



# ARC Briefing Note on the First Conference of Ministers Responsible for Meteorology in Africa

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## BRIEFING NOTE ON THE FIRST CONFERENCE OF MINISTERS RESPONSIBLE FOR METEOROLOGY IN AFRICA: 12-16 APRIL 2010

The First Conference of Ministers Responsible for Meteorology in Africa convened from 12-16 April 2010 under the theme “Investing in Weather and Climate Services for Development.” The Conference, organized by the World Meteorological Organization (WMO) and the African Union (AU), was attended by more than 400 participants.

The Expert Segment met from 12-14 April to discuss the challenges faced by National Meteorological and Hydrological Services (NMHSs) and their partners in fulfilling their potential contributions to achieving the Millennium Development Goals in Africa, the Strategic Plan of the African Union Commission (AUC), the objectives of the New Partnership for Africa’s Development (NEPAD) and implementing national and regional sustainable development plans, including sessions on: meeting development needs; the benefits of national meteorological, hydrological and climate services; capacity building; user perspectives; and closing information gaps.

The Ministerial Segment met from 15-16 April to consider and adopt the Ministerial Declaration on Meteorology and Climate in Africa.

### A BRIEF OVERVIEW OF METEOROLOGICAL AND HYDROLOGICAL SERVICES IN AFRICA

Weather forecasts and observations are one of the essential components of climate research and projections, which can help guide decision making in areas of energy, food security, transport and biodiversity conservation. Early warning systems are also imperative in ensuring that the impacts of extreme weather events are mitigated. NMHSs and their associated observation networks on the continent are necessary to ensure the availability of information for African decision-makers and end-users.

### DROUGHT MONITORING IN THE GREATER HORN OF AFRICA

The Drought Monitoring Centre for the Greater Horn of Africa, renamed as the Intergovernmental Authority on Development (IGAD) Climate Prediction and Applications Centre (ICPAC) in Nairobi, Kenya, seeks to mitigate the negative impacts of extreme climate events in the region including its seven member countries: Djibouti; Eritrea; Ethiopia; Kenya; Somalia; Sudan; and Uganda. The Center’s five objectives are to: provide timely early warning information

and support sector-specific applications to mitigate climate change impacts; improve the technical capacity of the producers and users of climate information; develop an improved, proactive, timely, broad-based system of information dissemination and feedback at sub-regional and national levels; expand the climate knowledge base and applications within the sub-region; and maintain quality controlled databases and information systems.

### METEOROLOGICAL AND CLIMATE COOPERATION FOR DEVELOPMENT IN AFRICA

The African Centre of Meteorological Applications for Development (ACMAD), created in 1987 by the Conference of Ministers of the UN Economic Commission for Africa, is composed of 53 member states and has been based in Niamey, Niger, since 1992. ACMAD aims to provide weather and climate information and support sustainable development in Africa in agriculture, water resources, health, public safety, and renewable energy. Its activities include capacity building in weather prediction and climate monitoring, Regional Climate Outlook Forum activities, technology transfer and research.

### COMMUNICATING WEATHER AND CLIMATE INFORMATION TO RURAL AREAS

The Radio and Internet for the Communication of Hydro-Meteorological Information for Rural Development (RANET) network is a collaborative effort of NMHSs, non-governmental organizations and communities to assist national and regional organizations in communicating weather, climate, and other

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developmental information to rural and remote areas. The network's activities include developing new communication tools and capacity building in partnership with NMHSs.

#### ***DEVELOPING ACCESS TO SATELLITE TECHNOLOGY***

The African Monitoring of the Environment for Sustainable Development (AMESD) project, launched by the AU in January 2010, aims to secure access to key Earth observations. National Meteorological Services and regional institutions will secure operational access to the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) data and improved data processing, as well as benefiting from the installation of 47 new EUMETCast stations to provide effective access to environmental data and products.

#### ***ENHANCING SAND AND DUST STORM WARNINGS***

The Sand and Dust Storm Warning System (SDS-WAS) was established by the WMO in 2006 to coordinate the activities of a global network of regional centers that monitor and forecast sand- and dust-storms. SDS-WAS aims to enhance the ability of countries to deliver timely and quality information, observations and forecasts for sand- and dust-storms, through an international partnership of research and operational communities, comprising 12 centers including a regional center for Northern Africa, Middle East and Europe.

### **SUMMARY OF THE EXPERT SEGMENT**

#### ***OPENING OF THE EXPERT SEGMENT***

The expert segment opened on Monday morning, 12 April. Joseph Mukabana, Kenyan Permanent Representative, World Meteorological Organization (WMO), noted that the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report highlighted the important role of National Meteorological and Hydrological Services (NMHSs) in combating climate change. He urged decision-makers to include NMHSs in agenda-setting and national planning.

Jerry Lengosa, Deputy Secretary-General, WMO, called on delegates to use the expert meeting to increase awareness of the NMHSs and their role in national socio-economic development and planning, and in combating climate change. He said that the success of this meeting would give rise to a follow-up meeting to assess progress in strengthening partnerships between governments and NMHSs.

Olushola Olayide Sodeko, African Union Commission (AUC), presenting on behalf of Rhoda Peace Tumusiime, Commissioner for Rural Economy and Agriculture, emphasized that climate change is a high priority in the African Union (AU) agenda. She urged participants to make preparations for a common African position for the sixteenth Conference of the Parties (COP16) to the United Nations Framework Convention on Climate Change (UNFCCC) to be held Mexico in the same spirit and goodwill shown at the AU Summit in February 2009 before the fifteenth COP held in Copenhagen.

Lawrence Lenayapa, Permanent Secretary, Ministry of Environment and Natural Resources, Kenya, welcomed delegates to the conference. Ramadhan Seif Kajembe, Ministry of Environment and Natural Resources, Kenya, noted that the ministry has begun implementing a national climate strategy, which will form the basis for the development of a national climate change program. He highlighted tree-planting initiatives to replenish forest cover and improve resilience to climate change, and thereafter declared the conference officially open.

#### ***ELECTION OF THE OFFICERS***

Olushola Olayide Sodeko, AU, reiterated the AU's commitment to combating climate change on the continent and reminded delegates of the important role the elected officials will play during the Ministerial Segment.

Mamadou Lamine Bah, Director Meteorology, Republic of Guinea, was elected as Chair of the meeting and M.A. Abdelgadir, Sudan, and Abdalah Mokssit, Morocco, were elected as rapporteurs.

#### ***ADOPTION OF THE AGENDA***

Zimbabwe, supported by Namibia, suggested that more time be allocated to ministerial statements. Chair Bah proposed that the Secretariat look into this and the agenda was adopted by acclamation.

Bah acknowledged the role of meteorological data in combating challenges of climate change and in ensuring social and economic development. He reminded delegates of the objectives of the conference and congratulated the various African meteorological departments for their efforts and hard work in spite of poor working conditions and technological constraints. He lauded the WMO's support of regional initiatives such as their involvement in the First Africa Regional Association meeting of the WMO in Ouagadougou, Burkina Faso, in February 2007.

Alioune Ndiaye, Director, WMO Regional Office for Africa, noted that political stability was important in order to effectively deal with the additional socio-economic challenges brought on by climate change, emphasizing the role of meteorological and hydrological services in tackling this challenge. He urged participants to work together in formulating recommendations that would guide the Ministerial Conference to produce a sound Conference Statement.

#### ***MEETING DEVELOPMENT NEEDS FOR THE PROVISION OF WEATHER, WATER AND CLIMATE SERVICES IN AFRICA***

On Monday afternoon, Moussa Labo, Meteorology Department, Niger, chaired the session on meeting development needs. Adama Alhassane Diallo, African Centre of Meteorological Applications for Development (ACMAD), presenting on the importance of climate services for prediction of climate and weather in Africa, highlighted the mission of NMHSs in collecting, analyzing, and maintaining data and databases on meteorology and hydrology. He reported various contributions of NMHS data in forecasting climate extremes and their application in ensuring national development in areas such as agriculture, forestry, infrastructure, energy, health, transport, and tourism.

Speaking on the role of climate information in supporting climate compatible development in Africa, Anthony Nyong, African Development Bank (AfDB), noted that climate change is a threat to the continent's economic development, lamenting that before the impacts of climate change became evident, Africa was already lagging behind in its development goals. Nyong highlighted that there are growth and development opportunities within climate change, noting that climate information is fundamental in addressing climate change challenges, as well as for leveraging climate change-created opportunities. He noted that development, mitigation, and adaptation are "three sides of the same coin" and need to be tackled in tandem to develop climate compatible economies, and reiterated the AfDB's commitment to this type of development.

John Jones, Jr., World Bank, described the steps the Bank is taking in developing a “Pan-African Strategy and Plan of Action for strengthening Climate and Weather Services for All.” He reported that he would be consulting with the directors of the various meteorological departments in order to analyze their capabilities in two critical areas: the levels of NMHS involvement in current water resources projects; and the sustainability of investments made through projects supporting meteorological services. He noted that the information will be used to assist the World Bank in prioritizing those countries needing funding.

Petteri Taalas, Finnish Meteorological Institute, presented on the potential for donor countries and WMO in meeting development needs, and highlighted that Africa will face severe food, water and energy shortages if world economies failed to act conclusively on climate change. Emphasizing the importance Finland attaches to meteorological services in forecasting food production and wind and hydropower production, he stressed the need to scale up these services in Africa. He called for more investment in NHMSs in the global South from developed countries and donor organizations, to encourage overall development. On reform of the WMO, he proposed that the organization’s agenda be driven by regional development needs, and that the organization be a catalyst for development, especially in Africa.

In the ensuing discussions, participants debated: capacity development needs for NHMSs in information dissemination; data sharing; funding mechanisms for research institutions and universities engaged in climate change studies; and mechanisms for sustained funding for NHMSs.

### ***BENEFITS OF METEOROLOGICAL, HYDROLOGICAL AND CLIMATE SERVICES***

On Monday afternoon, the session on the benefits of meteorological, hydrological and climate services was chaired by Amos Makarau, Department of Meteorological Services, Zimbabwe.

Presenting on farmer-oriented meteorological and climatological information to reduce vulnerability of agricultural systems facing climate variability and change in Mali, Issa Djiré, Office de la Haute Vallée du Niger, presented a case study on the use of meteorological services to forecast rainfall patterns in order to plan food production periods. He described the experiment noting that meteorological centers were set up at the community level, and information from these centers was disseminated by extension officers and the media, as well as used to plan planting seasons based on rainfall forecasts. Djiré recommended that more countries incorporate meteorological services at the community level, as the input of these services has proved invaluable to farming communities.

Abere Mihretie, Climate and Health Working Group, Ethiopia, described Ethiopia’s strategies in linking health and climate. He reported on collaboration between the Federal Ministry of Health and the National Meteorological Agency in the use of weather information to forecast disease outbreaks particularly meningitis, malaria and acute watery diarrhea. He also reported on the Meningitis Environmental Risk Information Technologies (MERIT) Ethiopia Project and its four key areas of focus: socio-economic impacts of disease; determinants and risk factors of epidemic outbreaks; education and training; and disease surveillance.

Presenting on the benefits of meteorological data to an airline, Livingstone Ng’ang’a, Kenya Airways, gave an overview of Kenya Airways’ work in connecting the continent and beyond. He described aviation meteorology as concentrating on, *inter alia*, wind forecasts and high-level significant weather programmes including dust, sand storms and icing. Stressing the importance of meteorological information in aviation for the determination of landing speed, aircraft payload, take-off direction, and aircraft landing configuration, he urged decision makers to invest in better infrastructure for NMHSs. He further urged them to improve national telecommunications networks to ameliorate aviation meteorology.

Aida Diongue Niang, National Meteorological Agency, Senegal, discussed the development of services for safe maritime activities in West Africa. She noted that weather extremes were significant limitations in the maritime development of coastal regions and highlighted constraints such as sea-level rise, coastal erosion, and maritime accidents. She reported on Senegal’s use of atmospheric models, wave models, and data from other sources such as Meteo-France to provide bulletins of maritime forecasts for pre-defined zones of the sea. These bulletins, she added, were disseminated to commercial and artisanal vessels, port authorities, fisheries’ landing sites, emergency services, and other government authorities.

Hassen Lofti Frigui, Ministry of Agriculture, Water Resources and Fishery, Tunisia, presented on the need for meteorological and climatological information in water resource management. Briefing participants on Tunisia’s drought-flood cycle, he highlighted the need for better water management during both extremes. He drew attention to traditional knowledge that is used in conjunction with data from the National Meteorological Institute to give forecasts that are more accurate and noted that an information management center would be instrumental in tracking all the forecasts and predictions and enable longer term national planning of natural resources. He informed participants that 80% of rural Tunisia has adequate water supply due to the successful implementation of water management policies, but noted that this could be further improved with better statistical information from the NMHSs.

Guido Van Langenhove, Ministry of Agriculture, Water and Rural Development, Namibia, demonstrated his country’s use of flood forecasting information for the Zambezi river catchment to mitigate and minimize the adverse impacts of floods on human settlements. He noted the fact that the largest part of the Zambezi catchment was in Angola and Zambia, which complicates the forecast model since the majority of the data, is not from Namibia itself. He showed how data from the National Aeronautics and Space Administration (NASA), satellite images and weather forecasts from Zambia had recently enabled early warning of heavy floods of the Zambezi near the Angolan border and how such information is used to map ranges of flooded areas that require evacuation. He added that the lack of real-time ground monitoring and improvements in transboundary information exchange were a constraint to accurate flood forecasts.

Mnikeli Ndabambi, South African Weather Services, presented on the Severe Weather Forecasting Demonstration, a project to promote the enhancement of early warning against extreme weather conditions in southern Africa. He gave a brief overview of the project’s aims and activities, noting that a key tenet of the project is “cascading information,” where information is relayed from the global level to the local level. He described the 2007



Cyclone Favio as the testing ground for the project, highlighting that two effected countries were able to use the Severe Weather Forecasting Demonstration's early warning system to issue life-saving warnings five days in advance. Noting that after 2011, the project will be fully operational, he called for funding to ensure its sustainability. On Tuesday, 13 April, Jean-Luc Redelsperger, France, discussed the application of the African Monsoon Multidisciplinary Analysis (AMMA) project in the Sahel region in understanding the variability of monsoon rainfall and applying scientific research to monitor and provide environment-resource-climate interaction models. He showed how forecasts are applied to ensure civil security by providing synthetic maps that allow real-time observations of developing storms. He also mentioned applications of models in agriculture, water resource management, and for predicting first rains and dry spells over the Sahel.

Benjamin Lamptey, International Water Management Institute, Ghana, made a presentation on an international consortium for reducing risk from sand and dust storms in Northern Africa. He noted the correlation between an increase in sand and dust in the atmosphere and heightened storms, and informed delegates that WMO has initiated a Global Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) so that these disasters are better prepared for. He stressed the need to have retroactive analyses of sand and dust storms in order to improve mapping for future events.

In ensuing discussions, various recommendations were made to be forwarded to the Ministerial Segment on, *inter alia*: developing monitoring systems for areas where meteorological information has been underestimated; sustained government funding for NMHSs; implementing climate-health projects in all countries; and replicating the aviation meteorological services of Kenya Airways in more African countries through the establishment of dedicated government agencies.

### **DISASTER RISK REDUCTION**

The session on disaster risk reduction, co-chaired by Helena Molin-Valdés, UN International Strategy for Disaster Reduction (UNISDR), and Yadowsun Boodhoo, Meteorological Services, Mauritius, convened on Tuesday morning.

Introducing the session, Co-Chair Valdés listed the goals of the session: reviewing the progress of disaster risk reduction (DRR) in Africa; demonstrating the importance of meteorological and climatological services to DRR; and identifying the gaps, needs, and challenges to be addressed in order to strengthen the partnerships between DRR practitioners and meteorological service providers.

Olushola Olayide Sodeko, AU, on the Programme for Action for the Implementation of the African Regional Strategy for DRR, noted that the programme is derived from the Hyogo Framework for Action 2005-2015. She emphasized that for the African Regional Strategy to be implemented at the national level, there is a need for stronger partnerships between the meteorological services, governments and other concerned institutions.

Dulce Chilundo, Disaster Management Institute, Mozambique, discussed her country's activities in disaster risk management (DRM). She presented various techniques that are implemented when natural disasters occur, including enabling local communities to carry out their own evacuation exercises, particularly in the northern, central and southern regions of the

country where disasters are frequent. She added that the inclusion of DRM in school curricula was equipping the next generation to cope with climate-related disasters.

Carlos Villacis, Global Risk Identification Programme of the UN Development Programme (UNDP), presented the challenges of risk assessments in Africa. He compared risk management to disease management since in both cases, prevention and lateness in seeking solutions is common. He highlighted four challenges of risk assessments: the lack of inclusion of risk assessment in countries' policies; not involving affected communities in risk assessments; lack of monitoring and evaluation mechanisms; and insufficient local capacity to ensure the sustainability of assessment programs.

Abbas Gullet, Red Cross, Kenya, used examples from Kenya, Southern, West and Central Africa to demonstrate the role of the Red Cross and Red Crescent Societies in disaster preparedness and response. He noted that even though the Kenya Meteorological Department and the Red Cross in Kenya have no formal agreement, the Kenya Meteorological Department's weather forecasts, climate information, and data are used to prepare and issue early warning alerts and prediction maps before imminent disasters. He noted that, because of this, the Red Cross was able to respond more effectively to the disaster posed by El Niño in 2009, compared with their response in 2007. He elaborated on the Zambezi River Basin Initiative involving seven Southern African countries working on disaster preparedness, health care and HIV prevention and capacity building, as well as highlighting other West and Central African programmes for climate risk management.

Gift Livata, Malawi, discussed mechanisms to transfer financial risk from farmers affected by frequent climate disasters. He emphasized that the poverty trap can drive poorer households into continued poverty, and described the development of the Weather Index Insurance Programme, which enables farmers to reduce the risk of losing assets and farming investments to climate-related disasters. This programme, he noted, uses meteorological services in providing the data required for banks and farmers' associations to implement reliable insurance schemes.

In the ensuing discussion Adama Alhassane Diallo, ACMAD, spoke on the status of the operational capabilities of NMHSs in weather forecasting and climate prediction for supporting DRR in Africa, and emphasized the need for NMHSs to partner with local and international institutions in order to provide the best possible forecasts. He also said that NMHSs should take advantage of new technologies in the form of mobile telephony and the internet to disseminate information to wider networks.

Laban Ogallo, Intergovernmental Authority on Development (IGAD) Climate Prediction and Application Center (ICPAC), Kenya, gave a brief overview of the status of the utilization of climate information in Africa. He noted that for meteorology to feature in national development agendas in Africa, the Experts' Meeting would need to propose definite solutions for reducing Africa's vulnerability to climate change and resultant disasters.

Simon Mason, International Research Institute for Climate and Society, stressed the need to shift from short-term prevention methods to sustainable DRR systems. He highlighted the need to address the information gaps within and between various time scales to enhance preparedness for extreme events, explaining that politicians respond quicker to events during their terms in office. He cited protracted time scales as a reason for the slow progress toward a concrete agreement on climate change.

### **FILLING INFORMATION GAPS**

On Tuesday morning, Peter Ambenje, Drought Monitoring Centre, Kenya, chaired the session on filling information gaps. Amos Makarau, Meteorological Services Department, Zimbabwe, presented on the status and future plans of weather, water, and climate observing systems in Africa showing that most meteorological observation networks in Africa were inadequate and operating at 50% efficiency. He noted that this results in a failure to portray the true state of climatic conditions in Africa, provide timely early warning services of impending disasters, and promotes a "foreign dependency syndrome." He proposed that the message for the Ministerial Session should be that NMHSs require political and financial support from their governments.

Zilore Mumba, ACMAD, gave a presentation on ACMAD's projects in improving prediction and assessment in Africa. He noted that the WMO, through the climate information and prediction services, were responsible for developing the capacity of NMHSs to forecast climate hazards. He also highlighted WMO's SDS-WAS, and The Observing Research Predictability Experiment (THORPEX) program, which has increased the accuracy of one-to-fourteen day high impact water forecasts, and rescued vulnerable communities.

Linda Makuleni, South African Weather Services, presenting on accessing and sharing information on weather and climate, reiterated previous calls to form cross-sectoral partnerships to generate information that is more useful. She noted that although there are six regional telecommunication hubs across Africa, their number falls below the WMO recommended number, and that these hubs require infrastructural upgrading. Lauding the WMO Information System (WIS), she described its benefits and urged delegates to view WIS as a platform to interact with partners and to expand meteorological services at the national level.

Yadowsun Boodhoo, Meteorological Services, Mauritius, presented on providing weather and climate services to improve societal benefits noting that climate change will continue to exacerbate water availability and food security concerns in Africa. For climate services to be effective, he emphasized the need for better communication networks as well as the need to disseminate actionable information to the end-user. He lamented that in Africa, recordings of meteorological observations are deficient, a predicament that has a direct impact on development progress.

Aida Diongue Niang, Senegal, described the AMMA Africa strategy in filling information gaps in West Africa. She highlighted some landmarks including the AMMANET, which is a network of scientists in NMHSs, African Universities and regional research centers. She also presented the Plan d'implementation AMMA Afrique (PIAF) an initiative funded by the European Commission and the French Ministry of Foreign Affairs to support multidisciplinary research on climate change. She added that AMMA Africa was a good example of collaboration between research institutions, application services and NMHSs.

Hiroshi Koide, Japanese Meteorological Agency, discussed Asia's successes in climate and weather information services through Regional Climate Centers (RCCs). He outlined how the Tokyo Climate Center is responsible for mitigation of hazards though provision of frequent, reliable and highly verified data. He reported that his agency, in collaboration with WMO, is committed to strengthening RCCs in Africa.

Mikael Rattenborg, European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), made a technical presentation on the work of his organization, and reiterated

EUMETSAT's commitment to providing satellite coverage in Africa, particularly through maintaining data coverage, ensuring data access, developing capacities to use the data, ensuring links with users, and promoting exploitation of data.

### **CAPACITY BUILDING**

On Tuesday afternoon, Bruno Sekoli, National Meteorological Services, Lesotho, chaired the session on capacity building. Ifeanyi Nnodu, Nigerian Meteorological Agency (NIMET), presented on capacity building for institutional and human resource development. He listed the gaps in capacity building as, *inter alia*, inadequate equipment and manpower, lack of planning and infrastructure, inappropriate telecommunication systems, and the disconnect between local systems capacity and rapidly changing technology. He outlined several areas in which NIMET had received human resources development, enabling them to improve climate and weather services for, *inter alia*: aviation, marine and land transportation; agriculture; food security; oil and gas mining; and health.

Presenting on Meteorology, Climatology, Hydrology and associated fields taught at academic institutions, Barnabas Chipindu, University of Zimbabwe, noted that meteorology is a "closed field" while climatology as a subject is well covered under geography. Welcoming WMO assistance to governments in setting up meteorological training centers around the continent, he encouraged interested delegates to push for the establishment of such centers in their countries. He highlighted the lack of human resources in meteorological training centers and urged governments to offer competitive remuneration to staff in these centers to avoid brain drain. He also called for capacity building for activities within NMHSs, and requested regional economic communities to consider waiving school fees for students training in meteorology.

Malamine Sonko, Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA), discussed the development and maintenance of meteorological and hydrological infrastructure, noting that developing countries continue to lag behind in efficiency of NMHSs due to financial constraints, which translates to the lack of: data; quality in meteorological services provided; trained personnel; and maintenance of infrastructure. He recommended strengthening governmental and other funding avenues for capacity building and maintenance of infrastructure in NMHSs.

Bubu Jallow, UN Environment Programme (UNEP), on capacity building on climate change issues, drew delegates' attention to various funding sources and other support from multilateral environmental agreements and conventions. He listed the UNFCCC, the AfDB, UNEP, and the Global Environment Facility as potential development partners for NMHSs, noting that the mandate of NMHSs is data collection and the exchange of atmospheric data and information. He then gave examples of UNEP's work with NMHSs in the Seychelles and Ghana, stressing that governments need to consider NMHSs as major development partners.

Todd Ngara, UNEP Risoe Centre on Energy, Climate and Sustainable Development, explained the importance of capacity building for the Clean Development Mechanism (CDM) in Africa. He noted that most African countries have limited capacity to participate in the CDM due to the complex modalities, procedures and funding requirements. He recommended that African governments begin to perceive the CDM as an important factor in industrial growth and avoiding reliance on foreign support.





### **SPECIAL SESSION ON AVIATION**

This session, chaired by Abdalah Mokssit, Morocco, convened on Wednesday, 14 April. Simeon Zoumara, ASECNA, made a brief presentation on his organization's work and its relationship with NMHSs. He informed delegates that ASECNA works with seven meteorological centers, nine sub-centers and 30 surface meteorological centers, and liaises with NMHSs in all its member countries as well as WMO and other partner organizations. He noted the benefits of meteorology to aviation in Africa, but listed ASECNA's challenges as, *inter alia*, insufficient funding, an inability to maintain all its centers, and under-staffing in its most active centers, and called on member nations to assist ASECNA in improving its service provision to member nations.

Olli Marius Turpeinen, International Civil Aviation Organization (ICAO), discussed the implementation of Quality Management Systems (QMS) by Aeronautical Meteorological service providers. He outlined QMS requirements provided in ICAO and WMO regulatory documents, emphasizing the importance of accuracy in forecast, adherence to Operational Aeronautical Meteorological data exchange requirements and quantification of meteorological personnel. He discussed the Safety Management Systems (requiring safety related services in international aviation adding that quality management was a prerequisite to Safety Management System compliance. He further reported that in spite of the high initial cost of QMS implementation, states are eligible for cost recovery through air navigation charges and they, in the long-term, make significant savings due to efficient services.

In the discussion that followed, delegates raised issues to do with, *inter alia*, a cost recovery mechanism for ASECNA; the expansion of the role of NMHSs in ASECNA; the need for ICAO to assist ASECNA member states reach ISO 9000 Certification in their aviation sectors by 2012; the need for the operationalization of QMSs by 2012; the ability of ASECNA to deal with Africa's growing flight capacity; the role of national civil aviation groups to quality management; the need to reconcile the differences between ASECNA and member countries; the need for an instruments' calibration center to standardize calibration; and ensuring quality control at the level of ASECNA.

### **ENHANCING PARTNERSHIPS IN THE APPLICATION AND USE OF WEATHER AND CLIMATE SERVICES**

On Wednesday morning, the session on enhancing partnerships was chaired by Stephen Magezi, Department of Meteorology, Uganda. Mohammed Kadi, ACMAD-Niger Partnership, presented on the role of ACMAD in enhancing capacity to deliver weather and climate information in Africa. He highlighted that partnerships with the UN system, non-governmental organizations, African sub-regional economic groups, and international scientific projects among others were responsible for their improved capacity to: deliver "tailored" weather and climate information services and products; improve users' capacity and awareness; and link the Partnership to the media. He highlighted the major components of ClimDev Africa, funded by the AfDB and other partners, remarking that there is need for funding directed towards long-term support of operational services of NMHSs.

Vladimir Tsirkunov, World Bank, presented on creating regional partnerships for the modernization of NMHSs that support regional and national development, using experiences from Europe and Central Asia. He noted that in many of the countries in which the World Bank intervened, there was a lack

of funding, poor infrastructure, and lack of political will toward NMHSs. He informed delegates that success only comes from involving governments, end-users, and other partners in the development of NMHSs, and pledged his organization's support to African countries in the improvement of these services.

Karine Svingby, Ericsson, noted that mobile phone-based weather and climate services are within reach in Africa due to the existing cost-efficient mobile network, which already facilitates large-scale data handling and micro-payment flows. She noted that by 2020, "everything in the world would be connected," and that Ericsson intended to take advantage of this network to invest in the weather /climate market. Using an example of Docomo, a climate information service provider in Japan, she illustrated an environmental sensor network collecting data on pollen, ultraviolet light, temperature, lightning, and carbon dioxide information, which is disseminated to individuals.

On partnerships in agriculture, Koné Brahima, Center for Training, Research and Applications of Agrometeorology and Operational Hydrology (AGRHYMET), spoke about the work of his organization in the Sahel, noting that challenges such as unreliable funding, obsolete infrastructure, and lack of expansion capacity still needs to be addressed. He highlighted AGRHYMET's partnership with the Economic Community for West African States (ECOWAS), as well as their work with WMO. On the work of the African Monitoring of the Environment for Sustainable Development (AMESD) programme, he informed delegates that AMESD's objective is to improve environmental monitoring for better use of the natural resources in the Sahel and beyond. He noted with appreciation the support of EUMETSAT in the distribution of products to stakeholders in the region, and lauded all AMESD partner organizations for their continued support.

Luis Fernando Lopez Cotin, Spanish Meteorological Agency (AEMET), presented on the Spanish Cooperation program on NMHSs in West Africa to enable funding for meteorological services, and sharing experiences with Latin America. He highlighted the aim of collaboration with West Africa to provide relevant tools for sustainable development in components of: maritime safety; agriculture and fisheries; health; and emerging from natural disasters and conflict covered under the projects MARIMET, METAGRI, HEALTHMET and EMERMET respectively.

Byung-Seong Chun, Korea Meteorological Administration (KMA), spoke on enhancing partnerships between KMA and East Africa. He highlighted the history of Korea, noting its success in transiting from developing country status to its current developed country status. He underscored Korea's commitment to partnering with Africa to improve meteorological and hydrological services and described Korea's efforts to do this, including discussions at the Korea-Africa Forum in 2009, and a Korea International Cooperation Agency and WMO memorandum of understanding on African Aid Cooperation. On cooperation with East Africa, he said Korea would focus on supporting ICPAC, capacity building in the field of meteorology, and supporting the provision of information and communication services.

In the discussion, panelists dealt with issues concerning: the regional repatriation of funding for ClimDev Africa; the associated costs and capability of mobile-phone service providers to develop "tailored" meteorological services; and the opportunities to uplift NMHSs in war-torn nations such as Liberia through the AEMET and other partnerships.

## **SPECIAL SESSION ON THE GLOBAL FRAMEWORK FOR CLIMATE SERVICES**

On Wednesday afternoon, the special session on the Global Framework for Climate Services (GFCS), moderated by Jerry Lengoasa, WMO, was convened. Lengoasa introduced the speakers and noted the importance of the subject matter.

Jan Egeland, Co-Chair, High-Level Taskforce for the GFCS, introduced the Framework, stressing its potential to influence sustainable global change. He said that the provision and dissemination of climate information is integral to the development agenda, further noting that without this information, there would be “constant poverty.” He defined climate services, and emphasized their importance in the prediction of extremes in the near- and medium-term future. The mandate of the GFCS is to, *inter alia*, consult with stakeholders, prepare a report to review the current state of affairs and assess the gaps, and recommend options to address the gaps and solicit investment for its activities.

Filipe Lúcio, WMO, made a presentation detailing the events leading up to the third World Climate Conference (WCC-3), held in Geneva, Switzerland in 2009. He briefed delegates about the WCC-1 in 1979, which established the IPCC as well as the World Climate Programme and highlighted the establishment of Global Climate Observation System at WCC-2 in 1990. He then described the events at the WCC-3, noting one of its important outputs as the establishment of the GFCS.

Geoff Love, WMO, discussed the next steps of the GFCS. He outlined a plan of implementation and added that there would be proposals on the next steps relating to the role of the UN system and other stakeholders, approaches to global data policy, improving systematic *in situ* observations and monitoring of climate particularly in data-sparse areas. He noted that the strategy for this involves: face-to-face meetings in WMO’s six regions; an internet-based questionnaire that is also accessible via internet-enabled mobile phones; and outreach to the operational climate community experts and government review.

The ensuing discussion included: connecting several parallel initiatives working in isolation; finding practical mechanisms for stakeholders to ensure climate forecasts benefit the continent; communicating both short- and long-term data-series climate information to a wide range of users; delivery mechanisms of climate change communication; and incorporation of indigenous knowledge into GFCS.

## **USER PERSPECTIVES OF WEATHER AND CLIMATE SERVICES**

On Thursday, 15 April, Mama Konaté, National Meteorology, Mali, chaired the afternoon session on user perspectives. Presenting the view from the water sector, Guido van Langenhove noted a vast improvement in meteorological services over the past few decades, saying that the information generated currently is more reliable and more relevant. He lamented, however, a growing neglect in the importance of ground information, which renders information from remote sensing abstract and “dangerous to use.”

Speaking for the health sector, Yolande Raelina, Climate and Health Working Group, Madagascar, said seven new diseases have emerged in the past decade, all of which have the capacity to become epidemics. She also noted that with erratic rainfall patterns and the emerging threat of climate change, both of which affect human health, there is a need for the health sector to work more closely with meteorologists, hydrologists, and climatologists.

Stephen Njoka, Kenya Agricultural Research Institute (KARI), emphasized that improved agricultural practices enabled communities to become more resilient to climate change. He added that NMHSs on their own cannot provide all the meteorological service required and recommended decentralization through training of staff from other agencies to disseminate meteorological information. Benson Wafula, KARI, recommended strengthening links between NMHSs and research institutions, including universities, and strengthening the capacity of consumers in interpreting and applying meteorological information.

Judith Akolo, Kenya Broadcasting Corporation, shared her experiences working with the Kenya Meteorological Department and other scientists in the sector, stressing that it is imperative for scientists to share as much information as possible with journalists, who act as messengers to the wider public. She reminded delegates that without the media, information from meteorologists, and other scientists would not reach the public.

Patrick Luganda, Network of Climate Journalists of the Greater Horn of Africa, noted the importance of communicating climate change information for mitigation of losses that lead to reversals in national developments. He noted that ignorance on climate change matters was due to: an inability to understand the relevance of the information relayed; blame games; and politicization and trivialization of the issues. He emphasized the need for collaboration between media and the WMO, NMHSs, ICPAC, Climate Outlook Forum and other agencies that are important sources of climate related information.

In the ensuing discussion, panelists tackled issues surrounding feedback on communication from the public and other sectors, especially regarding early warning messages, as well as translating climate information into action at the community level. Delegates also discussed the use of new technologies to disseminate climate information. In conclusion, delegates noted that climate information needs to be packaged correctly so that it is: understandable and relevant; trusted and accessible; and actionable.

## **HIGH LEVEL SEGMENT**

### **OPENING CEREMONY**

On Thursday, 15 April, the High Level segment of the conference was convened. Joseph Mukabana, WMO, welcomed delegates to the High Level Segment of the Conference. Noting the role of meteorological and hydrological services as defined by the WMO, he stressed the importance of these services in their provision of early warnings prior to extreme weather events. Saying that the world’s attention is focused on the work of meteorologists and hydrologists in providing climate information, he urged policy makers in Africa to allocate the requisite funding to their NMHSs so that they can provide better climate information.

Margareta Wahlström, UN Under-Secretary-General and Assistant Secretary-General for Humanitarian Affairs, UNISDR, drew attention to the development of a national plan for Africa led by the AU to reduce the impacts of disasters, and noted WMO’s contribution as a founding member of UNISDR. She highlighted the theme of the Hyogo Framework for Action 2005-2015 “Building resilience in nations and communities to disaster,” emphasizing the need for more sharing and coordination of efforts to facilitate policy implementations and ensure sustainable development. She said such panels demonstrate how working together and building partnerships “can produce much effect.”



Rhoda Peace Tumusiime, Commissioner for Rural Economy and Agriculture, AU, lauded delegates for prioritizing meteorological and hydrological services in their development agendas. Lamenting that the facts of climate change paint a “gloomy picture” for Africa, she informed delegates of the setback this translates for the continent in terms of development and meeting the millennium development goals (MDGs). She called for a free flow of climate information throughout the continent, stressing that this will only be possible if the proper attention is given to NMHSs. She highlighted the work of the AU on adaptation and mitigation strategies, and emphasized the need to support vulnerable communities, especially in rural areas.

Michel Jarraud, Secretary-General, WMO, acknowledged the efforts of the AU in partnering with WMO to organize the conference. He commended Kenya for their involvement in WMO activities particularly through regional facilities including the WMO Specialized Meteorological center, the WMO Regional Telecommunications Hub, the Drought Monitoring Centre, the Mount Kenya Global Atmosphere Watch Station and a regional training center. He quoted the Kenyan President’s statement in the Nairobi African Parliamentarians Summit on Climate Change on the need for mechanisms to address the impacts of climate change, which necessitated strengthening of the capacity of NMHSs. He outlined the establishment of the GFCS at the WCC-3 to promote the development of decision-supportive tools and capacity in climate-related risk management, emphasizing the importance of NMHSs in meeting the MDGs since natural and climate-related disasters curtailed national development.

Noah Wekesa, Minister of Forestry and Wildlife, Kenya, urged the international community to take collective responsibility for climate change, and use limited resources to curb climate-related disasters by supporting NMHSs as custodians of predictions, weather forecasts and advisory to users. He reiterated the importance of NMHSs in ensuring the MDGs are met using information provided for early warning systems and disaster risk analyses. He remarked that the support to NMHSs should entail adaptation of new technology and interconnectivity through internet and other communication capacities while bringing NMHSs to end-users. He illustrated synergies between WWC-3 and the present initiative noting that it would form building blocks for decisions made and adopted at the Conference.

#### ***ELECTION OF THE BUREAU***

Delegates elected Ramadhan Seif Kajembe, Kenya, as Chair of the Conference. Hamed Semega, Mali, Patson Mbiriri, Zimbabwe, and Oumaro Mefiro, Cameroon, were elected as first, second and third Vice-Chairs respectively. Mohamed Zahoud, Morocco, was elected as Rapporteur.

#### ***ADOPTION OF THE AGENDA***

On the agenda, Senegal recommended that the Ministerial Declaration only be adopted after delegates heard Ministerial statements. The Conference adopted the agenda, with this amendment.

#### ***OPPORTUNITIES FOR AFRICA***

Eugene Koffi Adoboli, former Prime Minister, Togo, addressed the meeting on various indicators of climate change in Africa.

Jan Egeland, Co-Chair, High-Level Taskforce for the GFCS, stressed the need to understand the history of climate in order to better predict extreme events in the future. He also urged that the information collected by meteorologists be made available to various members of the economic sector in order to ensure better

planning for, among others, dam construction, food security, water management and energy security. He outlined the GFCS, and emphasized the importance of input from experts from around the world, particularly from regions whose expertise is currently unrepresented. He called on governments to provide guidance and support to the GFCS as its benefits are far reaching.

Vahid Alavian, World Bank Africa, remarked that the Conference has demonstrated a willingness to share knowledge, act technically and politically, and take action through finding mechanisms and approaches to curb climate-related disasters in Africa. He highlighted some World Bank funding partnerships in: hydrological projects; disaster risk management and recovery; capacity building in hazard management; and supporting South-South collaborations in information sharing among NMHSs. He noted that World Bank funding will continue to be allocated at the country level but also at the regional level where appropriate.

Anthony Nyong, AfDB, said that the AfDB was pleased with the level of commitment shown by stakeholders to strengthen NMHSs, reminding delegates that the information provided by meteorological services is central to development. He said that to address Africa’s climate change risks, it is necessary to have accurate climate information. Without this information, he stressed, it is nearly impossible for the water and agricultural sectors to manage risk due to climate change. He urged policy-makers to include climate in management decisions, and highlighted the efforts of the AfDB and its partners in developing projects, such as ClimDev Africa, to generate and disseminate relevant, useful information to end-users. He informed delegates that AfDB has invested US\$30 Million in projects carried out by its regional partners concerned with meteorology, climate change and infrastructure development, and reiterated the Bank’s willingness to continue supporting such initiatives. The Bank is also committed to host an African meteorological facility, similar to the African Water Facility, if called upon to do so.

Michel Jarraud, WMO, reminded Ministers of the April 2002 New Partnerships for Africa’s Development (NEPAD) conference where the African Minister’s Council on Water (AMCOW) was established. He urged ministers to take advantage of the opportunity of this conference to develop a similar structure that would reinforce their voice at the sixteenth UNFCCC COP to be held in Mexico, the sixteenth World Meteorological Congress and other key fora, and also provide input and strategic guidance to the fifteenth session of WMO Regional Association meeting in Africa in 2010.

Ministers met on Thursday afternoon and Friday to hear ministerial statements, discuss the report of the Experts Segment, and discuss and adopt the Ministerial Declaration. Chair Kajembe gavelled the Conference to a close at 5:19pm.

#### **SUMMARY OF THE EXPERTS’ STATEMENT**

In their Statement, the experts conclude that:

- NMHSs can contribute to sustainable development but are unable to do so due to several challenges;
- NMHSs are the sole official voice in issuing weather warnings for public safety;
- NMHSs play a major role in contributing to adaptation and mitigation strategies particularly in the production of future climate scenarios;
- existing Pan-African and regional institutions need to support NMHSs;
- aeronautical meteorological services are a critical activity for NMHSs and face challenges in



- implementing QMS that are ISO 900 compliant within the given timeframe; and
- South-South and North-South cooperation are needed to support improvement of weather, water and climate services in Africa.

They recommended, *inter alia*:

- strengthening observation and communication networks;
- implementing a QMS by all NMHSs that provide aeronautical meteorological services;
- encouraging the development and establishment of climate working groups to address climate and health, climate and energy, climate and transport;
- investing in long-term human capacity development;
- establishing national committees for climate-related matters;
- transforming NMHSs as agencies where required;
- strengthening cooperation between NMHSs and universities;
- building user-community understanding and capacity to benefit from NMHSs;
- strengthening existing operational frameworks for Pan-African cooperation for NMHSs; and
- take advantage of modern telecommunication technologies to reach local communities.

## MINISTERIAL DECLARATION

### ***SUMMARY OF OUTCOMES OF THE MINISTERIAL DECLARATION FROM THE CONFERENCE OF MINISTERS RESPONSIBLE FOR METEOROLOGY IN AFRICA***

Ministers and Heads of Delegations participating in the Ministerial Segment of the First Conference of Ministers Responsible for Meteorology in Africa acknowledged the need to collaborate in enhancing meteorological and hydrological services. They committed themselves to strengthening and sustaining NHMSs by providing necessary resources and adequate institutional frameworks to enhance their performance in supporting national development, and ensure that they meet ICAO's requirements regarding QMS by November 2012. They agreed to:

- establish the African Ministerial Conference on Meteorology (AMCOMET) as a high level mechanism for development of meteorology and its applications;
- designate a Task Force of ten members, including five ministers representing the African sub-regions, to formulate an institutional framework for AMCOMET and submit a proposal to its second session;
- develop, within a short period, an African Strategy for Cooperation to Strengthen NMHSs, taking into account statements of the Expert Segment of the Ministerial Conference held in Nairobi from 12-14 April 2010;
- establish, in collaboration with WMO, a sub-regional climate monitoring and adaptation structure for Central Africa;
- involve technical and financial partners, the international community and the UN system and its agencies to support AMCOMET in the preparation and implementation of the African Strategy;
- facilitate NMHSs access to the Copenhagen Green Fund for Climate Change and cost recovery with respect to aeronautical and maritime meteorological services;

- invite WMO to recognize the Declaration and bring it to the attention of the sixty-second session of the Executive Council, fifteenth session of the WMO Regional Association for Africa and the sixteenth WMO Congress and to take appropriate measures; and
- invite the AUC to take note of the Declaration and bring it to the attention of its next Summit and take appropriate measures.

## GLOSSARY

ACMAD	African Center for Meteorological Applications for Development
AfDB	African Development Bank
AGRHYMET	Center for Training, Research and Applications of Agrometeorology and Operational Hydrology
AEMET	Spanish Meteorological Agency
AMCOW	African Minister's Council on Water
AMESD	African Monitoring of the Environment for Sustainable Development
AMMA	African Monsoon Multidisciplinary Analysis
ASECNA	Agency for Navigation Safety in Africa and Madagascar
AU	African Union
AUC	African Union Commission
COP	Conference of the Parties
CDM	Clean Development Mechanism
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
GFCS	Global Framework for Climate Services
ICPAC	IGAD Climate Prediction and Application Center
ICAO	International Civil Aviation Organization
IGAD	Intergovernmental Authority on Development
IPCC	Intergovernmental Panel on Climate Change
MDGs	Millennium Development Goals
NEPAD	New Partnerships for Africa's Development
NIMET	Nigerian Meteorological Agency
NMHS	National Meteorological and Hydrological Services
QMS	Quality Management System
RCC	Regional Climate Center
SDS-WAS	Sand and Dust Storm Warning System
UN	United Nations
UNEP	UN Environment Programme
UNFCCC	UN Framework Convention on Climate Change
UNISDR	UN International Strategy for Disaster Reduction
WCC	World Climate Conference
WMO	World Meteorological Organization
WIS	WMO Information System