Global Framework for Climate Services

- **Goal:** Enable better management of the risks of climate variability and change and adaptation to climate change at all levels, through development and incorporation of science-based climate information and prediction into planning, policy and practice.

"Now is the time to invest in science, and to commit to rigorous and sustained climate observation, research, assessments and the provision of information. The establishment of the Global Framework for Climate Services will be an important step toward strengthening the application of climate knowledge in local, regional, national and international decision-making."

Ban Ki-moon, Secretary-General of the United Nations
What are Climate Services?

- Consolidation of **knowledge** about the past, present and future state of the **climate system**;
- **Identification** of the type and form of services involving information about the climate and its **impacts** that are needed within the community at large and within specific sectors that are particularly sensitive to climate variability and change;
- **Development** and **delivery** of a range of ‘products’ and advice based on climate knowledge and driven by the identified needs for climate services;
- Effective uptake and **application** of these products to help achieve desired outcomes.

Definitions

- **Climate data:**
  - Historical and real-time climate observations along with direct model outputs covering historical and future periods. Information about how these observations and model outputs were generated (“metadata”) should accompany all climate data.
- **Climate product:**
  - A derived synthesis of climate data. A product combines climate data with climate knowledge to add value.
- **Climate information:**
  - Climate data, climate products and/or climate knowledge.
- **Climate service:**
  - Providing climate information in a way that assists decision making by individuals and organizations. A service requires appropriate engagement along with an effective access mechanism and must respond to user needs.
Prerequisites for climate services: Conceptual

- **Available**
  - at time and space scales that the user needs
- **Dependable**
  - delivered regularly and on time
- **Usable**
  - presented in user specific formats so that the client can fully understand
- **Credible**
  - for the user to confidently apply to decision-making
- **Authentic**
  - entitled to be accepted by stakeholders in the given decision contexts
- **Responsive and flexible**
  - to the evolving user needs
- **Sustainable**
  - affordable and consistent over time.

**Why a Framework?**

- Present capabilities for providing climate services do not exploit all that we know about climate.
- Present capabilities fall far short of meeting current and future needs and delivering their full and potential benefits, especially in developing countries.
- A Framework for Climate Services will build on existing capacities and leverage these through coordination to address these shortcomings.
- Envisaged as a set of international arrangements to coordinate global activities and build on existing efforts to provide climate services focused on user needs, wider access and greater benefits of climate knowledge.
- NMHSs are the key building blocks for the Framework.
Components of GFCS

- **User Interface Platform** - to provide a means for users, user representatives, climate researchers and climate service providers to interact.
- **Climate Services Information System** - to collect, process and distribute climate data and information according to the needs of users and according to the procedures agreed by governments and other data providers.
- **Observations and Monitoring** - to ensure that the climate observations necessary to meet the needs of climate services are generated.
- **Research, Modelling and Prediction** - to assess and promote the needs of climate services within research agendas.
- **Capacity Building** - to support systematic development of the necessary institutions, infrastructure and human resources to provide effective climate services.

High-Level Taskforce Vision for GFCS

- A global system to **routinely generate and electronically exchange** an extensive set of defined climate data and data products.
- An initiative in developing countries to **upgrade the climate service capacities** and strategies of all vulnerable and low-capacity countries to a baseline level.
- An initial suite of **new knowledge products** – protocols, tools, products and services – developed through multiple initiatives on **user interfacing** and services development.
- An ongoing **governance mechanism** that drives the Framework’s development, particularly by engaging and mobilising stakeholders, user communities and new resources.
GFCS Sectoral Priorities

All sectors to be tackled but in the first four years the GFCS is proposing giving priority to:

- Agriculture
- Disaster risk reduction
- Water
- Health

Benefits

- Better water resources management
  - Inputs to hydrological characterisation (e.g., precipitation, evaporation, etc.)
  - Planning, design, development and operation of water supplies
  - Flood and floodplain management and control
  - Design and operation of irrigation and drainage systems;
  - Studies associated with power generation, fisheries and conservation, navigation and recreation

- Improved disaster risk management
  - Planning and emergency preparedness and response to extreme events
  - Siting of critical infrastructure such as hospitals, schools, etc.

- Improved support to planning and operations in the health sector
  - Risk Assessment/health system risk management
  - Epidemiological Surveillance & environmental Monitoring
  - Health Services (heat health warning systems, malaria waning system, etc.)

- Improved agricultural planning and management
  - Better drought and flood management
  - Improved food security
The principles of the GFCS

The 8 Guiding Principles

- Priority for the most vulnerable
- Maximize use of climate services
- Global, Regional, National
- Operational
- Climate services a public good
- Partnerships
- No duplication
- Maximize data exchange

GFCS Implementation Priorities

- Capacity building in developing countries
  - Linking climate service users and providers.
  - Building national capacity in developing countries.
  - Strengthening regional climate capabilities.
- Building capacity to implement the User Interface Platform in the developing world
- Improving climate observations in data sparse areas
- Building the capacity of the climate research sector in developing countries
Extraordinary Session of World Meteorological Congress: October 2012

- Establishment of Intergovernmental Board on Climate Services (IBCS) accountable to Congress
- First meeting of IBCS: 1-5 July 2013, Geneva, Switzerland
- Congress approved:
  - Terms of Reference and rules of procedure of IBCS;
  - Specific functions of the Secretariat support for GFCS;
  - Draft Implementation Plan of GFCS for consideration of IBCS
- Congress requested WMO Secretary-General:
  - to consider the GFCS needs in the budget proposal for 2014–2015;
  - to include reference to GFCS within the budget proposal for the 17th Financial Period of WMO (2016-2019).

IBCS Sessions

- IBCS-1: 1-5 July 2013, Geneva
- Adopted the implementation plan
- Governance Structure
  - Chair: Dr Anton Eliassen (Norway)
  - Co-Vice-Chairs: Dr L.S. Rathore (India) and Dr Linda Makuleni (South Africa)
  - 28-Member Management Committee
- Partnership Advisory Committee
- GFCS Trust Fund
- GFCS Office (as part of WMO Secretariat)
- IBCS-2 scheduled 10-14 November 2014 in Geneva
Partnerships

- PAC (Partners Advisory Committee):
  - EC, EUMETSAT, FAO, IFRC, IUGG, UNEP, UNITAR, WBCSD, WFP, WMO
  - First Meeting scheduled 27-28 October 2014 in Rome

- Joint Offices
  - WMO-GWP
  - WHO-WMO

- Project Oversight Board
- Interagency Coordination Group

Initial implementation activities & projects

- Establish frameworks for climate services at the national level in developing countries
- Strengthening capacity for disaster risk reduction and early warning
- Improving communications between the climate and agriculture and food security communities
- Partnering climate services and water resources management
- Developing National Climate and Health Working Groups
- Improving decision-making processes concerning climate-related risks
- Strengthening regional systems for providing climate services
- Large-scale data recovery and digitisation
Some Recent Activities

- National Consultations
  - Belize, Burkina Faso, Chad, Dominica, Mali, Malawi, Niger, Senegal, South Africa, Papua New Guinea, Kiribati, Tanga

- Flagship Projects
  - Regional Coordination in West Africa
  - Malawi and Tanzania
  - Dominica, Costa Rica

- Regional workshops for the most vulnerable countries
  - South East Asia, Caribbean, SWPI, Latin America, SEE (November), MENA (TBD)

- Meeting on Implementation Coordination of GFCS
  - 29 Sep – 1 October 2014, Geneva
  - Brought together a wide range of stakeholders actively involved in GFCS and related activities

GFCS activities

THE WORLD

LATIN AMERICA and CARIBBEAN:
- National Consultation for Frameworks for Climate Services at National Level in Belize and Dominica
- Regional Consultation for the Caribbean in Trinidad and Tobago and Latin America in San Jose
- Programme for implementing GFCS at Regional and National scales in the Caribbean (Canada)

AFRICA:
- National frameworks for climate services in Burkina Faso, Chad, Mali, Niger, South Africa;
- Tanzania and Malawi: Climate services adaptation programme in Africa (Norway)

ARCTIC:
- Programme for implementing GFCS at Regional and National scales (Canada)

SOUTH ASIA, SOUTH WEST PACIFIC:
- Programme for implementing GFCS at Regional and National scales (Canada)
- Regional Consultations for Asia in Bangkok and Pacific SIDS in Cook Islands
Typical Interactions required for GFCS at national level

- National Meteorological and Hydrological Services (NMHSs);
- National agencies for agriculture and forestry, marine (coastal and ocean), water resources, health, energy, the environment and disaster management, and other climate sensitive sectors;
- National and local government committees that deal with policy formulation involving a consideration of climatic issues;
- National Climate Forums;
- Universities and other institutions conducting climate system and climate applications research as well as observations and climate monitoring activities;
- Non-governmental organizations whose activities are sensitive to climate variability and change;
- Private/public partnerships aimed at tackling problems with a climate dimension.

User Interface Platform

- Feedback: that allows providers to obtain information on how effectively their products are meeting the needs of user communities;
- Dialogue: that provides opportunities for people responsible for research, observations, product delivery, and applying climate information to meet and communicate on either a bi-lateral or multi-lateral basis for assessing how well the components of the service chain (inputs, outputs and take-up) are performing individually and in relation to each other;
- Evaluation: that monitors the development, delivery and effectiveness of climate services as agreed between users and providers;
- Outreach: that improves climate literacy in targeted sectors and the wider user community through a range of public education initiatives and on-line training programmes.
- Contribute to Regional Climate Outlook Forums (RCOFs)
- Participate in regular National Climate Outlook Forums (NCOFs)
Climate Services Information System

- Physical infrastructure (computer capabilities, tools and operational practices, professional human resources); Climate Services Toolkit
- Ability to draw on climate information delivered by global and regional producing centres
- Promote the free and open exchange of national data and access to international data and products, while respecting national/international data policies
- Standards, protocols and schedules, quality control, archiving and subsequent access.
- Portfolio of climate products tailored to user contexts that will typically be required at national and local levels for various sectors
- A core national institution (NMHS in most cases) that provides at least a basic set of primary climate information and data products.
- Mandates (roles and responsibilities) of contributing institutions for strengthening and streamlining of the CSIS structure at the national level.
- The extent to which a NMHS can play the pivotal CSIS role will depend on its strengths, capabilities and given mandates.
- Contribute to/coordinate RCOFs; coordinate NCOFs
- Dissemination/communication

Observations and Monitoring

- Existing national capabilities for climate observations and arrangements for data exchange will provide the starting point for building the national infrastructure for climate services.
- Climate services at the national level will clearly benefit from the observing and monitoring systems operated by the NMHS and other organizations.
- Major spatial and temporal gaps in climate observations and historical data within national borders and areas of responsibility (which may include areas of open ocean), and especially in sparsely populated regions and throughout many developing countries.
- Major shortcomings in virtually all countries with respect to the organization and standardization of biological, ecological, environmental and socioeconomic observational programmes and data management practices.
- It will be important for all organizations with the potential to contribute to the GFCS at the national level to work together to scope out, agree on, and develop a national observations and monitoring effort as well as data sharing arrangements.
- Data management with quality assurance (archives & rescue)
Research, Modelling, and Prediction

- Improve relevant scientific knowledge and science-based climate information, and to facilitate their transitions into operational climate service provision by assisting with the development or improvement of tools and methods for effecting the transitions.
- Develop and improve practical applications and products to satisfy the needs of users identified by the other pillars.
- Accommodate user needs (wants) in establishing research priorities along with what is required to advance scientific understanding of the Earth’s climate system.
- Capacity for conducting research on the climate system or for conducting applied climate research varies very widely between nations, with many having little or no capacity at all except perhaps in narrowly targeted applications.
- Extending research strategies and programmes (e.g., World Climate Research Programme, WCRP) to target regional and national priorities.
- Coordinate resources within the framework of a broadly based national programme of climate research, which would serve to support not only their own national climate services but also through programmes of technological transfer the climate services of other countries with less developed research capabilities.

Capacity development

- Human capacity
- Infrastructural capacity
- Procedural capacity
- Institutional capacity

**Capacity development should:**
- address both demand and supply sides
- be service oriented
- respond to user needs
- be balanced with climate science capabilities
NMHSs: Underpinning the GFCS

- NMHSs already provide climate services based on the historical archives of observational data collected for weather services; several of them also provide operational climate prediction products, up to seasonal time scales.
- NMHSs are mandated by the WMO Convention to observing and understanding of weather and climate and in providing meteorological (including climatological), hydrological and related services in support of relevant national needs, ensuring authenticity to their products and services.
- NMHSs are structured and trained to provide 24/7 services.
- NMHSs through collaborative mechanism have established standard practices across the globe for weather services that can be easily extended for delivering climate services.
- Users deal with weather and climate information in a seamless manner, and it greatly helps them to meet all their weather and climate information needs through a 'single window'; NMHSs can effectively provide such a single window.
- NMHSs and their partners constitute a large pool of technical experts dealing with weather and climate.

Concluding Remarks

- In many regions, there is limited use of climate information. It is important to find ways for all countries to cope with climate variability and change through improved access to climate information and prediction/projection products.
- Climate adaptation and Climate-related risk management require multi-disciplinary/international collaborations and cross-disciplinary/international exchange of information.
- WMO is looking forward to GFCS as a major step forward in systematically providing climate information for decision making at various levels of climate-sensitive sectors.
- Greater focus required on enhancing national capacities to efficiently incorporate global and regional inputs into their operational provision of tailored climate information products for local communities.
Thank You
R Kolli@wmo.int

For more information on GFCS: http://www.wmo.int/gfcs
Google Group: http://www.wmo.int/gfcs/group