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Annex: 1

Subject: COP 21 and CMP 11 of the UNFCCC, Paris, France, 30 November–11 December 2015

Actions required: To inform as to your participation at COP 21 and to consider the full version of "Key Messages of the WMO Community"

Dear Sir/Madam,

Following my previous circular letter dated 16 September 2015, as you are aware, the 21st session of the Conference of the Parties to the Climate Change Convention (COP 21) will be held in conjunction with the 11th session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP 11) in Paris, France, from 30 November to 11 December 2015.

In addition to the key messages for this event attached to my previous letter, I am pleased to send you, attached, a full version of "Key Messages of the WMO Community for COP 21". These provide more detailed information concerning the relevant contributions of the WMO community, organized according to their relevance to the subsidiary structures which underpin the UNFCCC negotiations. Depending on the requirement and circumstances, you may wish to refer to both shorter and full versions. I hope these messages will be useful for inclusion in your country's national statements and for other preparations for the COP.

I encourage you to actively participate in COP 21 and CMP 11 as a member of your national delegation and to support the consideration and recognition of concepts and approaches reflecting the scientific and technical contribution of the WMO community. In case you or your staff members are planning to attend, if you have not done so already, I would appreciate receiving information concerning attendance not later than **13 November 2015**.

Yours faithfully,

(M. Jarraud)
Secretary-General

To: Permanent Representatives (or Directors of Meteorological or Hydrometeorological Services) of Members of WMO (PR-6874)

cc: Hydrological Advisers to Permanent Representatives

CLPA/CCA/UNFCCC-COP21/3rd, ANNEX

KEY MESSAGES OF THE WMO COMMUNITY FOR COP 21
Paris, France
30 November-11 December 2015

Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) is based on scientific facts and findings. In 1994, when the UNFCCC took effect, there was less scientific evidence about climate change, its origin and impacts than there is now. In the ensuing years the scientific case has strengthened to a point that it makes a compelling case for Member States to act in the interests of human safety even in the face of scientific uncertainty. Scientific information and assessments are indeed the key element guiding policy and decisionmakers to reach consensus on, and implement, UNFCCC agreements. Furthermore; robust climate information about the past, present and future state of the climate is of paramount importance in establishing and implementing climate change adaptation strategies at national, regional and global levels.

Scientific data and information provide realistic, actionable policy options and the evidence base for planning and implementing mitigation and adaptation.

This year is critical for the UNFCCC negotiations. The international community is expected to deliver a new, ambitious agreement in Paris. The more Permanent Representatives with WMO and delegates from National Meteorological and Hydrological Services (NMHSs) attend the UNFCCC Conference of Parties (COP), the more they can actively assist their national delegations in interpreting the science and in articulating key technical areas and services which NMHSs, supported by WMO and all its Programmes' co-sponsored activities (e.g. the IPCC), contribute in support of the implementation of the Convention. The following key messages contextualize the role of NMHSs within the relevant work-streams and bodies under the Convention.

NMHSs serve as major custodians and providers of authoritative data and competencies required to support climate change research and climate services. These services underpin adaptation at national level as well as global monitoring of atmospheric concentrations of greenhouse gases and climate change indicators. It is therefore important that NMHSs are provided with the necessary financial, human, technical and institutional resources as a fundamental contribution to UNFCCC processes.

Climate action depends on the availability of high-quality scientific information. NMHSs, Regional Climate Centers (RCCs) and global centers along with other related entities and partners, play a key role in linking climate knowledge with action. Global-scale initiatives, such as the Global Framework for Climate Services (GFCS), that facilitate improvements in the use of climate information by policymakers and others, are enabled by the availability of adequate climate

observations and state-of-the-art science applications at global, regional, national and local scales.

The conclusions of the WMO/UNEP sponsored Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5), the information contained in key WMO annual and multi-year publications such as the Greenhouse Gas Bulletins, the Ozone Bulletins, and the Annual Statements on the Status of Global Climate[1] demonstrate that the climate science is solid enough to be efficiently and cost-effectively used in policy formulation and implementation. At the same time, there is a need for further progress, on downscaling and communicating and educating about climate risks.

Sendai Framework for Disaster Risk Reduction and Sustainable Development Goals

Risk management has become a central element within the UNFCCC. As most disaster loss and damage is associated with climate hazards, integrating Disaster Risk Reduction (DRR) into climate services has the potential to generate multiple synergies.

At the Third United Nations World Conference on Disaster Risk Reduction in March 2015 in Sendai, Japan, 187 countries adopted the Sendai Framework for DRR 2015-2030. Measures identified in this framework, such as risk assessment, multi-hazard early warning systems, preparedness for extreme events, and risk management in climate-sensitive sectors, all contribute to climate change adaptation and reduction of climate-related loss and damage. In supporting these areas, WMO contributes to the achievement of the seven global targets of the Sendai Framework, through its Programmes and through its support for implementation of the GFCS.

Also this year, the United Nations Summit in September adopted new Sustainable Development Goals (SDGs). Goal 13 of the SDGs calls on all countries to take urgent action to combat climate change and its impacts. It further emphasizes strengthening resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. It also requests all countries to integrate climate change measures into national policies, strategies, and planning.

Climate has moved to the center of the post-2015 development agenda. This creates new demands, and opportunities for NMHSs to promote synergies and attract the resources necessary to expand relevant capacities.

At COP 21, negotiations will have to integrate the outcomes of these other major frameworks comprising the post-2015 development agenda. While science unequivocally points to human activity as the primary cause of global warming, it also underlines that there is still a chance for humanity to reverse the current trends and preserve the planet through bold and collective action.

1. Subsidiary Body for Scientific and Technological Advice (SBSTA)

1.1 Knowledge needs arising from the Cancun Adaptation Framework

WMO and its 191 Members, with its global network of NMHSs, follow globally agreed standards and protocols that support the implementation of adaptation-related initiatives. In the UNFCCC context these include the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change (NWP) and the Cancun Adaptation Framework. WMO's strong scientific and technical capabilities can be combined with local, regional and global knowledge to provide

[1] https://www.wmo.int/pages/prog/wcp/wcdmp/CA_2.php

authoritative and targeted analyses for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) as well as by the Subsidiary Body for Implementation (SBI). WMO and the NMHSs of its Members also have a vast reservoir of expertise, service capabilities, data and tools relevant for adaptation planning that can be delivered through governments, programmes, technical commissions, expert teams and partner organizations.

A communication gap currently exists between decisionmakers, vulnerable communities, development practitioners, and climate scientists, particularly in developing countries and Least Developed Countries (LDCs), with respect to the knowledge and capabilities available to support adaptation. This includes the processes for development and implementation of National Adaptation Plans (NAPs). Advocacy and outreach regarding available technical, capacity development and advisory services and research could help narrow this gap and deliver targeted operational climate services in support of adaptation.

NMHSs should participate in cross-disciplinary research between social and natural sciences to understand and better communicate projected climate impacts on water resources, health, wetlands and other natural ecosystems, urban and rural areas and livelihood systems to enable adaptation to a changing climate. Among other things, this information is needed to inform the preparation of NAPs (see section 2.1).

1.2 Global Framework for Climate Services (GFCS)

The GFCS helps governments and decisionmakers at all levels build the needed capacities to better anticipate the impacts of evolving climate conditions, including possible increases in climate extremes. Implementation of the GFCS at country level, therefore, provides a mechanism for implementing adaptation.

When the GFCS was established in 2013, it included four initial priority areas: Agriculture and Food Security, Disaster Risk Reduction, Health and Water. The World Meteorological Congress recently agreed on the inclusion of Energy as a fifth priority area of the GFCS, recognizing its potential contribution in improving energy-related outcomes both in terms of promotion of renewable energy sources and energy saving as well as through protection of energy infrastructure and delivery systems from weather and climate extremes. This decision aligns the GFCS with the UN SDG goal and target for energy, the UN Sustainable Energy for All (SE4ALL) initiative, and the UNFCCC Lima Call for Action, together with the prioritization of low emission power generation as a key strategic result of the projects funded via the Green Climate Fund. As energy is a revenue-generating sector, provision of energy-related climate services presents a considerable potential opportunity for NMHSs to support any other UNFCCC policy implementation on a sustainable basis.

GFCS implementation at national level provides an entry point for NMHSs' engagement with a wide group of stakeholders on issues directly related to UNFCCC implementation. Implementation of climate services can position NMHSs to access climate finance resources, including from the Green Climate Fund (see below) as well as from International Finance Institutions and bi-lateral donors.

1.3 Development and transfer of technologies and implementation of the Technology Mechanism

WMO coordinates efforts to address new and evolving technological requirements for climate data and for climate monitoring products and services. These data and services are needed for the analysis and assessment of climate extremes, national and regional climate change

adaptation policies, and the development/implementation of early warning systems and climate watches.

WMO's technical commissions, international programmes, Global Data-Processing and Forecasting System (GDPFS), WMO Information System (WIS), Global Telecommunication System (GTS) and Regional Climate Centers (RCCs), enable NMHSs to contribute to the work of the Climate Technology Centre and Network (CTCN) under the Convention.

WMO is strongly committed to coordinating the implementation and use of information and/or observation networks as well as information on communication technologies (ICTs) that will improve the global, regional and national acquisition for production, exchange, management and archiving of data and the distribution of information and warnings on weather, climate and water synergies. WMO will promote the use of WIS to enable countries to support UNFCCC processes and the post-2015 development agenda.

1.4 Research and systematic observation

Policymakers, development planners, farmers, the health community, and communities of practice of other socioeconomic sectors need timely, reliable, and easily understandable climate information. There are critical gaps in climate observing systems, particularly in Africa, that need to be filled to facilitate sound science and decisionmaking. Lack of adequate data and observation systems seriously hinders the ability of scientists to assess the past and current state of the climate and conduct research on climate risks, impacts and adaptation measures.

1.4.1 Research

The World Climate Research Programme (WCRP) contributes to improvements in understanding climate variability and changes - including predictive experiments for the future state of climate system to project how it will evolve under different emission scenarios. WCRP facilitates cutting edge climate research to address urgent challenges in sea level, water availability, global atmospheric circulation, regional climate, cryosphere and climate extremes. In addition to supporting the IPCC and UNFCCC, WCRP programmes support the priorities identified by its sponsors and stakeholders and support the research pillar of the GFCS.

WCRP coordinates the Coupled Model Intercomparison Project (CMIP) that serves as the fundamental community tool to better understand present and future climate changes. These model outputs, and hundreds of scientific articles analysing those outputs, serve as the basis for the most recent Assessment Reports of the IPCC. The WCRP community is now addressing three broad scientific questions in support of the WCRP Grand Scientific Challenges: (1) how the full integrated climate system responds to greenhouse gas forcing; (2) the origins and consequences of systematic model biases; and (3) how natural climate variability and uncertainties in scenarios impact predictability.

Climate change research is working to address a growing need for detailed, high-resolution information about regional aspects of climate change and variability. This information is needed by scientists in disciplines that require climate information (e.g. such as hydrologists) and by policymakers, other decisionmakers and officials responsible for assessing climate change impacts, and developing adaptation policies.

Although climate change projections are based on global models, such models lack sufficient spatial detail for all applications. WCRP leads the Coordinated Regional Climate Downscaling Experiment (CORDEX) initiative for producing an improved generation of regional climate change projections world-wide. These projections served as inputs into impact and adaptation studies assessed by the IPCC AR5 and will continue to do so for future assessments. CORDEX also improves communication between the impacts, adaptation, and other stakeholder communities on the one hand, and the regional climate information community on the other.

Efforts need to be made to ensure that observations crucial to our understanding of terrestrial systems – including the hydrosphere, biosphere and cryosphere – are moved from the largely research driven funding base to one that supports a secure, longer term monitoring network.

1.4.2 Systematic Observation

NMHSs play an important role in systematic observation under the convention as they are major contributors to GCOS, which is co-sponsored by WMO. The GCOS status report presented to SBSTA 43 at COP 21 examines the adequacy of the global climate observing system and GCOS plans for meeting the data and information needs for climate research, adaptation and climate services. GCOS has started work on developing a new implementation plan partly based on the conclusions of the status report, an outline of which has also been presented to this meeting of SBSTA. The new Implementation Plan will be finalized in 2016 and presented to SBSTA 45 during COP 22.

1.4.3 Climate data issues

Historical data recovery is a cost-effective complement to new observations as a means of significantly extending the length and coverage of the climate record. WMO data rescue programmes, therefore, constitute an invaluable contribution to strengthening the observational database. The International Climate Assessment & Dataset is an initiative that aims to provide access to near real-time station data, recovered and digitized historical data, and climate monitoring information and climate change assessments for as many sites in a region as possible[2]. Furthermore, climate data for monitoring climate variability and extremes are fostered through the international coordination of the WMO Climate System Monitoring (CSM)[3]. Climate assessment within the scope of the CSM provides authoritative information on climate trends and anomalies on global, regional and national scales.

Long-term observations are essential for documenting and analysing climate variations on multi-decadal to centennial timescale and thus providing a reference for current and future assessments of the Earth's climate. The WMO centennial station mechanism will recognize stations that provide such data to highlight the importance of preserving them.

1.4.4 WMO Policy for the International Exchange of Climate Data and Products to Support the implementation of the GFCS

Climate data and products only become of value when they are used to achieve socioeconomic and environmental benefits. In this regard, Seventeenth Congress adopted Resolution 60

[2] http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-13-00249.1
[3] https://www.wmo.int/pages/prog/wcp/wcdmp/CDM_1.php

(Cg-17) - WMO policy for the international exchange of climate data and products to support the implementation of the Global Framework for Climate Services.

WMO's policy for the international exchange of climate data seeks to ensure greater availability of, access to, and use of enhanced climate services for all countries. The policy promotes the free and open exchange of climate-relevant data, tools and scientifically based methods while respecting national and international policies.

Adoption of this policy will require Members to establish financial mechanisms, including new investments, for sustaining the network of stations and sensors needed for the global observing systems for climate. Resources are also needed for the maintenance and operation of data preparation and management systems. As the new policy is a vital contribution to the UNFCCC, climate financing resources may provide a means for supporting observing systems and data management and exchange.

1.5 Issues relating to Greenhouse Gas Monitoring

The Global Atmosphere Watch Programme of the World Meteorological Organization (WMO/GAW) is the only long-term international global programme that coordinates observations and analysis of atmospheric composition changes. The GAW Programme builds on a partnership of more than 100 countries. During its 25 years of existence WMO/GAW has matured into the system that provides reliable long-term high quality observations in support of international policymaking. WMO/GAW has several important elements, including globally coordinated observations supported by comprehensive quality assurance and capacity development. The WMO Greenhouse Gas Bulletin produced by this Programme provides valuable science-based information to the annual UNFCCC COP.

Following Cg-17, GAW has embarked on the development of an Integrated Global Greenhouse Gas Information System (IG3IS). IG3IS will be an independent, observationally based information system for determining trends and distributions of GHGs in the atmosphere and the ways in which they are consistent or not with efforts to reduce greenhouse gas emissions. This is being done already on a global scale through existing networks, but currently provides only a modicum of useful information at the spatial scale of nations and regions. The IG3IS will improve the granularity of observations and analyses in order to support the planning and management of Parties' Intended Nationally Determined Contributions (INDC) to mitigation efforts.

1.6 Issues relating to agriculture

WMO emphasizes a science-driven approach to enhancing adaptation in the agriculture sector, while promoting sustainable development, agricultural productivity and food security. There is growing attention to early warning in agriculture and monitoring of trends in droughts and floods. NMHSs assist in providing meteorological and related services to the agricultural community to help develop sustainable and economically viable agricultural systems. These services help to improve production and quality, generate income, reduce losses and risks, decrease costs, increase efficiency in the use of water, labour and energy, conserve natural resources, decrease pollution by agricultural chemicals, and contribute to the reduction and/or removal of greenhouse gases. Many of these benefits are also intended outcomes of the Global Alliance on Climate Smart Agriculture supported by WMO.

WMO assists NMHSs in a number of areas related to a SBSTA 42 conclusion concerning agriculture (FCCC/SBSTA/2015/L.2). Priorities include:

(a) Development of early warning systems and contingency plans in relation to extreme weather events and its effects, such as desertification, drought, floods, landslides, storm surge, soil erosion and saline water intrusion; and

(b) Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels.

WMO, UNCCD and FAO, along with other partner organizations, jointly facilitate the development of national drought policies around the world to create more drought resilient societies. The Integrated Drought Management Programme (IDMP) co-sponsored by WMO and the Global Water Partnership (GWP), in collaboration with other partners, works to support stakeholders at all levels by providing policy and management guidance and by sharing scientific information, knowledge and best practices.

1.7 Issues relating to water

Integrated water resources management is essential for adaptation and for reducing loss of life and property due to flooding and droughts. Water management requires the integration of weather, climate, and hydrological services. The GFCS and ongoing global efforts on water-related disaster risk reduction, provide vehicles for strengthening implementation of integrated water resources management for climate change adaptation.

There is a growing need for comprehensive water resource and related assessments, statistics on precipitation, flood and drought events, as well as meaningful assessments of spatial and temporal trends in surface-water and in ground water quantity and quality. NMHSs are increasingly expected to support governments in the sustainable use of scarce resources, such as water and energy. New products and services have the potential to inform sound decision and policymaking in the water and related sectors at the local, national, and international levels.

In addition to supporting UNFCCC processes, the hydrological data collected by NMHSs under the guidance of the Commission for Hydrology (CHy) could play a significant role in designing monitoring mechanisms for achieving the SDGs, especially the goals related to water and water-related disasters. This helps the WMO community actively participate in the discussions related to SDG monitoring through the framework provided by UN-Water. The activities of UN agencies, funds, programmes and offices with an interest in water matters continue to be effectively coordinated through UN-Water. The current Secretary-General of WMO has been the Chairperson of UN-Water since January 2012.

2. Subsidiary Body for Implementation (SBI)

2.1 Matters relating to the least developed countries and National Adaptation Plans (NAPs)

There is a strong demand for climate services to address climate change and adaptation, particularly at the local level. NMHSs can help meet this demand by combining climate change projections with local climate data and knowledge. These products can then be used to suggest adaptation strategies including for avoiding, preparing for and effectively responding to the changing patterns of extreme events. WMO is developing an Annex to the UNFCCC Technical Guidelines for the National Adaptation Plans, in the areas of analysis and interpretation of climate

data and information for adaptation planning and practices. The Annex will be submitted to COP 21 and shared with NMHSs for information.

NMHSs are encouraged to continue their active role in the UNFCCC Least Developed Countries Expert Group (LEG) and to provide technical advice to LDCs for preparing and implementing NAPs and other contributions to the LDC's work programme. NAPs are expected to guide the allocation of significant climate finance in the future.

The LEG has identified a clear list of needs for its future work. WMO can specifically contribute to the following areas:

(i) Identification, analysis and management of key data to support adaptation planning and implementation, including data rescue and archiving;
(ii) Analysis of climate data and the development and application of climate change scenarios in assessing climate change risks at the national, sectoral and local levels;
(iii) Design of research and systematic observations to support adaptation analysis and planning.

2.2 Warsaw international mechanism for loss and damage

COP 19 (November 2013) in Warsaw, Poland, established the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts. Monitoring of climate extremes and trends which lead to loss and damage at national level in support of this mechanism is a powerful policy support function that NMHSs are uniquely positioned to perform.

Moreover, data on extreme events, "slow-onset" climate trends, and associated losses and damage are crucial inputs for the design and implementation of National Adaptation Plans[4]. The same data is also needed for monitoring implementation of policy frameworks outside the UNFCCC context including Sendai Framework for DRR and the SDGs[5]. The role of systematically collected data on extreme and slow onset events at the convergence of these high-level policy frameworks makes work in this area one of the highest priorities for supporting the UNFCCC and post-2015 agenda.

Many NMHSs have developed and are maintaining historical catalogues of extreme events. Cg-17 decided to standardize weather, water, climate, space weather and other related environmental hazard and risk information and develop identifiers for cataloguing extreme events. These measures will facilitate Members' efforts to track climate-related loss and damage and promote inter-operability among datasets.

By collaborating with relevant authorities engaged in collecting and reporting data on losses and damage, NMHSs can facilitate the association of losses and damages with specific extreme events and slow onset trends.

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[4] Least Developed Countries Expert Group (2012) *National Adaptation Plans. Technical guidelines for the national adaptation plan process.* Bonn: UNFCCC secretariat. Bonn, Germany. December 2012. (http://unfccc.int/NAP) pp. 104-116 and Adaptation Committee (2013) *The State of Adaptation under the United Nations Framework Convention on Climate Change. 2013 Thematic Report.* Bonn: UNFCCC secretariat. Bonn, Germany. pp. 15-19.

[5] Outcome Document – Open Working Group on Sustainable Development Goals, 19 July 2014 (http://sustainabledevelopment.un.org/focussdgs.html) pp. 4 (17), 5 (1.5), and 13 (11.5) and Pre-zero draft of the post-2015 framework for disaster risk reduction – Co-chairs of the Bureau of the Preparatory Committee for the Third United Nations World Conference on Disaster Risk Reduction (http://www.wcdrr.org/documents/wcdrr/Pre-zero_draft_post2015_frmwk_for_DRR_8_August.pdf) pp. 4 (9-10) and 5-6 (12,i).

Many countries have already established or are establishing loss and damage accounting systems that track deaths, damage and loss to housing, health and educational facilities, infrastructure, etc. associated with hazard events and extremes. NMHSs have a vital role to play in the provision and quality assurance of this data. Specific roles for NMHSs include official designation/validation of extreme events and the values of key climate indicators and archiving of event data and trend indices as part of national or sub-national loss and damage accounting systems.

2.3 Capacity-building under the Convention

WMO participates in the eight-year Doha work programme under Article 6 of the Convention. Article 6 commits governments to promote and facilitate education, public awareness and training in the field of climate change. WMO and five other UN bodies are members of the United Nations Alliance on Climate Change Education, Training and Public Awareness. WMO brings to the Alliance its invaluable networks of experts and of NMHSs as well as a number of relevant programmes on education and training and scientific capacity-building.

Capacity-building under the Convention requires a standing institutional arrangement. Cg-17 decided to establish a Capacity Development Programme to ensure, through collaborative efforts of Members, the enhancement and development of the capabilities of NMHSs.

WMO builds capacity through education and training on climate science operations and methodologies. It identifies best practices in climate service delivery to help countries effectively incorporate climate issues into national sustainable development plans including NAPs. Furthermore, WMO is assisting in establishing a vigorous capacity development initiative to train the next generation of scientists and research networks at the global and regional level, ultimately targeting capacity development at the national level. This will serve as an enabling mechanism of human resources required for adaptation activities.

3. Climate Finance

Total pledges to the Green Climate Fund (GCF) exceed USD 10 billion. The GCF has eight strategic results, including low emission power generation and increased health, food, water and livelihood security especially among the most vulnerable. A GCF readiness and preparatory program with a cap of USD 1 million per country per year will help national entities get accredited and prepare projects for GCF financing.

The Green Climate Fund provides a means of financing NMHS's contributions to the implementation of the Convention, for mitigation and adaptation.

There are four scales of GCF projects: micro (less than USD 10 million), small (USD 10-50 million), medium (USD 50-250 million) and large (greater than USD 250 million). Countries wishing to access the GCF prepare and submit projects through a Nationally Designate Authority.

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