Working together towards strengthened Research and Operations Linkages for Enhancing Climate Services

Joint Session of WMO Commission for Climatology (CCl) and Joint Scientific Committee for the World Climate Research Programme (WCRP)

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We, the experts representing the World Climate Research Programme[1] (WCRP) and the World Meteorological Organization (WMO) Commission for Climatology (CCl), having met in a Joint Session on 02 July 2014 at Heidelberg, Germany, have deliberated on a number of issues of common interest and agree that our joint efforts are critical to comprehensively address the rapidly emerging societal needs for climate services for adaptation and risk management.

The World Meteorological Congress, at its extraordinary session in October 2012, established an Intergovernmental Board on Climate Services (IBCS) to spearhead the implementation of the Global Framework for Climate Services (GFCS). This major step was possible thanks to the scientific advances in climate research and operational systems to provide better climate information, and their increased use towards societal benefits. Under a changing climate, weather and climate extremes are likely to exhibit variability in their occurrence, intensity and character – the growing impacts from extreme weather and climate events indicate the need to support GFCS in the development of actionable predictions. The GFCS will facilitate the interaction among providers of climate information, scientists and users to help ensure the best use of the climate knowledge to assess risks associated with climate change and plan effective adaptation. The initial focus will be on improved service delivery for disaster risk reduction, health, water management, agriculture and food security. Climate Services as envisaged by GFCS will help mainstream climate science into decision making and help ensure that climate-sensitive sectors at national, regional and local levels are well equipped to access and apply the relevant climate information.

1 co-sponsored by the World Meteorological Organization (WMO), the International Council for Science (ICSU) and the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Through the decisions of the World Meteorological Congress at its sixteenth session in 2011, and the 65th session of WMO Executive Council in 2013, the World Climate Programme (WCP) was restructured, to closely align with the GFCS concept, with four components, namely the Global Climate Observing System (GCOS), the WCRP, the World Climate Services Programme (WCSP) and the Programme of Research On climate change Vulnerability, Impacts and Adaptation (PROVIA) implemented by the United Nations Environment Programme (UNEP).

WCRP supports decision-making in climate-sensitive contexts and planning adaptation to climate change by coordinating research required to improve climate predictions and the understanding of the human influence on climate. WCRP has successfully laid the scientific foundation for the current and future climate services. Its research projects, particularly those pursuing the coupled climate and Earth system models, are poised to push the frontiers of climate predictability further. Although climate science has advanced significantly during the past three decades, many scientific challenges remain. Climate research, including observing, understanding, modelling and prediction aspects, helps characterize climate variability and change and to generate quantitative climate predictions and climate projections, on a variety of scales in time and space, providing a key pillar for the GFCS. The 65th session of WMO Executive Council, in 2013, endorsed the recommendations of the WMO/ICSU/IOC Joint Scientific Committee (JSC) for the WCRP to launch the "grand science challenges" to catalyze the climate research efforts in advancing the current knowledge in some critical areas of climate science. As a result of a series of consultations with WCRP sponsors, stakeholders and affiliated network of scientists, WCRP identified six Grand Challenges as follow:

- Regional Climate Information
- Climate Extremes
- Changes in Cryosphere
- Regional sea-level Rise
- Water Availability
- Clouds, Circulation and Climate Sensitivity

The WMO Commission for Climatology has worked over the years to support WMO contributions to the WCP, and is particularly engaged with the WCSP to support provision of climate services, including through WMO's Climate Information and Prediction Services (CLIPS) project which is being transitioned into the GFCS. CCl also fosters the taking of high quality observations, managing the electronic climate data archive and coordinating the use of those data in climate monitoring and assessment. These activities have helped CCl take a lead role in the development of the Climate Services Information System (CSIS), as a component of GFCS designed to deliver the climate information that users need, which will be based on a three-tiered structure of entities at global, regional and national levels. Successful implementation of CSIS will need strong collaboration between CCl and WCRP, for operationalization of research advances as well as prioritization of research to address operational needs.

To support the successful implementation of climate services at all levels, WCRP and CCl agree to closely collaborate to address the following topical issues of direct relevance to climate risk management and adaptation, in general, and in particular to the GFCS:

1. Strengthen and mainstream research observations to serve as prototypes for future climate observing systems, in cooperation with Global Climate Observation System (GCOS) and benefiting from the ongoing WMO Integrated Global Observing System (WIGOS) standardization efforts and WMO Information System (WIS)

infrastructure;

2. Implement systems to channel recent research efforts to enhance the use of predictions at sub-seasonal and seasonal to interannual and decadal scales through operational systems put in place at global, regional and national levels for providing high quality climate services to stakeholders;
3. Ensure availability and access to reliable high-resolution regional climate change information (such as the output generated under the WCRP Coordinated Regional Downscaling Experiment (CORDEX)) needed for climate adaptation and risk management, accompanied with adequate guidance on their appropriate interpretation and evaluation and understanding of uncertainties;
4. Facilitate understanding and prediction of extreme events, to enable better preparedness to extremes and reduce societal vulnerability, particularly at the national and local scales;
5. Collaborate with the Commission for Basic Systems (CBS) in the operations of the WMO Global Producing Centres of Long Range Forecasts (GPCs) and facilitate optimal utilization of GPC products;
6. Utilize opportunities for joint participation in regional activities with strong involvement of operational agencies and NMHSs, such as the WMO Regional Climate Centers (RCCs) and the Regional Climate Outlook Forums (RCOFs); the relevant CCl bodies to interact with the WCRP Working Group on Regional Climate in facilitating the integration of user and decision-maker perspectives into the design and development of regional climate services through two-way communication and co-production activities;
7. Promote interdisciplinary research to develop sector applications, tools and tailored information;
8. Make joint effort to improve the training and availability of highly-skilled talent to undertake climate research, operational systems, and communication, particularly in the developing countries;
9. Recognize that the assessment of the current predictability of the climate system is an important aspect to be addressed, in order to provide more actionable climate information;
10. Agree that decadal prediction needs further research efforts to improve skills, and also co-exploration with users on the potential for exploiting the available skills.

Having benefited from collaboration in the past and in order to further strengthen this collaboration to achieve the above objectives, the WCRP and CCl agree to establish a joint collaborative mechanism and will seek further partnership with other WMO Technical Commissions, Programmes, co-sponsored Programmes, and other Research entities. The cooperative mechanism will include, inter alia, attendance at meetings of the respective high-level bodies of each entity (WCRP JSC, CCl sessions), organization in common of climate-related events such as WMO Technical Conferences and WCRP Open Science Conferences), Joint Expert Teams on issues of common interest (such as the successful and longstanding Joint CCl/WCRP-CLIVAR/JCOMM Expert Team on Climate Change Detection and Indices (ETCCDI)), joint publications, etc.
