

# REPORT OF THE 10<sup>TH</sup> EUMETSAT USER FORUM IN AFRICA

ETHIOPIA, ADDIS ABABA  
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## **REPORT OF THE 10<sup>TH</sup> EUMETSAT USER FORUM IN AFRICA**

Organised by EUMETSAT in collaboration with the  
National Meteorological Agency of the Federal Democratic Republic of Ethiopia,  
the United Nations Economic Commission for Africa  
the African Union Commission

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Addis Ababa, Federal Democratic Republic of Ethiopia  
1 – 5 October 2010<sup>2</sup>





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## SUMMARY REPORT

### Introduction

The 10th EUMETSAT User Forum in Africa was organised in Addis Ababa, Ethiopia, by EUMETSAT, in collaboration with the National Meteorological Agency of the Federal Democratic Republic of Ethiopia (NMA), the United Nations Economic Commission for Africa (UNECA) the African Union Commission (AUC).

The Forum was held from 1 to 5 October 2012 with some 180 participants representing 60 countries, of which 47 were African. In addition to the representatives of African National Meteorological and Hydrological Services (NMHSs) and regional specialised institutions for Meteorology, Climate and Environment, the following African policy Institutions were represented: Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC), Economic Community Of Western African States (ECOWAS), Intergovernmental Authority on Development (IGAD), Indian Ocean Commission (IOC), and South African Development Community (SADC), together with representatives from the AUC, the African, Caribbean and Pacific Group of States (ACP).

Several specialised regional and sub-regional technical institutions such as ACMAD, AGRHYMET, ASECNA, CICOS, ICPAC; the SADC Drought Monitoring Centre, the Mauritius Oceanographic Institute (MOI), Regional Centre for Mapping of Resources for Development (RCMRD), Universities and National GIS entities, were represented.

Representatives of the following European and international institutions also attended the Forum: the Joint Research Centre, the European Union Delegation to the African Union, the German Weather Service (DWD), the UK Meteorological Office (UK Met Office) and the World Meteorological Organization (WMO), as well as other organisations such as the Vlaamse Instelling voor Technologisch Onderzoek (VITO), the International Institute for Geo-Information Science and Earth Observation (ITC), the AMESD Programme Coordination Team, and several Ethiopian national institutions.



### Opening Ceremony

The Opening Ceremony started at 09:00 on 1 October 2012.

***Mr. Carlos Lopes, under Secretary-General and Executive Secretary of the United Nations Economic Commission for Africa*** opened the Ceremony welcoming all participants. He noted that the Forum symbolises the importance that partnerships can play to achieve mutually beneficial outcomes. He welcomed opportunities for strengthening partnerships with African climate related institutions and EUMETSAT in order to address Africa's development needs and priorities, including tackling the adverse impact of climate change.

**Mr. Alain Ratier, EUMETSAT Director-General**, expressed his pleasure at being present at the opening of the 10<sup>th</sup> EUMETSAT User Forum in Africa. He recalled that the EUMETSAT Strategy approved by the 26 Member States highlights the importance of the cooperation with Africa, and indicated the good opportunity provided by the 10<sup>th</sup> forum to look at the future challenges and how to address them together. Based on the recent launches of two new EUMETSAT satellites in 2012 and the status of future programmes that will ensure data availability over Africa until 2040, he confirmed that solid foundations exist for EUMETSAT to support the implementation of the WMO RA-I Strategic Plan, the MESA programme and the recent initiative to implement the Global Framework for Climate Services in Africa.

**Mr. Jerry Lengoasa, Deputy Secretary-General of the WMO**, thanked the government of Ethiopia for hosting the event. He highlighted the importance of the Forum to bridge the gap between the capabilities that satellite technology can offer and the practical use on a day-to-day basis. Referring to the Global Framework of Climate Services, he was pleased to note that Africa is taking an active role in this domain. He underlined the fact that climate and development are intrinsically linked and that satellite information can play a role in facing future challenges. He welcomed the cooperation with the African Climate Policy Centre (ACPC), the AUC and the African Development Bank and called upon for strengthening the linkages between ClimDev-Africa and Earth Observation, particularly the EUMETSAT supported activities. He finally commended the European Union and the African regional and sub-regional organisations for the launch of the MESA programme that

builds upon PUMA and AMESD foundations.

**Mr. Gary Quince, Head of the European Union Delegation and EU Special representatives for the African Union**, thanked the Government of Ethiopia, EUMETSAT, UN-ECA and the African Union Commission for the organisation of this event. Mentioning that the impact of climate change is expected to be greatest on developing countries and vulnerable economies, particularly in Africa, he emphasised the need for reliable and accurate data for Africa through earth observation and space technology applications and their transformation into understandable information packages. He informed the participants on the new MESA project that builds on over 10 years of EU support to earth observation in Africa notably with PUMA and AMESD. He also welcomed the joint EUMETSAT – ACPC organisation of the Climate Day and concluded by reconfirming EU commitment to work together with African and European partners to provide all the necessary support for improved access and use of EO data for sustainable development in Africa.

On behalf of **Eng. Mahboub M. Maalim, Executive Secretary of the Intergovernmental Authority on Development (IGAD)**, Mr. Debalkew Berhe welcomed all participants in the IGAD region. After mentioning the major sectors that benefit from the cooperation between EUMETSAT and Africa, such as meteorology, hydrology, civil aviation, agriculture, environment, disaster management and climate change, he recalled the 15 years of cooperation between EUMETSAT, IGAD and other African regional organisations to implement the PUMA, AMESD and now MESA projects, and considered it a good example of the implementation of the Joint Africa-EU Strategy. He finally

called for stronger networking between African and European institutions to jointly undertake research, to exchange best practices and experts and prepare a fertile ground for the transfer of know-how and technologies for use of satellite data and related information technologies.

On behalf of **H.E. Commissioner Rhoda Peace Tumusiime, African Union Commission for Rural Economy and Agriculture, African Union Commission, Dr. Abebe Haile Gabriel**, highlighted the vital contribution that earth observation provides to understanding the Earth system and better predicting and mitigating expected global changes and their impact on African populations. After highlighting the main objectives of the EUMETSAT User Forum in Africa, he presented the main achievements of PUMA and AMESD and emphasised the endeavours of the MESA programme, insisting on the importance of good knowledge and management of natural resources and environmental assets. He finally mentioned the GMES and Africa initiative, which aims to set-up an overall framework in Africa for Earth Observation applications through a long term partnership between African and European stakeholders.

On behalf of the **Mr. Alemayehu Tegenu, Minister of Water and Energy of the Federal Republic of Ethiopia, Mr. Kebede Gerba State Minister with the Ministry of Water and Energy**, warmly welcomed all delegates to Addis Ababa. He then recalled the main challenges facing Africa on a daily basis: the fight against poverty and efforts to combat the perverse effect of the natural disasters (such as drought, floods, etc) that are undermining its development. He mentioned the high degree of priority given to the question of climate change and the key role played by late

Prime Minister Meles Zenawi in Africa. He encouraged the participants to work towards establishing solutions that will enable effective combating strategies for adaptation to climate change and global warming. He then recalled the importance of cooperation with EUMETSAT for the NMA and the support of the EU for projects such as PUMA and AMESD. He concluded by appealing to EUMETSAT, the World Meteorological Organisation and the international meteorological institutions to strengthen technical and scientific cooperation with African countries.

He concluded his speech by wishing the participants every success in their work and declared the 10<sup>th</sup> EUMETSAT User Forum in Africa open.



### **Introductory session**

**Mr. Fetene Teshome**, Permanent representative of Ethiopia with WMO presented this session and introduced the various speakers.

**Mr. Paul Counet and Mr. Emilio Barisano** presented the evolution of the role of the African NMHS in exploiting satellite information, between the 4<sup>th</sup> EUMETSAT User Forum in Africa, held in Kampala in 2000 and this Forum. They indicated the progress made on technical, institutional and networking aspects, thanks notably to the PUMA and AMESD projects. Looking ahead to the future, they mentioned the opportunities to continue strengthening these aspects thanks to the MESA project, the development of an African Strategy for Space and the regional implementation of the Global Framework for Climate Services (GFCS).



**Mr. Vincent Gabaglio** presented the objectives of the Forum and the detailed programme. He highlighted the importance of the Climate Day, co-organised with the ACPC and the sessions related to the use of Earth Observation for renewable energy, and the presentation of the new MESA project. He finally presented the latest status of implementation of the recommendations from the 9<sup>th</sup> EUMETSAT User Forum in Africa.



### **Session 1 - Overview of EUMETSAT programmes and international context**

The first session was dedicated to the presentation of the status of Earth observation programmes from various international institutions. It was complemented by a presentation of various third party data and products provided to Africa through EUMETSAT's infrastructure.

**Mr. Alain Ratier**, EUMETSAT Director-General presented the status of the EUMETSAT satellite programmes. He provided information on the status of MSG, EPS and Jason programmes and mentioned that the future programmes (MTG and EPS-SG) will be the pillars to ensure continuity and improvement of services in the 2020-2040 timeframe.

**Mr. Reinhard Schulte-Braucks**, Head of the GMES Unit at the European Commission (EC) presented the status of the EC's GMES initiative and its benefits for Africa. He provided specific examples of service applications and projects involving African institutions. He concluded by recalling EC support for the GMES & Africa initiative.

**Mr. Jérôme Lafeuille**, WMO introduced the WMO Space programme, its scope and the various initiatives to support the use of satellite data in Africa.

**Mr. Zhang Peng** from the Chinese Meteorological Administration (CMA), provided an overview of the Chinese satellite programmes, focusing on the status of FY-3. He mentioned CMA willingness to contribute its satellite data to Africa.

**Mrs. Sally Wannop** concluded the session with an overview of the new and enhanced data and products made available to Africa through EUMETCast either by EUMETSAT or by various partners, such as MeteoFrance, UK Met office and ECMWF.



### **Anniversary session**

#### **Earth observation for weather, climate and environment in Africa: a vision for the next 20 years**

To mark the 10th edition of the EUMETSAT User Forum in Africa, a Special Anniversary Session was organised with the objective of proposing a vision for Earth observation in Africa for the next 20 years.

This special session allowed eminent figures from national, regional and international institutions and from space agencies to share their perceptions regarding the evolution of EO application in the past decades and to provide their vision for the future.

**Mr. André Bassolé** acted as moderator for this session. He first

invited **Dr. Tillmann Mohr**, Special Adviser to the Secretary General of WMO and former Director-General of EUMETSAT, and **Dr. Adigun Ade Abiodun**, former Chairman of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), Founder of the African Space Foundation, Nigeria, to provide an overview of the progress made during the last 20 years.

He then invited the following two speakers representing user institutions to speak about the benefits of Earth observation in their respective area of responsibilities: **Mr. Jerry Lengoasa**, Deputy Secretary General of the World Meteorological Organisation and **Dr. Mohamed Khalil Timamy**, Head of division in the Department for Rural Economy and Agriculture of the African Union Commission.

For the third part of this session, the moderator raised a number of questions to the various speakers that highlighted the important aspects that have or would permit an increased use and impact of EO for various economic and environmental sectors in Africa.

During the fourth and last part of the session, **Mr. Mahama Ouédraogo**, Head of division in the Human Resources, Sciences and Technologies Department of the African Union Commission, **Dr. Tillmann Mohr** and **Dr. Adigun Ade Abiodun**, provided their vision for the next 20 years, promoting the establishment of an African-wide EO policy, which would put at its heart the applications that will support African sustainable development.



## Session 2 – Parallel sessions

The second session of the Forum was composed of three parallel sessions on the following topics:

- EO for renewable energy;
- Data access evolution and training;
- Earth Observation data policy development in Africa.

A report of each session was presented to the plenary session, allowing all participants to comment and raise questions on each of these topics.

### Session 2A – EO for renewable energy

The session offered the opportunity to present through various presentations the on-going applications of Earth observation in Renewable Energy: notably for solar, wind, hydropower and wave. The presentations were followed by a discussion on how the meteorological and energy community could better exploit the EO data to support the development of the renewable energy sector.

The meteorological community was encouraged to increase collaboration with energy experts to better understand their requirements. Needs for increased scientific and technical capacities were also highlighted, notably with respect to measurement at ground level.

### Session 2B – Data access evolution and training

The first part of the session allowed a discussion with NMHSs about their evolving needs for data reception and data visualisation, taking into account the reception and processing capabilities that PUMA and AMESD

have successfully provided to NMHSs HQ offices.

The participants presented their requirements for additional products. This list will be provided to the WMO RA-I Data Dissemination Expert Group (RADEG) for further analysis. The session also noted that boundaries between meteorological applications & environmental applications are disappearing and the need to improve product documentation & access to product meta-data. Remarks were also raised on the reception stations.

During the second part of the session, the participants discussed the current situation of training in the region with EUMETSAT and representatives from the Centres of Excellence for training in satellite meteorology, as well as the evolving needs for training and potential options for improvement. The importance of increasing training on system administration was highlighted by many participants. The session also encouraged an increase in the use of distance learning methodologies, also as a mean to increase the number of trained experts.

### **Session 2C – Earth observation policy development in Africa**

The primary objective of this parallel session was to discuss governance and policy framework in Africa in order to develop long-term Earth observation capacities in the continent, maximise the accessibility of Earth observation data and the use of spatial information in government day-to-day business processes and services.

The first part of the session provided the opportunity to various speakers to present on-going initiatives in the area of Earth observation and geo-information policies.

A constructive discussion followed these presentations with intervention

from participants, representing national space agencies, continental policy institutions, international partners, and regional and sub-regional institutions.

The session concluded on three main recommendations. A first recommendation on data access and sharing, a second recommendation on capacity building and a final recommendation on the governance needed for setting up such a space policy building on existing institutional initiatives such as the Space Science and Application Platform (SSAP).

The session finally invited AUC and UN-ECA to report to their constituencies on these recommendations.



### **Session 3 – Access to EUMETSAT Data and products**

This session was introduced by a presentation from the Chair of the RA-I Dissemination Expert Group, Mr. James Kongoti, who presented the progress made in terms of increased availability of data on EUMETCast.

Mrs. Sally Wannop and Mr. Mark Higgins from EUMETSAT presented then the recent updates in EUMETSAT dissemination, archiving and user services as well as overall approach for training in RA-I.

Mr. Kassa Fekadu from the NMA then presented a solution for providing access to satellite data in regional offices of the NMA.

Finally Mr. Mikael Rattenborg introduced the Charter on Space and Major Disasters, including EUMETSAT contribution hereto, and the role that the NMHSs might take in relaying

disaster related information received through EUMETCast within their countries.

Several recommendations were captured from the discussion that followed the presentations.



## Climate Day

The objective of the Climate Day, organised jointly by the African Climate Policy Centre (ACPC) of the UN Economic Commission for Africa (UNECA) and EUMETSAT, was to present in which way the various African institutions could structure themselves to respond to the increasing needs of Climate information from policy institutions and other partners, in the context of the Global Framework for Climate Services (GFCS) developed in response to the conclusions of the 3rd World Climate Conference (WCC-3).

The Climate Day echoed the Addis Ababa Declaration in support to the implementation of GFCS in Africa, which was proclaimed on the eve of the Forum, on 30th September 2012. It focused on the regional dimension of the GFCS and contributed to the elaboration of a contribution paper to the African Integrated Strategy on Meteorology (Weather and Climate Services), which take into account existing institutions in Africa (ACPC, WMO African Regional Climate Centres, user community representatives, etc.) and on-going projects such as those planned in CLIMDEV-Africa and the MESA programme.

The Climate Day was composed of three sessions.

The first session introduced the objective of the Day and provided an overview of the CLIMDEV-Africa and GFCS initiatives. The Addis Ababa declaration was also read and distributed to participants during this session.

The second session provided an overview, with concrete examples, of the various components of the GFCS: the Observation and Monitoring component, the Research and Modelling component, the Climate Service Information System component, the User Interface component and the Capacity Building component.

The third session provided examples of pre-cursor climate services and presented the key roles of the Climate Outlook Forum in Africa in support to the climate services.

The Climate Day was concluded by a wrap-up presentation of the potential roles that the various technical and policy African regional institutions could play in Africa. These conclusions were captured in a document and proposed to serve as a contribution to the African Integrated Strategy on Meteorology.

A full report of the Climate Day is presented later in this document.

The Addis Ababa declaration in support to the implementation of GFCS in Africa and the contribution to the African Integrated Strategy on Meteorology can be found in the annexes.



## **Session 5 – AMESD and MESA programmes**

This session was introduced by a presentation of the main results of the AMESD Programme, by Mr. Danilo Barbero, Team leader of the AMESD Technical Assistance and by a presentation of the main objectives and expected activities of the MESA programme by the AUC.

Following these two introductory presentations, each Regional Economic Community (REC) and the Regional Implementation Centre (RIC) presented the main benefits and expected results of AMESD and MESA for their regions and demonstrated the concrete impact of these projects.

The session then continued with the presentation of the e-station software installed in each AMESD reception station. Mr. Marco Clerici, from the Joint Research Centre (JRC) of the EC presented the e-station from the developer's point of view, and Mr. Degelo Sebedo, from the Ethiopian Mapping Agency presented it from a user's point of view.

During the discussion that followed these presentations, the North African countries announced their willingness to run MESA-like activities in their region. The various suggestions raised during discussion in this session produced seven recommendations.



## **Session 6 – GMES & Africa and other Earth observation projects**

Introducing this session, Mr. Mahama Ouédraogo from the African Union Commission presented the status of the GMES & Africa initiative. Mrs. Ana Morgado from the Department of

Natural Sciences Tropical Research Institute (IICT) in Portugal explained the contribution of the BRAGMA project, which is funded by the EC and aims at facilitating discussion between African and European stakeholders.

This was followed by the presentation of three EU funded projects that contribute directly to the advent of GMES & Africa: a presentation of the GMES global land products that are relevant to Africa by Mr. Michel Massard from the European Commission, and the presentation of the EAMNET and SAGA-EO FP7 projects that support the Europe-Africa networking on Marine applications and the emergence of EO national networks, respectively.

The second part of this session provided an overview of the progress made in various projects and initiatives in Africa that contributes to the increased use of Earth observation across the continent: the US-funded SERVIR Africa initiative, the GEO AGRICAB project and the ESA funded GMFS projects, the ITC GEONETCast toolbox, as well as a prospective presentation on the potential use of 10m resolution GMES Sentinel-2 derived products in Africa.

The session was concluded by a discussion on these various initiatives and two recommendations related to GMES & Africa were raised regarding the dissemination of GMES data to Africa and the inclusion of the AMCOMET secretariat in the GMES & Africa Coordination Group.



## Session 7 - Review of main recommendations

The seventh and concluding session was dedicated to the review and adoption of the recommendations generated during the 10<sup>th</sup> EUMETSAT User Forum in Africa and the Climate Day.

As a result of the wide range of discussions that took place during the Forum, a total of 36 recommendations were reviewed and unanimously adopted by the participants in this final session. All recommendations are included in this report and status of their implementation will be provided regularly by EUMETSAT.

The Recommendations address EUMETSAT, the African National Meteorological Services, the sub-regional African Economic Groupings, the WMO and the AMESD Programme Coordination Team. They are grouped into six categories for ease of reference.

Before the conclusion of the Forum, the participants were invited to complete a Survey Form related to the organisation of the 10<sup>th</sup> EUMETSAT User Forum in Africa, in order to help EUMETSAT make the necessary improvements for the organisation of the next Forum.

EUMETSAT then invited the participants to indicate their interest in hosting the 11<sup>th</sup> EUMETSAT User Forum in Africa, in 2014. Representatives from Mali, Tunisia, Mauritius and Zambia expressed their interest in hosting the next forum.



## Closing Ceremony

**Mr. Vincent Gabaglio**, EUMETSAT representative, mentioned that the overall and specific objectives of the Forum had been met. The Forum permitted the strengthening of the dialogue between EUMETSAT and its users in Africa, through the presentations, discussion, parallel sessions and recommendations. He highlighted the outcomes of the Climate Day which echoes the Addis Ababa Declaration. He thanked all the speakers, the session chairs, the rapporteurs, the support staff from NMA, UN-ECA and EUMETSAT, as well as all participants for their contribution to the success of the Forum.

**Dr. Mohamed Khalil Timamy**, African Union Commission representative, highlighted the constructive work that took place during the five days of the EUMETSAT User Forum in Africa. He thanked the Ethiopian authorities, EUMETSAT and UN-ECA for providing an optimal environment that greatly facilitated the work of the participants during the Forum.

**Mr. Bekele Seleshi**, *African Climate Policy Centre, UN-ECA*, thanked EUMETSAT, the AUC and the NMA for the organisation of the Forum. He indicated the clear links that exist between the discussion made during the Forum, and especially the Climate Day with the work ACPC and its mandate. He wished all participants a safe trip back home and officially closed the 10<sup>th</sup> EUMETSAT User Forum in Africa.





## Exhibition area

On the occasion of the 10<sup>th</sup> EUMETSAT User Forum in Africa, an exhibition area was jointly set up by EUMETSAT, the UN-ECA and the NMA. The exhibition consisted of several display computers connected to a EUMETCast reception station, providing a live stream of data and products that could be displayed. The exhibition included a demonstration of EUMETSAT data and products, DevCoCast and VITO products, e-station SW, GEONETCast Toolbox by ITC, University of Twente, as well as a demonstration of projects such as SAGA-EO and AMESD THEMAs.

The exhibition area provided an opportunity for numerous interactions between users and data and SW providers.



## Technical visit

On the last day of the Forum, the NMA organised a technical and cultural visit. This well-attended excursion consisted of a visit to the main offices of the NMA. Welcomed by a traditional Ethiopian coffee ceremony, the participants enjoyed the presentation of the activities of the NMA by its personnel. The visitors also made a cultural visit to the National Museum of Ethiopia, where Lucy, our common 3.2 million year old Australopithecus afarensis ancestor, is preserved.



The 10<sup>th</sup> EUMETSAT User Forum in Africa was officially closed at 12:30 on 5 October 2010.



## LIST OF RECOMMENDATIONS OF THE 10<sup>th</sup> EUMETSAT USER FORUM IN AFRICA

The recommendations of the 10<sup>th</sup> EUMETSAT User Forum in Africa are sorted into the following categories:

1. Data and products (access and dissemination)
2. Training
3. Climate
4. AMESD, MESA and GMES & Africa
5. EO and Africa space policy
6. Renewable Energy and Disaster Risk Reduction

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



### **1. Data and products (access and diffusion)**

#### **Recommendation #1 EUMETCast Africa dissemination baseline**

The Forum recommends that the RADEG works with EUMETSAT to enhance the EUMETCast-Africa dissemination baseline with products covering the following parameters: precipitation; vertical soundings; trace gases; wind, wave and swell; Sea surface temperature (SST); Numerical Weather Prediction (NWP) output and products to support the following application areas: seasonal forecasting, weather and marine forecasting, disaster management and renewable energy, taking fully into account the existing constraints with respect to bandwidth capacity.

#### **Recommendation #2 Meta-data and documentation on products disseminated over EUMETCast**

The Forum recommends that EUMETSAT encourages EUMETCast data providers to improve the completeness of product documentation and meta-data to be made available within the products navigator.

#### **Recommendation #3 Improving user awareness of data and products**

Considering the results of the WMO survey on the use of satellite data, the Forum recommends that data providers take further steps to communicate the existence and functions of their product catalogues to users so that user knowledge of these tools (e.g. O.S.C.A.R and EUMETSAT product navigator) is improved.

#### **Recommendations #4 Networking between RADEG and RA-I NMHS at sub-regional level**

Noting the necessary networking between the sub-region representatives at the RADEG and the NMHSs within the sub-regions, the Forum recommends that the WMO RAI President coordinates the nomination of POCs in the NMHSs who will be in contact with its sub-regional RAIDEG representative as regards the use of and changes in the content of the EUMETCast Africa data streams.

### **Recommendation #5**

#### **National coordination for data diffusion**

The Forum recommends that NMHSs initiate coordination efforts to share data from the EUMETCast based infrastructures (e.g. PUMA 2010 and the AMESD stations) within their country to enable full use of the products nationally.

The Forum recommends the NMHSs of Sudan, Zambia, and Burkina Faso to report about the progress made in their country at the next EUMETSAT User Forum in Africa. Other NMHS are invited to propose contribution related to this recommendation when a call for contributions for the next User Forum is communicated.

### **Recommendation #6**

#### **Integration of RADEG in WIGOS**

The Forum recommends that the RA-I Data Dissemination Expert Group (RADEG) becomes an integral part of the regional structure of the World Integrated Global Observing System (WIGOS) as is recommended by CBS for all WMO Regional Associations.

### **Recommendation #7**

#### **Continuity of the IODC service**

The Forum recommends to EUMETSAT to continue the IODC until the end of life of Meteosat-7 and to consider moving a satellite from the MSG series over the Indian Ocean to ensure continuity of the IODC, unless equally effective solutions are found with other satellite operators.

### **Recommendation #8**

#### **Continuation of EUMETCast over Africa**

The Forum noted that EUMETCast over Africa has become the main means to access meteorological data by most African NMHSs and therefore recommends that EUMETSAT commits to guarantee access to EUMETCast Africa by African users for the duration

of the currently approved satellite programmes and to consider EUMETCast continuation and evolution in the context of the future EUMETSAT satellite programmes.



## **2. Training**

### **Recommendation #9**

#### **User preparation for new satellite generations**

Echoing the recommendation from the CBS XV meeting, the Forum recommends that EUMETSAT takes fully into account the African user community in its planning to prepare users for the Meteosat Third Generation and for the EPS Second Generation programmes.

### **Recommendation #10**

#### **Coordination with higher education institutions and evaluation**

The Forum recommends that the centres involved in training (WMO Centres of Excellence (CoE) and MESA Regional Implementation Centres (RICs)) in cooperation with institutions of higher learning explore how capacity building interventions at different levels can be coordinated. It also invites the RICs and WMO CoE to encourage those higher education institutions to install EUMETCast reception stations to facilitate the cooperation.

The Forum also recommends that the centres involved in training (WMO CoE and MESA RICs) explore how to evaluate the quality of the training interventions.

### **Recommendation #11**

#### **Virtual Lab and Distance learning**

The Forum recommends to

- WMO and the other Virtual Lab (VLab) sponsoring agencies to ensure the continuity of the technical support officer role which enhances the overall efficiency of the VLab activities in Africa
- EUMETSAT to maintain the licenses for online and distance learning (e.g. CENTRA) appreciating the increase in accessibility that these tools bring.

### **Recommendation #12**

#### **Ensuring training benefits within NMHS**

The Forum recommends to the PRs with the WMO (and NMHS Directors)

- to select staff with appropriate and suitable background for training, and afterwards to deploy them directly so that they can apply their competence. The Forum considers that proper deployment and training of staff also contributes to the retention of competent staff;
- to ensure that participants of training events are given the opportunity to share their newly acquired knowledge with relevant colleagues and consider their increased skills in new deployments;
- to ensure that their internet connectivity is adequate for accessing on line educational resources and training materials (e.g. e-learning).

### **Recommendation #13**

#### **Data access and training session at future Fora**

The Forum recommends that EUMETSAT includes a Data Access and Training interactive session at future Fora.



## **3. Climate**

### **Recommendation #14**

#### **Addis Ababa declaration**

The Climate Day recommends that each NMHS representative informs their national delegations to AMCOMET of the Addis Ababa Declaration in support to the implementation of the GFCS in Africa” enabling them to take the declaration into account when discussing and approving the African Strategy on Meteorology (weather and climate services).

### **Recommendation #15**

#### **Contribution to the African Strategy on Meteorology**

Based on the increasing understanding of the possible roles, responsibilities and contribution that each institution could make to the GFCS, the Climate Day recommends that the paper entitled “contribution to the African Strategy on Meteorology (weather and climate services)” become an annex to the Strategy on Meteorology (weather and climate services), which will be discussed and is planned to be endorsed during the second session of the AMCOMET meeting, from 14 to 19 October 2012 in Zimbabwe. The participants of the Climate Day invite EUMETSAT to inform WMO of this request.

### **Recommendation #16**

#### **GFCS implementation in Africa**

Highlighting the need for an implementation plan of GFCS in Africa at regional and sub-regional level, the Climate Day recommends that the AUC and the WMO Secretariat call for a meeting to draft a roadmap for the implementation of GFCS in Africa (including an approach for resource mobilisation), at regional, sub-regional and national level, involving the WMO, WMO-RA I, AUC, RECs, RCCs, UNECA (ACPC), EU, EUMETSAT and others.

### **Recommendation #17**

#### **Projects coordination and mapping within the GFCS**

Noting the various on-going projects and initiatives dealing with matters related to the GFCS (e.g. MESA, CLIMDEV-Africa, VIGIRISK, WASCAL, SASSCAL, WIGOS, etc), the Climate Day recommends that the WMO and AUC invite these projects to map their activities as a contribution to the implementation of the GFCS in Africa, in consultation with the RECs. The Forum notes the need to coordinate the projects contribution to GFCS.

The Climate Day further recommends AUC in consultation with the RECs, WMO and ACPC to ensure continuous monitoring of user needs and their need in term of capacity building.

The Climate Day further recommends continuous advocacy at the highest level of the importance of climate services for national, regional and continental economical and environmental security and development,

### **Recommendation #18**

#### **Contribution to GCOS**

The Climate Day recommends that NMHS of RA-I contribute to GCOS through the deployment of new, and the maintenance of existing, in-situ observing facilities.

### **Recommendation #19**

#### **Rainfall estimates to improve Climate Services**

Noting the interest of several NMHS in the experiment conducted in Ethiopia and Tanzania regarding the use of Meteosat Rainfall estimates to improve the Climate Services in Africa, the Climate Day recommends that the WMO Secretariat investigate the possibilities to extend this experiment to other countries/regions in Africa.

### **Recommendation #20**

#### **Input data for GPCC products**

The Climate Day recommends that the NMHS respond to the invitation the GPCC (Global Precipitation Climatology Centre) made by WMO, during the Forum to provide their precipitation data so that the GPCC product can be enhanced (especially focusing on daily resolution), while respecting property rights of the original NMHS data.



## **4. AMESD, MESA and GMES & Africa**

### **Recommendation #21**

#### **Upgrade of PUMA 2010 stations within MESA**

The Forum recommends to the African Union Commission (AUC) that any future display system of the upgraded PUMA 2010 station considered within the scope of MESA permits flexible and user-friendly local configuration and customisation. It further recommends to upgrade within MESA the PUMA 2010 stations at the Training Centres.

### **Recommendation #22**

#### **Training in System Administration within MESA**

The Forum recommends to the EC and AUC to enhance and increase the training in System Administration within the MESA project through the following measures:

- take the necessary measures so that continental system administration training is resilient to changes in staffing and is resilient to changes in project cycles;
- increase the number of people that can be trained, notably through the use of on-line training
- increase the length of the training session.

**Recommendation #23**  
**WMO Centre of Excellence and NMHS**  
**role within the MESA project**

The Forum recommends to the African Union Commission to take into account existing experience available in the NMHSs; and in the WMO RTC and Centres of Excellence for training in satellite meteorology when implementing the MESA.

**Recommendation #24**  
**AMESD and MESA products diffusion**  
**to the entire continent**

The Forum recommends to the African Union Commission and the Regional Implementation Centres to catalogue AMESD data and products (e.g. through the Product Navigator and the AMESD website) and make available AMESD products to the entire continent, using EUMETCast. This will contribute to continental cross-fertilisation objective of MESA.

The Forum recommends that EUMETSAT, in cooperation with the AUC, provides the AMESD/MESA RICs with a template that will be used to formally express their interest in the products and services produced by their sister RICs in order to facilitate the process of cross-fertilisation and ultimately continentalisation of certain products and services.

**Recommendation #25**  
**Continentalisation of the Thema**  
**marine and coastal management**

The Forum recommends that the AUC ensures that the MESA grants (in particular the ECOWAS and IOC grants on marine and coastal management) enable all African countries with a coastline to benefit from the MESA Thema on marine and coastline management, on the same model used in AMESD to cover the entire Indian Ocean coastline through the MOI/IOC AMESD Thema.

**Recommendation #26**  
**North Africa association with MESA**

The Forum recommends that the AUC, in consultation with the EU delegation to the AU and EUMETSAT, explore the possibility of associating the Northern African countries (Morocco, Algeria, Tunisia, Libya and Egypt) and other excluded African countries (i.e. South Africa) to the MESA project and investigate opportunities to implement MESA-like activities (e.g. THEMA, thematic training, cross-fertilisation, etc.) in this region.

**Recommendation #27**  
**North Africa and MESA training and**  
**infrastructure**

The Forum recommends that the WMO, AUC and EUMETSAT look at possibilities to finance the participation of North African countries (Morocco, Algeria, Tunisia, Libya and Egypt) in the MESA continental training plan. WMO and EUMETSAT might also consider developing an infrastructure in these countries equivalent to that made available to sub-Saharan countries through the MESA project.

**Recommendation #28**  
**Dissemination of GMES data and**  
**products to Africa**

The Forum recommends to the EU, ESA and EUMETSAT to investigate the possibility of disseminating, potentially through EUMETCast, 'free-of-charge' GMES data and products (including Sentinel-2 and 3 data and products) to the NHMS and the broader African User Community taking into account also WMO resolution 40 of Congress 12 and resolution 25 of Congress 13.

**Recommendation #29**  
**AMCOMET Secretariat in GMES &**  
**Africa coordination group**

The Forum recommends to AUC/HRST to include the AMCOMET Secretariat in the Coordination Group of the GMES and Africa initiative, as is already the



case for the African Ministerial Conference on Water (AMCOW), Environment (AMCEN) and Science and Technology (AMCOST).



## **5. Earth observation and Africa space policy**

### **Recommendation #30 Data Access and Sharing**

The Forum recommends to the Group on Earth Observations (GEO) to ensure that African projects using EO data or producing information based on EO data are aware of the existence of the GEO Data Sharing Principles and to encourage them to comply with these principles.

### **Recommendation #31 Capacity Building**

The Forum recommends the AU to lead the coordination of a Human Resources training strategy focused on space technologies and use of space-based data. This strategy shall be based on an assessment of the resources existing in Africa at national, sub-regional or regional level. Such a strategy should also plan for establishing links with international partners. The strategy should include the principle of having appropriate roles for newly trained people.

### **Recommendation #32 Space Research**

The Forum recommends that the AUC facilitate, in the framework of the pan-African universities research activities which are closely related to Earth Observation, user application programmes and therelated infrastructure.

### **Recommendation #33 Governance for Earth Observation policy in Africa**

The User Forum welcomed the creation by the AUCof a Space Science and Application Platform (SSAP), in response to a request of the African Ministerial Council on Science and Technology (AMCOST) and which aims to develop a space policy for Africa. The Forum recommends that the space policy is balanced between the different pillars of science and technology and space-based applications. It recommends that the space-based applications are user driven, and delivers concrete results for sustainable development in Africa.

It further recommends that the discussions of the SSAP includes the RECs and that the SSAP reflects on the appropriate level of political ownership, The SSAP is encouraged to report to AMCOST as soon as a draft policy, is available.

### **Recommendation #34 Reporting of the recommendations on EO and Africa space policy**

The Forum recommends that the AUC and UN-ECA report back on the recommendations #30 to #33 to their appropriate constituencies for further consideration, support, endorsement and implementation.



## **6. Renewable energy and Disaster**

### **Recommendation #35 EO for renewable energy**

Noting the potential of meteorological data and products in general, and of Earth observation in particular, to support the development and management of renewable energy in Africa, the Forum recommends that:

- NMHS and energy experts coordinate to create a common understanding of requirements of the energy sector, and the contribution of existing and future EO based products,
- NMHS investigate the feasibility to complement and improve in-situ measurement networks with pyranometers, anemometers at 10m or higher, rain gauges and wave buoys;
- NMHS and energy experts act with academia to create scientific and technological knowledge to develop these renewable energy products based on measurements of solar surface irradiance, wind speed at 10m and higher, rainfall and wave height;
- NMHSs propose to their policy authorities and partners the organisation of national workshops to demonstrate the importance of products and data for the energy sector to private investors, financial institutions, public agencies and engineering bureaus.

EUMETCast infrastructure in case of major disaster.

The NMHS of South Africa (SAWS) and Ethiopia (NMA) are invited to report on the status of implementation of this recommendation at the next EUMETSAT User Forum in Africa. Other NMHS are invited to propose contributions related to this recommendation when a call for contributions for the next User Forum is communicated.

### **Recommendation #36**

#### **Role of NMHS w.r.t. International Charter on Space and Major Disasters**

Noting that EUMETSAT recently joined the International Charter on Space and Major Disasters and its contribution through the dissemination of Charter products through EUMETCast Africa, the Forum recommends that the NMHSs work in collaboration with national institutions/administrations responsible for civil protection and disaster relief operations of the services offered through the Charter and the





## SPEECHES – OPENING CEREMONY

### OPENING CEREMONY

**Statement by Mr. Carlos Lopes,  
Under Secretary-General and  
Executive Secretary of the United  
Nations Economic Commission for  
Africa**

[All protocol observed]

The 10th EUMETSAT User Forum in Africa is a significant milestone and it is quite appropriate that it is taking place here in Addis Ababa, Africa's diplomatic capital. I welcome you to this beautiful city and the United Nations Conference Centre. Please enjoy the warm hospitality of our host country as you deliberate on issues of crucial importance to Africa.

This User Forum symbolizes the important role that partnerships can play to achieve mutually beneficial outcomes. This is evident from the successful collaboration between ECA's African Climate Policy Centre, the African Union Commission, the Ethiopian National Meteorology Agency and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) to organize this event. It is also clear from the diverse and high level of participation from over 60 countries and agencies. This spirit must continue to inform efforts to gather the data, images and products for weather and climate management in Africa.

It is easy to demonstrate how important earth observation is for Africa. Agriculture is the single largest

contributor to Gross Domestic Product in most of our countries and employs a substantial part of the population. Yet, agriculture in Africa is mostly rain-fed and therefore very dependent on weather conditions. Quite evidently we need up-to-date weather information for short-term planning in agriculture as well as in construction, logistics, travel and tourism to mention but a few important sectors.

The same needs are obvious in monitoring climate change over a longer time period. The scientific debate around climate change has subsided given the undeniable reality of the evidence available to us. Many parts of the world have experienced severe and prolonged droughts, unprecedented flooding, tsunamis, and hurricanes. We are also witness to the spectacle of melting ice glaciers and receding lakes. Our focus has accordingly shifted from gathering data to prove climate change to generating the data to shape appropriate policy responses. There is still a lot that we need to do.

Africa has not been spared from climatic events that have left a trail of disasters and exacted a heavy toll on lives and property. We also face a special challenge as the region most vulnerable to the impact of climate change although having contributed least to the problem. The experience of Lake Chad, which satellite imagery has visibly shown extensive shrinkage by almost 90% since the early 1960s is a good example. This shrinking Lake has affected fishing and farming and also led to migration, internal

displacement and conflicts over the rights to the use of the remaining water.

Apart from dependence on natural resources, Africa faces a particular challenge in responding to climate change. The switch from energy intensive and carbon reliant economic activities requires resources to overcome path dependence and maintain high growth rates. In other words, as we seek to build power plants for industry and day-to-day life, we must consider their environmental effects. This dilemma is compounded by Africa's relatively limited scientific knowledge, technological means and financial resources for successful adaptation.

All these constraints point to the importance of climate related information and data. While we cannot by ourselves bring about the changes required for mitigation on a global scale, we still need accurate and reliable data to feed into regional early warning systems. We also need information to fashion appropriate policy responses for required behavioural change. Real time information and data are also essential in determining alternative courses of action including into a green economy. The inevitability of green growth was deliberated upon at great length at the recently concluded Rio+20 Conference. Africa's positions in the on-going United Nations Climate Change negotiations will, of course, need to continue to be informed by accurate information and data.

The reality of our situation is that there is still much to be done in terms of generating the kind of accurate data and statistics to inform policy work across the board and not only in the area of meteorology. This User Forum highlights the use of space technology to generate data and points to an

important issue in African development. Science, technology and innovation were essential for economic development in other parts of the world, just as accurate statistics were key for measuring and tracking progress.

ECA will continue to explore ways of using promoting the use of science, technology and innovation to catalyse development and improve the generation of socio-economic data. This was a major consideration in our decision, along with the AU Commission and the African Development Bank to establish the Climate for Development in Africa (ClimDev-Africa) programme. A key objective of ClimDev-Africa is to scale up capacities and improve climate related data and information in the continent, which explains why we welcome the collaboration with EUMETSAT.

The African Climate Policy Centre, the policy arm of ClimDev-Africa, will enhance partnership with EUMETSAT particularly to implement the Global Framework for Climate Services. Such collaboration will assist in better managing the risks of climate variability and adaptation to climate change at national and regional levels. I welcome the opportunities that exist for strengthening partnerships with African climate-related institutions and EUMETSAT. I am certain that such collective endeavours will help address Africa's development needs and priorities including tackling the adverse impact of unabated climate change.

I wish you fruitful and positive deliberations.

Thank you for your kind attention.



**Statement by Alain Ratier,  
EUMETSAT Director-General**

[Protocol observed]

It is a great pleasure and honour for me to open this EUMETSAT User Forum in Africa.

First of all, this is of course my first participation in the Forum as EUMETSAT Director-General.

Secondly, this 10<sup>th</sup> edition of the Forum marks almost 20 years of success and trusting relationship between EUMETSAT and Africa.

Last but by no means least, in June 2011 our Council approved a new strategy for the next decades, reasserting the importance our 26 Member States attach to a continued cooperation with Africa. Looking back on these 20 years of successful cooperation, we can see how far we have come, but also look ahead to future challenges such as adaptation to climate change, with the setting up of the Global Framework for Climate Services (GFCS). I will come back to this subject later on.

EUMETSAT's commitment to cooperation with Africa will therefore continue in the next decades and our task will consist of fulfilling the objectives of the strategic plan for RA-I of the World Meteorological Organization, by offering easier access to our satellite data, and products and information distributed via EUMETCast, and by helping you optimise your use thereof at continental, RECs and national level.

To meet this commitment, we must firstly secure continuity of service over the coming decade using the current generation of our Meteosat and Metop satellites. In this respect, 2012 was a decisive year as we have successfully launched the 3<sup>rd</sup> Meteosat Second Generation satellite – MSG-3 – on 5<sup>th</sup>

July and our second polar-orbiting satellite, Metop-B, on 17<sup>th</sup> September. The performance assessment of these two satellites looks bright and both should start providing operational service by early 2013. The former will produce geostationary images above the Gulf of Guinea, while the latter will further contribute considerably to NWP error reduction, by 25% of total contributions from all observations.

However, we already need to look further and prepare next-generation satellites, which will make it possible for weather forecasts to improve further in the 2020-2040 period, but also to produce climate data series totalizing more than 30 years. This is why our Council approved our Meteosat Third Generation (MTG) programme in 2011 and has taken big steps towards the approval of our polar-orbiting second-generation satellite programme, despite the economic crisis in Europe. Meteosat Third Generation satellites will deliver more frequent, more accurate and more informative images, and for the very first time temperature and humidity soundings on a hourly basis. In some years we will have to assess together the potential of such new observations for Africa, which is, as you know, the continent enjoying by best coverage by Meteosat.

We will have to make sure these successful launches and these new investments yield full benefits for Africa, not only regarding meteorology, but also for other applications deemed crucial for sustainable development on the continent, such as agriculture, marine resources and water management, energy production, natural disaster and climate hazard prevention and management.

Here again, we can capitalise on the achievements of the partnership we have established over the years with



the European Union, the African Union, the ACP Secretariat and the African Regional Economic Communities. The PUMA and AMESD projects have deployed 384 EUMETCast stations on the continent, enabling real time access to EUMETSAT satellite data, data from our international partners, and weather forecast and analysis information provided by the best research and forecast centres, such as the European Centre for Medium-Range Weather Forecast based in Reading, UK. EUMETCast has therefore played a tremendous role in the development of applications in Africa, originally in meteorology with PUMA and has then opened up to numerous related applications with AMESD, both in support of sustainable development policies for a continent extremely prone to weather and climate hazards.

The MESA project approved in 2011 will start in 2013 based on these solid foundations. It will help maintain the existing infrastructure and build satellite data processing and interpretation capacities of regional centres and national users. This project also clearly exemplifies the implementation of the Joint EU-Africa Strategy, which was approved in 2007. On the one hand, it indeed contributes to the 6<sup>th</sup> Partnership on Climate and Environment, by providing crucial information for environment sustainability (and for climate change monitoring). On the other hand, it illustrates the 8<sup>th</sup> Partnership on Science, Information and Space, demonstrating the real benefits of space cooperation driven by application and service requirements of users, resulting in tangible benefits for African citizens and States together with technological advantages. This application- and user-driven approach has shaped EUMETSAT's success story in Europe and we believe strongly in it.

In conclusion, I would like to come back to the challenges posed by climate variability and change. As we all know and IPCC pointed it out in 2007, Africa is the most vulnerable continent and should, at institutional, scientific and technical levels, develop capacities in climate services in support of adaptation and mitigation policies to enable decision-makers to compare reliable climate information with other socio-economic data.

The GFCS is a suitable structure to take up this challenge requiring coordination at all levels - global, regional and national. And the Addis-Ababa Declaration in support of the implementation of the GFCS in Africa, which was unanimously approved last night, clearly indicates that Africa does not want to miss such an opportunity.

Here again, EUMETSAT humbly but determinedly hopes it can back the implementation of your decisions. To that end, we are involved together with other satellite operators in setting up an architecture for climate monitoring from space, which will represent our joint contribution to the GFCS Observing and Monitoring component. Meteorological satellites have already accumulated more than 30 years of climate data, and will become increasingly important to understand climate changes and monitor essential climate variables.

Thank you for your attention. I look forward to our interactions in the coming days and wish you an excellent Forum.



**Statement by Mr. Jerry Lengoasa,  
Deputy Secretary General of the  
WMO**

[Protocol observed]

It is a privilege for all of us here today, and for me in particular as the representative of the World Meteorological Organization, to attend the opening of the tenth EUMETSAT User Forum in Africa in this great city of Addis-Ababa. I would like first of all to thank the government of Ethiopia for hosting this important event.

I would like also to commend EUMETSAT for the initiative of establishing the EUMETSAT User Forum who met for the first time in Niamey, Niger in April 1995, in partnership with the African Center for Meteorological Applications to Development (ACMAD), the CILSS Agrhymet centre, and the National Met Service of Niger.

Hundreds to thousands of lives, and livelihoods, are threatened and lost every year in Africa due to the impacts of climate variability and change, in particular extreme weather and climate events. Some, if not most, of such losses could be avoided if communities had access to reliable, timely and tailored weather and climate information and services. In this regard WMO, through its network of National Meteorological and Hydrological Services around the world and partnering with satellite operators, including EUMETSAT, is working to assist African countries as appropriate.

The EUMETSAT User Forum has proven, along the years, to be a model of dialogue between satellite providers and satellite users, between the 26 EUMETSAT Member States and the 56 WMO Members of Africa. In every region such a dialogue is highly

needed to bridge the gap between the impressive capabilities that satellite technology can offer, and the actual use of these capabilities in the day-to-day work. But this is particularly true in Africa where there are many developing countries and most of the least developed countries, and where weather and climate services are so closely linked to vital resource management, and disaster risk reduction in support of sustainable development. The African continent occupies most of the field of view of the Meteosat satellite, and through the Forum, African users have better realized the benefits it offered to support their needs. These benefits have greatly expanded when moving from the first to the second generation of Meteosat, now supplemented by the EUMETSAT Polar system, and I'd like to take this opportunity to congratulate EUMETSAT for two successful launches in the same year: Meteosat-10 in July and Metop-B only 2 weeks ago.

Today is a particular milestone for the EUMETSAT Forum in Africa as it is the tenth meeting of this Forum, which is an indication of its success and an evidence of the sustained support of EUMETSAT to the African user community over time. I would like to commend EUMETSAT and its partners for this continuing support, since continuity is essential when dealing with capacity building and sustainable development.

But today is an important milestone, not only because of the number 10, but mainly because of the emphasis put in this Forum on climate applications – with a dedicated Climate Day in our programme. This is particularly timely given the increasing awareness that climate and development are intrinsically linked in our future, that this raises challenges that need to be faced and that satellite

observation can play a key role in this regard. Among its top priorities, the World Meteorological Organization is working with its partners towards the implementation of the Global Framework for Climate Services (GFCS), which was the subject of a High Level meeting yesterday and which will be the sole agenda item of the WMO Extraordinary Congress later this month. Climate change is a reality and will impact on living conditions, activities and resources (in particular water resources and agriculture). This must be monitored, investigated and anticipated. Related services must be developed in every region in order to provide decision makers with the most relevant weather and climate information and services. In this connection, the implementation of GFCS in Africa requires pro-active players.

I am pleased to note that Africa has taken an active start in this domain. For example, three national workshops on GFCS were held a few weeks ago in Burkina Faso, Niger and Mali. Furthermore, here in Addis a workshop was convened two weeks ago by honorable Water and Energy Minister Alemayehu Tegenue on the subject of upgrading hydro-meteorological networks and rescuing historical hydro-meteorological data, as a contribution to the ClimDev- Africa programme. I would like to acknowledge the role of Ethiopia and the African Climate Policy Centre (ACPC) which plays a pivotal role in the ClimDev-Africa programme supported by the UN Economic Commission for Africa, the African Union Commission and the Africa Development Bank. In this respect, I should mention the Second Annual Conference on Climate Change and Development in Africa to be held in this city of Addis-Ababa later this month, for “advancing knowledge, policy and practice on climate change

and development”. I trust, that choosing Addis-Ababa as the venue of this 10th EUMETSAT User Forum, and the participation of ACPC and ClimDev-Africa in the programme will help strengthening the linkages between these initiatives and Earth Observations, particularly the EUMETSAT supported activities.

The first and second meetings of the EUMETSAT User Forum had laid the ground for the PUMA project to “Prepare the Use of MSG in Africa” which was instrumental in preparing the user community for MSG through well-focused actions on equipment, training and applications, with the support of the European Union. This was followed by the AMESD project (African Monitoring of the Environment for Sustainable Development) also funded by the European Union, where more emphasis was put on environmental applications. This year we will discuss the MESA project (Monitoring of Environment and Security in Africa) which is another step forward in this remarkable partnership between EUMETSAT, the European Union, and African regional/sub-regional organizations. I would like to commend once more all parties involved for this endeavor. It builds on a solid foundation with a longstanding partnership, a well-established dialogue with the user community, a sound strategy, and a clear focus on identified applications with concrete benefits, to take the best advantage of advanced science and satellite technology.

I wish to conclude this statement by thanking once again the government of Ethiopia for hosting this event, and wishing to all participants a fruitful conference.

Thank you for your attention



**Statement by H.E. Gary Quince,  
Head of the European Union  
Delegation to the African Union and  
EU Special Representative for the  
African Union**

[Protocol observed]

It is a pleasure for me to be able to say a few words at the opening of this 10th EUMETSAT User Forum in Africa. I would like to thank the Government of Ethiopian (and particularly the Ministry of Water and Energy), EUMETSAT, the UN Economic Commission for Africa, the African Union Commission and the Ethiopian National Meteorology Agency for organising this event and I join my previous speakers in welcoming you all here in Addis Ababa.

Climate change is a global phenomenon which will affect everyone. But its impact is expected to be greatest on developing countries and vulnerable economies, particularly in Africa, in terms of food security, water management, and other extreme weather hazards such as flooding, coastal erosion, drought and desertification. Climate change and development are inseparably interlinked.

In this context reliable and accurate data for Africa through earth observation (EO) and space technology applications, and their translation into easily understandable information packages, is essential for better informed decisions of African policy makers for environmental monitoring and sustainable management of natural resources.

The European Union understands its global and shared responsibility in

helping our African partners in cope with the environmental challenges they face.

The Africa – EU partnership on climate change and environment, one of the 8 partnerships of the Joint African EU Strategy provides a joint platform for dialogue, cooperation and exchange, to develop concrete actions for improved management of natural resources in Africa.

The AMESD programme is one such concrete action within the Africa EU partnership on Climate Change and Environment. Through this programme, the AU and RECs are working together with AU member states, the European Union and its Joint Research Centre and EUMETSAT, to help the AU, RECs and African governments improve their access to Earth Observation data for designing, implementing, monitoring and evaluating national, regional and continental policies towards sustainable development.

AMESD is closely intertwined with other initiatives, such as the ClimDev Africa initiative and the Multilateral Environmental Agreements programme, and it also has important links with actions under the Africa –EU Partnership on Science, Information Society and Space, and will contribute to the development of the Global Monitoring for Environment and Security (GMES) Africa initiative.

AMESD is one of the initiatives that have seen the EU working with EUMETSAT in support to improved environmental monitoring in Africa in the last 10 years, starting with the programme 'Meteorological Transition in Africa/ Preparation for the Use of Meteosat [second generation] in Africa (MTAP/PUMA)', in support of Earth Observation technologies for meteorological purposes.

Since 2007, AMESD has been working in 48 African countries to upgrade and install 111 receiving stations and the necessary software to improve access by African users to Earth Observation data, to train operators and analysts to process this data from satellites and ground stations that provide valuable information about key environment and development parameters. The first version of products and services being developed by the five regions has been showcased to policy and decision makers in Africa. This includes a range of information responding to people's needs such as monitoring the water level and flow rate of key rivers used for commercial transport; water cycle information to help agriculture; monitoring of the changing condition of rangelands for livestock management purposes; tracking the depletion and/or degradation of land; monitoring of marine pollution, fisheries resources and coastal erosion.

This year, a new Financing Agreement was recently signed between the African Union Commission and the European Commission to facilitate sustainable access to Africa-wide environmental information derived from Earth Observation technologies. Through this agreement, the EU will fund a new 37 million EUR programme 'Monitoring of Environment and Security in Africa (MESA)'.

This programme will run until 2018, with the objective to address the need for improved management of natural resources and environmental security towards sustainable development in Africa, at continental, regional and national levels, covering all Sub-Saharan African countries.

MESA will bring added value to several areas: monitoring of soil and water conditions for agriculture, tracking forest degradation and

desertification, providing information to policy and decision makers in order to mitigate or adapt to the effects of climate change and reduce the risks of natural and human made disasters.

The MESA programme builds on over 10 years of EU support to earth observation applications in Africa and brings the EU financial contribution to nearly 70 million EUR since 2001. This support is the concrete expression of our key objective of supporting sustainable development across Africa.

This conference offers a great opportunity to review the contribution of satellite meteorology to development in Africa and help plan future initiatives tailored to your current and future needs. We look forward with interest at the "Climate Day", jointly organised with the African Climate Policy Centre (ACPC) of the UNECA, where you will discuss the potential contribution of Earth Observation to on going and planned Climate initiatives in Africa and we look forward to hearing your views.

By bringing together representatives of African countries, regions and organizations, as well as European stakeholders, this conference also offers the opportunity to raise awareness about the usefulness of EO data for informed policy making and planning and improved environmental governance.

To conclude, let me reconfirm that the European Union is very committed to work together with all African and European partners and will continue to provide all necessary support required for improved access and use of EO data for sustainable development in Africa.

I wish you a fruitful meeting.

Thank you very much.



**Statement on behalf of Eng.  
Mahboub M. Maalim, Executive  
Secretary of the Intergovernmental  
Authority on Development (IGAD)**

[Protocol observed]

Please allow me to read the Statement of the Executive Secretary of IGAD, who wished to be here with you, but he could not as the meeting clashed with United Nations General Assembly, where the Regional Economic Communities are requested to present their on sustainable development and peace and security.

I quote:

Excellencies, Ladies and Gentlemen,

It gives me a great pleasure and privilege to welcome you to the to the IGAD region and to this beautiful city of Addis Ababa. It also gives me a privilege to address this august gathering of the 10th EUMETSAT User Forum in Africa, which aims to strengthen the interaction and dialogue among Africans and between EUMETSAT and African users on the optimal use and application of the satellite data and information and other communication services to foster sustainable development in Africa.

As you all know, Africa gets meteorological data from EUMETSAT on behalf of Europe, free of charge and that EUMETSAT operates a series of meteorological satellites that monitor the atmosphere, oceans and land surfaces. Most of these satellites provide data and information on real time to African countries, which is very crucial to their economic development.

Major sectors benefiting most from the EUMETSAT data / information include meteorology, hydrology, civil aviation, agriculture, environment, disaster management, and climate change, to mention a few. Organizing regular interactions and dialogues between EUMETSAT and African Users from these different economic sectors will enhance the capacity of the African Community in maintaining the ground receiving stations and other infrastructures as well as in the use and application of satellite data / information to foster sustainable development in Africa. As Africa's economy depends primarily on agricultural production, which in turn depends on sustainable management of its environmental resources, access and use of meteorological data / information for informed decision making and planning in major economic sectors is a precondition to achieving sustainable management.

IGAD's collaboration with EUMETSAT dates back to more than 15 years when EUMETSAT and the Regional Economic Communities (RECs) in collaboration with the Meteorological Services in Africa, came together in the development and implementation of the Preparation of the Use of MSG data in Africa called "the PUMA project", with the financial support of the European Union. This cooperation continued through the follow on project called the African Monitoring of the Environment for Sustainable Development (AMESD), which again was supported by the European Union under the auspices of the African Union. The tradition further continued and we have now embarked on the development a follow on project to the AMESD project, called 'the Monitoring of Environment and Security in Africa' (MESA), which again is supported by the European Union. I can witness that EUMETSAT, during all these years, has provided the required

data/information, training, technical support and has created a strong partnership between Africa and Europe. I believe this is a good example of the implementation of the Joint Africa –EU Strategy.

The partnership between EUMETSAT and Africa can be described as very good and intact. However, we need to make it stronger through effective networking of African and European institutions working on the use of satellite data/information, undertaking joint research, exchange of best practices and experts, transfer of technology, etc. Africa needs to build “the smallest critical mass” to enable it master the use of the satellite data / information and other communication infrastructures and technologies. African countries operating satellites may play a critical role in working closely with Eumetsat and other European satellite operating institution so that they build the bridge for Africa’s transformation in this sector and acquiring the technology. Our African institutions, particularly the RECs led by the African Union, should prepare the fertile ground for the transfer of know-how and technology.

I am convinced that this meeting will enhance our North – South and South – South cooperation to address the problems and challenges affecting Africa. It is also a manifestation of our increased commitment to strengthen the partnership between Africa and EUMETSAT and between Africa and Europe at large. Currently, some actions are being undertaken at continental and regional levels to strengthen the partnership, however, we need to ensure that these actions are geared to address the problems and challenges faced by people at community and local levels.

Finally, I want to thank EUMETSAT for organizing the conference, the Federal

Democratic Republic of Ethiopia for hosting the conference and UNECA for availing its conference facilities at our disposal.

I thank you for your kind attention.

“I unquote.”



**Statement on behalf of H.E Rhoda Peace Tumusiime, Commissioner for Rural Economy and Agriculture, African Union Commission (AUC)**

[Protocol observed]

Climate change is one of the greatest challenges facing mankind in the 21st century. Although being the smallest contributor to the greenhouse gas emissions, the African continent is the most exposed to the effects of global warming, climate variability and change.

Earth observations provide a vital contribution to understand the Earth system allowing us to better predict and mitigate the expected global changes and their impact on African populations whose life conditions are heavily threatened by the incorrect use of natural resources and climate variability. EO observations allow decisions taken based on reliable and scientific data, to be truly oriented for the harmonious socio-economic development of African people and the sustainable use of natural resources for the benefit of future generations.

EUMESAT forum is an occasion for us to recognize the vital support of EUMESAT to Africa and the important place that Africa has in such important organization. Since 20 years our continent is benefitting of the continuous coverage by Satellites

operated by EUMETSAT that contributes to the monitoring of the weather, the climate and the environment. Satellite data and products are of great benefit for meteorological and environmental applications, especially in Africa where in-situ observations are scarce.

The 10th EUMESAT user forum brings together experts from the African National Meteorological Services, the user community with the objective to reinforce the well-established dialogue in order to facilitate the use of EUMETSAT satellite data throughout the continent. The Forum also provides the opportunity to identify actions and initiatives that could be taken by EUMETSAT and its partners to meet the requirements of its African users.

With the implementation of PUMA project ended in 2005 the weather forecasting capabilities across the continent have been enhanced based on the use of Satellites of Meteosat Second Generation (MSG).

Its successor, the African Monitoring of Environment for Sustainable Development (AMESD) programme, a Pan-African Initiative with continental and regional components, is the first operational project exploiting widely the EO data and processes. The EUMESAT data are used both by the National Meteorological Services and other institutions for Environmental and Agricultural purposes. AMESD is a partnership between the African Union Commission, 5 RECs, the EU and ACP Secretariat.

Taking into account that the AMESD general purpose is to improve decision making-processes thorough the extensive use of Africa-wide environmental information obtained from EO technologies, the RECs have established 5 AMESD Regional

implementation Centres to improve environmental monitoring for sustainable management of natural resources in the five RECs and 48 countries of sub-Saharan Africa, with a view at contributing to poverty alleviation in one of the poorest areas of the world.

Since 2007 AMESD has created an operational network of 107 EUMETcast receiving stations which receive satellite environmental (AMESD stations) and meteorological (PUMA 2010) data and process them producing wheatear forecast and monitoring of environment. Datasets of environmental data and products are improved in the 5 Regions through the implementation of 5 thematic actions. The capacity of archiving data is enhanced in several institutions through the provision of equipment and better access to EO data via receiving stations (AMESD and PUMA). Regional networks are being developed under the leadership of the 5 RICs allowing better access to EO data through sharing information between each component of such networks (AMESD and PUMA focal points) and makes possible dissemination of added valued products.

But the main practical achievement has been the delivery of 12 AMESD operational services to monitor the environment in 5 thematic areas. 5 RICs and their national AMESD partners have been capacitated to generate and disseminate data and products to the end-user community of decision and policy makers with the purpose to allow them take decisions on prioritized sectors of intervention. At the same time the end –users and AMESD stakeholders are involved in several events with the objective to bring together who is generating the information with who is actually using it for environmental management and



evidence-based decision and policy making. This approach shall be extended and further developed with the Monitoring of Environment and Security Programme (MESA) which is the successor of AMESD programme from 2013.

MESA will consolidate the achievements of AMESD and extend them to achieve an even more wide impact on decision and policy makers. MESA will endeavour to:

- Increase and optimize the operation of the EUMETCast receiving stations;
- Increase the transfer of capacity and training from the RICs to the national level for greater ownership and sustainability of the efforts to operate the system, generating and delivering services;
- Increase the usability and operability of services for policy and decision making;
- Consolidate and reinforce the capacities of the MESA community and end-users made of environmental practitioners, decision and policy makers.

The relationship between security and the environment is the most sensitive area of human dependence on the good knowledge and management of natural resources. Environmental assets are critical part of the livelihoods of many people in Africa. When these resources are threatened because of environmental changes, people's security is also threatened.

Events such as floods and drought are more and more frequently causing loss of lives and severe damage to infrastructures. For such reason, Governments are increasingly becoming aware of the relationship between ecological stability and human security. MESA will work to produce applications for disaster management so that Earth

Observation can be used to predict extreme events for short term interventions and also put in place policies and actions to prevent and mitigate in the middle run their impact.

MESA will also be the precursor of GMES and Africa initiative which aims to set-up an overall framework in Africa for Earth Observation (EO) applications through a long term partnership between African and European stakeholders.

Thank you for your attention.



**Opening remarks on behalf of Mr Alemayehu Tegenu, Minister of Water and Energy, Federal Democratic Republic of Ethiopia, by Mr State Minister**

[Protocol observed]

Ethiopia is deeply honoured to host the 10th EUMETSAT User Forum in Africa today and it gives me pleasure, on behalf of His Excellency the Prime Minister, our Head of Government, to extend a warm welcome to the eminent personae, researchers, men of science and academics in charge of meteorological and climatic issues, meteorological satellite administrators, and the technical and financial partners who have been willing to travel to Addis Ababa.

On this happy occasion, I would like to pay deserved tribute to His Excellency the Director-General of EUMETSAT, Alain Ratier, who, with his organisation, is working on the development of meteorological satellites for the progress and wellbeing of humankind. May I be allowed, on behalf of the people of Ethiopia, to convey to him our deep

appreciation of our country being chosen and the trust shown in it for holding these meetings. This is also the appropriate moment to pay clear tribute to the Deputy Secretary-General of the World Meteorological Organization, Mr. Jerry Linguasa, and to his Organization, which, tirelessly and with dynamism and skill, presides over the future of that exemplary multinational cooperation instrument.

Ladies and Gentlemen,

I am proud to extend this series of tributes to all your teams; no evidence is needed of their commitment and determination to rise to the climatic and environmental challenges.

The main challenges facing the international community and, more especially Africa, on a daily basis are the fight against poverty, strengthening the democratic process, the stability of the institutions, economic and political governance, and, especially over the past few decades, efforts to combat the perverse effects of the natural disasters that are dangerously undermining its development. We need to remember that Africa, our continent, has immense natural wealth which ought to give it advantageous opportunities for the socio-economic development of its people as national sustainable development policies that are basically geared to the fight against poverty are defined and implemented in its States. However, the lack of appropriate technological means, anarchic and often irresponsible use of those resources, combined, for more than 30 years now, with the phenomenon of severe climate change and its perverse effects in terms of natural disasters (floods, drought, etc.), have contributed to the socio-economic decline of a fair number of countries in Africa.

We can still recall the recent drought in the Horn of Africa that was accompanied by an ongoing, variable rainfall pattern and flows.

Again this year, our sub-region has been severely affected by raging waters and the persistence of extreme meteorological and climatic phenomena. Early in the season, the IGAD Climate Prediction and Application Center, its partners and the National Meteorological Services did indeed issue warnings about the risks of rainfall but our people's limited anticipation capacity, which is largely attributable to inappropriate technical material, gave free rein to those hydrometeorological disasters. Thus, confronted with the considerable vulnerability of our people, the African political authorities have undertaken in recent years to give high priority to the question of climate change and variability in the programmes to combat poverty. The late PM Melese has been playing a key role representing Africa.

It is noted that there is a strong participation by very high-level African delegations in the third Global Climate Conference in Geneva, Switzerland, which took place from 31 August to 4 September 2009, during which an excellent speech was delivered by H. E. EFDRE President Girma Woldegiorgis, and the first Conference of Ministers Responsible for Meteorology, organized by the World Meteorological Organization, which was held in Nairobi, Kenya, from 12 to 16 April 2010.

It emerged from these different meetings that it is urgent for an effective policy for gathering meteorological data and information which will involve the local communities in monitoring climate conditions to be introduced in order to improve productivity in vital sectors

such as agriculture and the related sectors.

This EUMETSAT User Forum in Africa is being held at a time when current international events are still calling for our attention in terms of natural disasters, particularly those that are hydro-meteorological in origin (floods in Haiti, China and Pakistan, landslides in China, Uganda) and those that follow on from global warming (fires in Russia, Spain). The combination of all these geophysical imbalances poses a serious threat to our ecosystem and, according to experts, could destroy life on earth if appropriate solutions are not found in the short and medium term.

The theme of these meetings, which are devoted to Earth Observation and Applications of Meteorological Information, is therefore timely, as at the end of this Forum, our wish is, by adopting a dynamic approach to working and exchanging experience between meteorologists, the providers of satellite data and products, the users of satellite products and meteorological predictions, scientists and researchers, for possible relevant and innovative solutions regarding the impact of climate change on those sectors to be found so that warning and adaptation strategies can be developed and integrated into our development programmes. Agriculture is particularly affected by disruptions to the climate and it is essential for solutions to be found to that problem, on the one hand, because of the risk to food security and, on the other, because agricultural activity alone represents 70% of employment on the continent of Africa and is the main economic driver of most of the States.

The Government of Ethiopia is therefore following the progress made in your work with considerable interest and would like to reaffirm its readiness

to lend strong support to this important initiative concerning the establishment of dynamic analysis and planning mechanisms that will enable effective combating strategies to be implemented.

The World Meteorological Organization would not be true to its mission if it were not a model of international cooperation. The reality of our world and contemporary societies calls for very intensive international scientific cooperation between university institutions, operational forecasting centres and the users of meteorological predictions, the best equipped States and those who are less well equipped, so as to find, in a synergy of actions, sensible solutions to the problems associated with the climate and the environment.

Thus, in the context of the change over in 2002 to the second generation meteorological satellite (MSG), which risked being fatal for the African meteorological services, in 1996 the latter, working with WMO, the African regional economic groupings (e.g. ECOWAS, SADC) and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), had established the Preparation for the Use of the

Meteosat satellite in Africa project (PUMA). Through European Union financing, the project enabled all African Meteorological Services to be equipped with satellite data receiving stations. Like other African countries, Ethiopia has benefited since that period from the valuable work of EUMETSAT, which has thus helped to improve the quality of meteorological predictions in our country.

This is therefore an appropriate opportunity for me to extend my most sincere thanks to EUMETSAT and its financial partners, particularly the

Commission of the European Union,  
for this substantial material support.

I would also like to pay tribute to and encourage fruitful cooperation between Ethiopia, the African countries and EUMETSAT and its partners, one of the outcomes being the AMESD Project, GMESD is also coming which provides our countries with satellite reception stations for the acquisition of applied satellite products for environmental management and the upgrading of PUMA stations, which have made a major contribution over the past decade to improving the quality of meteorological predictions in our countries.

I would like to take advantage of this platform to make an urgent appeal to the EUMETSAT, the World Meteorological Organization and the international meteorological institutions to strengthen technical and scientific

cooperation with African countries, particularly by:

- the implementation of operational observation, measuring, analysis and data distribution networks,
- the acquisition of remote sensing equipment,
- the improvement of meteorological predictions,
- capacity-building through human resources training.

Our government and our people are expecting a lot of your work and very special attention will be paid to its conclusions.

On that note of hope, I would like to wish you every success in your work and declare the 10th EUMETSAT User Forum in Africa open.

Thank you.







## SESSION REPORTS

All presentations and speeches delivered during the 10<sup>th</sup> EUMETSAT User Forum in Africa are included in the CD-ROM inserted in the present report. The following paragraphs provide a brief abstract of the presentations and report on the discussions.



### Introductory Session

Following the Opening Ceremony, Mr. Fetene Teshome, Permanent representative of Ethiopia with WMO introduced this session that aimed at presenting the context of the Forum, its main objectives and its programme.

Mr. Paul Counet and Mr. Emilio Barisano presented the evolution of the role of the African NMHS in exploiting satellite information, between the 4<sup>th</sup> EUMETSAT User Forum in Africa, held in Kampala in 2000 and this 10<sup>th</sup> User Forum. They recalled that during the period in which the PUMA and AMESD projects were implemented, efforts to reach sustainability were equally distributed towards the development of a framework with technical (e.g. the EUMETCast station), institutional (e.g. role of the RECs) and networking dimensions (e.g. cooperation at regional and national level). Looking ahead to the future, they mentioned that opportunities exist to continue strengthening these three dimensions notably through the MESA project, the development of an African Strategy for

Space and the regional implementation in Africa of the GFCS.

Mr. Vincent Gabaglio then 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. He highlighted also the sessions related to climate services, renewable energy and the MESA project. He finally presented the detailed programme of the Forum and provided logistics information for the participants.



### Session 1 – Overview of EUMETSAT programmes

Chairperson: Fetene Teshome, NMA;  
Rapporteur: Vincent Gabaglio, EUMETSAT.

The first session was dedicated to the presentation of the status of Earth observation programmes from various international institutions. It was complemented by a presentation of various third party data and products provided to Africa through EUMETSAT's infrastructure.

Mr. Alain Ratier, EUMETSAT Director-General presented the EUMETSAT satellite programmes. He provided information on the status of MSG, EPS and Jason programmes, including examples of applications in Africa. He highlighted the recent launch of two

new satellites, one MSG satellite, which will become Meteosat-10 once operational and the second Metop satellite. He by explained that EUMETSAT expected to contribute to GMES with the operation of Sentinel-3, -4 and -5 and provided an overview of the EUMETSAT future programme: Meteosat Third Generation (MTG) and EPS-Second Generation (EPS-SG). He concluded his contribution by underlining that these future programmes will form the pillars to ensure continuity and improvement of services in the 2020-2040 timeframe.

Mr. Reinhard Schulte-Braucks, Head of the GMES Unit at the European Commission presented the status of the European Commission's GMES initiative and its benefits for Africa. He introduced the GMES Space segment composed of five sentinels and various contributing missions, and the six GMES Core services (land, marine, atmosphere, emergency, security and climate change). He continued by providing examples of specific service applications and highlighted several research projects, funded by the EC FP7, with African participation. He then presented the main opportunities for Africa: the possibility for African users to access most of the GMES data and products. He concluded by mentioning the EC support to the GMES & Africa initiative.

Mr. Jérôme Lafeuille introduced the WMO Space programme. He illustrated the positive impact of satellite for Numerical Weather Prediction (NWP). He then presented results of the survey on satellite use by WMO members that highlighted the relevance of EUMETCast for allowing NMHSs direct access to satellite data. The last part of the presentation focused on initiatives to support the use of satellite data, such as the VLab for training purposes and the Observing Systems Capability and

Review (OSCAR) database, which references more than 400 satellites and 700 instruments with characteristics and indication of relevant variables.

Mr. Zhang Peng provided an overview of the Chinese Meteorological Administration (CMA) FengYun (FY) satellites. His presentation focused on the status of FY-3 missions and its follow-on. He concluded by mentioning that CMA was willing to contribute its satellite data, especially polar satellite data to the African meteorological, hydrological, and environmental communities.

Mrs. Sally Wannop concluded the session with an overview of the various data and products. She firstly presented the future operational satellite configuration (Metop and Meteosat) and the expected changes that will happen when Meteosat-10 and Metop-B start their operational life. After mentioning the plan for the Indian Ocean Data Coverage (IODC) service, she mentioned the new and enhanced EUMETSAT products, provided by the Central Application Facility (CAF), such as NDVI and NDVI, total ozone and atmospheric motion vector products, and those provided by the Satellite Application Facilities (SAFs), notably new Ocean Sea Ice (OSI SAF) products (ASCAT Coastal Winds, High Resolution Metagranule SST based on Metop, Atlantic High Latitude SST and Sea Surface Fluxes), new Land Application (LSA SAF) products (Fire Risk Map and Fire Detection and Monitoring products) and new Climate SAF products (AVHRR-GAC 20 year Climate Data Records on Clouds and Surface Radiative properties), as well as new SW versions from the Nowcasting (NWC SAF) and Numerical Weather Prediction (NWP SAF). She then presented new third party products available to African users: Météo-France ARPEGE model

outputs, Met Office ATDNet lightning data, ECMWF global & African regional NWP data for surface pressure levels, CMA satellite data, AMESD products and the OSFAC land application images from Landsat covering central Africa. After mentioning several new climate products available through the EUMETSAT Data Centre, she presented the EUMETSAT product navigators and invited all participants to discuss their data and product needs with the regional WMO RAI Dissemination Expert (RADEG).



## **Special anniversary session**

### **Earth Observation for weather, climate and environment monitoring: Vision for the next 20 years**

This Anniversary Session was split into four parts.

The first part was dedicated to two presentations on the evolution of EO in Africa during the past 20 years.

Dr. Tillmann Mohr, Special Adviser to the Secretary General of WMO and former Director-General of EUMETSAT, presented the evolution of satellite meteorology and its impact for the Meteorological Community in Africa. He highlighted the progress made in that area since the start of the PUMA project in 2000 until the 10<sup>th</sup> EUMETSAT User Forum in Africa.

Dr. Adigun Ade Abiodun, former Chairman of UNCOPUOS, Founder of the African Space Foundation, Nigeria, provided an overview of the progress made during the last 20 years in the Space domain. He pointed out the possible antagonism between the high potential provided by EO and the low

or inexistent African capacities to exploit it. He highlighted also the tentative attempts to build an African EO satellite with limited success.

The second part was dedicated to the benefits of EO from the user's perspective. The moderator invited two speakers representing user institutions to speak about the benefits of EO in their respective areas of responsibilities through two interventions.

Mr. Jerry Lengoasa, Deputy Secretary General of the WMO highlighted the benefits of the operational use of EO data and methods for the NMHSs in Africa. He indicated the great expectations of this community and of climate scientists. He underlined the progress made in satellite telecommunications, which is also very relevant for meteorological community. He pointed out that the activities related to EO are growing fast.

Dr. Mohamed Khalil Timamy, Head of division in the Department for Rural Economy and Agriculture (REA) of the AUC highlighted the crucial role of EO for the environment, disasters and agriculture monitoring using the example of the results of the AMESD Project and the expected results of the MESA programme, both funded by the EU and led by the REA Department of AUC. He underlined the necessity to link the MESA program with other existing EO activities and programs in Africa, pointing out the great necessity to include a strong training and capacity building component in EO initiatives.

For the third part of this session, the moderator raised a number of questions to the various speakers that highlighted the important aspects that have or would permit an increased use and impact of EO for various economic



and environmental sectors in Africa. The main points raised were:

- an important set of data and information exist but only a small part is really exploited in Africa, due to the lack of capacity and organisation of users;
- the need to prioritize activities towards great environmental challenges, such as the Tchad lake, the Humid Forest of Congo Basin, etc.;
- the need to assess the use and exploitation of existing products;
- the need to dramatically enhance African capacities to develop EO based products and services;
- the need to strengthen the legal aspects related to EO matters and define principles for data policy;
- the need to find specific resources for development activities that are independent from operational projects;
- the need to establish an African Space Policy;
- the need to reach a critical mass of capacities for development and implementation of EO related programmes;
- the need to build operational networks between users, and with data providers;
- the importance of making use of existing data, products and assets and develop additional coordination mechanisms;
- the need to clarify the purpose and objectives of the African Pan-University on Space Science;
- the need to pursue efforts to ensure the usefulness of EO for sustainable development in Africa.

During the fourth and last part of the session, Dr. Mahama Ouédraogo, Head of division in the Human Resources, Sciences and Technologies Department of the African Union Commission, Dr. Tillmann Mohr and Dr. Adigun Ade

Abiodun, provided their vision for the next 20 years, promoting the establishment of an African wide EO policy, which would put at its heart the applications that will support African sustainable development.

Dr. Mahama Ouédraogo presented current thinking related to the GMES & Africa initiative developed within the framework of the Strategic Africa-EU Partnership, which is based on the previous AMESD and ongoing MESA program. He affirmed the need to support the three transversal components: institutional aspects, infrastructure and capacity building. He also highlighted the Pan-African University on Space science, and its potential to strengthen EO future effort in Africa.

Dr. Adigun Ade Abiodun highlighted the necessity for African countries to adopt a new vision to integrate space assets, such as EO, in their own development policies by reinforcing their technical capacities and taking into account their present financial and technical capacities.

Finally, Dr. Tillmann Mohr proposed to structure the future EO activity in Africa in continuity with the successful projects of the last decade. He highlighted the need for Africa to develop a strategy for space. The strategy should be composed of two pillars: space technology and space applications. The centres of excellence created during the past decades would fall under the second pillar. This would allow, with the support of African institutions (AUC and RECs), the establishment of a sustained "African ownership" of space data applications. He finally presented the GFCS as a real opportunity for Africa and called upon for political leadership on space and climate matters.



## Session 2 – Parallel sessions

Chair: Jacques Garané, Burkina Faso.  
Rapporteur: Mr. Emilio Barisano,  
EUMETSAT

Three parallel sessions were proposed on the following topics:

- EO for renewable energy
- Evolution of access to data and training
- Development of policies for EO in Africa

Each single session was successfully conducted and they prepared their own report (see below).

### **Session 2.A. Earth Observation for Renewable Energy**

Chairperson: Mr. Sahele Tamiru, Ethiopian Ministry of Water and Energy (MoWE).  
Rapporteur Dr. Lucien Wald, Mines ParisTech.

Considering that Renewable Energy has a future in Africa, the objectives of this session were:

1. to present on-going applications of Earth Observation in Renewable Energy (solar, wind, hydropower, wave, etc) for policy planning, investment decision.
2. to discuss how the meteorological community could better exploit the EO data to support their Ministries in developing the renewable energy sector.

The following presentations were provided:

*Importance of renewable energy in a Green Economy in Africa and*

*expectation with respect to Earth Observation technologies, by Sahele Tamiru, Ministry of Water and Energy, Republic of Ethiopia.*

An overview of the commitment of the Republic of Ethiopia to Green Economy was given as well as the strategy to reach this goal. EO data have been partly used to establish maps of resources in Ethiopia for hydropower, sun power, wind power, and forest biomass.

*Estimate of solar energy resources in Africa with Earth Observation data, by Lucien Wald, MINES ParisTech, France.*

The current means for estimating surface solar irradiation from ground stations or Meteosat satellites were presented as well as the perspectives offered by the GMES-MACC project (HelioClim-4). The databases HelioClim-1 (HC1) and -3 were briefly discussed, HC1 being a GEOSS CORE data set, i.e. of open access.

*Information system on hydropower management, by Pierre Baril, Ouranos, Québec, Canada.*

Many EO data and NWP models are mobilized in Ouranos to provide answers in various domains affected by climate change. A detailed example was given in hydropower in Québec. The importance of preparing companies such as HydroQuébec to new more appropriate practices for energy management was stated.

*Wind map for wind energy production, by Kumar Ram Dhurmea, National Meteorological Agency, Mauritius.*

Mauritius is preparing itself to harness wind energy. A measurement campaign has been set up to measure the wind at different altitudes for a better modelling and representation of

the 3-D field in the lower layer of the atmosphere over the island.

*Overview of satellite products relevant to renewable energy, by Hans-Peter Roesli, Eumetsat*

Several EO data are already used in the domain of renewable energy. Several examples are given illustrating the benefit of EO in various fields: hydropower, sun power, offshore wind energy, wave energy.

During the discussion, the session agreed beyond doubt that EO data and products offer a strong potential to renewable energy in Africa.

The discussion focused on hydropower, wind, sun and wave energy as they are more relevant to meteorology than biomass from wood and crop which are relevant to forestry and agriculture.

There are possible « immediate » interests of EO in renewable energy:

- planning of policies in energy and their design [resource assessment]
- investment decision (public or private, banks) [more precise resource assessment for feasibility studies]
- monitoring operations of a power plant [checking simulated production vs actual]

Current EO-derived meteo products may bring « immediate » satisfaction to these early needs in renewable energy in Africa. It was underlined that a number of other data are needed: land cover, digital terrain elevation, hydrography, map of electricity grid, etc. Several of them may be derived from EO.

The session also highlighted the need for long-term accurate measurements at ground level with relevance to

meteorological parameters of major interest in renewable energy: wind speed, solar irradiation, rainfall.

NMHSs are very capable of creating products tailored to needs in renewable energy. It needs on the one hand, scientific and technical development, e.g., better modelling of the wind profile in the surface layer. On the other hand, it needs collaboration with energy experts to better understand their requirements and help them to become acquainted with meteorology.

## **Session 2B**

Chair and rapporteur: Mrs. Sally Wannop and Mr. Mark Higgins, EUMETSAT

The first part of the session allowed a discussion with NMHSs about their evolving needs for data reception and data visualisation, taking into account the reception and processing capabilities that PUMA and AMESD have successfully provided to NMHSs HQ offices.

The participants presented their requirements for additional products. The following were mentioned: precipitation & vertical soundings, atmospheric composition (trace gases for air quality applications), marine data & products such as wind/wave/SST/model, agricultural products (crop & livestock), fire application products and high resolution imagery for land applications and in support of disaster management, climate monitoring products, seasonal forecasting products and products for renewable energy applications.

This list will be provided to the WMO RA-I Data Dissemination Expert Group (RADEG) for further analysis. The session also noted that boundaries

between meteorological applications & environmental applications are disappearing and the need to improve product documentation & access to product meta-data.

The following remarks were raised regarding the reception stations:

- Flexible display software to allow for easy user configuration;
- Display software needs to be customisable for specific applications;
- Display systems need to merge data traditionally used for meteorological applications with those traditionally used for environmental applications;
- Sustained, local capability to maintain/configure the reception & display system is essential.

The session also discussed the need to strengthen national coordination in the deployment and use of reception stations and invited the RECs to have an active role in fostering active collaboration across EO disciplines.

During the second part of the session, the participants discussed with EUMETSAT and the Centres of Excellence for training in satellite meteorology, the current situation of training in the region, the evolving needs for training and potential options for improvement.

In terms of training subjects, the areas of interest are for climate, environmental monitoring and meteorology. The increasing need for training on the following application areas was also noted: marine, seasonal forecasting, products for renewable energy, products and processing for climate services, air quality.

Regarding training methods, the session reflected on how to most

effectively train, avoiding dependencies to project cycles and suggested to shift more towards online, particularly for knowledge courses, as pre-conditions for further training. Online courses would increase the number of people who can be trained.

The importance of increasing training on system administration was highlighted by many participants. Concrete proposals were recorded as input for the MESA training plan.

Finally, the session also recommended that Data Access & Training sessions are included in future UFA meetings, and where possible, additional time is given to this topic.

### ***Session 2.C: Earth Observation Policy Development***

The Focus of this session was to highlight some of the issues to be considered in developing long-term sustained EO capacity in the continent:

- What are the current governance and policy frameworks that exist in the continent?
- Could we identify possible gaps and overlaps?
- What continent-wide EO governance mechanism do we need to establish?
- What is the role of governments, private sector, academia and user communities?

The session was introduced by the following presentations.

Mr. André Nonguierma from the UNECA on African Regional Spatial Data Infrastructure

Mr. Mahama Ouédraogo, from HRST / AUC on the African Policy on Space

Mr. Danilo Barbero from the AMESD Technical Assistance on the Main outcomes of AMESD Workshop on the use of EO in support to policies

Mr. Humbulani Mudau from the GEO Secretariat on the AfriGEOSS contributing to EO policy in Africa

Mr. Ganiy Agbaje from NASDRA provided an example of a national EO policy/programme with the Nigeria EO programme, focusing on the space segment and data policy

As a background it was noted that there are many Earth Observation initiatives in Africa. All maintain policy related activities that lead to duplication, redundancy and confusion in programmes and projects. The following points were highlighted:

- The number of projects and initiatives established in Africa through partnership in the last ten years are vast: over 100.
- There is not currently a comprehensive mapping of space-related initiatives in the continent.
- Many African countries are also developing fast and increasing their present in space. We only know that at least four African countries (Algeria, Nigeria, Egypt and South Africa) have developed/acquired EO systems.
- No shared knowledge on all the bilateral agreements amongst African countries that have been developed and how many common projects have been established.

With these elements in mind, the participants constructively developed an approach for developing a space policy for Africa.

The session concluded on three main recommendations. A first recommendation on data access and sharing, a second recommendation on

capacity building and a final recommendation on the governance for setting up such a space policy building on the existing institutional initiative such as the Space Science and Application Platform (SSAP).

The session invited AUC and UN-ECA to report to their constituencies on these recommendations.

### ***Report of the parallel sessions and discussion***

A report of each parallel session was presented to the plenary session to all attendees and the main outcomes were discussed and endorsed by the plenary.



### **Session 3 – EUMETSAT data and user support**

Chairperson: Mr Félix Hounton, WMO  
Rapporteur: Dr. Hans-Peter Roesli, EUMETSAT

The Session 3 presented topics related to access to EUMETSAT data and to user support.

Mr. James Kongoti (Kenya Meteorological Department), the group's chairperson, presented the RA-I Dissemination Expert Group (RAIDEG). RAIDEG comprises of experts from the NMHSs of the 6 sub-regions of RA-I, from EAMAC and ACMAD as well as of representatives of EUMETSAT and WMO. The scope of RAIDEG is to establish user requirements as regards meteorological/environmental data and products for RA-I included in the data stream of EUMETCast-Africa, and to liaise with EUMETSAT/WMO in order to maintain a dissemination baseline. The chairman then reported on the 3rd RAIDEG meeting that was held the

day before the Forum in the Ghion Hotel in Addis Ababa. RAIDEG reviewed actions from the previous meetings and noted the successful deployment and automatic update of the PUMA 2010 stations that included extensive training of users and technicians. In recognising the vital role of RAIDEG, WMO proposes to establish similar groups in other RAs. Finally, RAIDEG compiled a list of recommendations.

Mrs. Sally Wannop (EUMETSAT) gave a broad view on recent updates/news in EUMETSAT's dissemination, archiving and user services. She illustrated the ever expanding EUMETCast data streams and user communities. User figures for Africa, some details of the future evolution to EUMETCast-Africa/PUMA2010 and the announcement of the inclusion of a Training Channel in EUMETCast stressed the continuing support EUMETSAT is giving to the African NMHSs and user communities at large. Further improvements in the Data Centre (archive), the User Notification Service (UNS) and the Web information/services (including Twitter) were mentioned as well.

Mr. Mark Higgins (EUMETSAT) exemplified EUMETSAT's mandate for training in RA-I. Being an active partner in European and global initiatives of relevance to space-based weather, climate and environment monitoring EUMETSAT is helping meteorological communities to meet their respective needs by making the optimum use of current and planned satellite services. In Africa most training is done in partnership with the Centres of Excellence in satellite meteorology (CoE) based in Casablanca, Nairobi, Niamey and Pretoria. In addition, on-line event weeks, internet courses, Web material and interactive modules are available (<http://training.eumetsat.int> and

EUMETCast training channel). Of particular significance for the training efforts in RA-I is the growing weather discussions in Regional Focus Groups.

Mr. Kassa Fekadu (NMA) gave an overview on the key functionalities of the GEONETCast Toolbox, the data from GEONETCast and the system layout of a EUMETCast receiving station. He then showed the Toolbox Ethiopia for water and food security as implemented at NMA. Some of the products exemplified the crucial importance for NMA of access to GEONETCast and to the toolbox capabilities, i.e. to have dispose of affordable and reliable weather and climate monitoring. NMA has already deployed 3 GEONETCast installations in 3 selected branch offices and plans to finally cover all 11 branch offices.

Mr. Mikael Rattenborg (EUMETSAT) announced that in 2012 EUMETSAT has joined the International Charter on Space and Major Disasters. He explained the purpose of the Charter, its history, membership and activation mechanisms. Some statistical data showed the frequent Charter activations worldwide per types of calamities. Relevant to Africa in particular, EUMETSAT plans to distribute Charter relevant data via its EUMETCast and FTP services, including ad hoc third-party data and rapid deployment of additional (mobile) EUMETCast stations in affected areas. Many African NM(H)Ss and other organisations have indicated to EUMETSAT an interest in contributing the EUMETCast capability to support disaster relief activities. More information is available under the link: [www.disasterscharter.org](http://www.disasterscharter.org).

During the final discussion it was pointed out that, for the time being, the role of RAIDEG will be limited to meteorological business of the NMHSs only. Inclusion of other institution's

requirements might be considered later. Other points raised have been subsumed in the Forum's list of recommendations under the headings Data and Products (access and diffusion) and Training.



The report of the Climate Day is presented separately.

## **Session 5 – AMESD and MESA**

Chair: Mr. Olusola Ojo, ACP Secretariat,  
Rapporteur: Mr. Emilio Barisano, EUMETSAT

Mr. Danilo Barbero, Team Leader of the AMESD Technical Assistance, presented the main results of the AMESD program in a synthetic and comprehensive way. He highlighted the involvement of the initial partners AUC; EU, RECs and ACP Secretariat, the initial objectives and expected results, and presented the actual results achieved.

The four expected results were:

- Improved access to EO data
- Establishment of operational services
- Strengthening of policy and institutional networks
- Ensuring an adequate technical level (training).

These four results were reached thanks to the following main achievements:

- 54 PUMA Station upgraded
- 57 new AMESD station installed
- 5 THEMA implemented with 13 services
- 1000 African experts trained
- 2 AMESD Forum

- Policy and Decision Maker Workshop

Dr. Mohamed Khalil Timamy, African Union Commission, then presented MESA and its main objectives. He recalled that the MESA programme was in line with the GMES & Africa Initiative and the Partnership #6 on climate and #8 on Space of the Joint Africa Europe Strategy action plan.

The MESA program has a budget of 37 M€ provided by the RECs and ACP Secretariat through the European Development Funds (EDF). The Financial Agreement was signed in March 2012.

The objectives of MESA are:

- Infrastructure Support, including upgrading and maintenance of receiving stations and information and data management in all Sub-Saharan African countries
- Consolidate and further develop Information Services in the thematic areas addressed by AMESD, but also include new thematic areas (e.g. climate services, and forest information).
- Promote cross-fertilisation among the five partner regions and pursue the continentalisation of services
- Strengthen political and policy development frameworks to ensure an active and sustainable participation of African stakeholders in initiatives concerning Earth Observation for environment and security
- Capacity development and training of African stakeholders at continental, regional and national levels

The main milestones are:

- Technical Assistance will be in place early 2013;

- THEMAs Grants can be started by the end of 2013;
- The Training should start in 2013;
- The upgrade of the station will start in 2015.

Following these two introductory presentations, each Regional Economic Community (REC) and the Regional Implementation Centre (RIC) presented the main benefits and expected results of AMESD and MESA for their regions and demonstrated the concrete impact of these projects.

Mr. Issifou Alfari (AGRHYMET) and Mr. Johnson Boanuh for the ECOWAS region:

Globally, the objectives of the AMESD project into the ECOWAS region were reached. It was recalled that the AMESD Project in West Africa covered the ECOWAS countries plus Mauritania (UMA) and Chad (CEMAC).

The main Services put in place were:

- Vegetation monitoring
- Water bodies monitoring
- Savannah burning monitoring

ECOWAS then presented its expectations for MESA. The interest is to continue and consolidate the Services put in place during the AMESD Project and to open in the region a new THEMA on the Marine and Coastal Management.

ECOWAS earmarked an amount of 5 million Euros from its EDF budget for MESA. .

For AGRHYMET the perspectives are:

- to finalize and consolidate the existing Services;
- to strength the national level in order to build a real national

network and develop the project with national institution;

- to reinforce capacity building mainly at national level;
- to put in place a Regional Steering Committee.

In order to select the new RIC in charge of the THEMA Marine and Coastal management, a specific study was commended. The results of the study were consolidated during an Internal ECOWAS workshop, and the Department of Oceanography and Fisheries of the University of Ghana was finally selected.

The next steps for the Marine THEMA are:

- formal appointment of the new RIC
- identification and nomination of the national focal points for the new THEMA on Marine and Coastal Management
- to establish links with MOI, the IOC RIC for marine and coastal management.

Mr. Zachary Atheru, from ICPAC and Dr. Debalkew Berhe from IGAD presented AMESD and MESA for the IGAD region.

The AMESD objectives thema for the IGAD region was Soil Degradation and the Natural Habitat Conservation. Two services were developed and are now operational.

For MESA preparation, the expectation for the IGAD region are:

- Consolidation of the two existing services;
- Introduction of a new service on Forest monitoring;
- Cross-fertilization with other RICs on Agriculture purpose;
- Progress on Harmonization of Environmental Policies;



- Enhancement of infrastructures for PUMA and AMESD Stations and related software;
- To strengthen and improve the regional and national networking;
- To involve more the IGAD Member States at national level in the production of national “bulletins” and related information strengthening national networking;
- To facilitate data sharing at regional and national level;
- To set up a regional Steering Committee.

Mr. Isidore Embola presented the status of AMESD and MESA in the CEMAC region.

The CEMAC THEMA is implemented by the CICOC and involves 6 CEMAC countries and RDC (which is part of SADC). He recalled the great importance of the Congo River Basin for the environment (water, humid forest, climate change) and economy (80% of goods transportation are by fluvial transportation). The monitoring of water balance is fundamental for the region, and the two CEMAC Services are:

- The early warning of low water for transportation purposes;
- The hydrologic cycle monitoring for the environmental purposes (humid forest, flooding areas).

150 experts were trained in the region during AMESD.

For MESA, the CEMAC perspectives are:

- to consolidate the existing services;
- to add new a new service for monitoring humid areas;
- to consolidate EO exploitation at national level.

Mr. Isaac Kusane and Mr. Bradwell Garanganga, BDMS, presented the status in the SADC region.

It was recalled that the SADC THEMA on Agriculture and Environmental monitoring was implemented by the BDMS and covered eleven countries. Three services were developed:

- Agriculture monitoring
- Drought monitoring
- Fire monitoring

Fire monitoring stations were deployed in addition to the PUMA and AMESD Stations.

Seventy one products have been realised and are operationally available through the EUMETCast system. A programme of regional and national capacity building was also implemented.

For MESA, the perspectives of the SADC Region are to:

- To continue and consolidate the three AMESD existing services;
- To extend new services on flooding and air quality monitoring;
- To extend the services to all continental SADC Countries, the inclusion of Madagascar is still pending decision;
- Cross-fertilization with other RICs is envisaged on livestock, land use and change detection etc...

Mr. Vimal Ramchandur from the MOI and Mrs. Gina Bonne from IOC presented the status in the IOC region.

The IOC THEMA was dedicated to Marine and Coastal Management. It covered all IOC Countries plus Kenya, Mozambique, Tanzania, Cap Verde and Sao Tomé. The THEMA was implemented by the MOI in Mauritius.

The expectations for MESA are to:

- Continue and improve the AMESD activities and services;
- Enhance the fishing bulletin

- Better identify the shorelines;
- Add new services on oil spillage and marine rescue;
- Integrate climate change component.

Additional expectations are to:

- Put in place a regional steering committee, which would meet twice a year;
- Enhance the national level network;
- Increase the involvement of policy makers;
- Increase and enhance capacity building

The session then continued with the presentation of the e-station software that is installed in each AMESD reception station. Dr. Marco Clerici, from the Joint Research Centre of the EC presented the e-station from the developer's point of view, and Mr. Degelo Sebedo, from the Ethiopian Mapping Agency (EMA) presented it from a user's point of view.

It was recalled that the e-station is an open system based on open source SW and suitable for a wide range of applications. Until now the systems has been based on two computers but it is expected that in the future it will be possible to run it on a single machine.

The system can work together with the EUMETCast Station but also through internet connection. It can store/archive data, process data and edit bulletins. The System is used by all 5 AMESD RICs.

A new release of the e-station is expected, with more flexibility in the installation of the SW. The Environmental Monitoring and Mapping System (EMMA) package will be redesigned and the REPORTER package will be reconsidered.

At the EMA, the e-station is fully operational and used mainly for environmental purposes. Thanks to the e-station, EMA can provide information related to agriculture, wildlife and the environment to policy makers and universities.

During the discussion that followed these presentations, the North African countries claimed their willingness to run MESA-like activities in their region. This was supported by the AUC.

The participants also discussed the sharing of AMESD data and capacity building aspects. It was suggested to:

- Have an AMESD Product list of all AMESD products developed by the RICs;
- Share this data through the EUMETCast system;
- Harmonize format and produce meta-data on a continental level;
- Identify a mechanism of diffusion of AMESD/MESA Data and products;
- Continentalise many products that are developed on a regional basis;
- Increase and enhance links with Universities;
- Involve the Meteorological Training Centres (IMTR, EAMAC) for training activities more in environmental matters;

The various suggestions raised during this session produced seven recommendations.



## **Session 6 – “GMES and Africa” and other EO Projects**

Chair: Mr. Mahama Ouédraogo (AUC) and Mrs. Gina Bonne (IOC).

Rapporteur: Dr. Marco Clerici, JRC.

The main objective of the session was to have an overview of the GMES & Africa Initiative and its current status, as well as the status of other related FP7 projects (BRAGMA, EAMNET and SAGA-EO), of existing initiatives and tools for the generation and exploitation of EO data in Africa (VEGETATION products from VITO, ITC GEONETCast Toolbox, SERVIR Project) and of future opportunities for higher resolution EO observation (Sentinel-2 platform).

*Presentation of the GMES Africa Initiative (Mr. Mahama Ouédraogo – AUC)*

GMES Africa's main goal is to provide Africa with long-term capabilities in the Earth Observation sector to benefit from the development and application of space technologies resources in some priority areas such as peace and security, food security, health and the Millenium Development Goals (MDG).

The Maputo Declaration called for an extension of the EU GMES Initiative to Africa and other ACP countries; the EU-Africa Joint Strategy Partnership 8 on Science, IT and Space confirmed this commitment. In the project preparations different themes have been considered under three pillars, based upon a policy and institutional framework, an infrastructure framework and a capacity building component. The 'GMES and Africa' Co-ordination Team is composed of AUC, UNECA, RECs, AMCOST, AMCEN, AMCOW, Member States (on African side) and EC, Member States ESA and EUMETSAT (on EU side).

At present the main identified challenges are: 1) African capacity in EO, 2) African ownership of the Initiative, 3) successful co-ordination of the initiative and 4) the finalisation of the Action plan, which has not yet been achieved.

*Support Action for GMES & Africa: the BRAGMA FP7 project (Mrs. Ana Morgado - Portugal)*

A general overview of the BRAGMA (Bridging Actions for GMES and Africa) Project was provided. This Action would support the GMES & Africa process by 1) organizing coordination and thematic expert workshops, 2) facilitating participation of pre-qualified African stakeholders at relevant events and 3) building a community, engaging with key stakeholders, establishing and connecting networks, and disseminating information through the BRAGMA Portal, Online Forum and Newsletters. The Action involves ten countries, five in Europe and five in Africa. In BRAGMA four components have been identified: Political, Strategic, Technical and Implementation, all strongly linked each other. BRAGMA is currently facilitating the validation process of the GMES and Africa Action Plan. The first validation workshop will be organized on the Marine topic during the second week of October in Mombasa, Kenya. A second (water topic) and third (natural resources topic) validation workshop should take place later this year in Nigeria and Egypt.

*GMES Global Land products for Africa (Mr. Michel Massart – EC)*

A parallel is presented between the GMES Initiative in Europe and Africa with respect to the political basis, precursor projects, and thematic, coordination. GMES is an independent EO system, supported by the largest fleet of satellites and ground-based sensors in the world, to answer the global needs of managing the environment, understanding and mitigating the effects of climate change and ensuring civil security. GMES is an operational user orientated service,

meant to continue in the future, covering all aspects from data acquisition to dissemination. The 'in-situ' component is led for the EU by EEA, while the Space Infrastructure is led by ESA, and includes the launch of the Sentinel mission satellites, starting from 2013. Six services exist - Land, Marine, Atmosphere, Emergency, Security and Climate Change. GMES is also an EU contribution to GEO.

The Global Land Service is a component of GMES that will start in 2013 and disseminate a set of mature EO based parameters in the fields of vegetation, radiation, water and carbon, at low-mid resolution, on 10 days basis, to be made available through EUMETCast and ftp. Their applications include the monitoring of natural resources and crops, food security and water management. At the current stage, the contract for implementing the 'Initial Operations' Phase (2013) is under evaluation at JRC. From 2014 GMES will become an EU Operational Program.

*Europe-Africa Marine Network: status of the EAMNET FP7 project (Mr. Vimal Ramchandur - MOI)*

This FP7 project aims to improve access to marine EO data in Africa, increasing use and exchange and developing a long term approach for capacity building in marine Earth observation. It also supports the involvement of African Countries in GMES and is a contribution to GOOS Africa. EAMNET provides African coverage at 1 km resolution for SST and Chl-a, beyond the areas covered by AMESD-IOC THEMA, while 300m resolution MERIS data coverage started with Lake Victoria. A web-based catalogue of products exists on the project's website ([www.eamnet.eu](http://www.eamnet.eu)) and analysis tools are implemented (e.g. the latest BILKO software and Matlab-based applications) and were

made available during the training sessions in Africa in the period 2011-2012. Sixteen fellowships were granted in every region of Africa to early and mid-career scientists, involving both member institutions of EAMNET and any African Marine Institute (similar to the POGO fellowship program). The Project plans to support the validation of 'GMES & Africa' with its involvement in a Marine and Coastal Workshop on 9 and 10 October 2012 in Mombasa and providing feedback on the Action Plan in the 2013 POGO meeting in Cape Town.

*Main results of the SAGA-EO FP7 project (Mr. Camille Loumouamou - Congo-Brazzaville)*

SAGA-EO is a FP7 Project involving eight partners (three in EU and five in Africa), with a duration of two years (ends in October 2012) and an overall budget of around 1 million Euros. Its main goal is to propose a model for networks of EO data by using a multi-thematic approach at national level. Three dimensions of the network are considered -organisational, institutional statute, technological. Five assessment sessions have been conducted in Africa (Ghana, Senegal, Congo-Brazzaville, Mozambique and Ivory Coast) to assess the paradigm through various scenarios implementing the organisational and technological dimensions.

An important concept is to have a network of actors interacting beyond the exchange of EO data: metadata catalogues are proposed according to international standards and an 'interface' with the PUMA and AMESD projects has been tested. In particular, for the Congo-Brazzaville assessment session on flooding, the network was composed of several technical actors providing data (precipitation, forecast), the GRSEN-CERGEN Centre

elaborating these data and generating the 'flood situation map' and the final beneficiaries (DGA, DGS, DGP, PAM and ANPGC). In conclusion, an important outcome of the project will be to develop clear institutional support for the multi-thematic network in order for it to be realised.

*VEGETATION products and food security (GMFF, AGRICAB) (Mr. Sven Gilliams, VITO)*

The main steps of the EO data process are development of methods, operational production, distribution and capacity building. VITO has been operating in this field for many years, on projects like VGT4Africa, Geoland2-Biopar, DevCoCast, and others. Now VITO is operating products from six low resolution sensors and more than twenty different indicators and has a strong co-operation with EUMETSAT (they are part of the EUM network) and LSASAF. Distribution goes through ftp, web (Geoland2 SDI portal) and EUMETCast. Users in Africa now number more than 290, with an enormous increase since 1998. Training in Africa is focused on specific topics (e.g. 'crop monitoring') and 20 workshops will be held in Africa in the next three years. Development of products and indicators is done in co-operation with Universities. Development of a global Agricultural Drought Stress Index System (ASIS) based on remote sensing data is ongoing. As an operational institution, VITO must guarantee data continuity: in this sense, the PROBA-V sensor, to be launched in 2013, will be the continuation of the SPOT-Vegetation mission.

*The ITC GEONETCast Toolbox for satellite application development in Africa (Mr. Chris Mannaerts - ITC)*

The presentation showed how products have been generated by African Users using the ITC GEONETCast Toolbox. ITC is now part of the Twente University and is a multi-disciplinary organisation, with the goal of combining multi-source information to offer to end users. The original idea was to have a fast and easy access to meteorological, climate and EO data through an open source application, in the past access to different formats of data streams had been a 'blocking' factor for users. Thus the ITC GEONETCast Toolbox was developed, it is a plug-in in ILWIS Open. An example is the MSG HRIT Data Retriever. The overall software represents only 20 Mb and offers powerful functionalities (namely in the ILWIS Open 3.8 version of the code). History of applications in Africa starts in 2006, with the first low cost stations, and was supported by projects as DevCoCast (users in Africa and South America), AMESD-SADC and EO2Heaven. In AMESD development was done in close co-operation with the African Universities. Other examples of intervention in Africa are the 'Early Warning in Food Security in Ethiopia' (GEONETCast WFS-E Toolbox) where MSG-MPE, ET, vegetation indicators are combined. A new application, dedicated to NMHS agencies, is under test now. The technological partner of the project is 52NORTH.

*Status of SERVIR Africa (Mr. Lawrence Okello - RCMRD)*

SERVIR is an Inter-agency collaboration between NASA and USAID aiming at improving environmental management and disaster risk management by strengthening the capacity of governments to integrate EO and GIS information into policy making.

In the SERVIR Project, the link in Africa is made with RCMRD, which has 18 member countries: in a first phase (2008-2011) Eastern African Countries were targeted, while the remaining countries will be targeted by 2015. The SERVIR Platform covers the 4 phases of discovering, acquiring, using/creating and sharing the generated data. One typical application is the implementation of the CREST hydrological forecasting model, able to forecast flooding by exploiting meteorological data. Other applications, available from the project website, are the Coral Reef Bleaching Monitoring Tool and the LULUCF information applied to Green House Gases Inventory. Important components of the Project are the User Needs assessment (e.g. through Regional WSS) and the Capacity Building (more than 360 trainees in 2011 alone). A number of strategic partnerships exist on the US-side (including NASA, NOAA, USGS, and FEWSNET) and in Africa at Regional level (e.g. ICPAC, RCMRD).

*10-m Sentinel 2 data, an opportunity for Africa (Mr. Marc Leroy - CNES)*

The African decision-making community is in need of reliable information derived from good quality high resolution data covering wide parts of the countries for environmental issues, as stated at the AMESD User Forum in Mauritius, 2011. Development of EO in Africa is one of the topics of the cooperation between Europe and Africa (Strategic Partnership Area n° 8: 'Science, Information Society and Space') and

this topic has been tackled by projects like TIGER and PUMA/AMESD/MESA, but the availability of HR data is still very low. Various options were considered (e.g. ARM and CBERS) and, in this context, ESA Sentinel-2 represents an interesting additional opportunity, due to the spatial (from 10 to 60 m) and spectral resolution, the revisit time (5 days) but also for the free of charge data licence. In this respect, Sentinel-2 will represent an important advancement, allowing nearly cloud free images at 10 m on a monthly basis. ESA products are developed at TOA and need to be atmospherically corrected and time-composited. CNES suggests the generation and distribution, e.g. through EUMETCast, of monthly composite products on a per-country basis; beneficiaries could be African user communities already structured at the national level in programmes such as AMESD/MESA or TIGER, according to the LSASAF model.



## Annexes

In the annex the following is provided:

- Programme of the Forum
- Programme of the Climate Day
- List of participants
- Addis Ababa Declaration
- CD Rom





## **CLIMATE DAY**

### **3<sup>rd</sup> October 2012**

## **REPORT OF THE CLIMATE DAY**

### **Introduction**

The objective of the Climate Day, organised jointly by the African Climate Policy Centre (ACPC) of the UN Economic Commission for Africa (UNECA) and EUMETSAT, was to present how the various African institutions could structure themselves to respond to the increasing needs of Climate information from policy institutions and other partners, in the context of the Global Framework for Climate Services (GFCS) developed in response to the conclusions of the 3rd World Climate Conference (WCC-3).

The Climate Day echoed the Addis Ababa Declaration in support to the implementation of GFCS in Africa, which was proclaimed on the eve of the Forum, on 30th September 2012. It focused on the regional dimension of the GFCS and contributed to the elaboration of a contribution paper to the African Integrated Strategy on Meteorology (Weather and Climate Services), which takes into account existing institutions in Africa (ACPC, WMO African Regional Climate Centres, user community representatives, etc.) and on-going projects such as those planned in CLIMDEV Africa and the MESA programme.



### **Session 1: GFCS implementation in Africa at regional level**

Chairperson: Dr. Mohamed Khalil Timamy, African Union Commission  
Rapporteur: Mr. Paul Counet, EUMETSAT

The first session introduced the objectives of the day and provided an overview of the Climdev-Africa and GFCS initiatives. The Addis Ababa declaration was also read and distributed to the participants during this session.

Paul Counet, EUMETSAT, introduced the Climate day by explaining its objective. He emphasised the need for African stakeholders to organise themselves in an efficient way, with balanced and transparent mandates and levels of responsibility. He mentioned that this clear organisation was necessary to comfort donors, which are willing to support the production of reliable climate information in Africa in support to decision making and climate change mitigation strategies.

Mr. Félix Hounton, WMO, presented the historical background of the GFCS, its objective to provide reliable climate information to various users, and the main principles for its implementation. He mentioned the four priority application areas for the GFCS: water, health, disaster and agriculture (including food security). He then focused the presentation on the implementation at global, regional and national level, and their inter-



dependencies. For the regional level, he particularly referred to the Climate Outlook Forum and provided three examples for national level implementations.

Mr. Seleshi Bekele (ACPC) and Dr. Mohamed Khalil Timamy (AUC) then presented CLIMDEV Africa, a joint initiative of the AUC, UNECA and the African Development Bank. CLIMDEV aims at addressing “the need for greatly improved climate information for Africa to strengthen the use of such information for decision-making, by improving analytical capacity, knowledge management and dissemination activities”.

In order to implement CLIMDEV Africa, an African Climate Policy Centre (ACPC), based in UNECA, has been created to “co-ordinate and strengthen the policy response to climate change, building the capacities of sub-regional and national organisations and guiding policy”. The AUC has established a Climate Change and Desertification Unit (CCDU) in order to “provide policy and political guidance and to enhance coordination and harmonisation of Africa’s activities in the field of climate change”. Activities under CLIMDEV Africa will be supported by a CLIMDEV Africa Special Fund, under the coordination of the African Development Bank.

After this presentation, Mrs. Gina Bonne from the Indian Ocean Commission (IOC) read the Addis Ababa Declaration in support to the implementation of GFCS in Africa to all participants, and informed them that this declaration was proclaimed on the eve of the 10<sup>th</sup> EUMETSAT User Forum in Africa, on 30<sup>th</sup> September 2012.



## **Session 2: The GFCS components**

Chairperson: Mr. Bekele Seleshi, ACPC

Rapporteur: Mrs. Sally Wannop, EUMETSAT

The second session provided an overview, with concrete examples, of the various components of the GFCS: the observation and monitoring component, the research and modelling component, the climate service information system component, the user interface component and the capacity building component.

The first presentation on climate services for decision makers by Pierre Baril, Director-General of Ouranos, Canada, outlined the approach taken by the Quebec State to develop a comprehensive climate service combining observational data, model output and down-stream applications to facilitate informed decision-taking.

The second presentation, by Mr. Reinhard Shulte-Braucks, Head of GMES Bureau, EC, provided an overview of the current and future activities of the EC to develop a sustained climate service which will contribute to GFCS.

### ***Observation and monitoring component***

The third presentation given on behalf of Mr. Mark Dowell, JRC highlighted the CEOS initiative to develop, with the cooperation of space communities, WMO Space Programme and CGMS members, an “Architecture” of observations from space in support of GFCS. The physical architecture aims at coordinating the efforts of the satellite agencies to develop future satellite services in support of climate monitoring.

The forth presentation given by Caroline Richter, Director of the GCOS Secretariat, WMO, focussed upon the valuable contribution that coordinated and sustained in-situ observations can make to climate studies. In her presentation Ms. Richter emphasised the important role NMHSs play in supporting the extension of the network of operational in-situ facilities.

### ***Research and Modelling component***

The following two presentations addressed the role that climate models can play in support of GFCS. Ms. Anna Ghelli, ECMWF, outlined the challenges faced in developing models in support of seasonal and decadal forecasting and the contribution they can make to climate services.

Professor Bruce Hewitson, UCT, presented the work of CORDEX in the development of regional climate models, focussing on the pilot project for the African region. The Professor outlined the challenges researchers face in using observation data and model ensemble to develop climate information services.



## **Session 2 (continued)**

Chairperson: Mr. Félix Hounton, WMO  
Rapporteur: Mr. Mark Higgins, EUMETSAT

This session continued and focused on the components of the GFCS in Africa; covering climate information systems, user interface and capacity building.

### ***Climate Service Information System***

*The climate service information system component, by Mr. Mohamed Kadi, ACMAD*

This presentation discussed the production and supply of service requirements: capacity [physical, computational and human], capability [through training] and networks/collaboration. Development of organisational and human capacity is essential. The services focus on DRR, Health, and flood risk. ACMAD partner with IFRC (Climate Centre) to work on useful bulletins oriented on extreme events. Seasonal forums already exist in each REC. ACMAD now have a helpdesk to support regional and national bodies and workshops to support institutions, through a number of projects.

### ***User Interface component***

*The user interface component, by Mr. Bekele Seleshi, ACPC*

This presentation addressed the question: what is the role of ACPC in user interface in relation to GFCS? Meteorological data are part of the basis for decision making and response at various levels. Climate information is useful in a range of economic sectors and the data providers need to be connected to the users in various institutions. NMHSs are a significant element of this but can be constrained by national economics. This needs investment; statistics show that \$1 in investment in warning capability saves national economies \$5 in disaster management. A continuous monitoring of the evolving user needs helps to develop relevant services for users. There is a strong link to educational requirements so that users are able to make the most of services. This can also help bridge policy, practice and research communities in Africa. This forum and the climate outlook forums can be seen as good examples of this. There are many examples from across the region. A good mapping of primary and

secondary users, networks and the important impacts need to be explored. Any institution can capitalise on this approach.

### ***Capacity building component***

*SASSCAL and WASCAL Projects and Contribution from Climate SAF*  
*Dr. Frank Kaspar, DWD*

This presentation addressed the projects that are internally connected to other activities of DWD [CM SAF and GPCC] in the region. WASCAL and SASSCAL are two projects funded by the research ministry in Germany. DWD are directly involved in SASSCAL. CAL is “climate change and adaptive land use” WA - West Africa and SA - Southern Africa. There is a capacity development link between African and German research institutions. The scope includes: improving the observations network, research school for graduate students, and a core research program. The partnership between Germany and local partners is crucial in setting the activities. SASSCAL has an element of use of the EUMETSAT CM SAF data for climate applications – in this case for work on climate change adaptation. GPCC data will also be used. DWD hosts the WMO regional climate centre for Europe and is working on seasonal and decadal predictions which will assist the region. SASSCAL and WASCAL centres are aware of GFCS and could be coordinated.

*Met Office support to Climate Change*  
*Met Office Karen McCourt*

This presentation covered the partnerships of the Met Office with a number of institutions to support regional and national development activities. Work is across the competences of the Met Office [including science, technology and

services]. These partnerships extend to GFCS activities. For example, the Met Office has worked with the NMHS in Sierra Leone to support observation development and has worked on development of CLIMSOFT software for climate data management. ESIAC is an example of training in action. Climate science research partnership (CSRP) is a key project between the UK and Africa for proving prediction tools. These are being used in the regional COFs. Locally Precis, regional climate monitoring system, is available for national use. Precis is Linux based, with 200+ users in the region.

*The VIGIRISC Project*  
*Mr. Mohamed Kadi, ACMAD*

This presentation discussed the VIGIRISC project. The aim of which is to reduce risks to economies and people linked to climatic variability. The project covers 5 domains: food security, water resources, health, civil protection and forecasting of severe weather event. The project provides services and a platform for dialogue at different levels including research, civil society and governmental organs. The project is driven by ACMAD and began in 2009. The key successes are: training and capacity development in areas of climatic risk, using services in early warning systems, and training in communications. There has also been development of operations and increase in coordination. The underlying need assessment is also beneficial.



### **Session 3: Pre-cursor services and Climate outlook Forum**

Chairperson: Mr. Mohamed Kadi, ACMAD

Rapporteur: Dr. Hans-Peter Roesli, EUMETSAT

The third session provided examples of the pre-cursor Climate services and presented the key role of the Climate Outlook Forum in Africa.

A joint presentation by Mr. Tufa Dinku (IRI of Columbia University) and Mr. Kinfe Hailemariam (NMA) gave insight into the development and implementation of a rainfall information system at NMA. The rain climate data are based primarily on the TAMSAT products and archives. The information is accessed via a Web service that offers a multitude of functionalities to the user. Challenges and future work include improvement of the precipitation data notwithstanding the scarcity of ground truth and training of user groups in understanding and using the existing and new services.

*Mr. Zachary Atheru (IGAD Climate Prediction and Applications Centre – ICPAC) and Mr. Diriba Korecha (NMA).*

The two speakers described the long-standing regional (ICPAC) and national (NMA) climate fora. Both operational services are based on consensus from various (downscaled) indicators and predictors, where NMA is using manual methods while ICPAC is using a computerised approach that includes high-power-computing. Both fora show fair skill and have a broad user community in these drought and flooding prone areas of eastern Africa.

Points raised during the discussions have been subsumed in the Forum recommendations under the heading Climate.



### **Conclusion of the Climate day**

The Climate Day was concluded with a wrap-up presentation of the potential roles that the various African regional technical and policy institutions could play. These conclusions were captured in a document and proposed to serve as a contribution to the African Integrated Strategy on Meteorology.

The Addis Ababa declaration in support to the implementation of GFCS in Africa and the contribution to the African Integrated Strategy on Meteorology are annexed.







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## LIST OF ABBREVIATIONS

ACMAD	African Centre for Meteorological Application for Development
ACP	African, Caribbean and Pacific Group of States
ACPC	African Climate Policy Centre
ATDNet	Arrival Time Difference (ATD) Network (thunderstorm detection)
AGRHYMET	Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AMCEN	African Ministerial Conference on the Environment
AMCOMET	African Ministerial Conference on Meteorology
AMCOST	African Ministerial Council on Science and Technology
AMCOW	African Ministers' Council on Water
AMESD	African Monitoring of the Environment for Sustainable Development
ARM	African Resource Management Satellite Constellation
ARPEGE	Action de Recherche Petite Echelle Grande Echelle (MeteoFrance)
ASECNA	Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar.
ASIS	Agricultural Drought Stress Index System
ASMET	African Satellite Meteorology for Education and Training
AUC	African Union Commission
CBERS	China–Brazil Earth Resources Satellite program
CCDU	Climate Change and Desertification Unit
CGMS	Coordination Group for Meteorological Satellites
CICOS	Commission Internationale du bassin Congo-Oubangi-Sangha
CEMAC	Central African Economic and Monetary Community
CLIMSOFT	CLIMatic SOFTware
CMA	Chinese Meteorological Administration
CSRP	Climate Science Research Partnership
EAMAC	Ecole Africaine de la Météorologie et de l'Aviation Civile
EC	European Commission
ECOWAS	Economic Community Of Western African States
EDF	European Development Fund
EMA	Ethiopian Mapping Agency
EMMA	Environmental Monitoring and Mapping System
EO	Earth Observation
EPS	EUMETSAT Polar System
ESA	European Space Agency
ESIAC	e-Learning Statistics in Applied Climatology (
EU	European Union
Eumetcal	Training programme for satellite Meteorology
EUMETCast	EUMETSAT's Broadcast System for Environmental Data
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
FEWSNET	Famine Early Warning Systems Network
GCOS	Global Climate Observing System
GEO	Group on Earth Observation
GEOSS	Global Earth Observation System of Systems (GEOSS)
GFCS	Global Framework for Climate Services



GMES	Global Monitoring of the Environment and Security
GPCC	Global Precipitation Climatology Centre
HRST	Human Resources, Sciences and Technology
HR	High Resolution
ICPAC	IGAD Climate Prediction and Applications Centre
IGAD	Intergovernmental Authority on Development
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 Observation, Netherlands
JRC	Joint Research Centre, European Commission
LSA SAF	Land Surface Analysis SAF
LULUCF	Land Use, Land-Use Change and Forestry
MDD	Meteosat Data Distribution
MDG	Millennium Development Goals
MOI	Mauritius Oceanographic Institute
MSG	Meteosat Second Generation
MTG	Meteosat Third Generation
NDVD	Normalised Difference Vegetation Index Decadal
NDVI	Normalized difference vegetation index
NMA	Ethiopian National Meteorological Agency
NMHS	National Meteorological and Hydrological Service
NOAA	National Oceanic and Atmospheric Administration
NWP	Numerical Weather Prediction
OSCAR	Observing Systems Capability and Review
OSFAC	Observatoire Satellital des Forêts d'Afrique Centrale
OSI SAF	Ocean and Sea Ice SAF
PUMA	Preparation for the Utilisation of Meteosat Second Generation in Africa
RA-I	Regional Association One (WMO)
RCMRD	Regional Centre for Mapping of Resources for Development
RECs	Regional Economic Communities
RIC	Regional Implementation Centre
SADC	Southern African Development Community
SAF	Satellite Application Facility
SANSA	South African National Space Agency
SASSCAL	South African climate change and adaptive land use
SAWS	South African Weather Service
SSAP	Space Science and Application Platform
SUMO	Software for the Utilisation of MSG in Outlook Activities
TOA	Top of Atmosphere
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UNDP	United Nations Development Programme
UN-ECA	United Nations – Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
VIGIRISC	Vigilance et Gestion Intégrée du Risque Climatique
VITO	Vlaamse Instelling voor Technologisch Onderzoek, Belgium
VLab	Virtual Laboratory (WMO)
WASCAL	West African climate change and adaptive land use
WCRP	World Climate Research Programme
WIGOS	WMO Integrated Global Observing System
WMO	World Meteorological Organization





## **ANNEX/ANNEXE**





## FORUM PROGRAMME (English)

### Monday 1 October 2012

#### **09:00 Opening Ceremony**

10:30 *Group Photo and coffee break*

10:45 *Press Conference (upon invitation)*

#### **11:15 Introduction to the 10<sup>th</sup> EUMETSAT User Forum in Africa**

11:15 *Introductory remarks*  
*Fetene Teshome Permanent Representative of Ethiopia with WMO*

11:30 *From Kampala to Addis Ababa, evolution of the role of NMHS in exploiting satellite information*  
*Paul Counet and Emilio Barisano, EUMETSAT*

11:50 *Objectives and programme of the 10<sup>th</sup> EUMETSAT User Forum in Africa*  
*Vincent Gabaglio, EUMETSAT*

12:10 *Review of Recommendations from the 9<sup>th</sup> EUMETSAT User Forum in Africa*  
*Vincent Gabaglio, EUMETSAT*

12:30 *Lunch*

#### **Session 1: Overview of EUMETSAT Programmes and international context**

*Chairperson: Fetene Teshome Permanent Representative of Ethiopia with WMO,*  
*Rapporteur: Vincent Gabaglio, EUMETSAT*

14:00 *Status of EUMETSAT programmes MSG, EPS, Jason, GMES and future programmes*  
*Alain Ratier, EUMETSAT*

14:30 *GMES and its benefits for Africa*  
*Reinhard Schulte-Braucks, Head of GMES Bureau, European Commission*

14:50 *Status of WMO Space programme*  
*Jérôme Lafeuille, WMO*

15:00 *FY-3 program overview*  
*Zhang Peng, Chinese Meteorological Administration (CMA)*

15:10 *EUMETSAT and third party data and products*  
*Sally Wannop, EUMETSAT*

15:40 *Q&A, discussion*

16:00 *Coffee Break*

#### **16:30 Special Anniversary Session: Earth observation for Weather, Climate and Environment monitoring: A vision for the next 20 years**

18:30 *Cocktail dinner (UN-ECA)*

### Tuesday 2 October 2012

09:00 *Presentation of the main recommendations from Session 1 and Special Session*  
*Rapporteurs of Session 1 and Special session*

#### **Session 2: Parallel sessions**

*Chairperson: Ali Jacques Garané, Burkina Faso*  
*Rapporteur: Emilio Barisano, EUMETSAT*

09:10 *Presentation of the objectives of the three parallel sessions*  
*André Nonguierma, Mark Higgins, Sahle Tamru*

#### **Session 2.A – Earth Observation for Renewable Energy**

*Chair and moderator: Sahle Tamru, Ministry of Water and Energy, Ethiopia*

09:30	<i>Rapporteur: Lucien Wald, MINES ParisTech</i> Introduction <i>Sahle Tamru, Ministry of Water and Energy, Republic of Ehtiopia</i>	09:35	Feedback from the survey and on the station and software upgrade
		10:00	Small group discussion on data elements of survey and meeting feedback
		10:35	<i>Coffee Break</i>
09:35	Importance of renewable Energy in a Green Economy in Africa and expectation with respect to Earth Observation technologies <i>Sahle Tamru, Ministry of Water and Energy, Republic of Ehtiopia</i> <b>Questions - answers</b>	10:50	Summary feedback to whole group
		11:00	Small group discussion on training
09:55	Estimate of solar energy resources in Africa with Earth Observation <i>Lucien Wald, Mines ParisTech</i> <b>Questions - answers</b>	11:45	Feedback to whole group
		12:00	Optional presentations from Centers of Excellence
10:15	Information System on Hydropower management, <i>Pierre Baril, Ouranos</i> <b>Questions - answers</b>	<b>Session 2.C – Earth Observation Policy Development in Africa</b> <i>Chair and moderator: André Nonguierma, UN-ECA</i> <i>Rapporteur: Paul Counet, EUMETSAT</i>	
10:35	<i>Coffee break</i>	09:30	Introduction <i>André Nonguierma, UN-ECA</i> <i>Paul Counet, EUMETSAT</i>
10:55	Wind map for wind energy production <i>Kumar Ram Dhurmea, Mauritius National Meteorological Agency</i> <b>Questions - answers</b>	09:40	African Regional Spatial Data Infrastructure and GGIM <i>André Nonguierma, UN-ECA</i> <b>Questions- answers</b>
11:15	Overview of satellite products relevant for Renewable Energy <i>Hans-Peter Roesli, EUMETSAT Consultant</i> <b>Questions - answers</b>	10:00	African Policy on Space, GMES and Africa <i>Mahama Ouédraogo, HRST department, African Union Commission</i> <b>Questions- answers</b>
11:35	<b>General discussion</b> on how NMHS can support Renewable Energy production with Earth Observation data and products	10:20	Main outcomes of AMESD Workshop on the use of EO in support to policies <i>Danilo Barbero, Mohamed Khalil Timany, African Union Commission</i> <b>Questions- answers</b>
12:20	Wrap-up <i>Rapporteur</i>	10:40	<i>Coffee Break</i>
<b>Session 2.B – Data Access Evolution and Training</b> <i>Chair and moderator: Mark Higgins, EUMETSAT</i> <i>Rapporteur: Sally Wannop, EUMETSAT</i>		11:00	AfriGEOSS: contributing to EO policy in Africa <i>Humbulani Mudau, GEO Secretariat</i> <b>Questions- answers</b>
09:30	Introduction		

11:20 An example of a national EO policy/programme s  
Nigeria EO programme: Space segment and Data policy  
*Ganiy Agbaje, NASDRA*

**Questions- answers**

11:40 **General discussion** around the following theme:

- Data Access / Sharing Policy
- Capacity Building Strategy on Space
- Governance and Institutional arrangement
- Guidelines for policies and regulatory framework

12:20 Wrap-up  
*Rapporteur*

**12:30 Lunch**

**Session 3: Access to EUMETSAT data and user support**

*Chairperson: Félix Hounton, WMO*

*Rapporteur: Hans-Peter Roesli, EUMETSAT*

14:00 Report from the Expert Group on Data Dissemination on EUMETCast  
*James Kongoti, KMD and Chair of the expert group*

14:20 Access to EUMETSAT data and products (EUMETCast and Data centre)  
and User Support (Help Desk, notifications)  
*Sally Wannop, EUMETSAT*

14:50 Overview of EUMETSAT training activities in Africa  
*Mark Higgins, EUMETSAT*

15:00 Installation of GEONETCast stations in Regional offices in Ethiopia  
*Kasa Fekadu, NMA, Ethiopia*

15:20 EUMETSAT joining International Charter on Space and Major Disasters  
Role and opportunities for the WMO RA-I NMHS  
*Mikael Rattenborg, EUMETSAT*

15:40 Q&A, discussion

16:00 *Coffee break*

**Session 2: Report from the parallel sessions**

*Chairperson: Ali Jacques Garané, Burkina Faso*

*Rapporteur: Emilio Barisano, EUMETSAT*

16:15 Report from Session 2A Earth Observation for Renewable Energy  
*Sahele Tamiru, Lucien Wald*

16:45 Report from Session 2B:  
*Mark Higgins, Sally Wannop, EUMETSAT*

17:15 Report from Session 2C  
*André Nonguierma, Paul Counet*

17:45 Q&A, discussion and main recommendations

18:00 *Departure of local transport for all participants*

19:00 *Gala Dinner, hosted by the Ethiopian National Meteorological Agency*

**Wednesday 3 October 2012: CLIMATE DAY**

**Objective**

The objective of the Climate Day, organised jointly by the African Climate Policy Centre (ACPC) of the UN Economic Commission for Africa (UN-ECA) and EUMETSAT, is to present in which way the various African institutions could structure themselves to respond to the increasing needs of Climate information from policy institutions and other partners, in the context of the Global Framework for Climate Services (GFCS) developed in response to the conclusions of the 3rd World Climate Conference (WCC-3).

The Climate Day will focus on the regional dimension of the GFCS and contribute to the elaboration of a GFCS regional implementation plan which will take into account existing institutions in Africa (ACPC, WMO African Regional Climate Centres, user

community representatives, etc.) and on-going initiatives such as CLIMDEV Africa and MESA.

This Regional Implementation Plan of the GFCS for Africa will serve as a reference to guide the execution of GFCS at national level, and will be Africa's link to the worldwide GFCS Implementation Plan, which is planned to be endorsed at the next WMO Extraordinary Congress, at the end of October 2012.

### **Background Information**

#### **The need for climate information and services**

The critical effect of climate change on African populations is widely recognised and has been underlined in many international Fora over the past decades. Consequently, various climate mitigation and adaptation strategies have been proposed and discussed by African policy makers and planners at continental, regional and national level. The implementation of these strategies and associated plans will require important investments in the coming years.

Therefore, a better understanding of climate change and climate variability has become a key element to support the decision making process in Africa, so that investments for mitigation and adaptation actions are done wisely and on the basis of accurate climate information.

This has been fully recognised at political level. The First Conference of Ministers responsible for Meteorology in Africa (AMCOMET) agreed in April 2012 in Nairobi, to take the necessary measure to “develop an African Strategy [...] to effectively meet government and societal needs and requirements for weather and climate information and services, taking into account [...] the planning for the Global Framework for Climate Services (GFCS)”.

Climate related activities are also an important element of the Joint Europe-Africa Strategy (JEAS) and its related Action Plan. Climate change (and environment) is one of the eight EU-Africa Partnerships. Initiatives such as ClimDev Africa are supported within this framework, in close links with the proposed Global Climate Change Alliance (GCCA).

#### **GFCS and ClimDev Africa**

The need for a coordinated collective effort to provide such climate information has been the driver for the 3<sup>rd</sup> World Climate Conference (WCC) to propose the establishment of the **Global Framework for Climate Services (GFCS)**. This framework, whose various elements are currently under discussion, should “*enable better management of the risks of climate variability and change and adaptation to climate change, through the development and incorporation of science-based climate information and prediction into planning, policy and practice on the global, regional and national scale*”.

**ClimDev Africa**, a joint initiative of the African Union Commission (AUC), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank, has anticipated this global effort as it aims at addressing “*the need for greatly improved climate information for Africa to also strengthening the use of such information for decision-making, by improving analytical capacity, knowledge management and dissemination activities*”.

In order to implement ClimDev Africa, an African Climate Policy Centre (ACPC), based in UNECA, has been created to “*co-ordinate and strengthen the policy response to climate change, building the capacities of sub-regional and national organisations, guiding policy*”. The African Union Commission has established a Climate Change and Desertification Unit (CCDU) in order to “*provide policy and political guidance and to enhance coordination and harmonisation of Africa's activities in the field of climate change*”. Activities under Climdev Africa will be supported by a Climdev Africa Special Fund, under the coordination of the African Development Bank.

#### **MESA planned contribution to Climate Services**

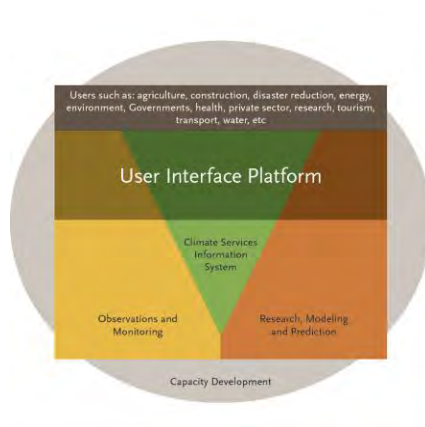
The Financing Agreement of the “Monitoring of Environment and Security in Africa (MESA)” programme was signed on 13<sup>th</sup> March 2012. Climate Services is one of the thematic actions (THEMA) addressed by MESA. The responsibility of the implementation of the MESA Climate Services should be assigned, pending result of an assessment study, to ACMAD who shall create a network with other relevant MESA Regional Implementation Centres (RICs) and shall design the MESA Climate Services in close cooperation with the MESA users: the African analyst (ACPC) and policy institutions (AUC and the RECs) and their Member States.



## Content of the Climate day

During the Climate Day, the various components of the GFCS will be explored through presentations by various African and international actors. These presentations will illustrate through concrete examples the various elements that could support the implementation of the GFCS in Africa.

The various components of the GFCS are:



The detailed programme of the CLIMATE DAY is presented in the following pages.

### Session 1: GFCS implementation in Africa at regional level

*Chairperson: Dr Mohamed Khalil Timamy, African Union Commission*

*Rapporteur: Paul Counet, EUMETSAT*

- 09:00     Introductory remarks  
            Paul Counet, EUMETSAT and Seleshi Bekele, ACPC
- 09:20     Global Framework for Climate Services  
            Félix Hounton, WMO

- 09:45     CLIMDEV Africa  
            Seleshi Bekele, ACPC and Mohamed Khalil Timamy, AUC
- 10:10     Addis Ababa Declaration in Support to the Implementation of the Global Framework for Climate Services in Africa
- 10:30     *Coffee break*

### Session 2: The components of the GFCS

*Chairperson: Bekele Seleshi, ACPC*

*Rapporteur: Sally Wannop, EUMETSAT*

- 10:50     Climate services in support to decision-making process: the example of the State of Québec  
            *Pierre Baril, Director-General Ouranos*
- 11:20     Towards an operational GMES Climate Change Service  
            *Reinhard Schulte-Braucks, Head of GMES Bureau, European Commission*

#### ***The Observation and monitoring component***

- 11:40     Global architecture for Climate Monitoring from Space  
            *Paul Counet, EUMETSAT on behalf of Mark Dowell (JRC), chair of the CEOS-CGMS-WMO Drafting Team*
- 11:50     In-situ measurement in Africa, overall status of the observing networks.  
            *Caroline Richter, Director of the GCOS Secretariat (WMO)*

#### ***The Research and Modelling component***

- 12:10     Decadal and seasonal forecast  
            *Anna Ghelli, ECMWF*
- 12:30     WMO World Climate Research Programme  
            CORDEX: Targeting Knowledge Gaps on Climate Change in Africa  
            *Prof. Bruce Hewitson, Climate System Analysis Group, University of Cape Town*

12:50	Q&A discussion	16:20	Use of Meteosat Rainfall estimates to Improve Climate Services in Africa: an Example from Ethiopia <i>Kinfe Hailemariam, Director, Met Instruments and ICT Directorate, NMA</i> <i>Tufa Dinku, IRI, Columbia University, USA</i>
13:00	<b>Lunch</b>	16:50	Regional Climate Outlook Forum in East Africa <i>Zachary Atheru, ICPAC, WMO African Regional Centre for Climate</i>
<b>Session 2 (cnt'd): The components of the GFCS</b> <i>Chairperson: Félix Hounton, WMO</i> <i>Rapporteur: Mark Higgins, EUMETSAT</i>		17:10	National Climate Outlook Forum: the case of Ethiopia <i>Diriba Koricha, NMA, Ethiopia</i>
	<b>The Climate Service Information System component</b>	17:30	Q&A, discussion
14:00	The role and capacities of WMO African Regional Climate Centres to run information system for Climate Services in the four GFCS thematic areas <i>Alhassane Diallo, ACMAD</i>	<b>Conclusion</b>	
	<b>The User Interface component</b>	17:40	Conclusion of the CLIMATE DAY
14:40	The role of ACPC in relaying information to users (policy makers and planners) with socio-economic added value information <i>Bekele Seleshi, ACPC</i>	18:00	End of the Climate Day
	<b>The Capacity building component</b>	<b><u>Thursday 4 October 2012</u></b>	
15:00	SASSCAL and WASCAL "Regional Science Service Centres for Climate Change and Adapted Land management" and contribution from the Climate SAF <i>Frank Kaspar, DWD</i>	09:00	Main recommendations from the Climate Day
15: 25	UK support to Climate and development in Africa <i>Karen Hann, Jane Wardle, UK Met office</i>	<b>Session 5: AMESD and MESA programme</b> <i>Chairperson: Olusola Ojo, ACP Secretariat</i> <i>Rapporteur: Emilio Barisano, EUMETSAT</i>	
15:45	VIGIRISK, a project support by the FFEM <i>Leon Guy Razafindrakoto, ACMAD</i>	09:10	Main result of the AMESD programme <i>Danilo Barbero, AMESD Technical Assistance Team Leader</i>
16:00	Coffee break	09:30	Presentation of MESA programme <i>Mohamed Khalil Timamy, African Union Commission</i>
<b>Session 3: Pre-cursor services and Climate outlook Forum</b> <i>Chairperson: A. Diallo, ACMAD</i> <i>Rapporteur: Hans-Peter Roesli, EUMETSAT</i>		10:15	AMESD – MESA in the ECOWAS region <i>Johnson Boanuh, ECOWAS commission, and Issifou Alfari, AGRHYMET</i>
		10:35	Coffee break

10:50	AMESD – MESA in the IGAD region <i>Debalkew Berhe, IGAD secretariat, and Apuuli Bwango, ICPAC</i>	<i>Camille Loumouamou, Congo and Jean-Guy Planès, Pascal Lazaridis, Thalès</i>
11:10	AMESD-MESA in the CEMAC region <i>Isidore Embola, CEMAC, and Olivier Thamba Umba CICOS</i>	15:40 <i>Coffee Break</i>
11:30	AMESD MESA in the SADC region <i>Bradwell Garanganga, SADC Secretariat, and Isaac Kusane, BDMS</i>	16:00 Earth observation data and capacity building to support management of agriculture and the environment in Africa <i>Dr Lieven Bydekerke, VITO</i>
11:50	AMESD – MESA in the IOC region <i>Gina Bonne, Indian Ocean Commission, and Vimal Ramchandur, MOI</i>	16:30 The ITC GEONETCast Toolbox for satellite application development in Africa <i>Chris Mannaerts, University of Twente, ITC</i>
12:10	e-station, current status and planned evolution <i>Marco Clerici, JRC, European Commission</i>	17:00 Status of SERVIR Africa <i>Lawrence Okello, RCMRD</i>
12:25	e-station: application, the case of Ethiopia <i>Degelo Sebedo, Ethiopia Mapping Agency</i>	17:20 10-m Sentinel 2 data, an opportunity for Africa <i>Marc Leroy, CNES, and all</i>
12:40	Q&A, discussion and main recommendations	17:40 Q&A
13:00	<i>Lunch</i>	19:00 <i>EUMETSAT Dinner</i>

**Session 6: GMES & Africa and other Earth observation projects**  
*Chairperson: Mahama Ouédraogo, AUC (HRST department)*  
*Rapporteur: Marco Clerici, JRC*

14:00	Presentation of the GMES Africa initiative <i>Mahama Ouédraogo, African Union Commission</i>
14:20	Support Action for GMES & Africa: the BRAGMA FP7 project <i>Ana Morgado, Portugal</i>
14:40	GMES Global Land products for Africa <i>Michel Massart, European Commission</i>
15:00	Europe-Africa Marine Network: status of the EAMNET FP7 project <i>Vimal Ramchandur, MOI, EAMNET Consortium member</i>
15:20	SAGA-EO: towards National Earth Observation user networks

**Friday 5 October 2012**

09:00	Feedback form - 10 <sup>th</sup> EUMETSAT User Forum in Africa
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**Session 7: Review of main recommendations**  
*Chairperson: Vincent Gabaglio, EUMETSAT*  
*Rapporteur: Emilio Barisano, EUMETSAT*

09:15	Review of the recommendations of 10 <sup>th</sup> EUMETSAT User Forum
11:00	<i>Coffee break</i>
11:20	Adoption of the 10 <sup>th</sup> User Forum recommendations

**11:30**     **Closing ceremony**

*12:30*     *Lunch*

**Technical Visit**

14:00     Departure for the Technical Visit (from UN-ECA)

18:00     Return from the Technical Visit (to Ghion Hotel and UN-ECA)

**End of Forum**



**Minutes of the  
High Level meeting on the  
Global Framework for Climate Services in Africa  
Addis Ababa, 30 September 2012**

**Compte-rendu de la  
Réunion de haut niveau sur le Cadre Mondial pour les Services  
Climatologiques en Afrique  
Addis Ababa, le 30 septembre 2012**

At the invitation of the Minister for Water and Energy of the Federal Democratic Republic of Ethiopia,

A l'invitation du Ministre de l'Eau et de l'Energie de la République fédérale démocratique d'Ethiopie,

the Representatives of the African Union Commission (AUC), the Regional Economic Communities (RECs) (CEMAC, ECOWAS, IOC, IGAD, SADC) and the Secretariat of the African, Caribbean and Pacific (ACP Secretariat) Group of States,

les représentants de la Commission de l'Union Africaine (CUA), des Communautés Economiques Régionales (CER) (CEMAC, CEDEAO, COI, IGAD, SADC) et du Secrétariat du Groupe des États de l'Afrique, des Caraïbes et du Pacifique (Secrétariat ACP ),

declared their support to the Addis Ababa Declaration for the Implementation of the Global Framework for Climate Services (GFCS) in Africa, attached herewith,

ont déclaré leur soutien à la Déclaration d'Addis Ababa pour la mise en œuvre du cadre mondial pour les services climatologiques en Afrique, ci-jointe,

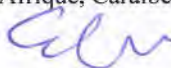
in the presence of representatives from the World Meteorological Organization (WMO), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the United Nations Economic Commission for Africa (UN-ECA), the African Centre for Meteorological Applications for Development (ACMAD) and the European Union (EU).

en présence des représentants de l'Organisation Météorologique Mondiale (OMM), de l'Organisation Européenne pour l'exploitation des Satellites Météorologiques (EUMETSAT), de la Commission Economique pour l'Afrique des Nations Unies (UN-CEA), du Centre Africain pour les Applications de la Météorologie au Développement (ACMAD) et de l'Union Européenne (UE).

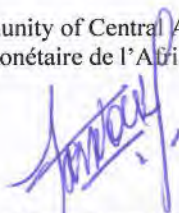
For the African Union Commission,  
Pour la Commission de l'Union Africaine,  
Dr Abebe Haile-Gabriel



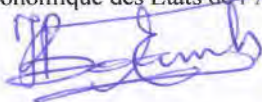
For the Secretariat of the African, Caribbean and Pacific Group of States (ACP),  
Pour le Secrétariat du Groupe des Etats d'Afrique, Caraïbes, Pacifiques (ACP),  
Dr Emmanuel Opoku Awuku



For the Economic and Monetary Community of Central Africa (CEMAC),  
Pour la Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC),  
Commissaire Jean-Serges Wafio



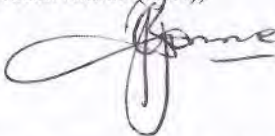
For the Economic Community of West African States (ECOWAS),  
Pour la Communauté Economique des Etats de l'Afrique de l'Ouest (CEDEAO),  
Dr Johnson Boanuh



For the Intergovernmental Authority on Development (IGAD),  
Pour l'Autorité Intergouvernementale pour le Développement (IGAD),  
Dr Debalkew Berhe



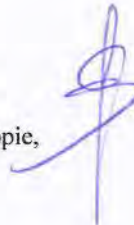
For the Indian Ocean Commission (IOC),  
Pour la Commission de l'Océan Indien (COI),  
Mrs Gina Bonne



For the Southern African Development Community (SADC),  
Pour la Communauté pour le Développement de l'Afrique Australe (SADC),  
Dr Bradwell Garanganga



For the Government of the Federal Democratic Republic of Ethiopia  
Pour le Gouvernement de la République démocratique fédérale d'Ethiopie,  
H.E. Ato Almayehu TEGENU, Minister of Water and Energy







**ADDIS ABABA DECLARATION  
IN SUPPORT OF THE IMPLEMENTATION OF THE  
GLOBAL FRAMEWORK FOR CLIMATE SERVICES (GFCS) IN AFRICA  
Addis Ababa, 30 September 2012**

**DECLARATION D'ADDIS ABABA  
EN SOUTIEN A LA MISE EN ŒUVRE DU CADRE MONDIAL POUR LES  
SERVICES CLIMATOLOGIQUES EN AFRIQUE  
Addis Ababa, le 30 septembre 2012**

**We,**

Representatives of the African Union Commission (AUC), the Regional Economic Communities (CEMAC, ECOWAS, IOC, IGAD, SADC) and the Secretariat of the African, Caribbean and Pacific (ACP Secretariat) Group of States, on the invitation of the Minister of Water and Energy of the Federal Democratic Republic of Ethiopia, in the presence of the representatives of the World Meteorological Organisation (WMO), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the United Nations Economic Commission for Africa (UN-ECA), the African Centre for Meteorological Application for Development (ACMAD) and the European Union (EU),

Convened in Addis Ababa, on the basis of our respective mandates and responsibilities to address climate change and climate variability to enhance regional integration, on the eve of the opening of the 10th EUMETSAT User Forum in Africa,

**Recalling** the African Union Assembly Decision, Assembly/AU/Dec.134 (VIII), of January 2007, which expressed grave concern on “the vulnerability of Africa’s socio-economic and productive systems to climate change and variability and to the continent’s low mitigation and response capacities”;

**Referring** to the IPCC 4th Assessment Report: Climate Change 2007, which states that “Africa is one of the continents most vulnerable to climate change and climate variability”;

**Nous,**

Représentants de la Commission de l'Union Africaine (CUA), des Communautés Economiques Régionales (CEMAC, CEDEAO, COI, IGAD, SADC) et du Secrétariat du Groupe des États de l'Afrique, des Caraïbes et du Pacifique (Secrétariat ACP ), à l'invitation du Ministre de l'Eau et de l'Energie de la République fédérale démocratique d'Ethiopie, en présence des représentants de l'Organisation Météorologique Mondiale (OMM), de l'Organisation Européenne pour l'exploitation des Satellites Météorologiques (EUMETSAT), de la Commission Economique pour l'Afrique des Nations Unies (UN-CEA), du Centre Africain pour les Applications de la Météorologie au Développement (ACMAD) et de l'Union Européenne (UE),

Réunis à Addis-Abeba à la veille du 10<sup>ème</sup> Forum des Usagers d'EUMETSAT en Afrique, sur la base de nos mandats et responsabilités respectifs visant à renforcer l'intégration régionale en réponse aux changements et aux variations climatiques,

**Rappelant** la décision de l'Assemblée de l'Union Africaine , Assembly/AU/Dec.134 (VIII), de janvier 2007, qui exprime de graves préoccupations quant à “la vulnérabilité des systèmes socioéconomiques et de production au changement et aux variations climatiques de l'Afrique et aux faibles capacités d'atténuation et de réponse”;

**Se référant** au 4<sup>ème</sup> Rapport d'Evaluation du GIEC: Changements climatiques 2007, qui stipule que «l'Afrique est l'un des continents les plus vulnérables aux variations et aux changements climatiques»;

**Noting** that climate change is a major threat to sustainable growth and development in Africa, and that changing rainfall patterns are projected to have further negative impact on agriculture and food security, water availability and distribution, and that the frequency, magnitude and duration of extreme weather and climate events, such as severe storms, droughts and floods is likely to increase;

**Also noting** that the adverse effects of climate change and sea-level rise present significant risks to the sustainable development of Small Island Developing States (SIDS), and the long term effects of climate change may threaten the very existence of some SIDS;

**Recognising** the coordination by the Conference of African Heads Of States and Government on Climate Change (CAHOSCC) lead by the late Prime Minister Meles Zenawi and the African Ministerial Conference on the Environment (AMCEN) on the African common position on climate change at international negotiations;

**Recalling** that through the Declaration on Climate Change and Development in Africa, at the 8<sup>th</sup> Ordinary Session of the African Union Assembly, in January 2007 (Assembly/AU/Decl.4 (VIII)), the Heads of State and Government of the African Union commit to “foster and strengthen cooperation between National Meteorological and Hydrological Services (NMHSs), Regional Climate Centres (RCCs), Regional Economic Communities (RECs) and institutions on matters of climate variability and climate change”, and “to strengthen current African Regional and sub-regional climate centres of excellence to address climate change and variability prediction as well as in the development of climate applications decision tools”;

**Reiterating** that a better understanding of climate variability and climate change is required to support the decision making process in Africa, so that investments for climate risk management, mitigation and adaptation actions are based on reliable climate information;

**Recognising** the decision of the Heads of State and Government at the 3<sup>rd</sup> World Climate Conference (WCC-3) to establish a Global Framework for Climate Services (GFCS), spearheaded by the World Meteorological Organization (WMO);

**Also recognising** that the GFCS will “enable better management of the risks of climate variability and change and adaptation to climate change, through the development and incorporation of science-based climate information and prediction into planning, policy and practice on the global, regional and national scale”;

**Notant** que le changement climatique est une menace majeure pour la croissance et le développement durables en Afrique, et que l'évolution des régimes pluviométriques devraient avoir davantage d'impact négatif sur l'agriculture et la sécurité alimentaire, la disponibilité et la distribution de l'eau, et que la fréquence, l'ampleur et la durée des phénomènes météorologiques et événements climatiques extrêmes tels que les tempêtes, les sécheresses et les inondations sont susceptibles d'augmenter;

**Notant également** que les effets néfastes des changements climatiques et de l'élévation du niveau des mers compromettent gravement le développement durable des Petits États Insulaires en Développement (PEID) et que les effets à long terme du changement climatique peuvent menacer l'existence même de certains petits États insulaires;

**Reconnaissant** la coordination par la Conférence Africaine des Chefs d'Etat et de Gouvernement sur les changements climatiques (CAHOSCC), dirigée par le défunt Premier Ministre Meles Zenawi, et de la Conférence Ministérielle Africaine sur l'Environnement (CMAE) sur la position africaine commune sur le changement climatique lors des négociations internationales;

**Rappelant** que dans la Déclaration sur les Changements Climatiques et le Développement en Afrique, lors de la 8<sup>ème</sup> session ordinaire de l'Assemblée de l'Union Africaine, en Janvier 2007 (Assemblée/AU/Decl.4 (VIII)), les chefs d'État et de Gouvernement de l'Union africaine s'engagent à “promouvoir et renforcer la coopération entre les Services météorologiques et hydrologiques nationaux (SMHN), les centres climatologiques régionaux (CCR), les Communautés économiques régionales (CER) et les institutions sur les questions de la variation du climat et du changement climatique”, et “de renforcer les centres d'excellence régionaux et sous-régionaux africains actuels pour s'occuper des prévisions du changement et de la variation climatique ainsi que du développement d'outils de décision appliqués au climat”;

**Rappelant** qu'une meilleure compréhension de la variation et du changement climatiques est nécessaire pour appuyer les processus décisionnels en Afrique, afin que les investissements pour la gestion et l'atténuation des risques climatiques et les mesures d'adaptation soient basés sur des informations climatiques fiables;

**Reconnaissant** la décision des Chefs d'Etat et de Gouvernement lors de la 3<sup>ème</sup> Conférence Mondiale sur le Climat (CMC-3) d'instaurer un Cadre mondial pour les services climatologiques (CMSC), sous l'égide de l'Organisation météorologique mondiale (OMM);

**Également conscient** que le CMSC “permettra une meilleure gestion des risques liés à la variation et au changement climatiques et de l'adaptation au changement climatique, à travers le développement et l'intégration des informations et prévisions climatologiques scientifiquement fondées pour la planification, les politiques et les pratiques aux échelles mondiale, régionale et nationale”;



**Noting** that the WMO Extraordinary Congress plans to approve in October 2012 the GFCS Implementation Plan and its governance mechanism;

**Taking into account** that the First Conference of Ministers responsible for Meteorology in Africa agreed in April 2010, in Nairobi, to establish the African Ministerial Conference on Meteorology (AMCOMET) and to take the necessary measures to “develop an African Strategy on Meteorology (weather and climate services)”, which will be discussed and adopted at the second session of AMCOMET in October 2012;

**Noting** that African countries, at the fifteenth session of WMO Regional Association for Africa (WMO RA-I) in Marrakech, November 2010, reaffirmed their intent to establish Regional Climate Centres (WMO RCCs) to serve the climate information needs in Africa;

**Further noting** that the WMO RA-I expressed the need to establish one RCC in each of the Regional Economic Communities (RECs) and a pan-African RCC at ACMAD, with a coordinating role;

**Also taking into account** that Climate for Development in Africa (ClimDev Africa), a joint initiative of the African Union Commission (AUC), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank, aims at addressing “the need for greatly improved climate information for Africa to also strengthening the use of such information for decision-making, by improving analytical capacity, knowledge management and dissemination activities”;

**Further taking into account** that climate related activities are important elements of the Joint Africa EU Strategy (JAES) and its related Action Plans, in close links with the Global Climate Change Alliance (GCCA);

**Considering** that the Monitoring of Environment and Security in Africa (MESA), a project funded by the European Development Fund (EDF), includes efforts to support development and strengthening of operational regional climate services in Africa;

**Recognising** the efforts of African institutions on addressing climate change and climate variability, in particular the Regional Economic Communities and other intergovernmental organisations;

**Convinced** that the implementation of GFCS in Africa will:

- **further enable** African institutions to contribute to and benefit from the results of the international cooperation efforts in the area of Climate Services particularly through better access to knowledge and technologies in climate monitoring, prediction and projection;

**Notant** que le Congrès extraordinaire de l'OMM en Octobre 2012 envisage d'approuver le Plan de mise en œuvre du CMSC et son mécanisme de gouvernance;

**Prenant en compte** que la première Conférence des ministres responsables de la météorologie en Afrique, tenue en Avril 2010 à Nairobi pour établir la Conférence ministérielle africaine sur la météorologie (AMCOMET) à recommander de prendre les mesures nécessaires pour “développer une stratégie africaine sur la météorologie (services météorologiques et climatologiques)”, qui sera discutée et adoptée lors de la deuxième session de l'AMCOMET en Octobre 2012;

**Notant** que les pays africains, à la quinzième session du Conseil régional pour l'Afrique (OMM CR-I) à Marrakech, en Novembre 2010, ont réaffirmé leur intention d'établir des centres climatologiques régionaux (CCR OMM) pour répondre aux besoins d'information climatique en Afrique;

**Notant en outre** que l'OMM CR-I a exprimé la nécessité d'établir un CCR dans chacune des Communautés économiques régionales (CER) et un RCC panafricain à l'ACMAD, avec un rôle de coordination;

**Tenant compte également** que le “Climat pour le développement en Afrique” (ClimDev Afrique), une initiative conjointe de la Commission de l'Union africaine (CUA), la Commission économique pour l'Afrique des Nations Unies (UN-CEA) et la Banque africaine de développement, vise à répondre à “la nécessité d'améliorer considérablement l'information climatique pour l'Afrique et aussi de renforcer l'utilisation de ces informations pour la prise de décision par l'amélioration de la capacité d'analyse, de gestion des connaissances et d'activités de diffusion”;

**Prenant en outre en compte** que les activités liées au climat sont des éléments importants de la Stratégie Commune Afrique-UE (SCAU) et de ses plans d'action connexes, en relation étroite avec l'Alliance mondiale contre le changement climatique (AMCC);

**Considérant** que la Surveillance de l'environnement et de la sécurité en Afrique (MESA), un projet financé par le Fonds européen de développement (FED), vise à contribuer au développement et au renforcement de services climatiques opérationnels régionaux en Afrique;

**Reconnaissant** les efforts des institutions africaines relatifs au changement et la variation climatiques, en particulier les Communautés économiques régionales et d'autres organisations intergouvernementales;

**Convaincus** que la mise en œuvre du CMSC en Afrique :

- **permettra** aux institutions africaines de contribuer et de bénéficier des résultats des efforts de la coopération internationale dans le domaine des services climatologiques, notamment par un meilleur accès aux connaissances et aux technologies de la surveillance du climat, de la prévision et des projections climatiques;

- **further enable** Africa to develop a Climate Risk Management Strategy taking into account the specificity and vulnerability of its Small Island Developing States;
- **provide** a framework for facilitating the coherent development and provision of climate services in Africa at continental, regional and national levels;
- **further organise** climate activities in Africa to ensure an efficient mobilisation and use of resources;
- **facilitate** synergies and harmonisation between existing and upcoming climate related projects in Africa (e.g. ClimDev Africa, MESA, etc.);
- **permettra** à l'Afrique de développer une stratégie de gestion des risques climatiques en tenant compte de la spécificité et de la vulnérabilité de ses petits États insulaires;
- **fournira** un cadre pour faciliter le développement cohérent et la fourniture de services climatologiques en Afrique au niveau continental, régional et national;
- **structurera** les activités du climat en Afrique pour assurer une mobilisation et une utilisation efficace des ressources;
- **facilitera** les synergies et l'harmonisation entre les projets existants et futurs liés au climat en Afrique (par exemple ClimDev Afrique, MESA, etc.);

#### Solemnly agreed to:

- **Support** the implementation of the Global Framework for Climate Services in Africa to ensure that the African Union Commission, the Regional Economic Communities and their Member States are enabled to establish and strengthen climate services;
- **Support** the efforts of AMCOMET to adopt, at its second session, the "African Strategy on Meteorology (weather and climate services)" taking into account the mandate and experience of the existing regional climate centres in Africa (ACMAD, AGRHYMET, ICPAC, SADC-CSC), as well as the overall GFCS implementation structure;
- **Provide** support to CEMAC and IOC in the establishment of Regional Climate Centres in the Central African and Indian ocean regions;
- **Request** AMCOMET and the WMO Regional Association for Africa (RA-I) to expeditiously implement the Strategy through the RECs and their Member States;
- **Request** the European Union and the African Union Commission to include the GFCS implementation in Africa within the Partnership on Climate and Environment of the Joint Africa EU Strategy and to identify funds for its implementation (for example, through the European Development Fund and Global Climate Change Alliance) at continental, regional and national levels;
- **Request** the African Union Commission to reinforce its leading role in reaching a common African position in climate change negotiations and in the implementation of GFCS in Africa;
- **Request** the international community to provide resources for the implementation of GFCS in Africa;

#### Convenons solennellement de:

- **Soutenir** la mise en œuvre du Cadre mondial pour les services climatologiques en Afrique pour faire en sorte que la Commission de l'Union africaine, les Communautés économiques régionales et leurs États membres soient capables d'établir et de renforcer des services climatologiques;
- **Soutenir** les efforts de l'AMCOMET pour adopter lors de sa deuxième session, la "stratégie africaine sur la météorologie (services météorologiques et climatiques)" en tenant compte du mandat et de l'expérience des centres climatologiques régionaux existants en Afrique (ACMAD, AGRHYMET, ICPAC, SADC-CSC), ainsi que de la structure globale de mise en œuvre du CMSC;
- **Fournir** un appui à la CEMAC et à la COI dans la mise en place de centres climatologiques régionaux dans les régions d'Afrique centrale et de l'océan Indien;
- **Demander** à AMCOMET et au Conseil régional pour l'Afrique (CR-I) de mettre rapidement en œuvre la stratégie à travers les CER et leurs États membres;
- **Demander** à l'Union européenne et à la Commission de l'Union Africaine d'inclure la mise en œuvre du CMSC en Afrique au sein du Partenariat sur le climat et l'environnement de la Stratégie conjointe Afrique-EU et d'identifier les fonds pour sa mise en œuvre (par exemple, par l'intermédiaire du Fonds européen de développement et l'Alliance Mondiale contre le Changement Climatique) aux niveaux continental, régional et national;
- **Demander** à la Commission de l'Union Africaine de renforcer son rôle moteur dans la construction d'une position africain commune dans les négociations liés aux changements climatiques et dans la mise en œuvre du CMSC en Afrique.
- **Demander** à la communauté internationale de fournir des ressources pour la mise en œuvre du CMSC en Afrique;

- **Urge** WMO to strengthen the African Regional Climate Centre in the provision of climate services to Africa through the Regional Climate Outlook Forums;
- **Inciter** l'OMM à renforcer les Centres climatologiques régionaux africains pour la fourniture de services climatologiques en Afrique par le biais des forums régionaux de prévision climatique;

**Kindly request:**

- H.E. Ato Alemayehu TEGENU, Minister of Water and Energy of the Federal Democratic Republic of Ethiopia to bring this Declaration to the attention of the 2nd session of the AMCOMET meeting and to the WMO Extraordinary Congress on GFCS in October 2012;
- the African Union Commission to bring this Declaration to the attention of the international community and the European Union in particular.

**Invitons:**

- S.E. Ato Alemayehu Tegenu, Ministre de l'Eau et de l'Energie de la République fédérale démocratique d'Ethiopie de porter la présente Déclaration à l'attention de la 2e session de la réunion AMCOMET et au Congrès Extraordinaire de l'OMM sur le CMSC en Octobre 2012;
- la Commission de l'Union Africaine de porter la présente Déclaration à l'attention de la communauté internationale et l'Union européenne en particulier.

Done in Addis Ababa, Federal Democratic Republic of Ethiopia= on Sunday 30 September 2012.

Fait à Addis-Abeba, République démocratique fédérale d’Ethiopie, le dimanche 30 Septembre 2012.





## **List of participants (alphabetic order) / Liste des participants (par ordre alphabétique)**

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