



World Meteorological Organization
Working together in weather, climate and water

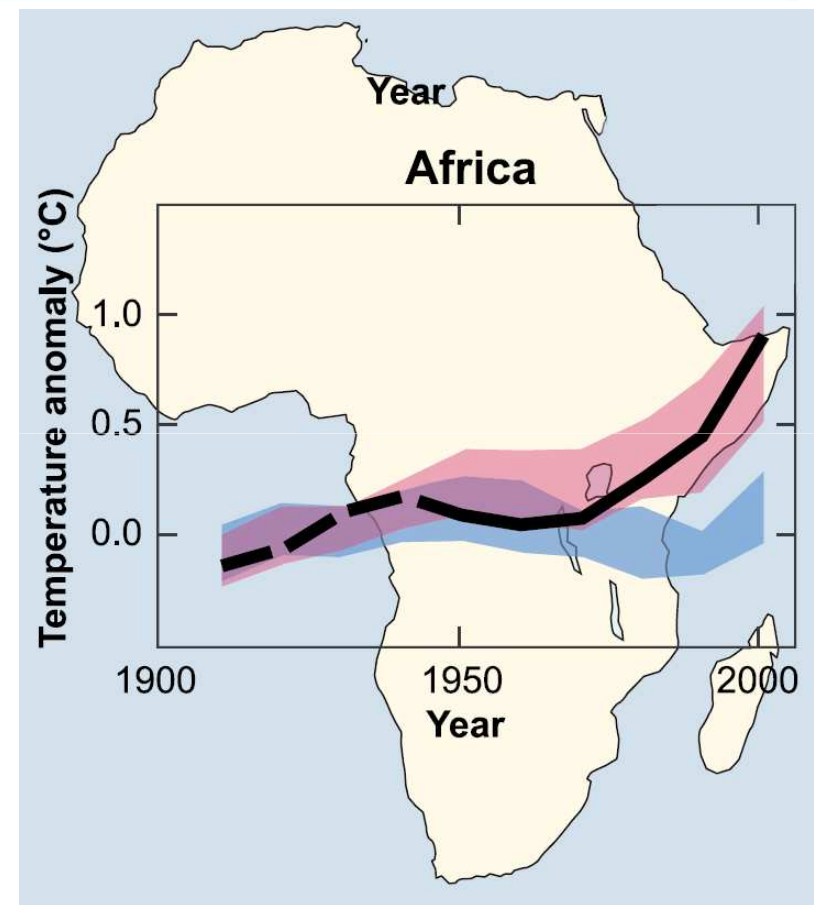
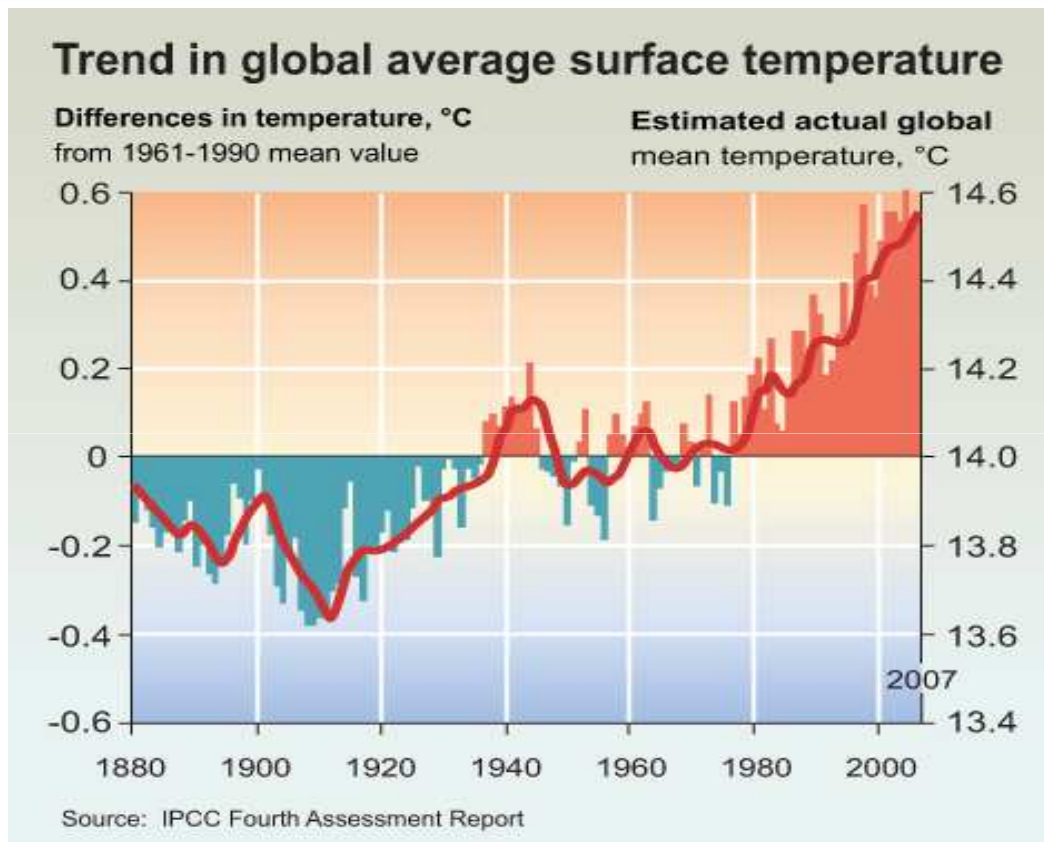
THE GLOBAL FRAMEWORK FOR CLIMATE SERVICES (GFCS)

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Deputy Secretary-General





Concern...



- ✓ The past is no longer a trustworthy indicator of the future
- ✓ New paradigms required to support decision-making

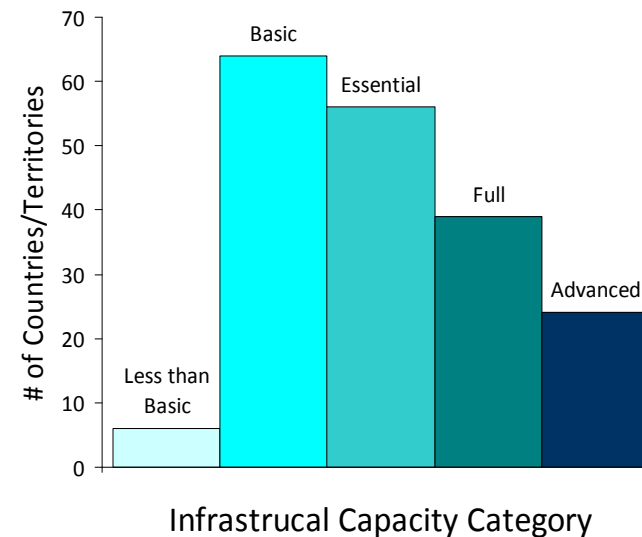
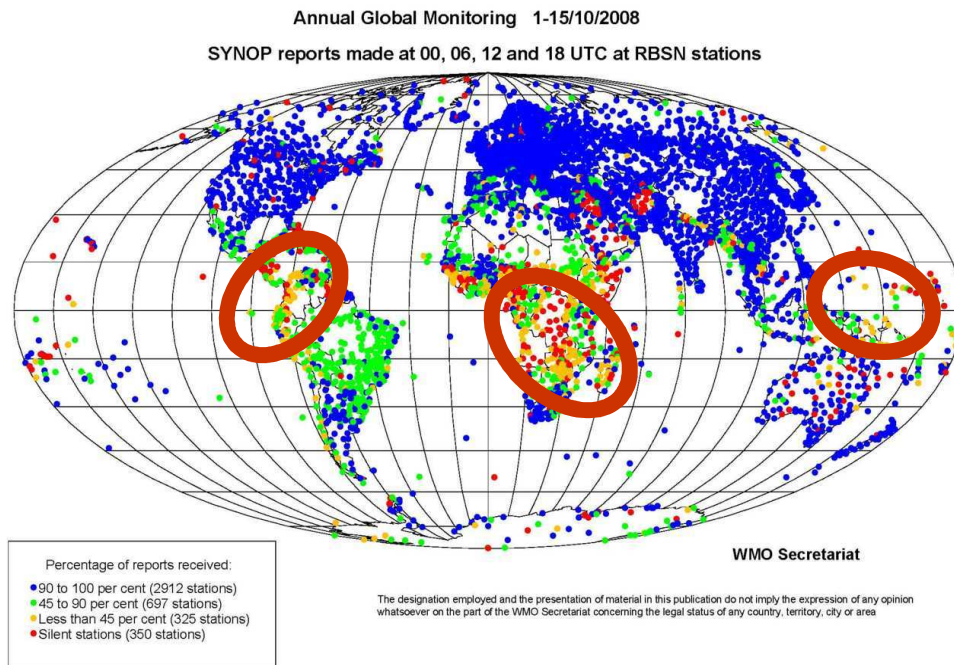




Concern...

- Many countries lack the infrastructural, technical, human and institutional capacities to provide high-

Infrastructural Capacities of Countries as of Aug 2010 to provide Basic, Essential, Full and Advanced Climate Services.





Concern...

- Climate services do not get to the “**last mile**” to those who need them the most.





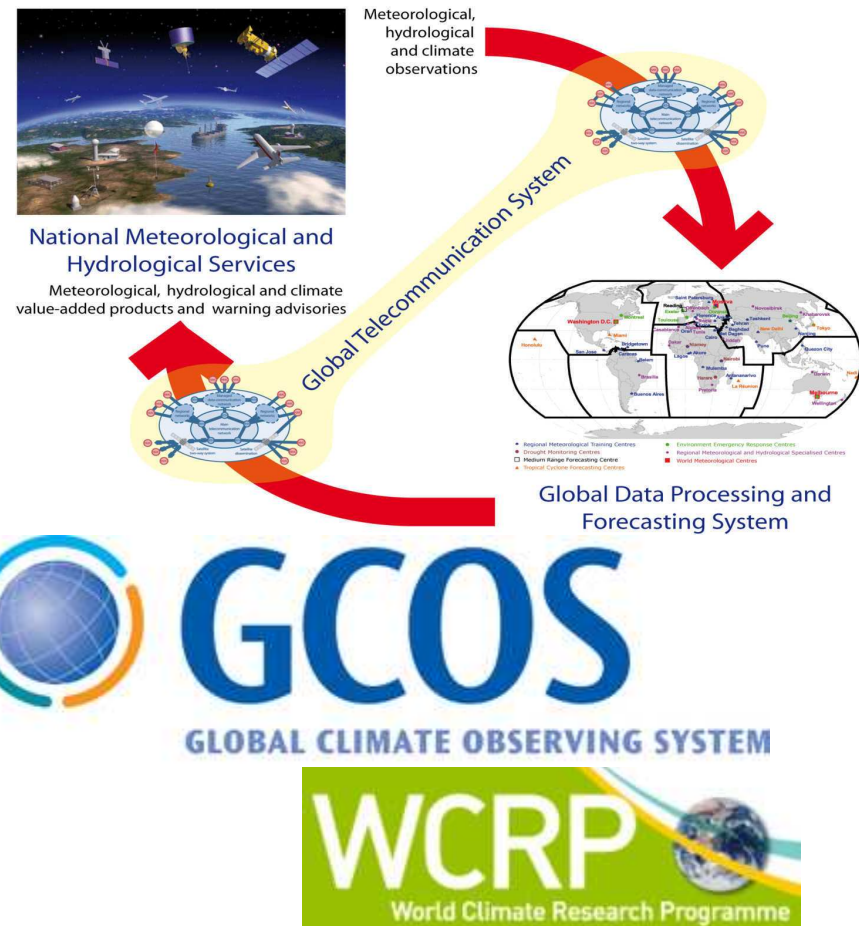
Concern...





Need for a coordinated and integrated approach

- GFCS is a global collective effort being built in collaboration with UN family, partners and stakeholders
- Need to address the full value chain from observations, research, products development to service delivery involving various actors
- WMO with its Members, bodies and co-sponsored programmes will provide only a component needed to build the framework



Partnerships are key for success of GFCS



The purpose of the GFCS



Enable better management of the risks of climate variability and change and adaptation to climate change, through the development and incorporation of **science-based** climate information and prediction into planning, policy and practice on the global, regional and national scale





What are Climate Services ?

- Generating and providing information on past, present and future climate, and on its impacts on natural and human systems
 - Historical climate data sets
 - Climate monitoring
 - Climate watches
 - Monthly/Seasonal/Decadal climate predictions
 - Climate change projections
- Helping the user
 - access the right product for decision making, and
 - use it appropriately including aspects of uncertainty

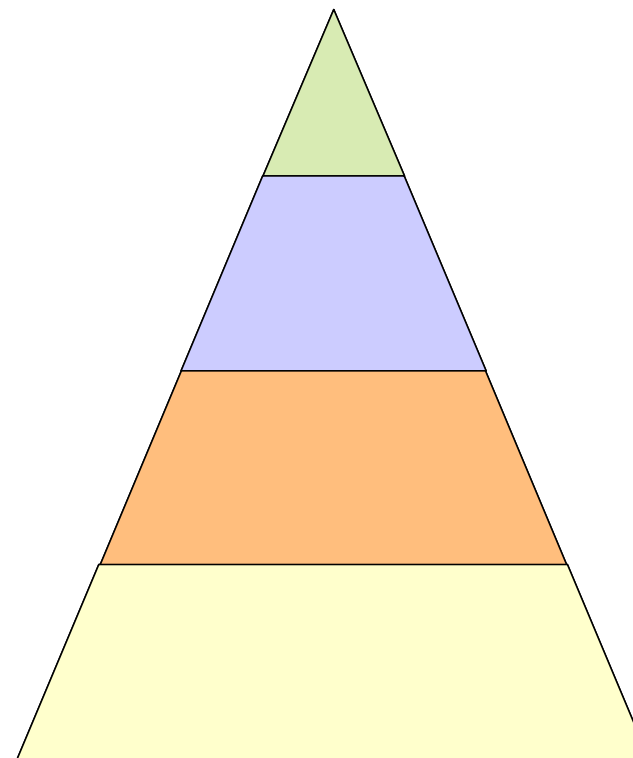


Photo Credits: NASA, Pedro Sanchez, Renzo Taddei



Pre-requisites for climate services

- **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, and
- **Sustainable:** affordable and consistent over time.





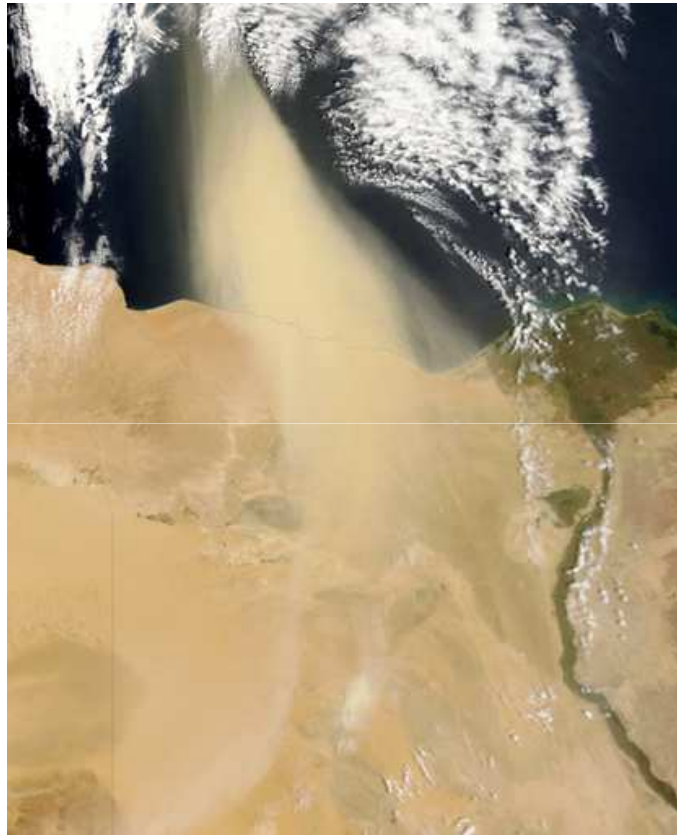
The principles of the GFCS

- 1 - Priority shall go to **building the capacity** of climate-vulnerable developing countries
- 2 - Ensure **greater availability of, access to, and use** of climate services for all countries
- 3 - **Three geographic domains**; global, regional and national
- 4 - **Operational climate services** will be the core element of the Framework
- 5 - Climate information is primarily an international **public good provided** by governments, which will have a central role in its management through the Framework
- 6 - Promote **free and open exchange of climate-relevant observational data** while respecting national and international data policies
- 7 - The role of the Framework will be to **facilitate and strengthen**, not to duplicate
- 8 - **Built on user needs** through user – provider partnerships that include all stakeholders



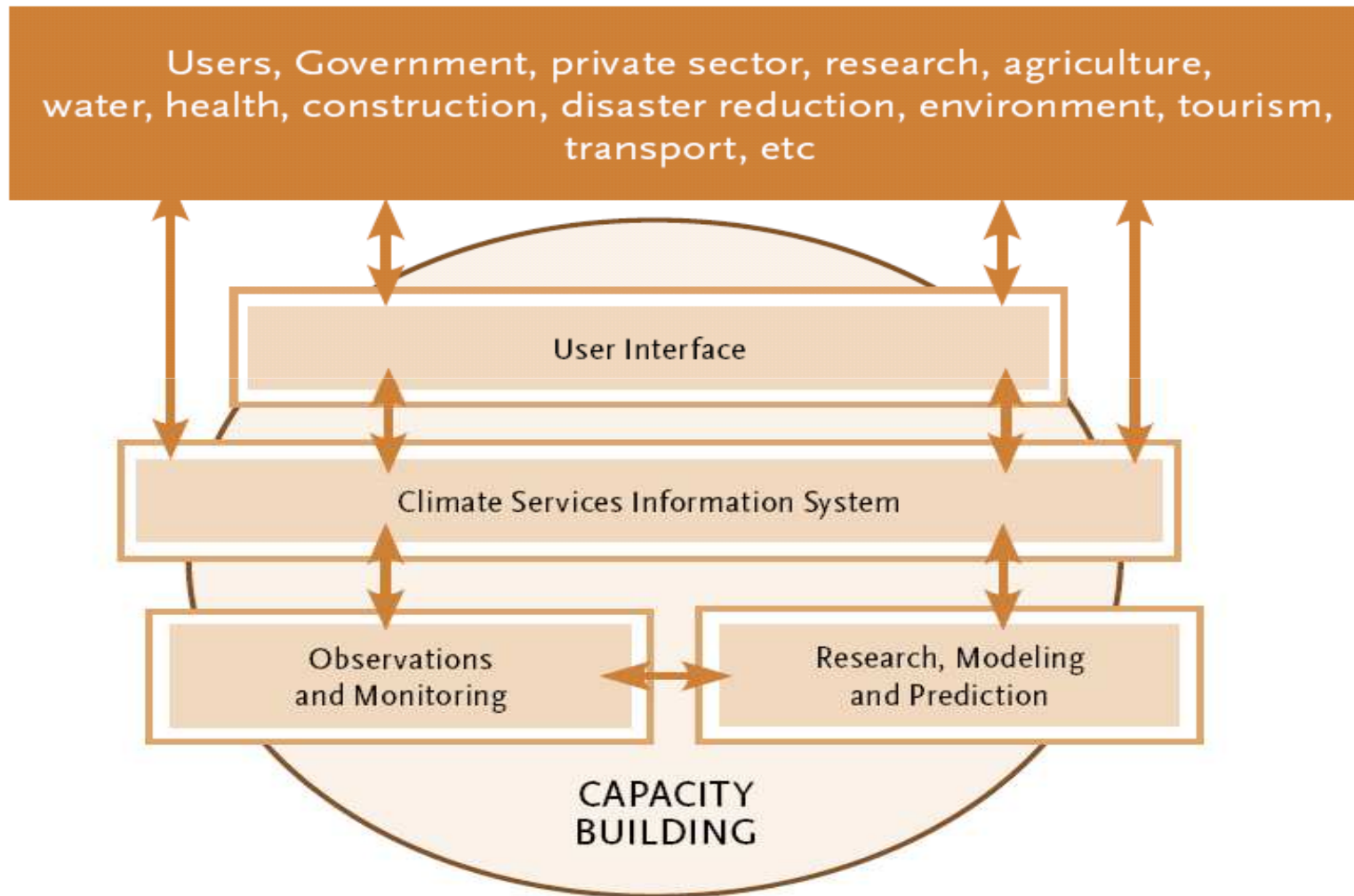
The GFCS priority areas

- ✓ **Water**
- ✓ **Disaster risk reduction**
- ✓ **Health**
- ✓ **Agriculture/food security**





The pillars of the GFCS



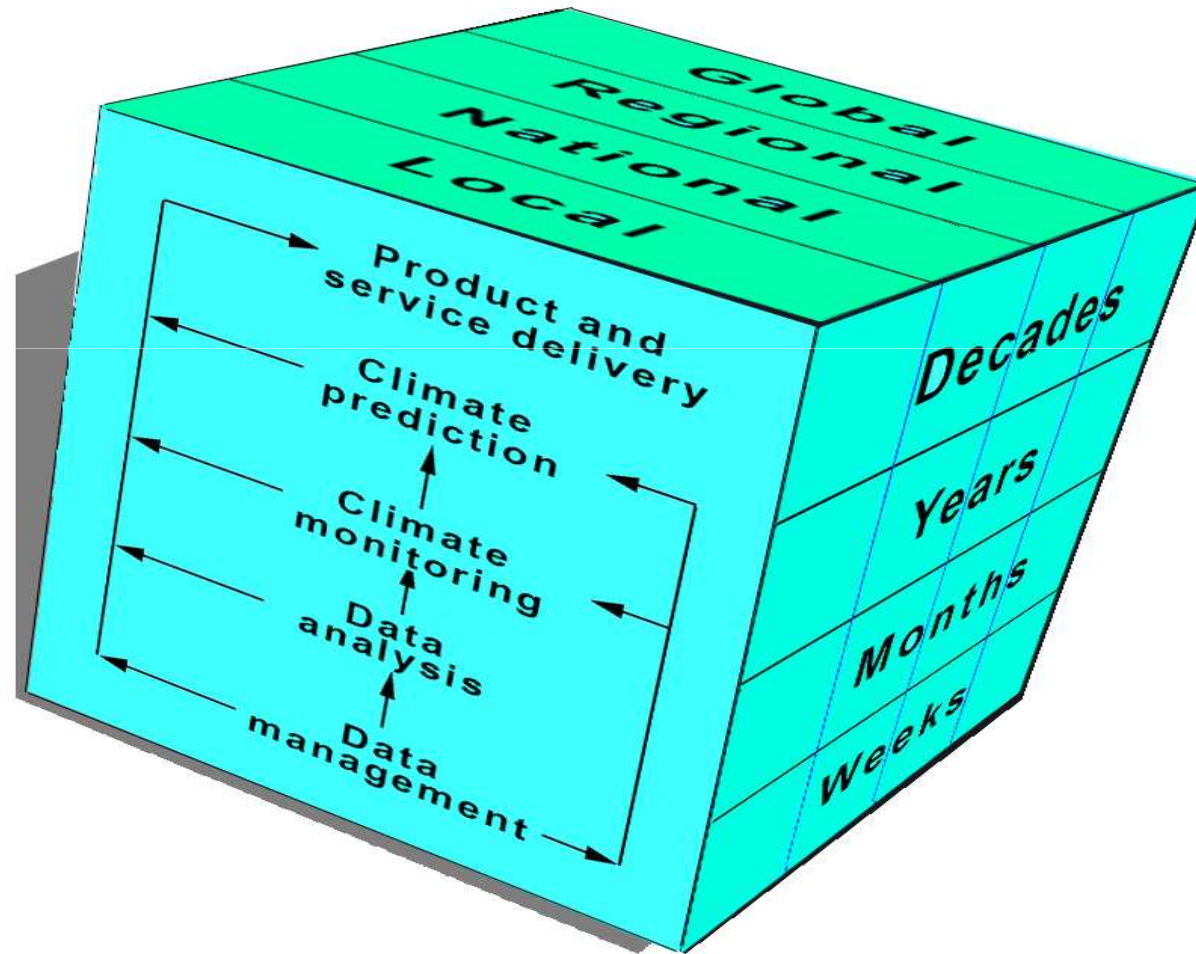


User Interface Platform





Climate Service Information System





Observations and Monitoring

- Collect data to meet service provision needs as identified by the UIP and research needs
- Develop agreements and standards for generating necessary climate data



Socio-economic data also required for provision of climate services



Research, Modelling & Prediction

- Further understanding of the climate system dynamics and change
- Engage in multidisciplinary research focusing on human vulnerabilities to changes, socio-economic impacts and adaptation options
- Engage in research to respond to needs emanating from UIP
- Translate scientific advances into applications and tools to address user needs

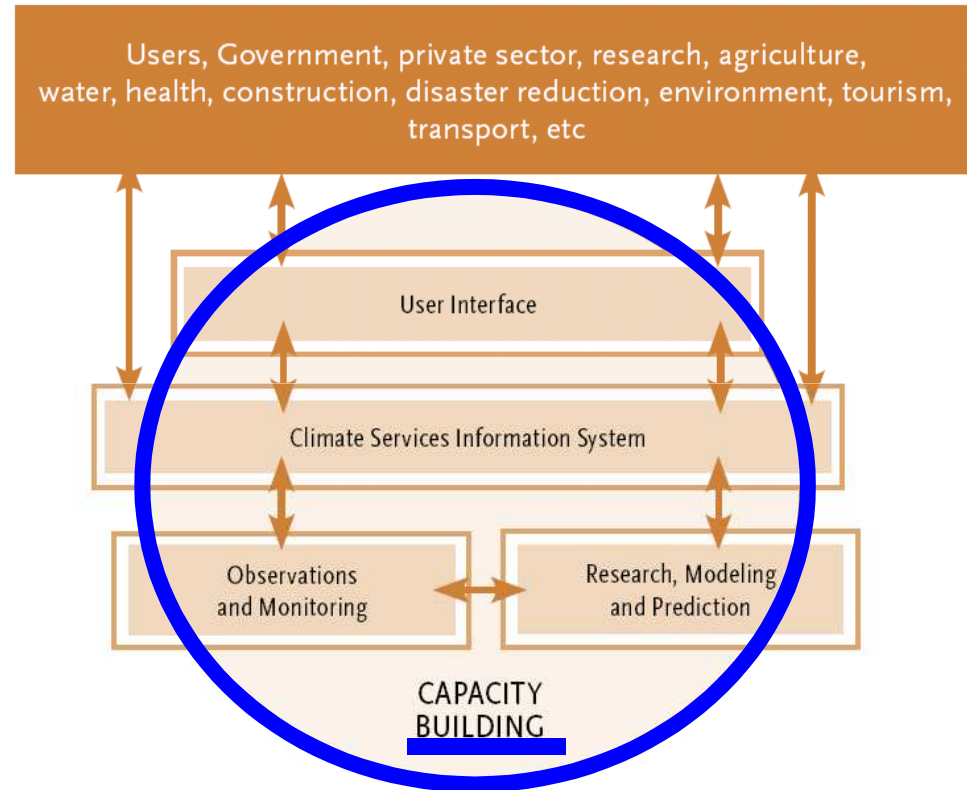


Future Earth - research for global sustainability



Capacity Development

- Support the systematic development of the institutions, infrastructure and human resources needed for effective climate services





Domains of operation of GFCs

Global Level (GPC)

- Produce global and regional climate prediction products
- Coordinate and support data exchange, major capacity building initiatives
- Establish and maintain standards and protocols

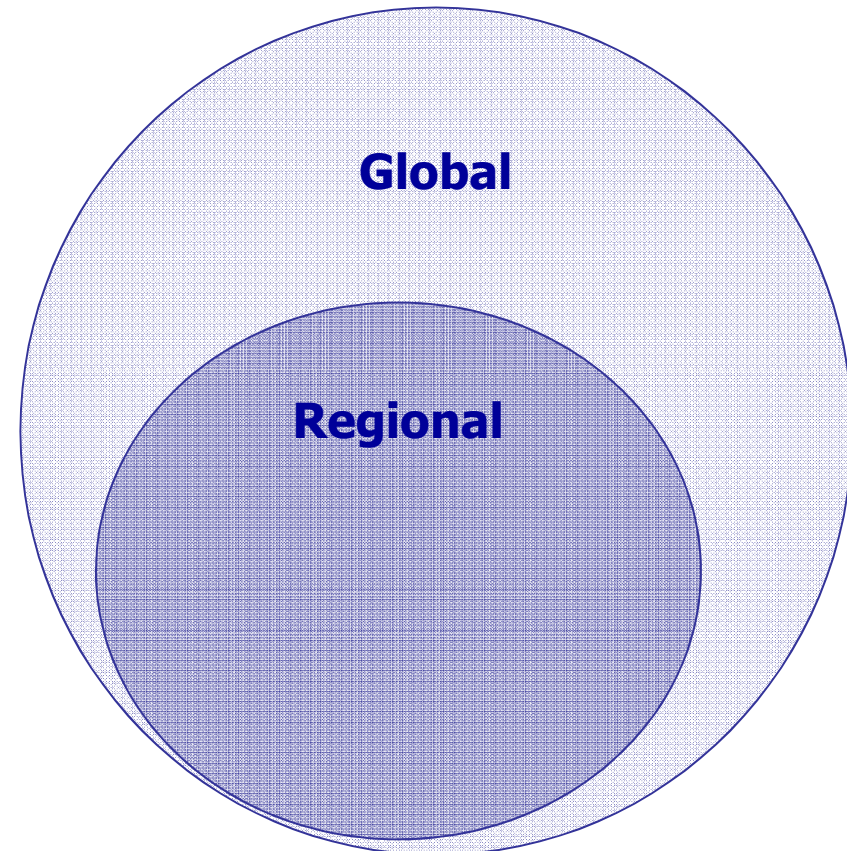




Domains of operation of GFCS

Regional Level (RCC)

- Support multilateral efforts to address regional needs
 - Regional policy, data exchange, infrastructure dev, research, training at service provision
- e.g., RCOF
 - Focused on providers
 - Need more linkages with research



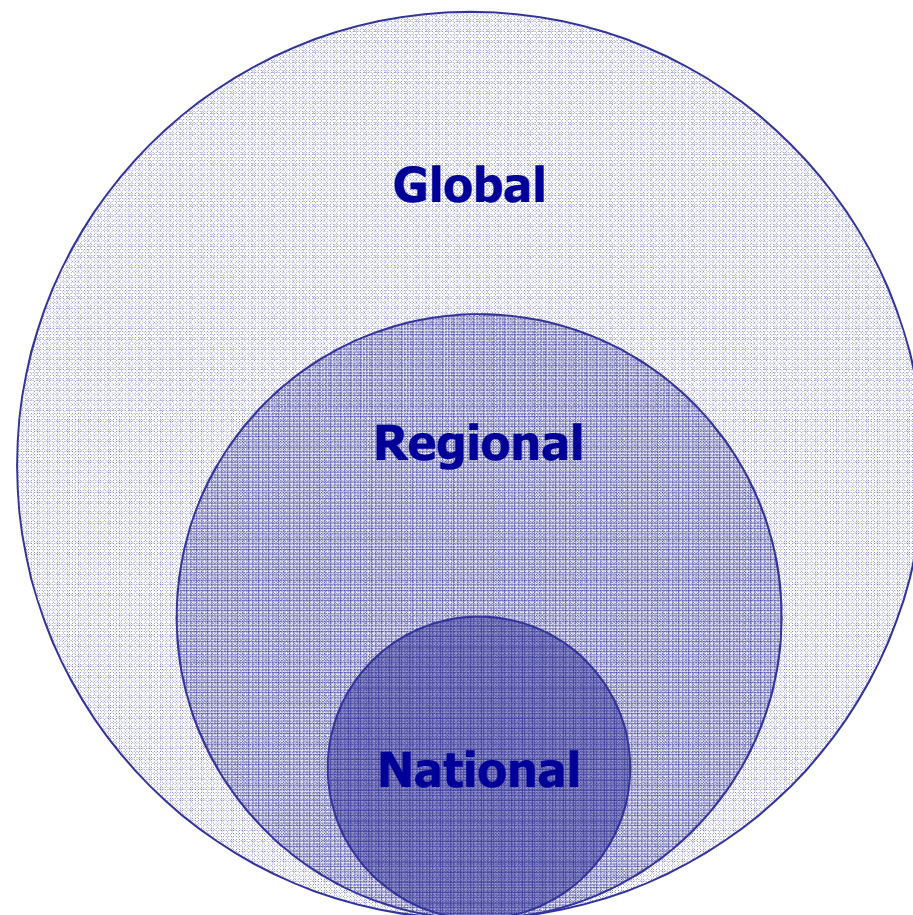
Critical for capacity building requiring resources beyond a single nation



Domains of operation of GFCS

National Level (NCC)

- Ensure access to data and knowledge products
- Tailor information to user requirements
- Ensure effective routine use of information
- Develop sustainable capacities





HLT recommendations

RM&P component to:

- Improve understanding of climate
- Develop core prediction tools, applications, products for development & improvement of climate services



WCRP Grand Challenges

- Provision of skilful future climate information on regional scales (includes decadal and polar predictability),
- Regional Sea-Level Rise,
- Cryosphere response to climate change (including ice sheets, water resources, permafrost and carbon),
- Improved understanding of the interactions of clouds, aerosols, precipitation, and radiation and their contributions to climate sensitivity,
- Past and future changes in water availability (with connections to water security and hydrological cycle), and
- Science underpinning the prediction and attribution of extreme events.



The RM & P of GFCS shall...

- Enhance through the UIP, the two-way interaction of the research community with climate information users in different sectors - social and natural scientists, private sector, NGOs, etc.
- Maximize production of partnership-based socially-relevant climate science information by proactively targeting the research towards developing and improving multiple practical applications and information products and satisfying the identified requirements of climate information users at the current science and technology readiness level
- Improve on a sustained basis the understanding of the functioning and predictability of the Earth's climate, impacts of its variability and change on people, ecosystems and infrastructure,
- Enhance the science readiness level for core climate projections/predictions, and substantiated climate information products.



Scope of the GFCS RM&P

- Ensure both fundamental and applied climate research;
- Address all components of the Earth System, including the role of humans and their significant interactions;
- Deliver climate information at global to national, and local levels with corresponding scaling up and down both in time and space, and characterizing the uncertainty of such information for users;
- Promote research on the development of the relevant Earth observations, field experiments, and production and validation of relevant datasets
- Provide policy relevant, but not policy prescriptive information; and
- facilitate research capacity development at the global, regional, and national levels.



Key priorities

- improving the availability of regularly updated standardized climate diagnostic and prognostic information, which can be characterized as infrastructural development and building on commitment of science to deliver through GFCS
- focusing climate research on delivering sustained improvement of climate information identified as feasible and most needed in the four priority areas of GFCS implementation
- supporting applied climate research for developing practical applications for the four near-term GFCS priorities through pilot and demonstration projects that bring together all five elements of the GFCS with a primary focus on integration and delivery of best climate information to users and decision makers.



Operational infrastructure required

- Technical infrastructure
 - Requirements for the different components of the GFCS (Observations, Monitoring, Research, Operational climate information and prediction products, User Interface mechanisms)
 - Interoperability of databases (e.g., WIS compliance)
 - Climate Services Toolkit (especially including downscaling/tailoring tools)
 - Web platform for dissemination
- Global-Regional-National interaction
 - Networking capabilities (national access to as well as contribution to global and regional products)
- Best practices and standardized approaches
 - Quality management, best practices on methods, tools, etc.
 - Standardized approaches for facilitating regional/sub-regional synergy
- Linking operational products with the applications
 - Access to application models and decision support tools
 - User-accessible climate knowledgebase
 - Operational linkages with applications infrastructure



Requirements for Successful Implementation of RM&P Pillar

- Active engagement of the climate science community in coordinated and targeted research on and development of all GFCS elements
- Adequate funding, human resources, and computing / data transmission and information technology support
- Availability of observations for climate variables that result in representation in models, their initial conditions, and forcing functions of identified known and predictable processes and phenomena
- Effective user feedback on products enabled by RM&P pillar, including through CSIS and UIP, and engagement in development of their capacity to effectively apply the climate information to addressing their requirements, which involves efforts to produce corresponding data and services on the user side, in all GFCS sectors
- Partnerships at global, regional and national levels.

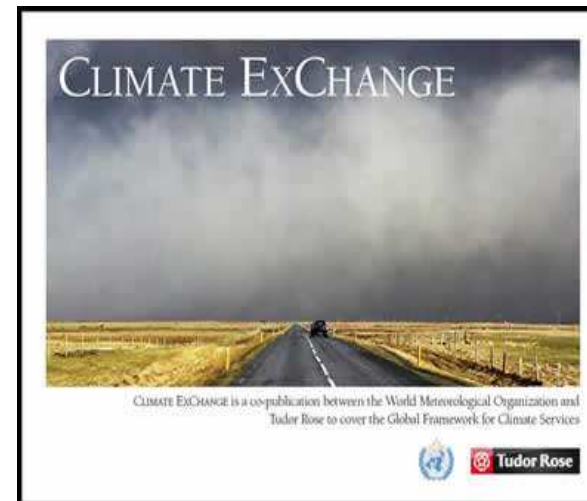


Important Milestones

- **17 September 2012:**
Translated documents on the web

- **26 – 27 October 2012:**
Dialogue on climate services
 - Interaction of Providers and users
 - Case Studies
 - ~40 countries
 - > 10 non-Met institutions
 - > 60 cases on all 4 priority areas and all pillars

- **29 – 31 October Ext Congress**





Thank You

