EOS Article

The Africa Climate Conference 2013: Africa Prepares a Roadmap Towards Addressing Climate-related Challenges and Information Needs for Policy and Decision Making

The Africa Climate Conference 2013 (ACC-2013) was held in Arusha, Tanzania from 15 – 18 October 2013. The conference, which was organized by the World Climate Research Programme (WCRP), the African Climate Policy Center (ACPC) of the United Nations Economic Commission for Africa (UNECA) and the University of Dar es Salaam brought together more than 300 participants which included decision-makers, research funding agencies, scientists from various disciplines and practitioners from Africa and around the globe. The objectives of the ACC-2013 were, *inter alia*: 1) to assess the state of knowledge of the African climate system and identify existing knowledge gaps; 2) to develop an Africa climate research agenda that will address climate information needs; 3) to develop a framework for mainstreaming climate information into planning and decision making processes; and 4) to establish networks to enhance the production and practical application of relevant information in areas such as agriculture and food production, water resources management, human health, climate risk management and adaptation planning.

Proposed Action Items

Following a series of plenary and parallel sessions, the conference participants endorsed several proposed action items and the Africa Climate Research for Development Agenda, which is summarized in the online supplement. Several existing and emerging structures and initiatives that will potentially provide the necessary enabling environment for the implementation of the action items and the development agenda were identified and are mentioned in the online supplement. The endorsed action items included: 1) development of sustainable observational networks, engaging in intensive observational campaigns, and recovery, digitization and analyzing existing historical climate data; 2) develop impact datasets across climate-sensitive sectors to enable the development and evaluation of application models; 3) undertake research on processes and feedbacks relating to the carbon and water cycles, land-atmosphere coupling and mechanisms communicating the climate change signal on temperature and rainfall in Africa; 4) undertake detection and attribution studies of past and future climate, particularly extreme events; 5) improve the understanding of local and remote drivers of climate variability at short to multidecadal timescales to improve climate prediction skill; 6) undertake multidisciplinary research involving social and natural scientists; 7) overcome barriers and limits

By M. E. Shongwe, Anna Pirani and Seleshi Bekele

to the flow of knowledge between scientists and the user communities; and 8) build research capacity of African institutions.

Acknowledgements

The authors gratefully acknowledge the contributions made by the participants and the ACC-2013 Steering Committee members towards the success of the conference and in the preparation of this report. The ACC-2013 SC comprised of: Arame Tall (co-Chair; CCAFS/CLIVAR Africa Climate Panel Co-Chair); Seleshie Bekele (Co-Chair; UNECA/ ACPC); Anna Pirani (CLIVAR); William Westermeyer (ACPC); Adama A. Diallo (ACMAD); Seydou Traoré (AGRHYMET/CILLS); Cheikh Kane (AMMA/ACMAD); Ernest Afiesimama (AMMA, Nigerian Meteorological Agency); Ousmane Ndiaye (Senegal Weather Service); Bruce Hewitson (UCT/CORDEX); Mxolisi Shongwe (South African Weather Service); Brad Garanganga (SADC Climate Services Center); Pius Yanda (University of Dar-es-Salaam/ACCFP); Joseph Mutemi (ICPAC); Francois Mkankam Kamga (Université des Montagnes); Abdulla Mokssit (Morocco Met Office); Fred Semazzi (U. North Carolina/WCRP Joint Steering Committee); Richard Graham (UK Met Office/CSRP Research Program); Pete Lamb (U Oklahoma/NOAA); Peter van Oevelen and Richard Anyah (GEWEX); Felipe Lucio (WMO GFCS); Valery Detemmerman (WMO); Simon Mason (IRI/GFCS) and Richard Washington (U. Oxford/CLIVAR Africa Panel Co-Chair).

EOS Article (Online Supplement)

The Africa Climate Conference 2013: Africa Prepares a Roadmap Towards Addressing Climate-related Challenges and Information Needs for Policy and Decision Making

The Africa Climate Conference 2013 (ACC-2013), organized by the World Climate Research Programme (WCRP), the Africa Climate Policy Center (ACPC) of United Nations Economic Commission for Africa (UNECA) and the University of Dar es Salaam was held in Arusha, Tanzania from 15 – 18 October 2013. The conference was attended by more than 300 participants, representing a wide range of stakeholders: an interdisciplinary group of scientists; policy makers; climate data and information providers; climate knowledge users from the public and private sectors; and research funding agencies.

Some Identified Challenges and Gaps

The ACC-2013 was motivated by existing climate-related challenges in Africa including: 1) inadequate and declining ground-based observational data sources; 2)insufficient understanding, knowledge and information on climate variability and change and their impacts on agriculture and food security, water and other natural resources management, sanitation and public health, environmental conservation, economic development, etc.; 3) high vulnerability to natural climate variations and anthropogenic climate change and associated extreme events such as droughts, floods, storms and heat waves; 4) lack of coordinated multidisciplinary platforms for the delivery of national climate services to inform sustainable development; 5) substantive gaps between the production of scientific information and the actual appropriateness, saliency and credibility of the information for the user community and for planning and decision making processes; 6) difficulties integrating contemporary scientific knowledge with local indigenous knowledge; and 7) lack of understanding of the complex interactions and feedbacks between climate and non-climatic stressors of political, social and economic origin.

Proposed Action Items

To address the aforementioned and other related challenges and gaps, the conference participants endorsed several proposed action items: 1) development of sustainable observational networks, engaging in intensive observational campaigns, and recovery, digitization and analyzing existing historical climate data; 2) develop impact datasets across climate-sensitive sectors to enable the development and evaluation of application models; 3)

By M. E. Shongwe, Anna Pirani and Seleshi Bekele

undertake research on processes and feedbacks relating to the carbon and water cycles, land-atmosphere coupling and mechanisms communicating the climate change signal on temperature and rainfall in Africa; 4) undertake detection and attribution studies of past and future climate, particularly extreme events; 5) improve the understanding of local and remote drivers of climate variability at short to multidecadal timescales to improve climate prediction skill; 6) undertake multidisciplinary research involving social and natural scientists; 7) overcome barriers and limits to the flow of knowledge between scientists and the user communities; and 8) build research capacity of African institutions.

Existing and Emerging Structures, Initiatives and Opportunities

The African Union Commission (AUC), Regional Economic Communities (RECs) and African Ministerial Councils will potentially provide the political leadership and will mobilize Governments' support towards the implementation of the Africa Climate Research Agenda for Climate Services and Development. The African Ministerial Conference on Meteorology (AMCOMET), the African Ministerial Conference on Environment (AMCEN) and the African Ministerial Conference on Water (AMCOW) will provide entry points to solicit government commitment and ownership of the ACC-2013 proposed roadmap. The Climate for Development in Africa (ClimDev-Africa) Programme, an initiative of the AUC, the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB) will adopt this Africa Climate Agenda as part of its mandate to lead the response of climate change in Africa. The Global Framework for Climate Services (GFCS) through its partnerships with governments and relevant organizations will facilitate the integration of the research agenda into existing national and regional climate services infrastructures. The World Climate Research Programme, which provided support for the ACC-2013 has pledged its support for the implementation of the conference declaration and recommendations. Several major climate data and research initiatives operating in Africa such as the African Monsoon Multidisciplinary Analysis (AMMA), IGAD Climate Prediction and Application Center (ICPAC), the African Center of Meteorological Application for Development (ACMAD), the West African Science Service Center on Climate Change and Adapted Land Use *(WASCAL), the* Southern African Science Service Centre for Climate *C*hange and Adaptive Land Use (SASSCAL) will provide the lessons upon which the Africa Research Agenda will be built.

The Africa Climate Research for Development Agenda

The Africa Climate Research for Development Agenda, endorsed by all participants at the ACC-2013 consists of four broad priorities for climate research in Africa. Each priority area contains a cluster of critical pan-African climate research proposals that should be supported and implemented in order to advance the existing knowledge frontiers, bridging the gap between social and biophysical research, and knowledge generation and application. The agenda will guide the World Climate Research Programme (WCRP) implementation of the research component of the Global Framework for Climate Services (GFCS) over Africa.

By M. E. Shongwe, Anna Pirani and Seleshi Bekele

Co-designed multidisciplinary research for improving climate forecast skill and reliability, across temporal and spatial scales (towards operational user-relevant seamless forecast products)

Pan-African Climate Research Program Proposals

i. *Subseasonal to Seasonal Prediction Project for Africa*
ii. *Integrated Climate Science, Applications and Policy Research – Understanding underpinning drivers of climate variability in Africa, unfolded across five regions (East Africa, Congo Basin, West Africa, North Africa, Southern Africa)*
iii. *Towards Robust Climate change projections over Africa: integrated CORDEX user-driven analysis*
iv. *Integrated multi-disciplinary climate and impacts research (across four priority GFCS sectors i.e. DRR sector, health, water and agriculture)*
v. *Extremes Attribution*
vi. *Multi-disciplinary validation of forecast skill (including impacts skill)*

Filling the Data Gap Tailoring for Sector Decision-making

Pan-African Climate Research Program Proposals

i. *Filling the Gap in Multidisciplinary data sets (for both climate and sector-specific vulnerability)*
ii. *Development of Integrated Africa Climate Data Information System within existing national and international initiatives*
iii. *Risk Profiles for Major African Cities*

Capacity-building, at all levels

Pan-African Climate Research Program Proposals

i. *Building African Capacity in Climate Science & Communication for Linking Climate Knowledge with Action*
ii. *Nurturing an African intellectual leadership in Climate Research for Development*
iii. *African research nodes of excellence*
iv. *Developing and Mainstreaming training curricula for a changing climate*
v. *From Global to Local: Linkages across prediction centers for delivery of operational climate services*

Mainstreaming climate services into decision making: Linking Knowledge with Action

Improved and more effective communication between climate science and Policy to identify end user needs

Pan-African Climate Research Program Proposals

i. *Framework for Co-producing Climate Services and Integrating Knowledge for Action*
ii. *Building the Interface: Multi-Stakeholder Platforms for Dialogue – Best methods for bringing together climate scientists and users for definition of common language, identification of needs and design of climate services to meet user needs*
iii. *Co-producing climate knowledge with local stakeholders – the End of End-users*
iv. *Supporting Adaptation under deep uncertainty adaptation scenarios addressing envelope of uncertainty, across timescales*

Acknowledgements

We thank the Government of the Republic of Tanzania for hosting the ACC-2013. The authors greatly appreciate the contributions made by the ACC-2013 Steering Committee (SC) Members before, during and after the event and in the preparation of this report. The excellent contributions made by the

conference participants are gratefully acknowledged. The SC comprised of: Arame Tall (co-Chair; CCAFS/CLIVAR Africa Climate Panel Co-Chair); Seleshie Bekele (Co-Chair; UNECA/ ACPC); Anna Pirani (CLIVAR); William Westermeyer (ACPC); Adama A. Diallo (ACMAD); Seydou Traoré (AGRHYMET/CILLS); Cheikh Kane (AMMA/ACMAD); Ernest Afiesimama (AMMA, Nigerian Meteorological Agency); Ousmane Ndiaye (Senegal Weather Service); Bruce Hewitson (UCT/CORDEX); Mxolisi Shongwe (South African Weather Service); Brad Garanganga (SADC Climate Services Center); Pius Yanda (University of Dar-es-Salaam/ACCFP); Joseph Mutemi (ICPAC); Francois Mkankam Kamga (Université des Montagnes); Abdulla Mokssit (Morocco Met Office); Fred Semazzi (U. North Carolina/WCRP Joint Steering Committee); Richard Graham (UK Met Office/CSRP Research Program); Pete Lamb (U Oklahoma/NOAA); Peter van Oevelen and Richard Anyah (GEWEX); Felipe Lucio (WMO GFCS); Valery Detemmerman (WMO); Simon Mason (IRI/GFCS) and Richard Washington (U. Oxford/CLIVAR Africa Panel Co-Chair). The event was funded by several sponsors which included: The African Centre of Meteorological Application for Development (ACMAD); Consortium of International Agricultural Research Centers (CGIAR) Climate Change, Agriculture and Food Security (CCAFS); Institut de recherche pour le développement (IRD); The National Oceanic and Atmospheric Administration (NOAA); The National Science Foundation (NSF); Secrétariat du Fonds Français pour l'Environnement Mondial (FFEM); République Francaise Ministère des Affaires Étrangères et Européennes; the United States Agency for International Development (USAID); the Southern African Development Community (SADC); The World Meteorological Organization (WM0); the Africa Development Bank (ADB); the United Nations Economic Commission for Africa (UNECA); The WMO Global Framework for Climate Services (GFCS); and the Norwegian Ministry of Foreign Affairs.

By M. E. Shongwe, Anna Pirani and Seleshi Bekele