable development, such as agriculture, management of water, marine and natural resources and transport.

During this forum we will discuss achievements and remaining challenges of these projects and you can be assured that EUMETSAT will continue to support them and their sponsors and to respond to requirements for the dissemination of additional products identified by the RAIDEG.

This forum will also discuss access to data from the Copernicus Sentinel-3 satellite and opportunities for their use in Africa, in combination with other ocean products available on EUMETCast, noting that EUMETSAT plans to start disseminating Sentinel-3 marine products to Africa in November 2016, on behalf of the EU. Additional capacities will be needed on the user side to develop oceanographic, marine and fisheries applications of this data, possibly within the GMES and Africa programme that will be presented by the African Union Commission. EUMETSAT will support this effort through a first Massive Open On-line Course (MOOC) on monitoring the oceans starting on 24 October and new courses on marine forecasting for African marine meteorologists.

Last but not least, we will discuss plans for preparing users for the transition from Meteosat Second Generation to Meteosat Third Generation, based on the results of a dedicated study that you recommended and that we have carried out with the support of RAIDEG. The results of this study will be presented during a dedicated session.

I would like to pursue with some words on climate change. We all know Africa and the island states of the Caribbean and the Pacific are among the most vulnerable regions. The Paris Agreement adopted at the COP-21 streses the need to strengthen scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making.

It is therefore indispensable that Africa and ACP states build, at institutional, scientific and technical level, the capacity to deliver climate information services to their decision makers, to build well founded adaptation policies.

The Global Framework for Climate Services (GFCS) and its Implementation Plan provides guidelines to achieve this, and I am delighted that the high level meeting of yesterday evening reaffirmed the commitment to rapidly operationalize the new Regional Climate Application and Prediction Centre for Central Africa for the benefits of the various countries.

Let me conclude by recalling that 2016 is a special year for EUMETSAT, as we celebrate our 30th Anniversary. During the celebration, several Africa users, who have been involved in our cooperation since the very beginning, came to Darmstadt to report on the history, achievements and benefits of this partnership, and to give their personal perspective for the

future. I am sure this Forum will be one first milestone towards fulfilling their expectations, and of course, and foremost, also yours.

I wish to thank the government of Rwanda again for hosting this Forum in Kigali.

I wish to thank also the Rwanda Meteorology Agency, the Ministry of Natural Resources and EUMETSAT staff for the excellent organisation

I thank you for your attention.

Statement by Mr Wenjian ZHANG, Assistant Secretary-General, World Meteorological Organisation

[Protocol observed]

On behalf of the WMO Secretary General, Petteri Taalas, I would like to congratulate the opening of the 12th EUMETSAT User Forum in Africa. Taking this opportunity I would like delivery a few thank yous:

First thank you go to the EUMETSAT, through the DG of EUMETSAT, Mr. Alain Ratier for organizing the important and timely user forum. There is a long history of close collaboration between WMO and EUMETSAT to help improve the provision more accurate weather and climate services for Africa – a collaboration that we value very much. WMO appreciated greatly that the European nations that have joined forces in EUMETSAT for providing comprehensive support to WMO Regional activities, developing and the LDCs, in particular Africa, with a strategic objectives and clear roadmap and, in doing so, combine your efforts with the European Union, the African Union and the World Meteorological Organization. A number of projects, initiatives and activities have already taken place in African region, including the EUMETSAT User Forum in Africa, who met for the first time in Niger in April 1995, and now as a long-standing commitment of EUMETSAT. Along the more than 20 years, it has proven to be a model of dialogue between satellite providers and satellite users, between the 30 EUMETSAT Member States and the 56 WMO Members of Africa.

Secondly, WMO thanks greatly the Government of Rwanda, through E. Vincent Biruta, Minister of Natural Resources of the Republic of Rwanda, for hosting this User Forum in this beautiful capital city Kigali. WMO realized that the Forum is also a convener of relevant stakeholders in matters related to earth observations, its applications and its policy implications. These stakeholders, such as the African Union Commission, the European Union, the African Ministerial Conference on Meteorology (AMCOMET) whose presence here today show the importance they are giving to this event.

Thirdly WMO thanks all the participants, especially African Users, for actively participating this user forum. The User Forums continues to be one of the key platforms in Africa that facilitate the use of satellite data throughout the continent, in particular, for the National Meteorological and Hydrological Services. In 2012 at 15th CBS session, a CBS resolution was approved for user readiness for new generation of GEO Meteorological satellites. We all aware that the constellation of meteorological satellites, particularly of geostationary

satellites, is undergoing rapid changes from 2014 to 2020. An entire new generation of systems, including Meteosat Third Generation (MTG) will become operational, posing great opportunities but also significant challenges to many users. WMO, through our space programme and Education and training programme activities, jointly with EUMETSAT and other satellite operators, has made great efforts for supporting the satellite utilizations, including but not limited to, the Virtual Laboratory for Education and Training in Satellite Meteorology (VLab), the registration of EUMETSAT datasets in the WMO Information System (WIS), the WMO Consultative Meetings on High-level Policy on Satellite Matters with study outcomes of Socio-economic benefits of meteorological satellites, and the WMO Satellite User Readiness Navigator (SATURN) project, just name a few. In this regard, I strongly encourage all WMO Members and users, to sensitize the potential challenges with the new generation of satellites, and to make greater efforts, even some institutional arrangements for applications in weather, climate and environmental areas, for ensuring the greater benefits from this new generation of satellites for the sustainable development of our nations.

To this effect, it is critical that we all build on these existing partnerships and explore the landscape in terms of new partners in support for a coherent and structured capacity building effort in Africa, a key component to ensure the sustainability of the investments we are all making today.

With these remarks, I would wish you all fruitful deliberations in the coming days and I am looking forward to see the outcomes of this Forum as well as recommendations.

Please rest assured that WMO will continue to support this user forum (platform).

Thank you, for your attention, merci.

Statement by H.E. Marie Thérèse Chantal MFOULA, Assistant Secretary General, ECCAS

[Protocol observed]

It is an honour and especially a great pleasure for me to take the floor today, on behalf of His Excellency Ambassador Ahmad Allam-Mi, Secretary General of the Economic Community of Central African States, to once more thank the Government of the Republic of Rwanda, through its Minister of Natural Resources, for the invitation to participate in this forum, for hosting us and for the facilities granted to the ECCAS delegation.

As I indicated yesterday during the Special Session on the Climate Application and Prediction Centre of Central Africa (CAPC-AC), which the ECCAS Heads of State and Government have just created in Douala, Cameroon, ECCAS welcomes the initiatives of the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) in Africa, as well as the special attention granted to the Community of Central African States within the framework of the CAPC-AC.

I would like to take this opportunity to invite the other development partners involved in the issues of climate, meteorology and disaster resilience to join in these EUMETSAT initiatives in a sincere and mutually beneficial partnership. This would help the African continent in general and Central Africa in particular to accelerate the capacity building of our States in their fight to reduce the level of their peoples' exposure to unforeseeable events of an environmental origin.

Finally, let me pay well-deserved tribute to our sister Community CEMAC, which cooperates with ECCAS on these issues, as well as to the World Meteorological Organization (WMO) and to the African Centre for Meteorological Application for Development (ACMAD) for their constant support to our sub-region.

Excellencies, Ladies and Gentlemen,

As you all know, the EUMETSAT User Forum is a unique opportunity to strengthen ties and to define cooperation policies between EUMETSAT and its African partners. ECCAS endeavours to participate in this noble mission, which should surely enable its States to benefit from European satellite technology and develop government capacity in meteorological and climatic monitoring.

In this regard, it seems useful to point out that, in its strategic outlook for 2025, ECCAS recognizes the importance of such sectors as the fight against climate change, desertification and drought, as well as those of peace, security and above all management of natural or man-made disasters. These sectors can be found within the strategic intervention priorities on which ECCAS has focused its efforts up to now.

Indeed, within our community, extreme climate anomalies and events occur with heavy socio-economic and environmental repercussions. The 2007 report by the Intergovernmental Panel on Climate Change (IPCC) indicates that increase in extreme events will be more likely in the 21st century, with more disastrous consequences if mitigation and adaptation measures are not taken now.

The actions to be carried out within this context are fully in line with the sub-regional strategy for risk prevention, disaster management and adaptation to climate change, as well as with the Action Plan for disaster preparedness and response in Central Africa contained in the June 2012 Ministerial Declaration of Libreville.

ECCAS is pleased to observe that this Forum will most certainly enable it to learn more and to forge new partnerships for achieving the goals associated with this strategic outlook.

Excellencies, Ladies and Gentlemen,

My hope is that the success of this meeting will be commensurate with the excellent way in which it has been organized.

I also hope that the results of this Forum will have a lever effect on the ongoing initiatives in our continent, as part of the fight against its vulnerability to climate events, and that it will inspire our current efforts to effectively and efficiently launch the Climate Application and Prediction Centre of Central Africa.

Thank you for your kind attention!

Statement by Ondrej SIMEK on behalf of Michael RYAN, Head of the Eu Delegation to Rwanda

[Protocol observed]

It is a great pleasure to be here today and contribute to the opening of this 12th EUMETSAT event on behalf of the European Union. It is fantastic to see so many African scientists and particular meteorologists today, together with policy makers.

The recent climate change agreement concluded in Paris and the international agreement on Sustainable Development Goals from Rio create an excellent opportunity for all of us – opportunity which we need to seize without delay and work together to make these agreements a reality. Never before has climate change become such a driving force to modify our technology, to direct our funding, to pursue cooperation, to do things differently.

In the European Union, we are already making a significant contribution towards the shift in how things are done. First, we are mainstreaming climate action in national economies across the EU through ambitious targets to reduce emissions, increase the share of renewable energy and improve energy efficiency.

Second, climate action is key element of our external development policy. The European Commission alone is aiming to spend around 20% of its development portfolio on climate-related projects and programmes. This is in line with the overall target of making at least 20% of the entire European Union budget for 2014-2020 "climate relevant".

Finally, climate action is a key issue in our dialogue and cooperation with third countries and regions. The 4th Summit of the Africa-EU Heads of State held in 2014 adopted a roadmap, which identifies 'climate change and environment' as one of the key areas for cooperation.

None of our actions could be done without having reliable and accurate data, which are a crucial element for being able to initiate and pursue effective climate change action. Reliable and accurate data allow for evidence-based policy-making and effective action.

The European Union has been supporting several projects and programmes targeting Africa's access and use of reliable climate-related data through Earth observation technologies.

PUMA, AMESD, MESA – I am sure that you are much more familiar with these abbreviations than myself. These are three consecutive programmes where the EU has teamed up with EUMETSAT to support Earth observation applications and services in Africa. The EU overall financial contribution to these programmes has been about €70 million.

We are also spending some €80 million to help strengthen Disaster Resilience to Natural Hazards in Sub-Saharan African and we support the Climate for Development in Africa (ClimDev) programme. Together with EUMETSAT these programmes will continue to further support capacity building of national and regional climate centres, give access to additional

Earth observation data and guide the effective integration of climate information into development planning. We work closely on the implementation of these programmes with the African Union Commission, Regional Economic Communities as well as the Regional Information Centres and UN organisations.

The joint work and team spirit demonstrated in the process of implementation of these programmes serves as an inspiration. Major progress has been made – we are now able to better forecast climate developments, have better understanding of crisis situations or be better prepared for mitigation of their consequences. Millions of lives were saved and economic activities safeguarded with the help of these programmes.

But apart from their core value, these programmes are also equally valuable in terms of their contribution to the wider objectives of regional and continental integration in Africa. The successful development of regional climate prediction and application centres in East and West Africa and the progress made yesterday with a high level policy commitment for the development of a similar Centre for Central Africa are promising.

We are now working to further extend our cooperation. You have all probably heard about the Global Monitoring for Environment and Security (GMES) and Africa initiative to create an overarching framework in Africa for Earth Observation applications. The EU has supported this initiative which has three priority thematic areas – marine and coastal areas, water resources and natural resources management. This initiative will be implemented from 2017, as a follow up to MESA, and will be managed by the African Union Commission. EU overall contribution to the whole project will be around 28 Mo€ and the project will enable the consolidation of services developed through the MESA project and support their expansion to other geographic zones of the continent, including Northern African countries and South Africa. Support will be provided to also develop new services. EUMETSAT will continue to play a major supporting role.

Honourable Permanent Secretary, Your excellences, dear ladies and gentlemen,

Let me once again reiterate that I am very pleased to be here today and demonstrate the European Union's strong commitment to addressing the challenge of green growth and climate resilience. I am proud of our partnerships, dialogue and cooperation in this area and it may be worth to investigate if we can apply some of the lessons learned in this area to other areas of cooperation.

Finally, I would like to take this opportunity to thank EUMETSAT for our successful teamwork at the European as well as pan-African levels to facilitate access and use of the crucial climate-related data. Together we have achieved a lot and I believe there will be many more achievements to celebrate!

I wish you all the very best with the proceedings of this Forum!

Thank you for your attention.

Statement by Dr. Josue DIONE on behalf of H.E. Rhoda Peace TUMUSIIME, Commissioner for Rural Economy and Agriculture, AUC

[Protocol observed]

Firstly, let me convey the greetings of H.E Rhoda Peace Tumusiime, the Commissioner for Rural Economy and Agriculture, who would have loved to be here in person, but she is unfortunately not able to join us today due to a previous commitment. Commissioner Tumusiime requested that I also convey the warm greetings of H.E Dr. Nkosazana Dlamini-Zuma, Chairperson of the African Union Commission to you all, and extend her sincere gratitude to the Government and People of the Republic Rwanda for hosting this Forum barely two months after successfully hosting the 27th Ordinary Session of the Assembly of the African Union.

On behalf of H.E Rhoda Peace Tumusiime, I am personally honoured to witness this great commitment of the Government of Rwanda, and would also like to express my sincere appreciation.

The 12th European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) User Forum for Africa (the 12th EUMETSAT User Forum for Africa) is taking place at a time when addressing issues of increased weather and climate variability, and climate change is high on the agenda of the African Union. Meteorological hazards in Africa manifest in various forms including floods, tropical cyclones, storm wave surges, droughts, extremely high temperatures, wild fires, sand or dust storms, landslides and avalanches. The World Bank observes that these hazards have outrageous effects on sectors such as the productive sector (agriculture, tourism, commerce and industry), infrastructure sector (housing, transportation, power, communication, sanitation and water supply), social sector (education, health, governance), and the cross-cutting sectors such as environment, livelihoods, religion and culture.

During 2015 and 2016, severe droughts and floods triggered by El Niño weather events have had devastating impacts on food security and the livelihoods of millions of people across the horn of Africa, Eastern Africa and Southern Africa. The flooding effects of the El Niño south of the equator contributed to a significant increase in outbreaks of water-borne diseases including cholera and other diarrheal diseases. Cholera outbreaks were recorded in Tanzania, Kenya and Ethiopia during 2015, while other countries recorded an increase in malaria cases and deaths compared to the same period in 2015. The southern region has experienced water scarcity leading to water rationing, and shortage of power due to impacts on hydropower generation.

Honourable Minister, distinguished delegates,

These meteorological hazards remind us of the noble and undisputed role of the African meteorological community to save lives, property and also to contribute to Africa's socio-economic development.

The African political leadership recognizes the important role the National Meteorological and Hydrological Services (NMHSs) play. It has swiftly and proactively put in place frameworks, institutions, and programmes in order for the continent to be able to prepare for,

respond to, and intervene during times of meteorological hazards. One such example is the African Ministerial Conference on Meteorology (AMCOMET) established as a high level mechanism for the development of meteorology and its applications in Africa. Consequently, the African Governments committed to:

1. Strengthening and sustaining National Meteorological Services by providing them with the resources and appropriate institutional frameworks to enable them to execute their functions;
2. Recognize the role of meteorological services as a fundamental component of the national development infrastructure and ensure that meteorological information is a permanent parameter and feature in national current and future plans, programmes and policies;
3. Regard National Meteorological Services as strategic national assets which contribute to national security, transport, food, water, energy and health in addition to being vital to sustainable development; and
4. Ensure that all sub regions of the continent are active and are adequately resourced.

Honourable Minister, distinguished delegates,

A second example is the development of the Integrated African Strategy on Meteorology (Weather and Climate Services) which was adopted in October 2012 in Victoria Falls, Zimbabwe and endorsed by the AU Executive Council in 2013. The strategy provides a framework for ensuring increased political support and recognition of National Meteorological and Hydrological Services (NMHSs); and also, offers an environment for enhanced weather and climate service delivery.

I am also happy that the Regional Climate Centre for the Central African Region is now established and operational and with solid political commitment. The African Union Commission is thankful to the World Meteorological Organization (WMO), AMCOMET Secretariat for the support and also takes this opportunity to thank ECCAS Member States, CEMAC and ECCAS Secretariat for implementing the Decision of the AU Executive Council in this regard.

With this high-level political support at continental, regional and country levels, I wish to call upon our National Meteorological and Hydrological Services (NMHSs) to ensure that accurate and timely weather and climate information are provided to all stakeholders, including farmers, fishermen, livestock herders, and other vulnerable groups. Thus, aware of the fact that most African economies are agriculture-based, weather and climate constitute a basic input or resource to agricultural planning. To this end, the African Union Commission wishes to inform this gathering that, through the Monitoring for Environment and Security in Africa (MESA) project:

- the Commission is committed to ensuring that all participating Member States are equipped with software and infrastructure, particularly, the PUMA Stations in order for our National Meteorological and Hydrological Services to be able to access and process data that is needed for forecasting, prediction, and other related services.

- the Commission has equipped four WMO Regional Training Centres in Africa with equipment and software. Training of African experts in these centres already commenced with the support of the MESA project.
- the Memorandum of Understanding between the AUC and EUMETSAT on the implementation of the MESA project is operating well and Africa continues to access data via the EUMETSAT's EUMETCast System.

The administrative arrangement with the European Union Joint Research Centre continues to benefit Africans with software, training, as well as expertise the development of environmental and continental environmental and climate bulletins.

Honourable Minister, distinguished delegates,

The Commission is grateful to the European Union for the financial support, not only for the infrastructure for meteorological purposes, but also other infrastructure for environmental monitoring activities. The cooperation that exists between the AU and EU in the framework of the Joint Africa – EU Strategy is highly cherished. As some of you might be aware, the Global Monitoring for Environment and Security (GMES and Africa) project, also supported by the EU, will commence implementation at the end of MESA. MESA and GMES Africa are not the only projects that the EU is supporting. We are also grateful for its support to the Climate Change activities including the ClimDev-Africa Initiative, the Great Green Wall for the Sahara and Sahel Initiative (GGWSSI), the Multilateral Environmental Agreement (MEAs) project, and the Building Resilience through Disaster Risk Reduction programme, among others.

I wish also to thank the ACP Secretariat, Regional Economic Communities, EUMETSAT, the EU Joint Research Centre, the African Centre of Meteorological Application for Development (ACMAD), and all the Regional Implementation Centres for their various roles in the implementation of the MESA project. As we execute our different mandates, I urge that our work be guided by what our political leadership has put in place so that our work remains relevant to the people we serve, and also align our work with Africa's Agenda 2063, which is "Africa's shared strategic framework for inclusive growth and sustainable development and a global strategy to optimize the use of Africa's resources for the benefit of all Africans"

Honourable Minister, distinguished delegates,

As I conclude, allow me to once again thank the Government and People of the Republic of Rwanda, EUMETSAT, the local organizers and all those involved in the preparations of this Forum. The effort and resources you put into this organization are highly appreciated. As I wish you all fruitful deliberations, I also wish to assure you that the AUC is committed to executing its mandate and implementing the recommendations of this Forum.

Thank you!!! Murakoze!!!

Opening statement by Fatina MUKARUBIBI, Permanent Secretary of the Ministry of Natural Resources

[Protocol observed]

It is a pleasure to be with you for the opening ceremony of the twelfth European Organisation for the Exploitation of Meteorological Satellites User Forum in Africa. On behalf of the Government of Rwanda, I warmly welcome you to Kigali – Murakaza Neza.

Rwanda is honoured to host this year's forum and we are grateful to EUMETSAT for placing your trust in Rwanda. Thank you. I would also like to take this opportunity to wish the organisation a happy 30th birthday – all the best for the next 30 years.

Ladies and gentlemen,

With the climate changing at an ever-faster rate, there has never been a more important time to come together to share knowledge and experience. We know that Africa is especially vulnerable to the impacts of a warming planet and Rwanda is no exception.

We felt the severe and tragic consequences of climate change in May when 56 of our citizens were killed in floods and landslides in the northern and western parts of the country. This extreme weather event also left many homeless and is a clear illustration of the high level of vulnerability we face.

Across the region and further afield, similar climate related disasters are increasing in frequency and severity, including floods in East Africa. But vulnerability to climate change does not mean we must sit by and wait for disaster to reach our doorstep. There is a better way, and it requires us to work together.

One of the major challenges the continent faces is our ability to harness the power of technology for green growth. We know already existing technology could transform our economies - from energy development and agriculture production to natural resource management – but we have not yet begun to take advantage of it. Satellites are just one example of such technology.

Another challenge is utilising the vast amount of data and information to support our citizens to build sustainable and climate resilient lives and economies. For many of our governments and our people, we simply do not access and make use of what's already available – including climate data.

These two challenges may seem daunting, but they can be overcome if we work in partnership, not just between Africa and Europe, but within the continent as well.

Over the next few days, this forum will focus on the application of meteorological information and satellite data for green growth and climate resilience. It is exactly this user-focused approach that is needed.

In 2011, Rwanda introduced our Green Growth and Climate Resilience Strategy – a cross cutting development plan to ensure the environment is at the heart of everything we do. Our goal is to become a developed, climate resilient and low carbon nation by 2050.

A key part of this strategy is putting people and the planet first. By involving our citizens at the beginning, middle and end of development, and incorporate environmental protection,

we will ensure our development can be sustained for generations to come. It is this approach we must continue to encourage when dealing with satellite data and meteorological information.

Our citizens – farmers, business people, scientists or practitioners – all depend on accurate and reliable climate information. By finding the best ways to reach these and other end users of climate and weather data, we can ensure the information they are accessing is understandable and useful to them in their daily lives.

Ladies and gentlemen,

I would like to conclude by thanking our partners for their invaluable support over many years. Africa's meteorological services, and in particular Rwanda, have benefited immensely from the support of EUMETSAT and its partners including the European Union Commission.

We look forward to continuing these strong partnerships, and working alongside the World Meteorological Organisation and other international institutions to boost technical and scientific cooperation.

In doing so, we will better prepare ourselves for the impacts of climate change and reduce our vulnerability. Our citizens deserve nothing less.

Finally, I hope that all delegates enjoy their time in the land of a thousand hills. I invite you to visit our national parks and historical places to learn more about our country and our efforts to build a green Rwanda.

I wish you fruitful deliberations and declare the 12th EUMETSAT User Forum in Africa open.

Thank you for your kind attention.

LIST OF PARTICIPANTS

Country	Firstname	Lastname	Organisation
Algeria	Mohamed	BENGHANEM	OFFICE NATIONAL DE LA METEOROLOGIE
Angola	Afonso	DOMINGOS	INAMET-ANGOLA
Belgium	Zdenka	DOBIASOVA	EUROPEAN COMMISSION - DG DEVCO
Belgium	Sven	GILLIAMS	VITO
Belgium	Tim	JACOBS	VITO NV
Belgium	Edmund	JACKSON	AFRICAN CARIBBEAN AND PACIFIC GROU OF STATES
Benin	Kokou Marcellin	NAKPON	SERVICE MÉTÉOROLOGIQUE NATIONAL
Botswana	Sacrasta	NCHENGWA	DEPARTMENT OF METEOROLOGICAL SERVICES
Botswana	George Odisitse	KEOTSENE	MESA SADC THEMA
Botswana	Modise Isaac	KUSANE	BDMS/SADC-CSC (MESA SADC THEMA)
Botswana	Faka	NSADISA	SADC
Botswana	Farai	MARUMBWA	MESA SADC THEMA
Botswana	Thembani	MOITLHOBOGI	MESA SADC THEMA
Botswana	Birgitta	SEVEBORG FARRINGTON	MESA
Burkina Faso	Jacques	LALLE	GENERAL DIRECTION OF METEOROLGY
Burundi	Aloys	RURANTIJE	IGEBU-BURUNDI NATIONAL MET
Cape Verde	José Carlos	DA LUZ	INSTITUTO NACIONAL DE METEOROLOGIA E GEOFISICA
Central African Republic	Hassan Adoum	BAKHIT HAGGAR	CEMAC
Central African Republic	Isidore	EMBOLA	CEMAC
Central African Republic	Athanase	YAMBELE	DIRECTION DE LA METEOROLOGIE ET DE L'HYDROLOGIE
Chad	Ngakougnon	MINDÉ	SERVICE DE L'AVIATION CIVILE ET DE LA METEOROLOGIE NATIONALE
Comores	Saifou-Dine	ALIANI TOIHA	AGENCE NATIONALE DE L'AVIATION CIVILE ET DE LA METEOROLOGIE
Congo	Serge Louis	NANGHO	MINISTERE DES TRANSPORTS ET DE L'AVIATION CIVILE
Côte d'Ivoire	Edoh Ferdinand	EKLOU	SODEXAM/ DIRECTION DE LA METEOROLOGIE NATIONALE
Côte d'Ivoire	Dieudonne	GOUDOU	AFRICAN DEVELOPMENT BANK
Djibouti	Osman Saad	SAID	AGENCE NATIONALE DE LA METEOROLOGIE
DRC	Freddy	FALANGA	FLG CONSULTING
DRC	Donatien	KAMUNGA MUSUNGAYI	METTELSAT
DRC	Charlotte	SWEDI KIMBOTE	CICOS
DRC	Olivier	THAMBA UMBA	CICOS
DRC	Halilou	ABOUBAKAR	CICOS

Country	Firstname	Lastname	Organisation
DRC	Maixent Olivier	KAMBI	DIRECTION DE LA METEOROLOGIE
DRC	Alphonse	KANGA	DIRECTION DE LA METEOROLOGIE
Egypt	Emad Eldin	MAHMOUD	EGYPTIAN METEOROLOGICAL AUTHORITY
Equatorial Guinea	Nuria Mikue	ASUMU MBEZE	ASECNA
Ethiopia	Robert	BROWN	AU-MESA
Ethiopia	Bruno	COMBAL	AU/MESA
Ethiopia	Dula Shanko	LEBETA	NATIONAL METEOROLOGICAL AGENCY
Ethiopia	Josue	DIONE	AFRICAN UNION COMMISSION
Ethiopia	Meshack	NDIRITU	AFRICAN UNION COMMISSION
Ethiopia	Olayide	OLUSHOLA	AFRICAN UNION COMMISSION
Ethiopia	Livingstone	SINDAYIGAYA	AFRICAN UNION COMMISSION
Ethiopia	Jolly	WASAMBO	AFRICAN UNION COMMISSION
Ethiopia	Hailu Wudineh	WUDINEH	AFRICAN UNION COMMISSION
Ethiopia	Wassie Argaw	BAYOU	AFRICAN UNION COMMISSION
Ethiopia	Hambani	MASHELENI	AFRICAN UNION COMMISSION
Ethiopia	Elvis Paul	TANGEM	AFRICAN UNION COMMISSION
Ethiopia	Irene L.	TIRWAKUNDA	AFRICAN UNION COMMISSION
Ethiopia	Kouassi E. Aubin	FAFEH	MESA
Ethiopia	Abraham G.	YIGEZU	MESA
France	Emilio	BARISANO	EUMETSAT, GEOSAT TECHNOLOGY
France	P. Frederic	CASTEL	WORLD SERVICE BRITISH BROADCASTING
France	Marine	GUERECHEAU	TELESPAZIO
France	Philippe	RIERA	TELESPAZIO
France	Marc	LEROY	CNES
France	Jean-Guy	PLANES	THALES ALENIA SPACE
France	Jean-Louis	ROUJEAN	METEO FRANCE
Gabon	Dominique	KUITSOUC	CEEAC
Gabon	Thérèse Marie Chantal	MFOULA	CEEAC
Germany	Alain	RATIER	EUMETSAT
Germany	Paul	COUNET	EUMETSAT
Germany	Vincent	GABAGLIO	EUMETSAT
Germany	Sylwia	MIECHURSKA	EUMETSAT
Germany	Mara	DAMBOUR	EUMETSAT
Germany	Mark	HIGGINS	EUMETSAT
Germany	Denis	FAYARD	EUMETSAT
Germany	Vesa	NIETOSVAARA	EUMETSAT
Germany	Joachim	SAALMUELLER	EUMETSAT
Germany	Sally	WANNOP	EUMETSAT
Germany	Steffen	KOTHE	GERMAN METEOROLOGICAL SERVICE
Ghana	Kwame	AGYEKUM	ECOWAS COASTAL & MARINE RESOURCES MANAGEMENT CENTER

Country	Firstname	Lastname	Organisation
Ghana	Andrew	NKANSAH	GHANA METEOROLOGICAL AGENCY
Guinea	Amadou	BALDE	DIRECTION NATIONALE DE LA METEOROLOGIE
Guinea-Bissau	Joao Lona	TCHEDNA	INSTITUTO NACIONAL DE METEOROLÓGIA (INM-GB)
Italy	Marco	CLERICI	JRC-EC
Italy	Antoine	ROYER	JRC-EC
Kenya	Peter	AMBENJE	KENYA METEOROLOGICAL DEPARTMENT
Kenya	Byron	ANANGWE	
Kenya	Zachary	ATHERU	ICPAC
Kenya	Joseph	KAGENYI	WMO-RTC-IMTR-NAIROBI/KENYA
Kenya	Eugene	KAYIJAMAHE	ICPAC
Kenya	Nicholas	MAINGI	KENYA METEOROLOGICAL DEPARTMENT
Kenya	Sospeter	MUIRURI	KENYA METEOROLOGICAL DEPARTMENT
Kenya	Leah	NAESS	AFRICAN UNION COMMISSION
Kenya	Viola	OTIENO	ICPAC
Lesotho	Kuroane	PHAKOE	LESOTHO METEOROLOGICAL SERVICES
Liberia	Arthur	GAR-GLAHN	LIBERIA METEOROLOGICAL SERVICE
Madagascar	Roger	RANDRIAMANANTENA	DIRECTION GENERALE DE LA METEOROLOGIE
Malawi	Rodrick	WALUSA	MALAWI METEOROLOGICAL SERVICES
Mali	Moussa	TOURE	MALI-METEO
Mauritania	Aida	CAMARA	OFFICE NATIONALE DE LA METEOROLOGIE
Mauritius	Ram Kumar	DHURMEA	MAURITIUS METEOROLOGICAL SERVICES
Mauritius	Vishwamitra	KARIMAN	MAURITIUS METEOROLOGICAL SERVICES
Mauritius	Javed	MOSAHEB	MAURITIUS OCEANOGRAPHY INSTITUTE
Mauritius	Gilles	RIBOUET	INDIAN OCEAN COMMISSION
Morocco	Tahar	SAOURI	NATIONAL METEOROLOGY DEPARTMENT
Mozambique	Jose	SAWANGUANE	NATIONAL INSTITUTE OF METEOROLOGY
Namibia	Simon Andre	DIRKSE	METEOROLOGICAL SERVICE
Namibia	Victor	KAURIMUJE	METEOROLOGICAL SERVICE
Netherlands	Ben	MAATHUIS	UNIVERSITY OF TWENTE - FACULTY ITC
Niger	Manfred W.	BUCH	ACMAD
Niger	Katiellou	GAPTIA LAWAN	DIRECTION DE LA MÉTÉOROLOGIE NATIONALE
Niger	Diakaria	KONE	EAMAC
Niger	Benjamin	LAMPTEY	ACMAD
Niger	Youchaou	OUSMAN BAOUA	NATIONAL METEOROLOGICAL OFFICE

Country	Firstname	Lastname	Organisation
Niger	Leon Guy	RAZAFINDRAKOTO	ACMAD
Niger	Henri	SONGOTI	CENTRE REGIONAL AGRHYMET
Niger	Nazirou	TOUNE	NATIONAL METEOROLOGICAL SERVICE
Nigeria	Hamza	UMAR	NIGERIAN METEOROLOGICAL AGENCY
Djibouti	Osman Saad	SAID	AGENCE NATIONALE DE LA METEOROLOGIE
Rwanda	John	NTAGANDA SEMAFARA	METEO RWANDA
Rwanda	Anthony	TWAHIRWA	METEO RWANDA
Rwanda	Matheu	MUGUNGA MBATI	METEO RWANDA
Rwanda	Livingstone	BYANDAGA	METEO RWANDA
Rwanda	Colethe	RUHAMYA	METEO RWANDA
Rwanda	Musoni	DIDACE	METEO RWANDA
Rwanda	Godfrey	HABUKURI	METEO RWANDA
Rwanda	Emmanuel	HAKIZIMANA	METEO RWANDA
Rwanda	Leonard	TUKAMWIBONERA	METEO RWANDA
Rwanda	Francine	KALIGIRWA	METEO RWANDA
Rwanda	Francois	NSENGIYUMVA	METEO RWANDA
Rwanda	Frank	RUSANGANWA	METEO RWANDA
Rwanda	Guy	KALISA	RTDA
Rwanda	Eustache	KARAGIRE	RCAA
Rwanda	Vianney	KAVUTSE	NATIONAL SCIENCE AND TECHNOLOGY COMMISSION
Rwanda	Eugene	MARIDADI	RWANDA MINISTRY OF INFRASTRUCTURE
Rwanda	Telesphore	NDABAMENYE	RAB
Rwanda	Arnaud	DE VANSSAY	EEAS-KIGALI
Rwanda	Ondrej	SIMEK	EEAS-KIGALI
Rwanda	Denis	RUGEGE	GGCRS
Rwanda	Marie Jose	UMUBYEYI	MINIRENA
Rwanda	Iyakaremye	VEDASTE	NGO
Sao Tome and Principe	Idalécio	PIRES FERREIRA MAJOR	INSTITUT NATIONAL DE LA MÉTÉOROLOGIE
Senegal	Mariane	DIOP-KANE	ANACIM
Senegal	Moïse	BETOLE ADA	ASECNA
Senegal	Jean-Richard	MANDABRANDJA	ASECNA
Senegal	Siméon	ZOUMARA	ASECNA
Seychelles	Gerard	BIJOUX	SEYCHELLES METEOROLOGICAL SERVICES
Sierra Leone	Saidu Momoh	KAMARA	SIERRA LEONE METEOROLOGICAL DEPARTMENT
South Africa	Christina	BOTAI	SOUTH AFRICAN WEATHER SREVICE
South Africa	Lee-Ann	SIMPSON	SOUTH AFRICAN WEATHER SREVICE
South Africa	Valanathan	MUNSAMI	DEPARTMENT OF SCIENCE AND TECHNOLOGY

Country	Firstname	Lastname	Organisation
South Sudan	Mojwok O. M.	AYOKER	SOUTH SUDAN METEOROLOGICAL DEPARTMENT
Sudan	Osman	MUSA	METEROLOGICAL AUTHORITY
Swaziland	Jabulani	HLATSHWAYO	SWAZILAND METEOROLOGICAL SERVICE
Switzerland	Jean-Paul	GAUDECHOUX	WORLD METEOROLOGICAL ORGANIZATION
Switzerland	Joseph	MUKABANA	WORLD METEOROLOGICAL ORGANIZATION
Switzerland	Josephine	WILSON	WORLD METEOROLOGICAL ORGANIZATION
Switzerland	Wenjian	ZHANG	WORLD METEOROLOGICAL ORGANIZATION
Switzerland	Andiswa	MLISA	GROUP ON EARTH OBSERVATIONS
Tanzania	Aloysius	CHEBET	EAC
Tanzania	Pascal	WANIHA	TANZANIA METEOROLOGICAL AGENCY
Togo	Abalo	AFFO-DOGO	DGMN TOGO
Uganda	Festus	LUBOYERA	UGANDA NATIONAL METEOROLOGICAL AUTHORITY
Uganda	Khalid	MUWEMBE	UGANDA NATIONAL METEOROLOGICAL AUTHORITY
Uganda	Sam	OCHOTO	UGANDA NATIONAL METEOROLOGICAL AUTHORITY
United Kingdom	Stéphane	FLASSE	EUMETSAT, FLASSE CONSULTING LTD
United Kingdom	Ross	MAIDMENT	TAMSAT, UNIVERSITY OF READING
United Kingdom	Steve	MANKTELOW	MET OFFICE
United Kingdom	Rebecca	VENTON	MET OFFICE/ METEO RWANDA
United Kingdom	Matthew	YOUNG	UNIVERSITY OF READING
Zambia	Victor M.	BUPE	ZAMBIA METEOROLOGICAL DEPARTMENT
Zimbabwe	Isaiah	GWITIRA	UNIVERSITY OF ZIMBABWE
Zimbabwe	James	NGOMA	METEOROLOGICAL SERVICES DEPARTMENT

KIGALI DECLARATION

KIGALI DECLARATION IN SUPPORT TO THE CLIMATE APPLICATION AND PREDICTION CENTER OF CENTRAL AFRICA (CAPC-AC)

Kigali, Rwanda, 12 September 2016

DÉCLARATION DE KIGALI EN SOUTIEN AU CENTRE D'APPLICATION ET DE PRÉVISION CLIMATOLOGIQUE DE L'AFRIQUE CENTRALE (CAPC-AC)

Kigali, Rwanda, le 12 septembre 2016

The Representatives of the African Union Commission (AUC), the Economic Community of Central African States (ECCAS) and the Economic and Monetary Community of Central Africa (CEMAC), hereafter The Participants,

in the presence of the representatives of the ECCAS Member States, World Meteorological Organization (WMO), the African Ministerial Conference on Meteorology (AMCOMET), the European Union (EU), the Secretariat of the African, Caribbean and Pacific (ACP Secretariat) Group of States, the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the African Centre for Meteorological Application for Development (ACMAD);

Convening in Kigali, Rwanda, at the invitation of the Minister for Natural Resources of the Republic of Rwanda, in line with their respective mandates and responsibilities to address issues related to climate change and climate variability and to enhance regional integration;

Recalling the AU Executive Council Decision (EX.CL/Dec.744(XXII)), in January 2013, that requested the Commission, in collaboration with the World Meteorological Organization (WMO) and partners to take all necessary steps to establish a regional climate centre in Central Africa;

Recalling the first and third sessions of the Conference of Ministers responsible for Meteorology in Africa (AMCOMET) held respectively in Nairobi, Kenya, on 15-16 April 2010 and in Praia, Cabo verde on 13-14 February 2015, which on the one hand *agreed to establish, with the support of WMO and partners a sub-regional structure for climate monitoring and adaptation to climate change for sustainable development in Central Africa* and subsequently to *commend the Central African States for approving the strategy and implementation plan for the establishment of a Regional Climate Centre (RCC) in Central Africa*;

Les représentants de la Commission de l'Union africaine (CUA), de la Communauté Économique des États de l'Afrique Centrale (CEEAC) et de la Communauté économique et monétaire de l'Afrique centrale (CEMAC), dénommés ci-après les Participants,

En présence des représentants des Etats membres de la CEEAC, de l'Organisation météorologique mondiale (OMM), de la Conférence ministérielle africaine sur la météorologie (AMCOMET), de l'Union européenne (UE), du Secrétariat du Groupe des États de l'Afrique, des Caraïbes et du Pacifique (Secrétariat ACP), de l'Organisation européenne pour l'exploitation de satellites météorologiques (EUMETSAT), du Centre Africain des applications météorologiques pour le développement (ACMAD);

Réunis à Kigali, Rwanda, à l'invitation du Ministre en charge des Ressources Naturelles de la République du Rwanda, sur la base de leurs mandats et responsabilités respectifs visant à répondre aux problèmes liés aux changements et aux variations climatiques et à renforcer l'intégration régionale ;

Rappelant la décision du Conseil exécutif de l'Union Africaine (EX.CL/Dec.744(XXII), prise en janvier 2013, qui demande à la Commission en collaboration avec l'Organisation météorologique mondiale (OMM), et les partenaires de prendre toutes les mesures nécessaires en vue de l'établissement d'un centre climatologique régional en Afrique centrale ;

Rappelant la première et troisième sessions de la Conférence des Ministres en charge de la Météorologie en Afrique (AMCOMET), qui se sont tenues respectivement à Nairobi, Kenya, les 15-16 avril 2010 et à Paria, Cap Vert, les 13-14 février 2015, et qui ont d'une part *convenu de mettre en place en Afrique centrale, avec le concours de l'OMM et de ses partenaires, une structure sous-régionale aux fins de surveillance du climat et d'adaptation aux changements climatiques dans la perspective d'un développement durable*, et d'autre part *félicité les États d'Afrique centrale d'avoir approuvé la stratégie et le plan de mise en œuvre visant à établir un centre climatologique régional (CCR) pour l'Afrique centrale* ;

KIGALI DECLARATION

Recalling the decision No72/CEEAC/CCEG/XVI/15 of the ECCAS Head of State and Government Conference, held in N'Djamena on 25 May 2015 to create the Climate Application and Prediction Centre for Central Africa (CAPC-AC) headquartered in Douala Cameroon;

Informed that during the second central Africa ministerial council on meteorology, held in Yaoundé on 29 July 2016, the ministers took note of the report of the experts on the organization chart, the statutes and the strategic plan to fund the Centre, and decided to hold a meeting of ministers in charge of Meteorology in the margins of the next regular session the Conference of Heads of State and Government for the adoption of all related resolutions;

Considering the Integrated African Strategy on Meteorology (Weather and Climate Service) adopted during the 20th Ordinary Session of the African Union Summit (2013), and its Implementation and Resources mobilisation plan approved by AMCOMET during its third session;

Recalling the Declaration of Addis Ababa of 30 September 2012 and the Benoni Statement of 7 September 2014, which support the implementation of the Global Framework for Climate Services (GFCS) in Africa to ensure that AUC, RECs and their Member States are able to establish and strengthen climate services and, request the ACP Secretariat to engage with the EU to secure financial support for a "GFCS-ACP programme" within the 11th EDF framework and initiate project definition and preparation;

Noting that the intra-ACP strategy, signed on 26 November 2015 in Brussels, includes the objective 2.2. to *contribute to strengthen production, availability, delivery and application of science-based climate prediction and services* with the expected result *to improve the quality and quantity of regional climate prediction and services offered by ACP regional climate centres and hydrometeorological organisations for four climate-sensitive sectors (agriculture and food security, health, water, and disaster risk reduction);*

Noting that the Result #3 of the 10th EDF (intra-ACP) programme "Building Disaster Resilience to Natural Hazards in Sub-Saharan African Regions, Countries and Communities", which is implemented through the ClimDev Africa Special Fund and aims at improving the core capacities of the national and Regional Climate Centres (RCCs), foresees a dedicated project for Central Africa (SAWIDRA – Central Africa);

Noting the existence of regional and specialized centres in the fields of Earth Observation, and those impacted by climate change such as water resources management (CICOS).forests management (COMIFAC) and energetic

Rappelant la décision N°72/CEEAC/CCEG/XVI/15 de la Conférence des Chefs d'Etat et de Gouvernement de la CEEAC, réunis à N'Djamena le 25 mai 2015, de créer le Centre d'Application et de Prévision Climatologique de l'Afrique Centrale (CAPC-AC) avec siège à Douala au Cameroun ;

Informé que lors du deuxième Conseil ministériel Afrique Centrale sur la météorologie, qui s'est tenu à Yaoundé le 29 juillet 2016, les ministres ont pris acte du rapport des travaux des experts sur l'organigramme, les statuts et le plan stratégique de financement du Centre, et décidé de la tenue d'une réunion de ministres en charge de la Météorologie en marge de la prochaine session ordinaire de la Conférence des Chefs d'Etats et de Gouvernement pour l'adoption de l'ensemble des résolutions y relatives ;

Considérant la Stratégie africaine intégrée pour la météorologie (services météorologiques et climatologiques), adoptée lors de la 20ème session ordinaire du Sommet de l'Union Africaine (2013), et son Plan de mise en œuvre et de mobilisation des ressources approuvé par AMCOMET lors de sa troisième session ;

Rappelant les Déclarations d'Addis Ababa du 30 septembre 2012 et de Benoni du 7 septembre 2014, qui soutienentt la mise en œuvre du Cadre mondial pour les services climatologiques (CMSC) en Afrique pour faire en sorte que la CUA, les CERs et leurs États membres soient capables d'établir et de renforcer des services climatologiques et, demandent au Secrétariat ACP de s'engager avec l'UE à assurer un soutien financier à un « programme CMSC-ACP » dans le cadre du 11ième FED et de lancer la définition et la préparation du projet ;

Notant que la stratégie intra-ACP signée à Bruxelles le 26 novembre 2015 inclus l'objectif 2.2. de *contribuer à renforcer la production, la disponibilité, la livraison et l'application de services et de prévisions climatologiques à base scientifique* avec comme résultat attendu *l'amélioration de la qualité et la quantité des services et des prévisions climatiques régionaux offerts par les centres régionaux du climat des ACP et les organisations hydrométéorologiques pour quatre secteurs sensibles au climat (agriculture et sécurité alimentaire, la santé, l'eau, et la réduction des risques de catastrophe)* ;

Notant que le Résultat #3 du programme du 10ème FED (intra-ACP) « Construire une résilience aux catastrophes liés aux risques naturels dans les régions, pays et communautés de l'Afrique sub-saharienne », qui est mis en œuvre par le biais du Fonds spécial ClimDev Afrique et vise à améliorer les capacités de base des centres climatologiques régionaux et nationaux, prévoit un projet dédié à l'Afrique centrale (SAWIDRA - Afrique centrale) ;

Notant l'existence de centres régionaux et spécialisés dans les domaines de l'Observation de la Terre, et les domaines impactés par les changements climatique, notamment, de la gestion des ressources en eaux (CICOS), des forêts (COMIFAC) et le pool énergétique Afrique centrale;

KIGALI DECLARATION

Further noting, the level of development of some regional projects in Central Africa, which could benefit from the CAPC-AC services, notably the regional Water Monitoring Centre and the Regional Energy Monitoring Centre;

Recalling the Article 7 para. 7. of the Paris Agreement adopted during the COP-21 in December 2015, which highlights that *Parties should strengthen their cooperation on enhancing action on adaptation, including with regard to (c) strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making*;

Notant également, le niveau de développement de certains projets régionaux en Afrique centrale susceptibles de bénéficier des services du CAPC-AC, notamment l'observatoire régional de l'eau et l'observatoire énergétique régional,

Rappelant l'Article 7 al. 7 de l'Accord de Paris adopté lors de la COP-21 en décembre 2015, qui souligne que *Les Parties devraient intensifier leur coopération en vue d'améliorer l'action pour l'adaptation notamment afin (c) d'améliorer les connaissances scientifiques sur le climat, y compris la recherche, l'observation systématique du système climatique et les systèmes d'alerte précoce, d'une manière qui soutienne les services climatiques et appuie la prise de décisions* ;

The participants,

Convinced that the CAPC-AC will facilitate the coherent development and provision of climate services at the regional and national levels, and allow for the streamlining of climate information in various regional priority areas such as disaster resilience, food security and agriculture, fishing and aquaculture, natural resources management, water resource management, health and energy;

- **Reaffirm** their support to the establishment of the CAPC-AC, **call** for a quick start of the Centre's operationalization phase and **encourage** the ECCAS and CEMAC Member States to allocate the necessary resources to fund the Centre primary operations costs;
- **Encourage** the establishment of a close cooperation between the CAPC-AC and other regional institutions working in climate change related fields, in order to optimise resources and impact;
- **Call upon** the AfDB and the ECCAS to expedite the start of the SAWIDRA-Central Africa project;
- **Request** the international community to fully consider the existence, the capacities and the needs of the CAPC-AC in their respective projects and initiatives for sustainable development in Central Africa;
- **Draw the attention of** the EU and the ACP Secretariat to the newly created CAPC-AC for their inclusion in the upcoming GFCS ACP programme;

Les participants,

Convaincu que le CAPC-AC facilitera le développement cohérent et la fourniture de services climatologiques aux niveaux régional et national, et permettra la rationalisation de l'information climatique dans divers domaines prioritaires régionaux tels que la résilience aux catastrophes, la sécurité alimentaire et l'agriculture, la pêche et l'aquaculture, la gestion des ressources naturelles, la gestion des ressources en eau. la santé et l'énergie;

- **Réaffirment** leur soutien à la mise en place du CAPC-AC, **recommandent** un démarrage rapide de la phase d'opérationnalisation de ce Centre et **encouragent** les Etats membres de la CEEAC et de la CEMAC à allouer les ressources nécessaires pour financer les coûts des opérations primaires;
- **Encouragent** la mise en place d'une coopération étroite entre le CAPC-AC et d'autres institutions régionales actives dans des domaines se rapportant aux changements climatiques, afin d'optimiser les ressources et les impacts ;
- **Demandent** à la BAD et la CEEAC d'accélérer le démarrage du projet SAWIDRA-Afrique centrale;
- **Demandent** à la communauté internationale de tenir pleinement compte de l'existence, des capacités et des besoins du CAPC-AC dans leurs projets et initiatives de développement durable en Afrique Centrale;
- **Attire l'attention de** l'UE et du Secrétariat des ACP sur le CAPC-AC récemment créé pour son inclusion dans le futur programme CMSC ACP.;

KIGALI DECLARATION

The Participants also kindly request:

- the Rwanda Minister of Natural Resources to bring the Kigali Declaration to the attention of the AMCOMET and relevant AU organs;
- the ECCAS Secretariat and the CEMAC Commission to draw the Kigali Declaration to the attention of next meeting of Minister in charge of Meteorology in Central Africa;
- the African Union Commission to draw the Kigali Declaration to the attention of the international community and in particular to the European Union and the ACP Secretariat, to consider the CAPC-AC for support.

Done in Kigali, Rwanda, on Monday 12 September 2016, in five originals

Les Participants invitent également :

- le Ministre rwandais des ressources naturelles à porter la Déclaration de Kigali à l'attention de l'AMCOMET et des organes compétents de l'UA;
- le Secrétariat Général de la CEEAC et la Commission de la CEMAC à porter la Déclaration de Kigali à l'attention de la prochaine réunion des Ministres d'Afrique Centrale en charge de la météorologie ;
- la Commission de l'Union Africaine à porter la Déclaration de Kigali à l'attention de la communauté internationale, en particulier de l'Union européenne et du Secrétariat des ACP, pour leur soutien au CAPC-AC.

Fait à Kigali, Rwanda, le lundi 12 septembre 2016 en cinq copies originales

For the African Union Commission,
Pour la Commission de l'Union africaine,
H.E. Mrs Rhoda Peace TUMUSIIME,
Commissioner for Rural Economy and Agriculture

For the Republic of Rwanda
Pour la République du Rwanda
H.E. Dr Vincent BIRUTA, Minister of Natural Resources

For the CEMAC Commission
Pour la Commission de la CEMAC,
S.E. HASSAN ADOUM BAKHIT HAGGAR
Commissaire en charge des Infrastructures
et du Développement Durable

For ECCAS Secretariat Général,
Pour le Secrétariat Général de la CEEAC,
S.E. Madame MFOULA EDIOMO Marie Thérèse Chantale
Secrétaire Général adjoint en charge du Département
de l'Intégration physique, Economique et Monétaire


Lemigo
Hotel
METEO RWANDA


MARIE THERESE MFOU
HASSAN BAKHIT HAGGAR
WENJIAN ZHANG
WMO
MICHAEL RYAN
HEAD OF DELEGATION
EU DELEGATION RWANDA


EUMETSAT
12th
EUMETSAT User Forum in Africa
Forum des Usagers d'EUMETSAT en Afrique
Rwanda Meteorology Agency
Lemigo Hotel
12-16 September, 2016
Kigali - Rwanda
Theme:"Earth Observation for Green Growth and Climate Resilience"


Welcome to the Forum