



REPORT OF THE FIFTH EUMETSAT USER FORUM IN AFRICA

**organised by EUMETSAT with
the World Meteorological Organization (WMO) and
the Ministry of Equipment and Transport of the
Republic of Senegal**

**Hotel NGOR, Dakar-Yoff, Senegal
30 September – 4 October 2002**



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EXECUTIVE SUMMARY

Introduction

The Fifth EUMETSAT User Forum in Africa was organised in Dakar, Senegal, by EUMETSAT, the World Meteorological Organization (WMO) and the Ministry of Equipment and Transport of the Republic of Senegal. The Forum was held from 30 September to 4 October 2002 with over 160 participants representing most African and European countries. Representatives of the following African Intergovernmental Regional Associations were present: Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD), Intergovernmental Oceanographic Commission of UNESCO (IOC) and Southern Africa Transport and Communications Commission (SATCC), Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC), as well as representatives of the European Commission and the Food and Agriculture Organisation of the UN (FAO).



Opening Ceremony

The Forum was officially opened on 30 September 2002 with a ceremony chaired by Mr. Alioune N'Diaye, Director of the Météorologie Nationale of the Republic of Senegal, and Permanent Representative with the WMO. Mr. Kane, Director of Cabinet, Ministry of Equipment and Transport of the Republic of Senegal gave the first address welcoming all the participants, and stated it was a privilege and an honour to hold this important Forum in Senegal and wished everybody a successful few days. He then led the Forum in a minute of silence to remember the lives lost during the unfortunate tragedy of the Diolla ship. Following this address, the participants were welcomed by Dr. Tillmann Mohr, Director-General of EUMETSAT, Mr. Amos Tincani, Advisor to the Director of DG Development, European Commission, Mr. Evans Mukolwe, Director Coordinator for Scientific and Technical Programmes, WMO, and Mr. David Kamara, Director of Transport of ECOWAS. Dr. Tillmann Mohr expressed his gratitude to the Republic of Senegal for hosting the Forum. He stated that the main purpose of the Forum is the exchange of information on EUMETSAT programmes, in

particular on the new Meteosat Second Generation (MSG) system, successfully launched on 28 August 2002, and the review of the initiatives undertaken in the framework of the Preparation for Use of MSG in Africa (PUMA) project. As for PUMA, he stressed that the Forum would be an excellent opportunity for all the actors involved to share their experience and to take all necessary steps to ensure that the implementation of the PUMA project would be a success. He thanked the members of the Project Steering Committee and particularly the representatives of the five African economic groupings involved, as well as the European Commission. He hoped that links with other vital African initiatives, such as New Partnership for Africa's Development (NEPAD), would also be established. He stated that the recently revised EUMETSAT strategy had reinforced the involvement with and support to the African user community in terms of satellite data access, training and user community communication and interaction. He concluded that EUMETSAT supported the African Monitoring of the Environment for Sustainable Development (AMESD) initiative undertaken by the PUMA Task Team, the purpose of which is to ensure that space-based observations, including data provided by EUMETSAT, would be used in an operational mode to support the sustainable development of the African continent. This initiative, already presented at the EC and recently discussed at the World Summit on Sustainable Development in Johannesburg, has been very positively received. He thanked the representatives of the African Intergovernmental Regional Organisations for their declaration on AMESD, made in Dakar on 29 September 2002 (see centrefold). He concluded by wishing the participants fruitful discussions and a very successful Forum. Mr. Amos Tincani, DG Development, representing the European Commission, addressed the Forum and indicated that the EC was very proud to support the PUMA project. This project was seen as an example, as it helps all African countries work together better with the aim to reinforce their capabilities of processing meteorological information in support of the development of their continent. The EC was also very pleased that the five African economic groupings represented at the Forum had already started

planning a follow-on initiative on the AMESD. The declaration signed in Dakar was very important to enable the EC to start the process of evaluation of the AMESD proposal. He assured the Forum that the request expressed by the African economic groupings will be seriously considered by the EC.

Mr. E. Mukolwe expressed pleasure to address the Fifth EUMETSAT User Forum in Africa, thanking, on behalf of the WMO Secretary General, Prof. G.O.R Obasi, the Government, the Direction de la Météorologie Nationale (DMN) and the people of Senegal for hosting this important event and for the warm welcome and generous hospitality as well as offering them his sincere condolences. He thanked EUMETSAT for its support to the Forum and stressed the importance of its commitment to the WMO World Weather Watch (WWW) space-based Global Observing System (GOS) through the MSG and Indian Ocean Data Coverage (IODC), as well as through its comprehensive training programme in Africa. WMO is developing a new strategy to support these efforts. An approach covering all African countries to cover education and training to ensure the full utilisation of available satellite data to enable sustained development. He expressed his appreciation to the members of the PUMA Task Team and to EUMETSAT for their dedicated work in arriving at the AMESD initiative and the EC for the provision of necessary resources. Hoping for activity priorities to be identified, he wished the Forum a successful outcome.

Mr. David Kamara, Director of Transport of ECOWAS, thanked the Senegalese people and Government, the institutions and administrations present. He stressed that the availability and utilisation of satellite observed environmental data and information has the potential of supporting decision-making for sustainable development in Africa. This includes the protection and management of the natural resource base for socio-economic development and as a result helps to eradicate poverty. The PUMA project can contribute to narrowing the gap in order to achieve the ultimate objectives in generating relevant environmental information to support sustainable development. However, it requires substantial and prolonged effort in institutional strengthening, capacity building and applications development at the end-user level, and close cooperation and coordination on a national, regional and international level. The PUMA follow-on initiative, AMESD, is considered by ECOWAS as a very important part of the environmental component of the

NEPAD initiative. He wished the participants successful deliberations and looked forward to the outcome of the Forum, hoping it would provide additional tools to enable further progress. Concluding his address, Mr. Kamara read the Declaration of Dakar on AMESD, signed in Dakar on 29 September 2002. (The text of the Declaration is included in these proceedings).



Objectives

The global objective of the Fifth EUMETSAT User Forum in Africa was to reinforce the already well established dialogue between EUMETSAT and its African user community, in order to optimise the use of our satellite data on the African continent and to ensure that the actions taken by EUMETSAT in Africa actually meet the specific requirements of our African partners.

Following the launch of MSG-1 on 28 August 2002, the particular objectives of the Fifth EUMETSAT User Forum in Africa were as follows:

- To prepare the African National Meteorological and Hydrological Services (NMHS) for the concrete implementation of the PUMA project. For this purpose, sessions were held in parallel to discuss in detail the implementation of the technical activities related to the provision of MSG receiving stations in all African countries, the implementation of Training Activities and the implementation of Outlook Activities. The Forum provided the opportunity for a final exchange of information prior to the concrete launching of the project, scheduled in late 2002, with the signature of the contract with industry for the installation of the first MSG receiving stations in Africa, the setting of the first training sessions and the launching of an initial call for ideas for projects within the framework of Outlook Activities.
- To hold, in addition to the concrete implementation of the PUMA project, working sessions presenting the latest developments made within EUMETSAT since the Kampala Forum of 2000, and presenting the training programmes developed by EUMETSAT in Africa.
- To hold, following a request from participants, a thematic half-day session focusing on marine meteorology. This topic is of major importance for all African countries located in

the coastal zone. EUMETSAT is considering its future operational participation in this field, possibly by taking part in the Jason-2 Programme.



EUMETSAT Programmes

EUMETSAT provided information on the current status of the EUMETSAT Satellite Programmes, Meteosat, MSG and the EUMETSAT Polar System (EPS) together with information on the Satellite Application Facilities (SAFs), Indian Ocean Data coverage (IODC), Rapid Scanning Service and the EUMETSAT Advanced TIROS Operational Vertical Sounder (ATOVS) Retransmission Service.



PUMA Project

Reports were presented on the key events since the last Forum. The EC had selected, via open competition, a Project Management Unit and an industrial partner to supply MSG receiving stations in Africa, and to provide related training in their maintenance and operation. A trust fund was set up by WMO to enable additional North and South African countries to participate in the project. The role of the PUMA Task Team has extended to include a forum for potential new projects, of which AMESD was a prime example.



EUMETSAT Training Programmes

Responses to the recommendations from the Fourth EUMETSAT User Forum in Kampala were provided. EUMETSAT's five-year training plan for the period 2004-2008, which will be closely coordinated with the education and training philosophy of the WMO, was presented. It was noted that EUMETSAT will continue to focus on the training of trainers in the field of satellite meteorology whereas training provision for PUMA related activities, e.g. receiving station maintenance, will be provided by the PUMA Project.



AMESD Initiative

Mr. Amos Tincani, Advisor with the Director-General of EC DG Development in Brussels, presented the AMESD initiative, which is

conceptually similar to that of the European initiative on Global Monitoring of the Environment and Security (GMES). The purpose of which is to ensure that space-based observations, including data provided by EUMETSAT, would be used in an operational mode to support the sustainable development of the African continent. The Declaration of Dakar, signed on 29 September 2002 by the five African sub-regional economic groupings, will enable the EC to provide the necessary resources to enable a feasibility study under the heading of AMESD. This feasibility study will commence in the first quarter of 2003.



Working Groups

Dedicated Working Group sessions were held on PUMA training, PUMA Outlook Activities, and PUMA receiving station demonstrations. In addition, there was a special session on marine meteorology.



Closing Session

As a result of the wide range of discussions that took place in the Forum sessions, 22 recommendations were drawn up in the final session. The recommendations were directed towards EUMETSAT, the PUMA Task Team, the PUMA Project Management Unit (PMU), WMO, NMHSs, the Regional Centres, EC and Industry. They mainly refer to the EUMETSAT programmes and training activities, PUMA activities, and the PUMA Outlook Activities.

Concluding the Forum, Mr. Paul Counet, EUMETSAT International Relations Officer, noted that the Fifth EUMETSAT User Forum in Africa was regarded as having been one of the most successful to date. Furthermore, the success of the PUMA project and the launch of MSG, were two tangible aspects enabling concrete discussions to take place at the Forum, opening up possibilities for new horizons in terms of activities of the NMHSs. The Forum expressed its full support of the PUMA Task Team implementing the AMESD initiative and making it operational as a step towards sustainable development.

Mr. Counet further stated that continued and increased support to the African community could be expected from EUMETSAT as indicated in EUMETSAT's newly revised strategy, and WMO equally so. However, in order for implementation to materialise, receiving stations

established, training carried out and to develop the capabilities of the African continent, the key players remained the African NMHSs. It was crucial that they play an active role, both in the medium term, in the framework of the PUMA project, and in the longer term, in the framework of the AMESD initiative, in order to ensure sustainable development. The AMESD initiative was confirmed by the signing of the Declaration of Dakar on 29 September 2002 by the five African sub-regional economic groupings, which will enable the European Commission to provide the necessary resources to make provisions for a feasibility study under the heading of AMESD.

The PUMA Task Team was tasked by the Forum to set up a framework ensuring that the AMESD initiative can become an operational programme with the use of earth observation data to enable sustainable development of the African continent.

Mr. Counet thanked, on behalf of Dr. Tillmann Mohr, Director-General of EUMETSAT and

himself, the Government and people of Senegal, the hosts DMN, the local organising committee, the EC, WMO, the five African economic groupings, the session chairmen/rapporteurs, and the drafting committee.

Additionally, in the closing session, the Forum acknowledged the effort and support of WMO, EUMETSAT and the EC to the PUMA Project and the follow-on AMESD initiative. Finally, on behalf of all participants, Col. N'Dala, the Delegated Regional Authorising Officer (DRAO) of the Project thanked EUMETSAT and the Republic of Senegal for the organisation of the Forum and expressed his condolences to the people of Senegal for the tragedy of the Diolla.

It was announced that the Sixth EUMETSAT User Forum in Africa would be held in the Central African sub-region in 2004.

The Forum was officially closed in the afternoon of 4 October 2002.



LIST OF RECOMMENDATIONS

LIST OF RECOMMENDATIONS OF THE FIFTH EUMETSAT USER FORUM IN AFRICA

SESSION 2 EUMETSAT Programme Status

Recommendation 1

In view of the major contribution of the IODC service to regional weather forecasting and, in particular, to the continuous monitoring of tropical cyclones and the timely provision by NMHSs of warnings of life-threatening weather related disasters, EUMETSAT should consider extending this service beyond 2005, in the event that no other satellite service is available to provide a similar service.

Recommendation 2

EUMETSAT, in coordination with WMO and Meteorological Data Distribution (MDD) data providers, should consider increasing the quantity of meteorological data and products, including MSG products, disseminated via the MSG MDD Service, and to make maximum use, as far as possible, of modern data code forms, such as Binary Universal Form for the Representation of meteorological data (BUFR).

EUMETSAT, together with industry, should consider the possibility of increasing the message length of Data Collection Platform (DCP) messages in the era of MSG and, furthermore, study the possibility of increasing the system data rate.

Recommendation 4

EUMETSAT should study possibilities to extend the coverage of SAF products to the African region, with a view to enhancing the capability of African NMHS to develop meteorological product applications for sustainable development.

Recommendation 5

The Forum recommended that WMO Regional Association-1 (RA1) consider the establishment of some African Satellite Application Facilities (SAF).



SESSION 3 PUMA Task Team Status

Recommendation 1

The PUMA Task Team approach should be used for the development of new initiatives and their related resource mobilisation.



SESSION 4 EUMETSAT's Training Programme

Recommendation 1

Considering the increasing need for training with respect to future satellite systems and applications, EUMETSAT should continue and increase its training activities for the African user community.

Recommendation 2

In order to establish a sustainable Computer Aided Learning (CAL) production capability, more CAL experts from all African regions need to be trained in the coming years, making use of modern CAL development tools.



SESSION 5 AMESD Initiative

Recommendation 1

The Forum noted with appreciation the AMESD initiative, and recommended that the process be developed further into sustainable projects, including marine activities.



SESSION 6 PUMA Project Receiving Stations

Recommendation 1

The Forum recommended that the EC delegation in Nairobi should send to the EC delegations of all participating countries a briefing note and a proforma invoice corresponding to the MSG receiving equipment, requesting them to address the relevant authorities in the country in order to

facilitate the custom clearance of the equipment. The PUMA PMU should send the same material to all NMHSs in Africa.

Recommendation 2

The Forum recommended that the PUMA task team should send a letter to the economic groupings, requesting them to inform the relevant authorities in their sub-region of the delivery of the MSG receiving equipment, to facilitate the custom clearance of the equipment.

Recommendation 3

The Forum recommended that the Permanent Representative (PR) of WMO of each country should designate a point of contact, who will be responsible for the implementation of the MSG receiving station in that country.



SESSION 7 Working Groups on MSG Receiving Stations

Recommendation 1

The Forum recommended that all NMHSs and training centres used for PUMA activities should improve their Internet accessibility.

Recommendation 2

The Forum recommended that the technical dossier related to the installation of the receiving equipment, should clearly specify the requirements of power supply stability, lightning protection and protection from interference to ensure the proper functioning of the equipment.



SESSION 8 Working Group on PUMA Outlook Activities

Recommendation 1

The Forum recommended that the selection process of the pilot projects should ensure at least one proposition in each of the five economic groupings and the North African countries.



SESSION 9 Working Group on PUMA Training

Recommendation 1

The Forum recommended that the PMU should investigate the involvement and use of training centres additional to Institute of Meteorological Training and Research (IMTR) and Ecole Africaine de la Météorologie et de l'Aviation Civile (EAMAC) in order to reduce travel and accommodation costs and to increase flexibility.

Recommendation 2

The Forum recommended that the appropriate training of technical staff and meteorologists (TC1 to TC4) should be provided and that follow-up training is also required.

Recommendation 3

The Forum recommended that PRs should take all steps necessary to ensure the provision of PUMA Core Trainers.

Recommendation 4

The Forum recommended that particular attention should be paid to the quality of



PRESENTATIONS

Opening Session

Welcome address by Dr. Tillmann Mohr, Director-General of EUMETSAT

Votre Excellence, Mr Abdoulaye Wade
Président de la République du Sénégal,
Messieurs les Ministres,
Messieurs les Représentants des Corps
Constitués,
Messieurs les Représentants des Corps
Diplomatiques,
Mr Alioune N'Diaye, Représentant Permanent
du Sénégal auprès de l'Organisation
Météorologique Mondiale,
Chers invités, Mesdames, Messieurs,

available XRUS system, user and maintenance documentation.

Recommendation 5

The Forum recommended the setting up of a contact network, such as an e-mail list server or Web site, where help can be provided by others, experience in fault solutions shared and a set of FAQ's established.

Recommendation 6

The Forum recommended the establishment of a feedback mechanism for evaluating the PUMA training programme.

Recommendation 7

The Forum recommended that training centres, especially Nairobi at Kenya Meteorological Department (KMD) and Niamey (EAMAC) and eventually new training centres for the PUMA project, should be equipped to ensure training with real-time data.



OTHER

It was announced that the Sixth EUMETSAT User Forum will be held in the Central African sub-region in 2004.

It gives me great pleasure to be here today and to address the Fifth EUMETSAT User Forum in Africa. On behalf of EUMETSAT and myself, I wish to take this opportunity to thank you, Mr President, and through you, the Government and people of Senegal for hosting this important event, and for the warm welcome and generous hospitality accorded to me and to my delegation since our arrival in Dakar. Your presence here is a further expression of your personal commitment to the promotion of science and technology and, in particular, the science of meteorology in support of sustainable development of Africa. This support is clearly reflected in the leading role that you are playing in the NEPAD initiative. I am also thankful to Mr Alioune N'Diaye,

Director of the Météorologie Nationale, and to his staff for the excellent arrangements made in ensuring the success of the Forum.

Your Excellencies, Ladies and Gentlemen,

The EUMETSAT Forum, whose objective is to help the current and potential user-community of meteorological satellites in Africa and the Mediterranean Basin to take the best possible advantage of the potential of meteorological satellite systems, has proved extremely useful. This Fifth User Forum is even more important and crucial since its main purpose is the exchange of information on EUMETSAT Programmes, in particular on the new Meteosat Second Generation (MSG) system, successfully launched on 28 August 2002, and the review of initiatives undertaken in the framework of the Preparation for the Use of Meteosat Second Generation in Africa (PUMA). This project, started in October 2001 with the recruitment of a Project Management Unit based in Nairobi, will now take on another dimension with the signature of a contract with industry for the provision of MSG receiving stations in all African countries.

The Fifth EUMETSAT User Forum in Africa is an excellent opportunity for all the actors involved in the project to share their experiences and to take all necessary steps to make sure that the implementation of the PUMA project will be a success.

Your Excellencies, Ladies and Gentlemen,

As you will be aware, the Fifth EUMETSAT User Forum in Africa is taking place at a particularly important time for EUMETSAT and its users. Since our last Forum in Kampala in September 2000, numerous events have had a significant impact upon EUMETSAT activities.

In November 2000, the Amended Convention of EUMETSAT entered into force. The Amended Convention broadens the scope of the activities of EUMETSAT by including a contribution to the operational monitoring of climate and the detection of global climate changes.

With regard to our programmes, EUMETSAT has continued to provide the operational service through the Meteosat-6 and -7 satellites. Simultaneously with its main mission, EUMETSAT has continued to provide the Indian Ocean Data Coverage Service through Meteosat-5 positioned at 63° east. At your expressed request, the June 2002 Council of

EUMETSAT agreed that these services should remain operational until the end of the year 2005. In addition, since 18 September 2001, EUMETSAT is now using its hot-backup satellite, Meteosat-6, to perform Rapid Scans, delivering images of a particular area of interest every 10 minutes, which is of particular importance for following rapidly developing meteorological phenomena.

The first Meteosat Second Generation (MSG) satellite was successfully launched from Kourou on 28 August 2002. MSG-1 is currently in a drift orbit moving in an easterly direction towards its final geostationary orbit.

Since launch, MSG-1 has successfully undergone several planned manoeuvres. MSG-1 is now rotating at its nominal operational spin rate of 100 rpm after its spin up from 55 rpm. It is planned to acquire first images by 16 October 2002. Test images will be disseminated by spring 2003, in preparation for an operational service, planned to start in the second half of 2003.

I must also inform you that discussions are progressing with EUMETSAT Member States concerning the procurement of a fourth MSG satellite, which would extend the duration of the programme until the 2015-2016 timeframe.

EUMETSAT is also progressing significantly with the development of its EPS Programme, which will enable Europe, in collaboration NOAA, to have a polar component in its system for observing the Earth and the Atmosphere.

The launch of the Metop-1 satellite is scheduled for mid 2005. The programme will last 12 years and will involve three satellites.

To conclude with the Programmes, fifteen EUMETSAT Member States have adopted the Programme Declaration and Definition for the optional EUMETSAT Jason-2 Programme. Subscriptions for the Programme are currently opened and EUMETSAT is optimistic that a positive decision on Jason-2 will be taken in the course of 2003.

This Programme would be the first optional Programme of EUMETSAT and would bring the organisation into the realm of observing the oceans and, in particular, of ocean altimetry.

Your Excellencies, Ladies and Gentlemen,

Outside these programmes, EUMETSAT has continued to play an active role at international level. This has resulted, among other things, in having Luxembourg joining the organisation as its 18th Member State, and Croatia and the Federal Republic of Yugoslavia as 4th and 5th Cooperating State, respectively.

A particular emphasis was also placed on collaboration with the World Meteorological Organization. Joint activities have been developed with the WMO in the framework of bilateral relations, but also in other fora, such as the Consultative Meeting on High Level Policy on Satellite Matters, the Coordination Group of Meteorological Satellites (CGMS), EUMETSAT/WMO training activities, etc.

All of these activities show what a vibrant organisation EUMETSAT is. However, there is one fundamental point that I have not yet addressed, and yet one which forms the very essence of this Forum: the relationship between EUMETSAT and its user community in general and, in particular, its users in Africa .

One of the tenets of the Revised Strategy approved by the Council of EUMETSAT in December 2001 is the strengthening of the collaboration with Africa. The Council of EUMETSAT decided that our Organisation will continue to implement its strategy of support in Africa. The aim is to help the African meteorological community make better use of available and planned satellite services, data and products, in order to help individual countries meet their national needs and support their sustainable socio-economic development.

This in turn may be beneficial in securing the future of African in situ observations that are, themselves, an important component of the overall observation network.

The main elements in the implementation of this strategy will be:

To facilitate, through the PUMA project and its potential follow-up, access to Meteosat, MSG and eventually EPS data products and services;

To support training in selected Regional Meteorological Training Centres, in collaboration with WMO and with the strong support of our ASECNA partners;

To hold regional user meetings to improve user interaction and understanding.

In accordance with the Revised Strategy presented above, EUMETSAT has continued to support the effort of the PUMA Task Team, by providing support to the PUMA Project Steering Committee, in charge of supervising the successful implementation of the project.

At this point in my speech, I would like to particularly thank the Members of this Project Steering Committee and particularly the representatives of the African Economic groupings involved in the PUMA project: CEMAC, IOC, ECOWAS, IGAD and SADC, some of whom are present today in the assembly. Particular thanks should also be addressed to the European Commission, both at the level of the Central Administration in Brussels, that has always been very supportive to this project, and at the level of the Delegation in Nairobi (Kenya), which is supervising the daily implementation of the PUMA project.

As a final point, EUMETSAT has been very supportive of the new initiative undertaken by the PUMA Task Team, aiming at developing a project on African Monitoring of the Environment in support of Sustainable Development (AMESD). The purpose of this initiative is to ensure that space-based observations, including data provided by EUMETSAT, would be used in an operational mode to support the sustainable development of your continent. AMESD would clearly focus on applications and would foster the cooperation between European and African scientists to make best use of all newly available space-based information. This initiative, already presented at the European Commission and recently discussed at the World Summit on Sustainable Development in Johannesburg has been very positively received. I personally hope that links with other vital initiative for Africa, like the NEPAD, would also be established. I am optimistic that, when we will meet in two years from now, at the Sixth EUMETSAT User Forum in Africa, the PUMA Task Team will be in a position to announce that AMESD has become a reality.

Votre Excellence, Mr Abdoulaye Wade
Président de la République du Sénégal,
Messieurs les Ministres,
Messieurs les Représentants des Corps
Constitués,
Messieurs les Représentants des Corps
Diplomatiques,
Chers invités, Mesdames, Messieurs,

I will conclude my address by reminding you that this Forum is yours. Only with your active participation will we reach useful conclusions and recommendations.

I wish this Forum a successful outcome. Thank you.



**Welcome address by Mr. Evans Mukolwe,
Director Coordinator for Scientific and
Technical Programmes, WMO**

Honourable Minister, Mr Kane, Director of Cabinet, Ministry of Equipment and Transport
Mr David Kamara, Director of Transport of ECOWAS,
Mr Alioune N'Diaye, Permanent Representative of Senegal with the World Meteorological Organization (WMO),
Dr Tillmann Mohr, Director-General, European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT),
Distinguished Guest, Ladies and Gentlemen,

It gives me great pleasure to be here with you today and to address the Fifth EUMETSAT User Forum in Africa. I wish to welcome you all to this very important Forum for users of satellite data from METEOSAT Satellites.

It is a strange coincidence that when most of the African Weather people were heading for Senegal, weather is one of the factors that contributed to a most horrific tragedy in Senegal. However, God works in mysterious ways and this might be just one of them. I am sure that the same God will help this nation go through this trying period with strength.

I, on behalf of WMO, would like to offer our sincere condolences to the Government and people of Senegal.

First, I would like to convey to you the greetings of Professor Godwin Olu Patrick Obasi, Secretary-General of the World Meteorological Organization. Professor Obasi would have like to be here with you in person but, due to prior commitments of equal importance, it was not possible. He, however, told me to pass to you his best wishes for a successful and, hence, fruitful Forum.

Second, Ladies and Gentlemen, I, on behalf of the World Meteorological Organization, would like to take this opportunity to thank you and, through you, the Government and people of Senegal, for hosting this important event and

for the warm welcome and generous hospitality accorded to us since our arrival in Dakar. Your presence here is a further expression of your personal commitment to the promotion of science and technology and, in particular, the sciences of meteorology and hydrology in support of sustainable development. I am also thankful to Mr Alioune N'Diaye, Permanent Representative of Senegal with WMO and to his staff for the excellent arrangements made in ensuring the success of the Forum. Let me extend my sincere appreciation to Dr Mohr, Director-General of EUMETSAT, for sponsoring this Forum.

Ladies and Gentlemen,

As you are aware, EUMETSAT satellites have continuously made major contributions to the WMO World Weather Watch's (WWW's) space-based Global Observing System (GOS). With Meteosat Second Generation, over 40 per cent of the Earth's surface will be covered on a 15-minute interval basis. Additionally, the commitment by EUMETSAT to continue the coverage over the data-sparse Indian Ocean, now served by Meteosat-5, will ensure adequate detection and monitoring of tropical cyclones in that area. It must be appreciated that MSG will greatly enhance our knowledge of atmospheric parameters by providing more frequent data with better accuracy.

There is no doubt in our minds that EUMETSAT is one of the cornerstones of the African Regional component of the WMO World Weather Watch. EUMETSAT's initiative in acting as a catalyst to improve the utilisation of its data through the User Forums such as this one and through its comprehensive training programme in Africa, is a strong evidence of its commitment to WMO and to the World Meteorological Community.

Ladies and Gentlemen,

To support the efforts of Members and Organisations such as EUMETSAT, WMO is developing a new strategic Plan for the Improvement and Enhancement of the WWW in Africa. The strategy, which has a continental approach covering all African countries, covers Education and Training in Satellite Matters to ensure the full utilisation of available satellite data. The strategy aims, first, to avoid errors of the past where some countries lay far behind others and, second, provide sustainability by introducing some uniformity in the technologies deployed.

You may also be aware that a new initiative for Africa "The African Monitoring of the Environment for Sustainable Development" is already progressing. The initiative aims at launching a programme that will allow African stakeholders – policy makers, the private sector, civil society – led by the African Sub regional Organisations designated as European Union's partners, to improve the management of their environment through a more timely and efficient use of relevant data, information and analysis, including from remote sensing. A lot of the remote sensed data will be received in Africa through the facilities to be provided by the Meteorological Transition in Africa (PUMA) Project. I would like to take this opportunity to express my appreciation to the members of the PUMA Task Team and to EUMETSAT for their dedicated work in coming up with the Initiative and the European Union for providing the necessary resources.

Ladies and Gentlemen,

We have a tight schedule ahead of us and I, therefore, do not wish to take too much of our already limited time. We shall talk more during presentation and discussions. I do hope, though, that at the end of the week, we shall have achieved the objectives of the Forum, namely identify priority activities.

I hope, too, that we shall also have time to see parts of this beautiful country before we leave.

Thank you.



**Welcome address by Mr. David Kamara,
Director of Transport of ECOWAS**

The Honourable Minister of Equipment and Transport of Senegal,
Distinguished representative of the International Organisations
Invited Guests,
Distinguished delegates,
Ladies and Gentlemen

It is a singular honour and a great pleasure for me to take the floor on behalf of the Executive Secretary of the Economic Community of West African States today at this Fifth EUMETSAT User Forum and to welcome you all to the beautiful city of Dakar.

I would also like to use this opportunity to thank the Senegalese Government and people for

their warm hospitality and for all the facilities made available to us.

In particular, I wish to thank His Excellency, President Abdoulaye WADE for his unflagging support and for his relentless efforts to further the cause of integration in our region.

I would also like to thank you all - Institutions, Administrations and the different companies present here for honouring the invitation to be among us today.

The ECOWAS Executive Secretariat is appreciative of the honour to be given the privilege to address this meeting that brings together meteorological services all over Africa.

On behalf of the ECOWAS Secretariat, I thank the organisers for inviting us to this important meeting which has the potential of laying the groundwork for realising a significant step forward in the availability and utilisation of satellite observed environmental data and information to support decision-making for sustainable development in Africa, including food security and natural resources management.

Satellite technologies can make an important contribution to protecting and managing the natural resource base for economic and social development and, indirectly, to eradicating poverty which is considered the greatest global challenge facing the world today, and its attainment is an indispensable requirement for sustainable development. This is true in particular for most of the African continent.

ECOWAS has been following with keen interest developments taking place in this regard under the EC/EUMETSAT - PUMA Project for upgrading the satellite receiving capacities of the African Meteorological Services for reception and processing of data from second generation Meteosat satellites. This is a major undertaking indeed, for which the European Commission, EUMETSAT and their African counterparts deserve to be congratulated.

This programme can make an important contribution to narrowing the rapidly widening digital divide between north and south. It is particularly important in Africa where Internet access and environmental information analysis and management capacity is seriously lagging behind the rest of the world.

However, to achieve its ultimate objectives in generating relevant environmental information to support sustainable development, there is a need for the programme to be accompanied by substantial and prolonged effort in institutional strengthening, capacity building and applications development at the end user level. This is a daunting task, particularly under the prevailing conditions in sub-Saharan Africa being faced with a multitude of socio-economic problems. There is also a need for close cooperation and coordination of efforts between all stakeholders, especially those involved in the activities under review by this meeting at both national, regional and international levels.

As you are all aware, in parallel to the PUMA Project, the Task Team in charge of this initiative has developed a concept paper on the African Monitoring of the Environment in support of Sustainable Development (AMESD). The purpose of this concept paper is to set out an enabling framework and to develop a follow-up on to the PUMA Project. The AMESD paper was presented to the European Commission for funding considerations in December 2001. Following this presentation, the European Commission organised a workshop on AMESD in Brussels from 16 – 17 May 2002. ECOWAS has been involved in all these activities and meetings. It is our conviction that AMESD constitutes a very important part of the environmental component of the NEPAD initiative.

I am also personally convinced that a joint support of the regional organisations involved in the PUMA Project would strengthen the AMESD concept and make its implementation a reality and a success.

I can assure you that ECOWAS will give all the necessary support to AMESD as it has done for the PUMA Project.

While wishing you very successful deliberations, I have every confidence that the recommendations that will emerge from your discussions during this forum will arm our Communities with the necessary tools to enable us ably rise to the great challenges looming large ahead of us.

Thank you.



Session 2: Status of the different EUMETSAT Programmes

Chairman: Dr. Tillmann Mohr
Rapporteur: Mr. G. Bridge

The Chairman welcomed participants to the session and provided a brief report on the recent successful launch of the first Meteosat Second Generation satellite (MSG-1) on 28 August 2002. A first image was expected late October or early November, after EUMETSAT took control of the satellite on 25 September.

Mr. G. Bridge reported on the status of the Meteosat system, currently involving the operation of three satellites, Meteosat-5 (IODC service at 63°E), Meteosat-6 (operational stand-by satellite and used for the Rapid Scanning Service) and Meteosat-7, the operational satellite at 0°. Participants recalled the various services and products from this satellite system, together with details of the Rapid Scanning Service and the new EUMETSAT ATOVS Retransmission Service. Full details of all these services, and details of all other EUMETSAT programmes, would be provided to participants on CD-ROM shortly after the meeting.

Dr. V. Gaertner presented information on the status of the MSG Programme, details of service transition from Meteosat to MSG, parallel operations of Meteosat and MSG, MSG products and services, the Satellite Application Facilities (SAFs) and the content of the new Low Rate Information Transmission (LRIT) and High Rate Information Transmission (HRIT) broadcasts. More comprehensive information on the broadcasts and the design and operation of the MSG User Stations was provided by Mr. E. Schaffner of EUMETSAT. Data encryption/decryption, compression and general user station processing were explained.

Finally, Mr. G. Bridge provided a status report on the EUMETSAT Polar System (EPS) and presented planning for the launch of the first Metop satellite in 2005. Brief details of the EPS products and services were provided.



Session 3: Status of the PUMA Project

Chairman: Mr. E. Mukolwe

Rapporteur: Mr. P. Counet

The President of the PUMA project Steering Committee from March 2002 to September 2002, Colonel B. N'Dala, from CEMAC, informed the Forum on the status of the project since the last Forum.

Since 1 October 2001, a Project Management Unit (PMU) had been based in Nairobi and the Kenya Meteorological Department had made offices available for the PMU.

On 28 November 2001, the European Commission published an Invitation to Tender (ITT) to select an industrial partner which will provide the MSG receiving stations and the related technical training on the use and maintenance of the equipment. The launch of the ITT was followed by an information day that took place at EUMETSAT on 14 December 2001. This meeting was chaired by the Chairman of the PUMA Steering Committee, at that time Dr. Gologo, from ECOWAS, and was attended by the representative of the European Commission from the Delegation in Nairobi. The tendering period was closed on 28 February 2002. Following this tendering process and evaluation of the proposals, a contract was awarded to the French company Alcatel Space in consortium with the German-based VCS GmbH. The proposed receiving stations will operate the Messir System, developed by Corobor of France. It is now planned that test stations will be installed in six countries during early 2003: Kenya (Drought Monitoring Centre (DMC)), Senegal (ASECNA), Niger (Agricultural and Hydrometeorological Centre (AGRHYMET)), Cameroon (NMHS), Zimbabwe (DMC) and Mauritius (NMHS). After on-site testing for six months the rest of the stations for the remaining African countries will be completed and installed by the end of 2004.

In December 2001, a workshop was organised at EUMETSAT with the Training and Outlook Activities expert of the PMU. The purpose of this workshop was to coordinate the actions undertaken by different partners involved in training in Africa, such as WMO and EUMETSAT and the training component of the

PUMA project. As a result of this workshop, two reference documents have been produced which will detail the general framework of the Training and Outlook Activities components of the project. These documents will be presented and discussed at the User Forum. It is planned that a first call for ideas for the Outlook Activities will take place in the first quarter of 2003. The initial training events, from an expected total of 17, will take place in parallel with the installation of the six test stations early 2003.

In March 2002, the second meeting of the PUMA Project Steering Committee took place in Nairobi. It presented the opportunity for all project stakeholders to endorse the Work Plan for 2002. During the meeting, the participants were also informed of the latest development with regard to the Trust Fund set-up by WMO to enable North African countries and South Africa to participate in the project.

Following the presentation by Colonel N'Dala, the Delegated Regional Authorising Officer (DRAO) of the Project, Dr. J.R. Mukabana, Director of Kenya Meteorological Department introduced the members of the Project Steering Committee.

The Session was concluded by a presentation by E. Mukolwe, Director Coordinator with WMO and Chairman of the PUMA Task Team since its creation in Harare in 1996. Mr Mukolwe recalled the history of the Task Team and the different achievements and presented a vision of the future of the PUMA Task Team. The team is becoming a group in which new ideas about meteorology in Africa are discussed and then presented as project. To illustrate this vision, Mr Mukolwe reported on the efforts of the PUMA Task Team to develop the African Monitoring of the Environment for Sustainable Development (AMESD) initiative, for which a special presentation is planned at the Forum. Finally, Mr Mukolwe informed the Forum of his decision to withdraw from his position of Chairman of the Task Team, after the WMO RA-1 meeting, planned in Swaziland in November 2002.



Session 4: EUMETSAT Training Programmes

Chairman: Mr. H. Verschuur
Rapporteur: Dr. V. Gärtner

The recommendations on training from the Fourth User Forum were presented together with the responses from EUMETSAT. The Forum appreciated the report from EUMETSAT and iterated that while all of them have been addressed, the underlying requests for training were still relevant for the future. The Forum expressed the view that the concept expressed at the Fourth User Forum of training the trainers in the framework of PUMA project should be maintained.

The EUMETSAT training scheme should take into account that during the past some participants had shortcomings in following the courses due to lack of prerequisite knowledge. Therefore, in future courses dedicated to further improving the knowledge on the new satellite systems, a balance should be sought to involve previously trained trainers as well as to allow for the training of newcomers to the field of satellite meteorology.

The Forum expressed the wish that EUMETSAT should ensure the continuity of its training activities for the African user community. It was also seen as essential that when training is conducted it includes basic training for technical people. This activity would however, have to be covered within the framework of the PUMA training activities, as the EUMETSAT training programme is limited to meteorologists.

In response to the question on how the new didactical training software is being validated, EUMETSAT explained that in the African Satellite Meteorological Training (ASMET) project an expert from the University of Boulder, Colorado is involved to take care of the proper handling of pedagogical aspects. The Forum recommended that the validation of new training modules should also involve African experts from various centres.

When considering training at regional training centres and when issuing guidelines for training courses, it should be considered whether to include basic training in meteorology to enable more meteorologists to

move to the field of satellite meteorology at a later stage. For the facilitation of training inside the meteorological services for operational staff, CAL modules were seen as quite essential because training could be performed at home in a self-training mode. Also video clips and interactions are appreciated very much by the students. Furthermore, it should be considered whether CAL modules should eventually include assessment tools and whether at the end of a CAL course a certificate could be provided.

Therefore, more CAL modules covering various aspects should be produced (e.g. modules for temperate climate regions, on air mass transport and on marine applications). EUMETSAT informed the Forum that the next ASMET module would be produced on the subject of tropical cyclones.

J. Kongoti (IMTR) and K. Attitso (EAMAC) presented the ASMET 2 and ASMET 3 CAL modules. The Forum was encouraged to feed back observations and comments to the producers of the CAL modules. Dr. M. Diarra (ASECNA) then introduced the virtual laboratory concept.

Concerning the selection of the centres of excellence for training support, Dr. Diarra explained that these centres were Regional Meteorological Training Centres (RMTCs) of WMO, which provided the necessary training infrastructure. In Africa, there were two centres, EAMAC in Niamey and IMTR in Nairobi, because at these centres the existing infrastructure for advanced training activities was available.

The EUMETSAT training plan was presented and the Forum was informed that the next EUMETSAT five-year training plan for 2004-08 was in preparation. In the training plan different elements for Europe and Africa were included. The EUMETSAT training activities for Africa were coordinated with the WMO training strategy. The training activities of EUMETSAT were appreciated and EUMETSAT was encouraged to continue with these activities.

The Forum mentioned that training activities should also be devoted to related disciplines like hydrology and agriculture to enable people working in these areas to benefit from the improved satellite data. While the improvement of links between Meteorological Services and other science disciplines is well understood, EUMETSAT responded that in their training activities they will continue to follow the

successful WMO strategy of training the trainers in the field of satellite meteorology. Training activities beyond this group of persons would have to be taken up by other organisations. This related particularly to the aspect of providing training on maintenance and IT technologies for the benefit of operating the PUMA stations where training had to be provided by the PUMA project.

During the discussions, it was mentioned that some effort should also be devoted to train Portuguese-speaking meteorologists in Africa. It was agreed that this would indeed be an issue for Africa. The Forum was informed that the WMO will help to refurbish the training centre in Angola and that EUMETSAT will assist in providing documentation and textbooks on remote sensing for this centre. The Forum was also informed that Portugal had initiated the CRIA project, addressing the applications and training needs for the Portuguese speaking countries.



Session 5: AMESD Initiative

Chairman: Mr. E. Mukolwe
Rapporteur: Mr. P. Counet

Mr. Amos Tincani, Advisor with the Director-General of EC DG Development in Brussels briefly presented the African Monitoring of the Environment for Sustainable Development (AMESD) initiative.

AMESD would be conceptually similar to the European initiative on GMES (with its emphasis on the use of satellite data in operational applications), drawing from the experience of the ongoing EC-funded PUMA project and other similar projects on remote sensing and environmental information management.

The aim of the AMESD initiative is to enable the African beneficiaries (the deciders, the private sector, the civil society) under the auspices of the African Regional Economic Organisations (partners of the European Union) to improve the management of their environment through more appropriate utilisation of data, information and pertinent analyses, including those collected from earth observation by satellite and to contribute towards the sustainable development of Africa. The programme is designed as a process of

actions in synergy with similar initiatives. It will act as an interface with the European Union's initiative on the Global Monitoring of the Environment and Security (GMES). This program will be implemented through a number of regional/continental thematic projects for the priority lines that will be identified by this study.

The term 'environment' is meant to cover natural resource monitoring, as well as natural disaster preparedness and mitigation¹. It would be conceived more as a process than as a discrete project, as a sort of 'market place', where the producers of data and information would be able to interact with potential beneficiaries and users, thus offering opportunities for synergy and collaboration across organisations and disciplines. The programme would essentially be demand-driven, and an important component of the programme would be to identify potential beneficiaries and users, help them come together to express their needs, and tap the potential that the new technologies have to offer.

The expected outcome would be:

The creation of an African interface with the EU initiative on GMES.

The better knowledge of the state and evolution of the environment in Africa and its distribution to the deciders, the private sector, the civil society and the end-users.

The more efficient management of the environment by the African partners themselves through the effective and timely utilisation of data, information and pertinent analyses, the support and reinforcement of capacity and the groupings of people and resources.

The development of networks at regional and national level to improve cooperation and synergies between the different players of African development, and notably those managing the natural resources (the meteorological services, the agricultural ministries, the cartography agencies, the water utilities, the river basins development organisations, disaster aid agencies, etc.). The better making of political decisions at national, regional and continental level on the

¹ See article by Larry Winter Roeder, Director of Global Disaster Information Network, published in the summer 2001 edition of 'Humanitarian Affairs Review' on the use of new technologies during disasters.

basis of pertinent and reliable data, information and analyses.

The improvement in cooperation and synergy between the donors, the international organisations and the various natural resources management programmes that they currently finance in the area of environmental management and monitoring. Several activities like the AMESD initiative are currently in progress. The aim of the present initiative is not to add yet another initiative, but to try to bring together the different initiatives under a single consistent and coordinated approach. (The project will be oriented far more towards the process than the technological results themselves).

The concepts listed above will be implemented and demonstrated through a limited number of thematic projects.

As a result of the signature of the Declaration of Dakar on 29 September 2002, the European Commission will now consider launching a feasibility study to assess the possibility of funding the AMESD initiative.



Sessions 7-9: Parallel Working Groups

Working Group 1 PUMA Training

Chairman: Mr. J. Lewis
Rapporteur: Mr. G. Bridge

The PUMA Training Workshop took place in the form of three half-day sessions on 2-3 October 2002, each with a different group of delegates. The sessions focused on a review of the Meteosat Transition in Africa Programme (MTAP) Training Plan and Training Implementation Document. The discussions were very constructive and resulted in the following main points being noted by the PUMA Training Team.

Main issues discussed:

- Selection of suitable candidates/pre-required knowledge;
- Cost effectiveness of training;
- Training priorities;
- Effective use of the core trainers;
- Training success indicators;
- Detailed analysis of constraints and the requirements of technical training.

Selection of suitable candidates/pre-required knowledge:

It is important that candidates have sufficient prior knowledge of required operating systems, windows, etc. If not, this has to be specifically addressed.

Core trainers need to have the appropriate prior knowledge and background.

Core Trainers may need to be "mobile", i.e. to train in other training centres, or at National Meteorological Centres (NMCs) in their economic regions.

PRs must ensure as far as possible that trained experts stay on location, or at least pass on their new skills to others before departure.

Cost effectiveness of training

Delegates proposed an increase in the number of training centres, taking note of offers from Morocco and South Africa, to reduce some travel and accommodation costs.

It may be possible to share some of the cost of travel and *per diem* with the NMHS.

It was proposed to structure some training activities around those of EUMETSAT, thereby sharing some of the travel costs.

It was decided to concentrate specifically on the TC1 and TC2 components, with the next priority given to TC3 and TC4. TC5 and TC6 will go to the outlook activities.

Training priorities

A high priority has to be allocated to technical training.

Initial technical training material has to be of a high standard to set the framework for further training.

Technical training should be provided prior to installation of XRUS and again afterwards, on the basis of the supply of real MSG data.

Basic technical training should also be given to the meteorologists, in order to ensure some degree of technical support to the XRUS in the event that technical staff are not available (as they are not always available on a 24 hours basis).

Effective use of the core trainers

The objective is to train as many NMC staff in Africa as possible.

These staff should be well qualified for the job with previous experience.

PRs should ensure that they are available for the task at the time they are needed and propose that they be mobile.

Economic groupings could decide on the number of core trainers needed for the region, on the basis of the availability of suitably qualified staff in the regions.

Core trainers should be trained as early as possible in the programme.

Detailed analysis of constraints and requirements of technical training

While hardware training is fairly straightforward, special attention should be paid to training in the installation and maintenance of software.

Training of meteorologists in the use of the software is not expected to be a large concern, especially, if they already have basic training in, for example in the use of Secondary Data User Stations (SDUS) and Primary Data User Stations (PDUS).

However, it is important that there is a degree of required prior knowledge, e.g. familiarity with operating systems, such as MS Windows NT, etc.

It may be difficult to release more than one technician at a time from NMHS for training off site.

Documentation should be of a very high quality, in English and French, and should be provided well in advance of the training.

The setting up of a contact network was recommended, such as an e-mail list server or Web site, where others can provide help, experience in fault solutions can be shared and a set of FAQ's can be established.

Training centres need to have high data rate connectivity to the Internet.

Training centres are urged to facilitate PUMA training activities.

Concerning the Niamey training centre, use should be made, as far as possible, of facilities offered by other local institutes, especially with regard to alleviating problems of accommodation.

There is a need to set up a well-established common set of operational procedures to set up, run and maintain the XRUS, which, if necessary, could be used by meteorologists in the event of non-availability of a technician.

One week training for TC2 is considered by many to be too short, but is adequate for basic TC1 and meteorologist users.

Up to three months factory training has been proposed for NMHS personnel with less prior knowledge but rejected as unrealistic by VCS. VCS say they just would not have the capacity or content to entertain guests for that period of time.

There is a need to train before an XRUS is set up and afterwards, in the true operational environment.

TC1 and TC2 trained staff must work in close cooperation with each other.

The modular approach to training was fully endorsed as this allows greater flexibility in its implementation.

Training tools should be developed to allow parallel on-the-job training (OJT) activities and, where feasible, NMHS are encouraged to supply additional workstations and IT infrastructure to support this.

There is a need for certification at the end of training to demonstrate successful completion.



Working Group 2 PUMA Outlook activities

Chairman: Mr. E. Barisano
Rapporteur: Mr. B. Monfraix

The session presented the Outlook Activities planned in the framework of the PUMA project.

The Outlook Activities concept is based on the development of proactive partnerships

between NMHSs, all technical government departments, Non-Governmental Organisations (NGOs) and private companies, using or able to use weather and climatic information. In addition, it is based on the widening of the NMHS-product user community by developing tailored products and services.

The Outlook Activities component was therefore designed in order to:

- assist NMHSs to provide information and services to a wider range of potential users,
- validate new cooperation concepts, by networking, with other actors of development in Africa, in a wider field of natural resources management such as agriculture, hydrology, forestry, health, transportation, and natural hazards.

As stated above, networking was defined as a key element for the success of the implementation of the Outlook Activities.

As an example, all African countries have to produce a certain number of environmental documents for a vast number of regional and sub-regional programmes such as the National Environmental Plan (PNAE), for National Programmes of Action against Drought and Desertification. The production of these documents is not possible without a dialogue, a network structure between the already mentioned actors, such as administrations, technical centres, research laboratories, development associations, NGOs, bilateral agencies and multilateral agencies. It is an operational framework which promotes exchange between actors interested in common problems.

In this context, NMHSs are essentially in relation with the technical administrations in their country, and are not structured to respond to the diversity of the thematic demands resulting of these structures. In order to improve both the quality of their work and their capacities, and in order to better serve a polymorphous demand, they must first reinforce their means for acquisition and processing of meteorological data.

Firstly, the NMHSs work in a public service context and provide data by sector and on request. Secondly, the project component Outlook Activity aims at promoting the pooling of NMHS resources, data, and knowledge to answer user enquiries. This means:

- to produce, store, reach and share the knowledge of the experience and the data produced within the network;
- to use and value experience by generalising methods of data processing. Historically, methods were applied to data in numerous countries;
- to return to development actors the acquired knowledge by harmonising ways for feeding back produced information.

Within each country, every service will have to integrate its activities with other development actors in order to reduce costs, which implies defining partnerships with adequate entities. Within the region, or even on a continental scale, every NMHS will have to stress a horizontal cooperation with other African NMHSs or centres of excellence.

It was agreed that these objectives could be achieved through two kinds of actions: Support Actions and pilot projects. The working session concentrated on the latter where the aims of the Pilot Projects were defined as follows:

- To set-up real partnerships: technical, institutional and contractual partnerships among NMHSs and other institutions through pilot projects.
- To build an operational network: an effective lever for reaching the objectives would be to build an operational network, using existing schemes, if any, and
- To share (satellite and ground) data, thematic information and tools for processing and analysing experiences in sustainable development.

The Pilot Projects were illustrated by two presentations made by representatives of Brazzaville, Congo, who had developed prototype Outlook Activity projects with the support of a consultant of the PUMA Task Team. The presentations were related to REseau COngolais des utilisateurs des données SATellites météorologique, climatologique et hydrologique (RECOSAT), and Système d'Information Ecologique et Satellitale au Service de la Santé (SIESAT).



Session 10: Marine Meteorology

Chairman: Mr. G. Bridge
Rapporteur: Dr. V. Gärtner

At the beginning of the session on marine meteorology Dr. V. Gärtner, EUMETSAT, informed the Forum about EUMETSAT's future involvement in the Jason programme. He then summarised the development of the Jason satellite series and the range of instruments to be flown on the system to ensure the very high precision of orbit determination required for highly accurate sea level and sea wave height observations. He presented several examples of marine products, many of great interest for meteorology and climatology. The participants then enjoyed a ten minute Centre National d'Etudes Spatiales (CNES) video describing the Jason system and many marine applications of the satellite products.

Mr. J. Savina, Météo France, presented a wide range of activities of Météo France in the marine meteorology area, especially for the regions surrounding Africa. The organisation of Météo France and many operational activities were explained. Some special examples on crisis management were shown (e.g. oil spill forecasting at the time of the Erika accident and the loss of containers at sea). The effects of severe storm surges were discussed and it was further outlined how thresholds for the issuing of warnings were reached.

Thereafter, a number of short overview presentations regarding marine activities in various African countries were given. These talks covered the themes of:

- Improvement of Marine Forecasts using Satellites in Sudan (Mr. Kafi);
- Development of Marine Meteorology in Africa (Dr. Bah);
- Marine Meteorology Activities in the National Weather Service of Morocco (Mr. Bouksim);
- Marine Meteorology in Benin (Mr. Lawson);
- Marine Meteorology: The complementary Role of Satellites and *in situ* Data (Dr. Mukabana);
- The DINA Cyclone (Mr. Perron);
- Meteorological Support to Harbour Activities in Algeria (Mr. Ounnar).

The Forum considered the advent of the new MSG products a major improvement for marine applications in the coming years.

It was mentioned that the presence of Meteosat-5 over the Indian Ocean provided vital support for marine meteorological activities, especially for the tropical cyclone monitoring centre. Therefore, it would be very much appreciated if EUMETSAT could keep an active satellite over the Indian Ocean for as long as possible, since there is no other equivalent satellite service available.

During the discussion it was recommended that several marine research and application projects should, as appropriate, be incorporated into an outlook activity of the Meteorological Transition in Africa Project.

The Forum added that the countries in Africa should be encouraged to expand their activities in the field of maritime meteorology by setting up more monitoring centres to take advantage of the enhanced services provided by MSG. More support projects to assist sea surveillance activities were seen as necessary. The Forum recalled that both the Atlantic and the Indian Oceans were of great interest to the African community. Furthermore, it was suggested that the West Indian Ocean Marine Applications Programme (WIOMAP) project should be strengthened to include the setting up a network of fixed buoys positioned within the West Indian Ocean region. For the relay of data from these new platforms the MSG telecommunication channels were considered as an appropriate means and the involved NMHSs would need to be equipped with the appropriate receiving stations.

In the ANNEX the following is provided:

- Annex I Programme of the Forum
- Annex II Dakar declaration
- Annex III List of participants
- Annex IV CD ROM



EUMETSAT POINTS OF CONTACT FOR OPERATIONAL MATTERS

Organisation of EUMETSAT User Forum in Africa

Strategy and International Relations (Sixth EUMETSAT User Forum in Africa)

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LIST OF ABBREVIATIONS

AGRHYMET	Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AMESD	African Monitoring of the Environment for Sustainable Development
ASECNA	l'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar
ASMET	African Satellite Meteorology Education and Training
ATOVS	Advanced TIROS Operational Vertical Sounder
BUFR	Binary Universal Form for data Representation
CAL	Computer Aided Learning
CEMAC	Communauté Economique et Monétaire de l'Afrique Centrale
CGMS	Coordination Group for Meteorological Satellites
CNES	Centre Nationale des Etudes Spatiale
DCP	Data Collection Platform
DMC	Drought Monitoring Centre
DMN	Direction de la Météorologie Nationale of Senegal
EAMAC	Ecole Africaine de la Météorologie et de l'Aviation Civile
EC	European Community
ECOWAS	Economic Community Of Western African States/Communauté Economique des Etats de l'Afrique de l'Ouest (CEDEAO)
EPS	European Polar Satellite
FAO	Food and Agriculture Organization of the United Nations
GMES	Global Monitoring of the Environment and Security
GOS	Global Observing System
HRIT	High Rate Information Transmission
IGAD	Intergovernmental Authority on Development
IMTR	Institute for Meteorological Training and Research
IOC	Intergovernmental Oceanographic Commission of UNESCO
IODC	Indian Ocean Data Coverage
KMD	Kenya Meteorological Department
LRIT	Low Rate Information Transmission
MDD	Meteosat Data Distribution
MSG	Meteosat Second Generation
MTAP	Meteorological Transition Africa Project
NCEP	National Center for Environmental Prediction (USA)
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NMHS	National Meteorological and Hydrological Service
NOAA	National Oceanic and Atmospheric Administration
OJT	On-the-Job Training
PDUS	Primary Data User Station
PNAE	National Environmental Plan
PUMA	Preparation for the Utilisation of Meteosat Second Generation in Africa
PUMA PMU	PUMA Project Management Unit
RA1	WMO Regional Association-1
RMTC	Regional Meteorological Training Centre (WMO)
SADC	Southern African Development Community
SAF	Satellite Application Facility
SATCC	Southern Africa Transport and Communications Commission

SDUS	Secondary Data User Station
WIOMAP	West Indian Ocean Marine Applications Programme
WMO	World Meteorological Organization
WWW	World Wide Web
XRUS	Combined HRIT and LRIT receiving station