



## *Seasonal forecasts: needs and opportunities for international coordination*



**Presented by WMO Secretary-General M. Jarraud  
at the ECMWF Seminar on Seasonal prediction:  
science and applications  
(Reading, 7 September 2012)**



# Presentation outline

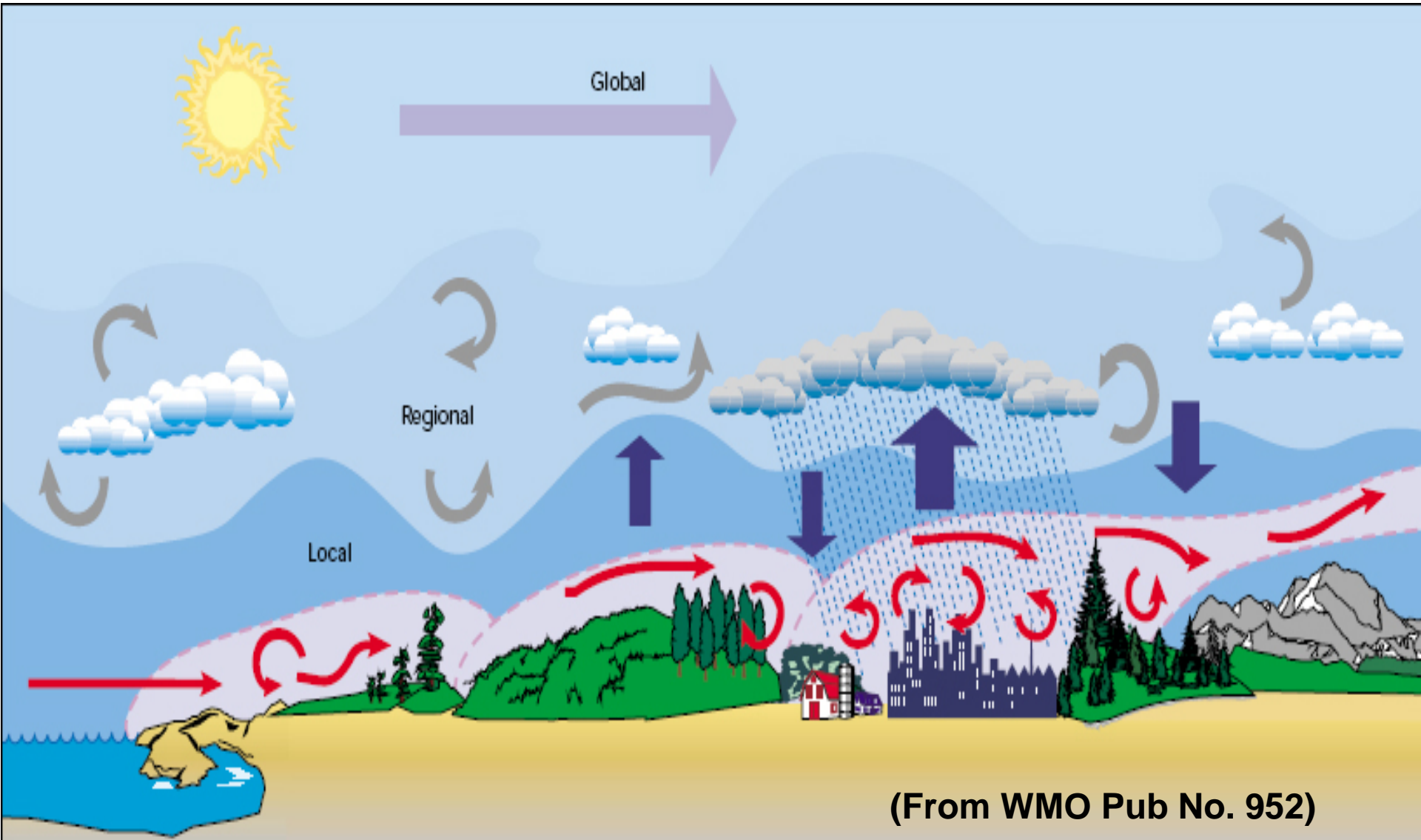
- ✓ Applications-oriented presentation, rather than scientific
- ✓ Climate models, seasonal forecasts and uncertainties
- ✓ A Global Framework for Climate Services (GFCS)
- ✓ Examples and success stories upon which to develop the Framework
- ✓ Concluding remarks







# Global, regional & local effects affect different societies in different ways



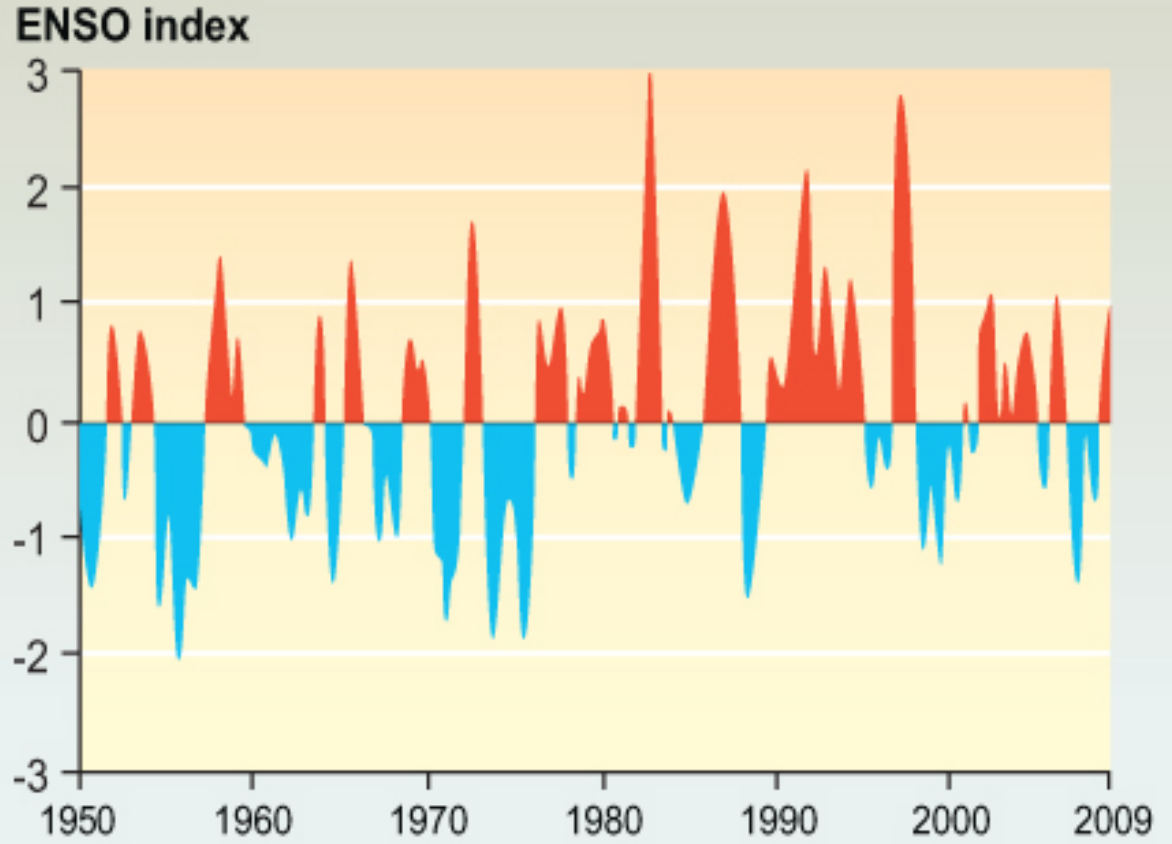
(From WMO Pub No. 952)



# El Niño forecasting: a successful example



## El Niño Southern Oscillation (ENSO) Index



Source: NOAA <http://www.elnino.noaa.gov/>





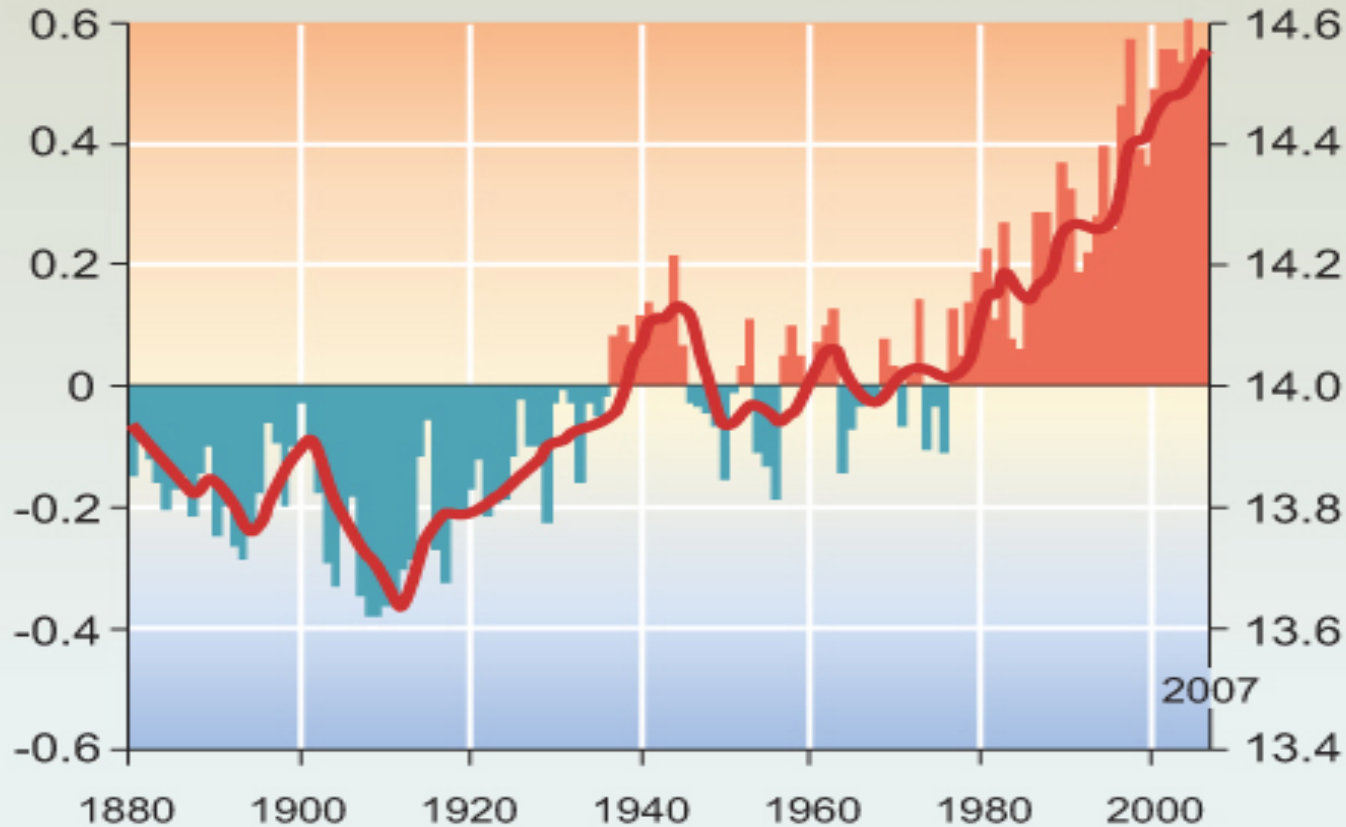


# Climate change introduces additional complexity

## Trend in global average surface temperature

Differences in temperature, °C  
from 1961-1990 mean value

Estimated actual global  
mean temperature, °C

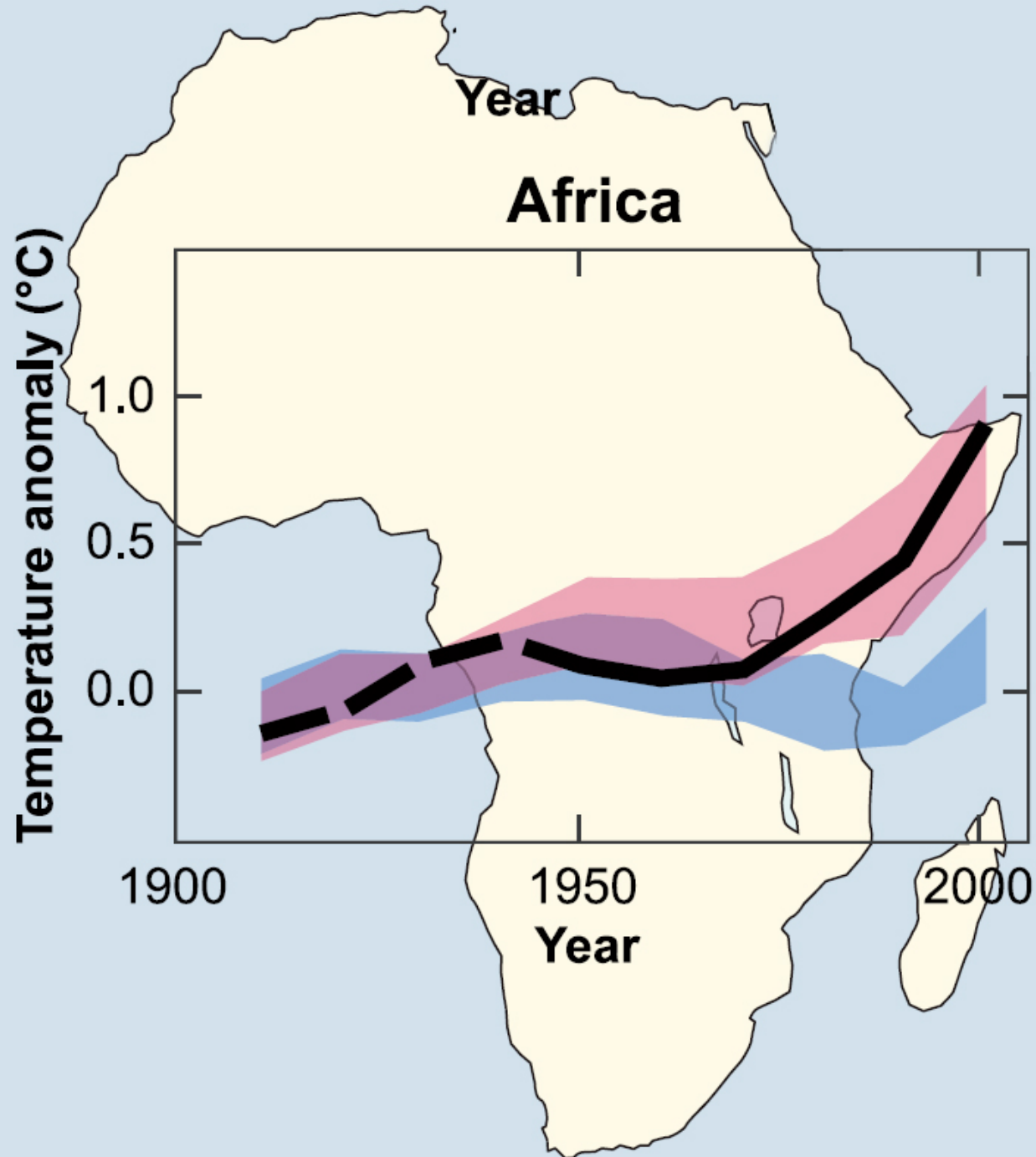


Source: IPCC Fourth Assessment Report



## Climate (un)certainties

- The past is no longer a trustworthy indicator of the future
- New paradigms are required in decision-making for climate variability and change risk reduction and adaptation

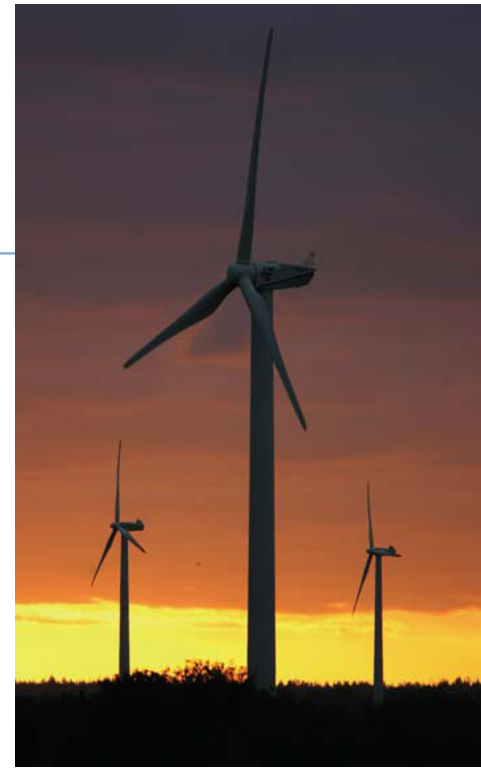




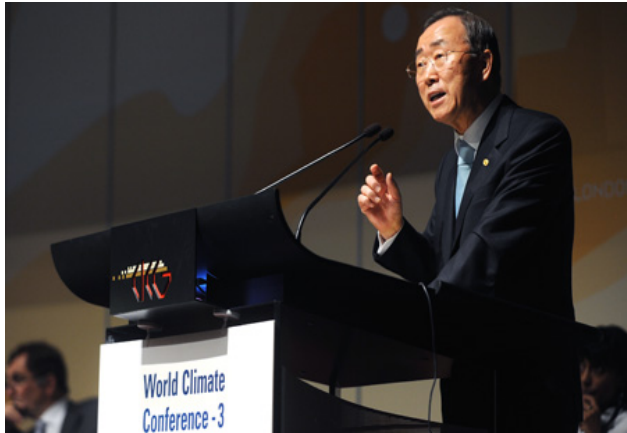
# Climate information for decision-making

## Identifying the potential users

- ✓ Agriculture and food security
- ✓ Disaster risk reduction
- ✓ Energy production, transport and usage
- ✓ Finance and insurance
- ✓ Health
- ✓ Water quality and water resources management
- ✓ Trade and commerce
- ✓ Transport
- ✓ Tourism
- ✓ Urban development/management
- ✓ Recreation and sports
- ✓ ...and many more...

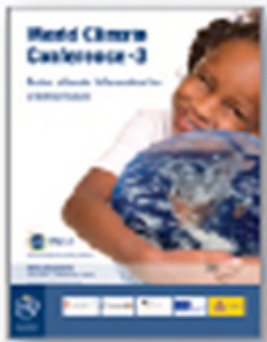






# An historic event





**SEP 2009**  
WCC-3  
unanimous  
proposal

**JAN 2010**  
Intergovernmental  
Meeting

**MAY/JUN 2011**  
Cg-XVI  
unanimous  
approval

**JUN 2011**  
EC-LXIII

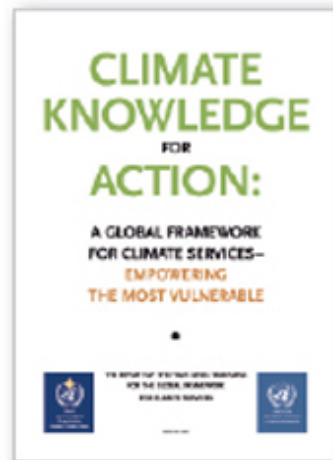
**JUN/JUL 2012**  
EC-LXIV

**2009**

**2010**

**2011**

**2012**



**2010**  
High-level  
Taskforce

**FEB 2011**  
HLT Report  
submitted



**JUN 2011**  
GFCS office  
established



**OCT 2012**  
GFCS user  
conference &  
WMO Congress  
extraordinary  
session



# 8 Guiding Principles

```
graph TD; A((8 Guiding Principles)) --> B((Priority for the most vulnerable)); A --> C((Maximize use of climate services)); A --> D((Global, Regional, National)); A --> E((Operational)); A --> F((Climate services a public good)); A --> G((Maximize data exchange)); A --> H((No duplication)); A --> I((Partnerships));
```

Priority for the most vulnerable

Maximize use of climate services

Global, Regional, National

Operational

Climate services a public good

Maximize data exchange

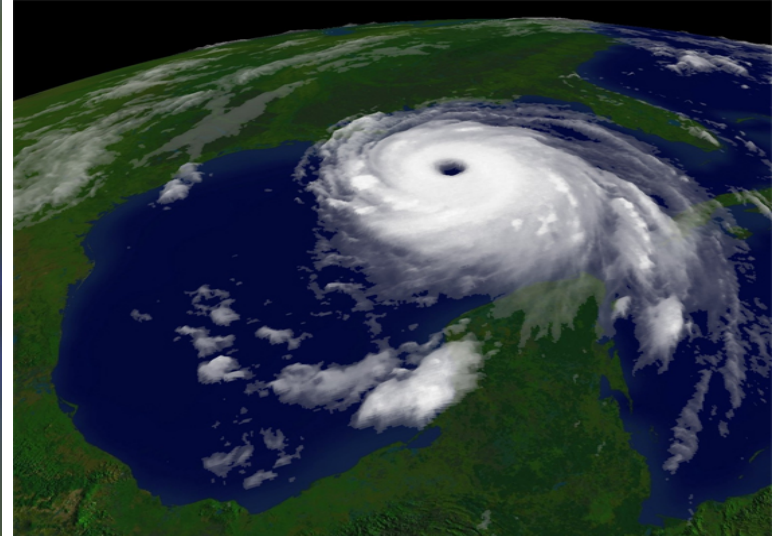
No duplication

Partnerships





## 4 initial GFCS priority sectors

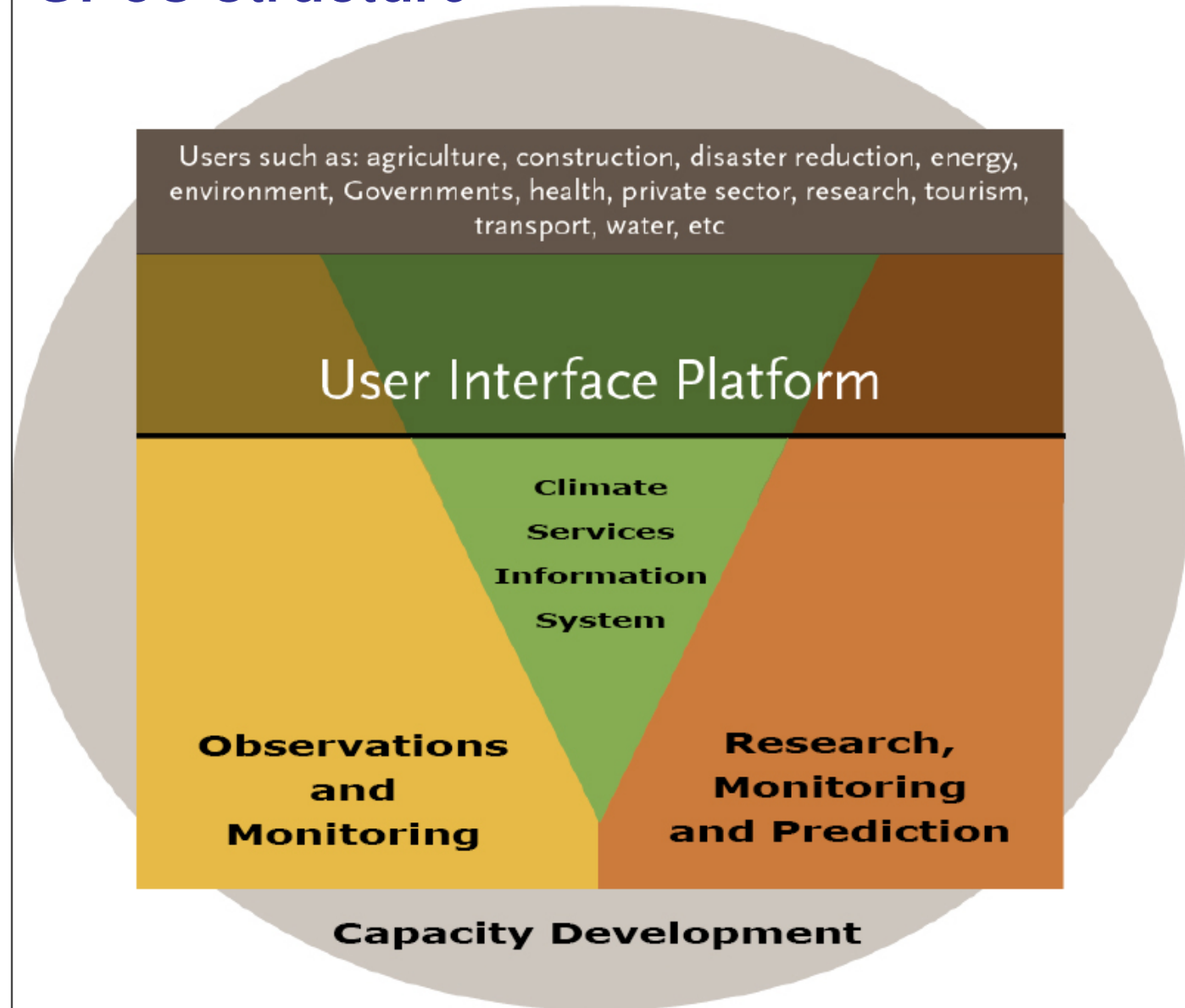


- ✓ **Water**
- ✓ **Food security**
- ✓ **Health**
- ✓ **Disaster risk reduction**





# GFCS structure







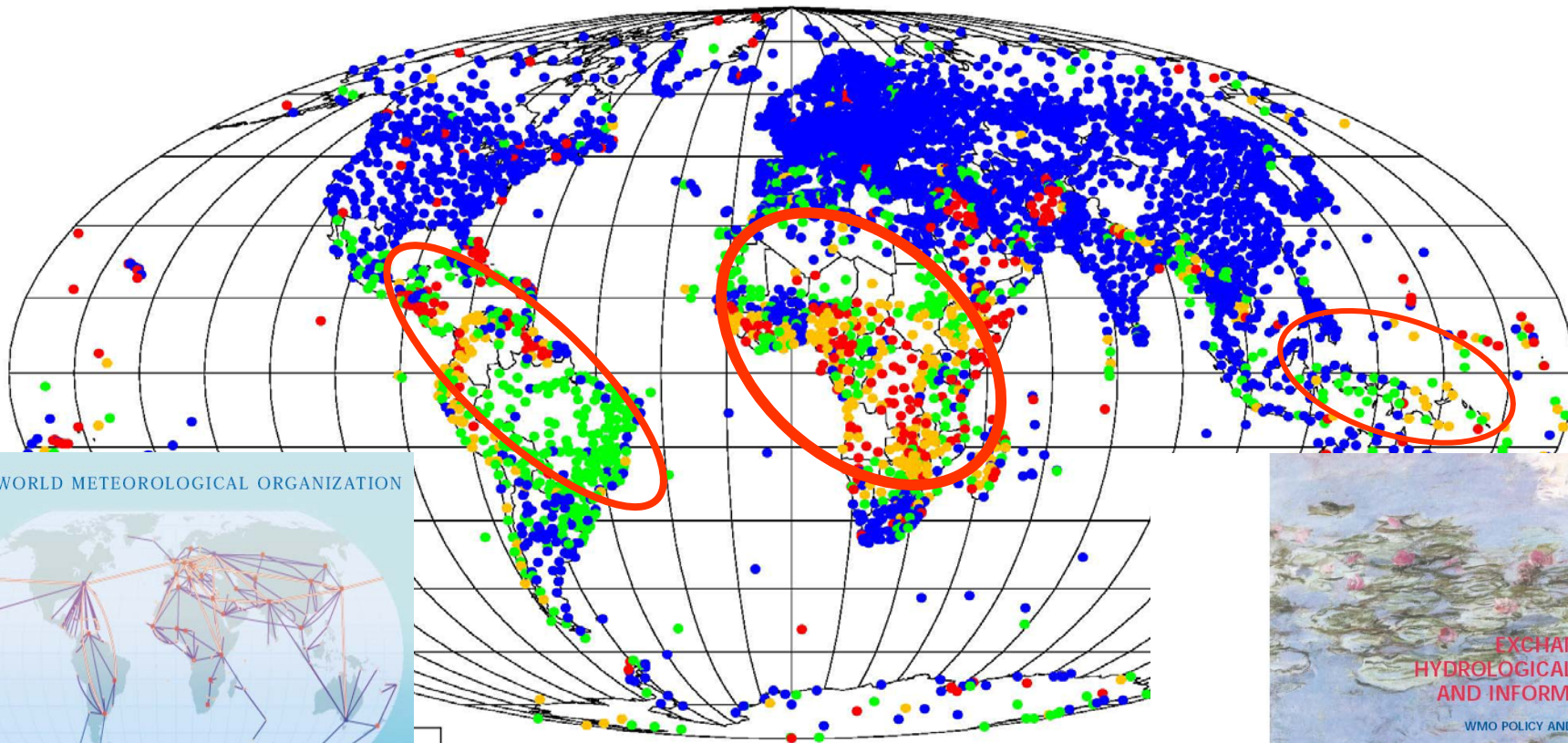
# 3 key challenges: observational gaps

1) Bridging global

- 2) Incorporating non-traditional data
- 3) Data exchange issues

Annual Global Monitoring 1-15/10/2008

SYNOP reports made at 00, 06, 12 and 18 UTC at RBSN stations



WORLD METEOROLOGICAL ORGANIZATION

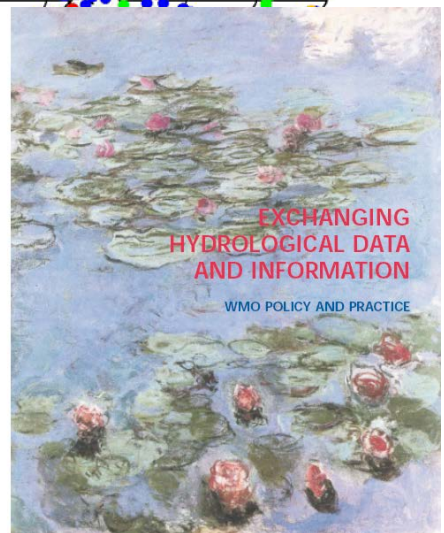


## EXCHANGING METEOROLOGICAL DATA

GUIDELINES ON RELATIONSHIPS IN COMMERCIAL METEOROLOGICAL ACTIVITIES  
WMO POLICY AND PRACTICE

WMO - No. 837

The designation employed and the presentation of material in this publica  
whatsoever on the part of the WMO Secretariat concerning the legal statu

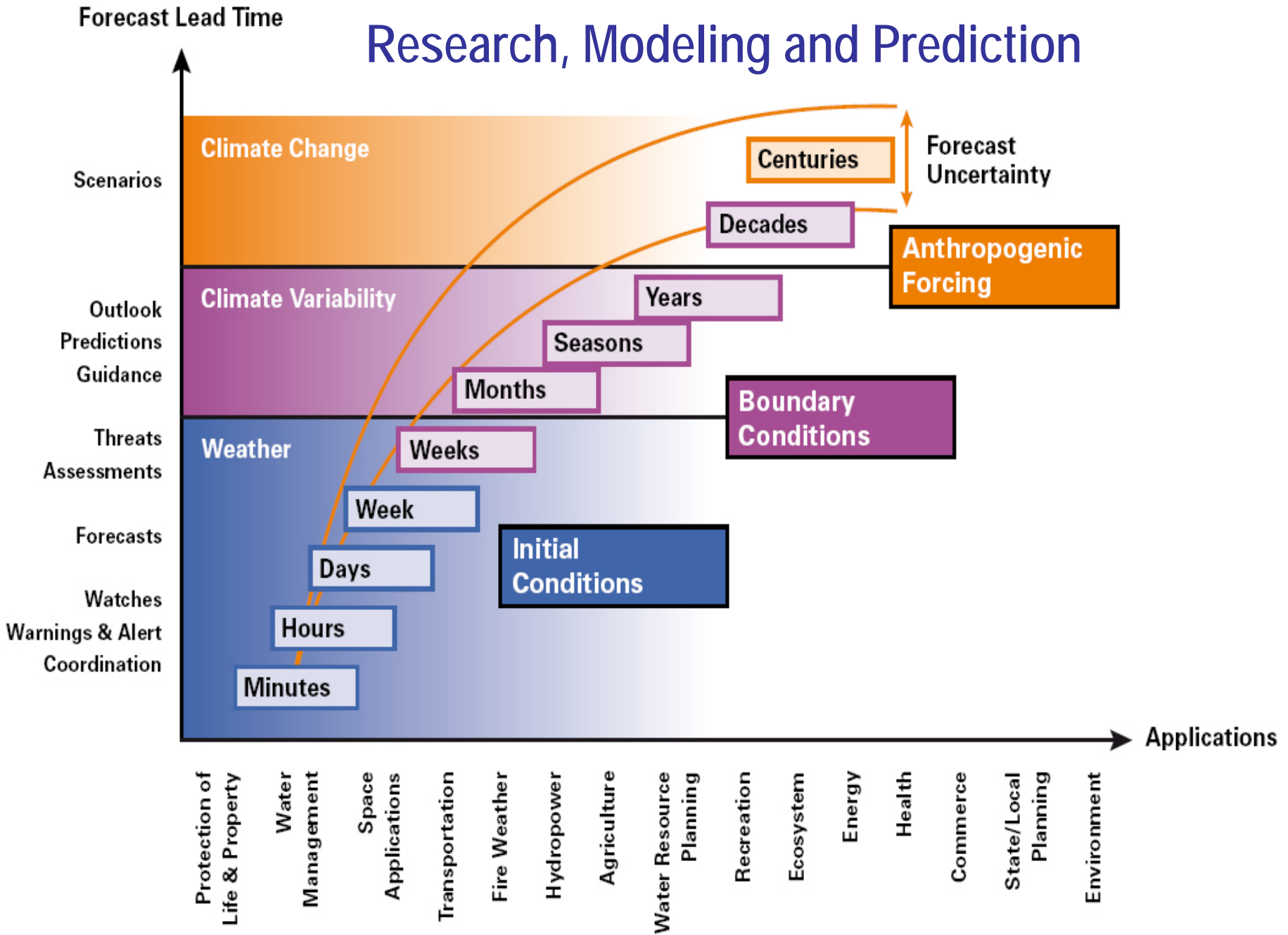


## EXCHANGING HYDROLOGICAL DATA AND INFORMATION

WMO POLICY AND PRACTICE

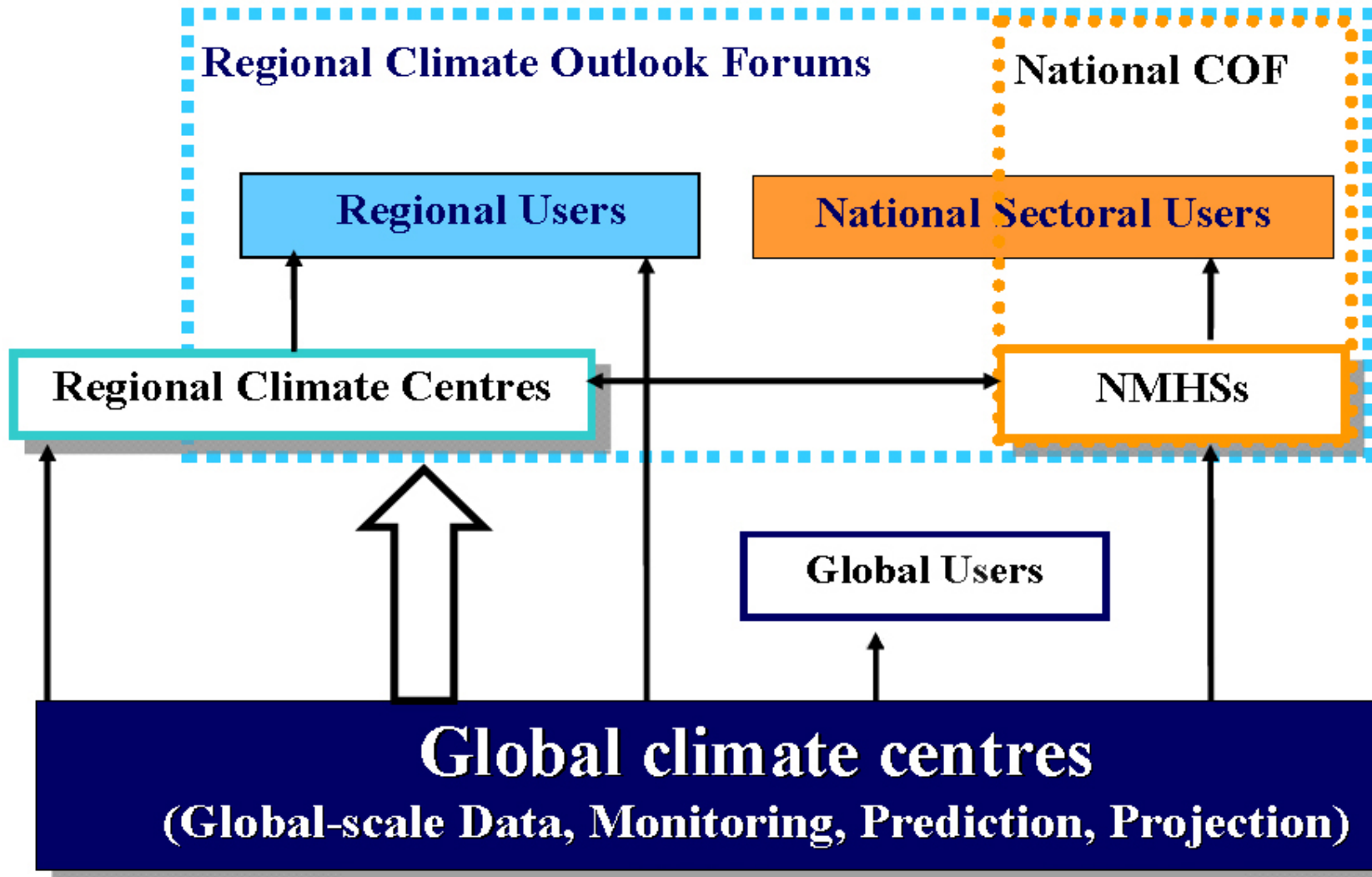


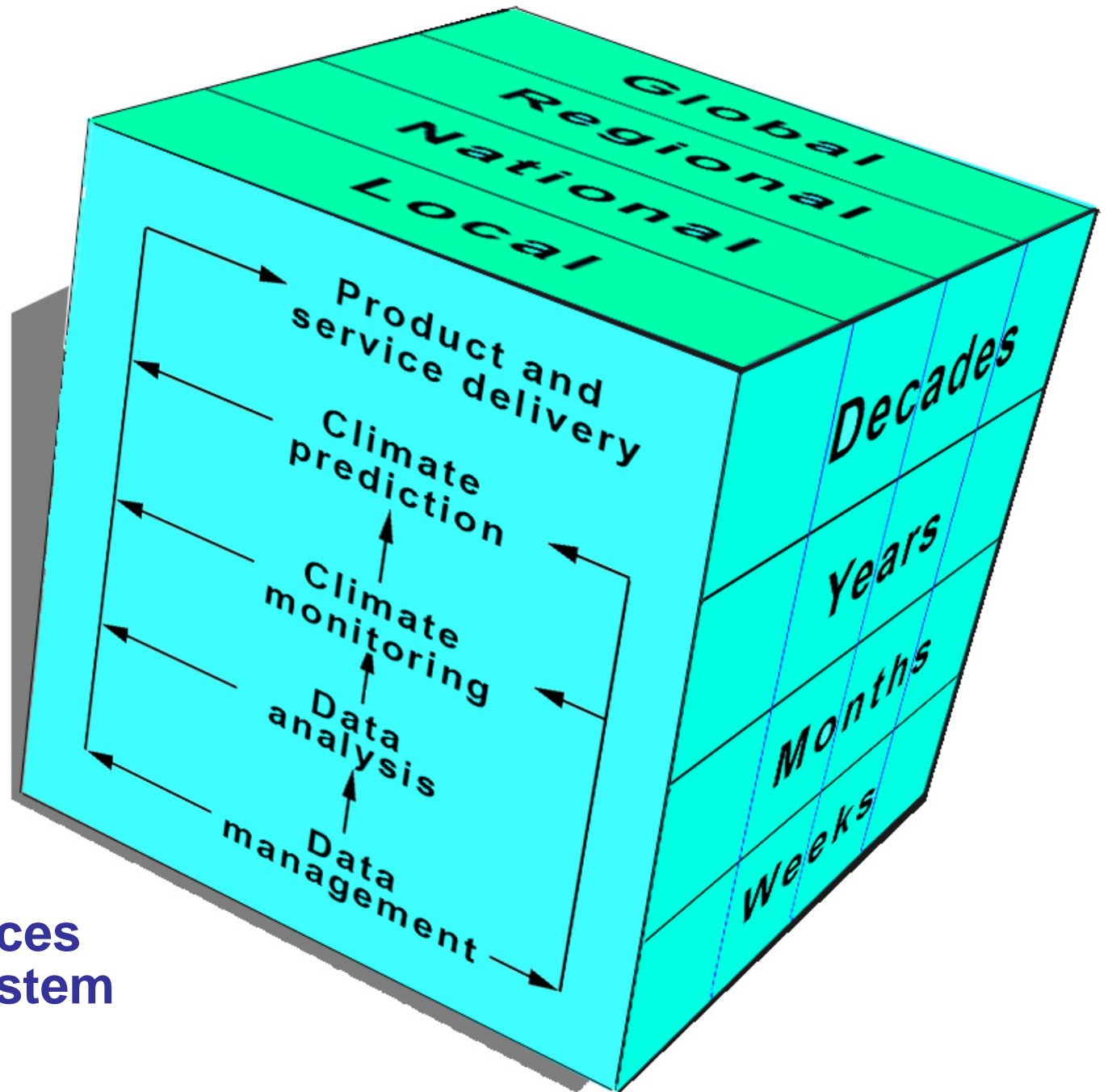
# Research, Modeling and Prediction





# Climate Services Information System





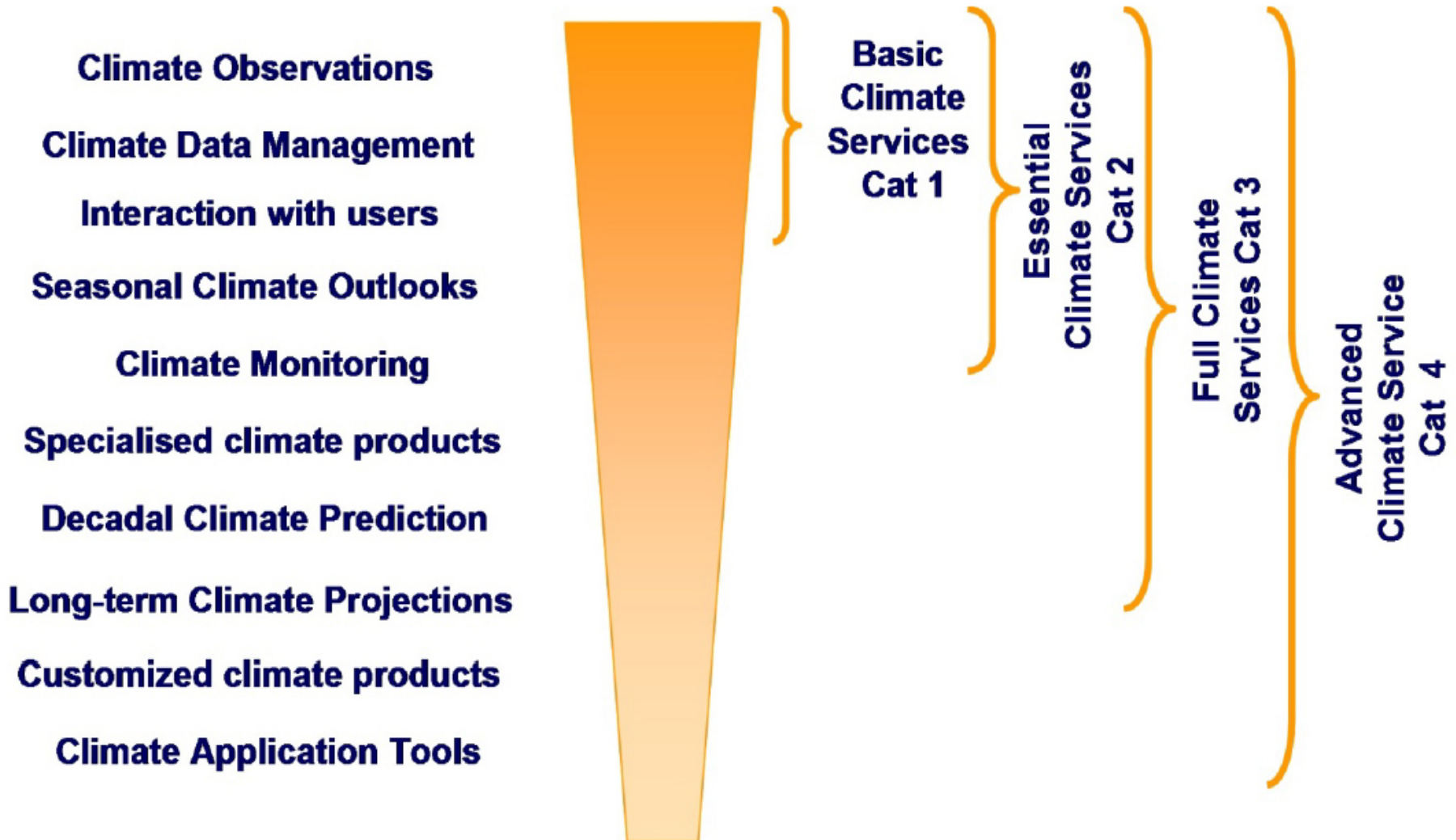
## Climate Services Information System

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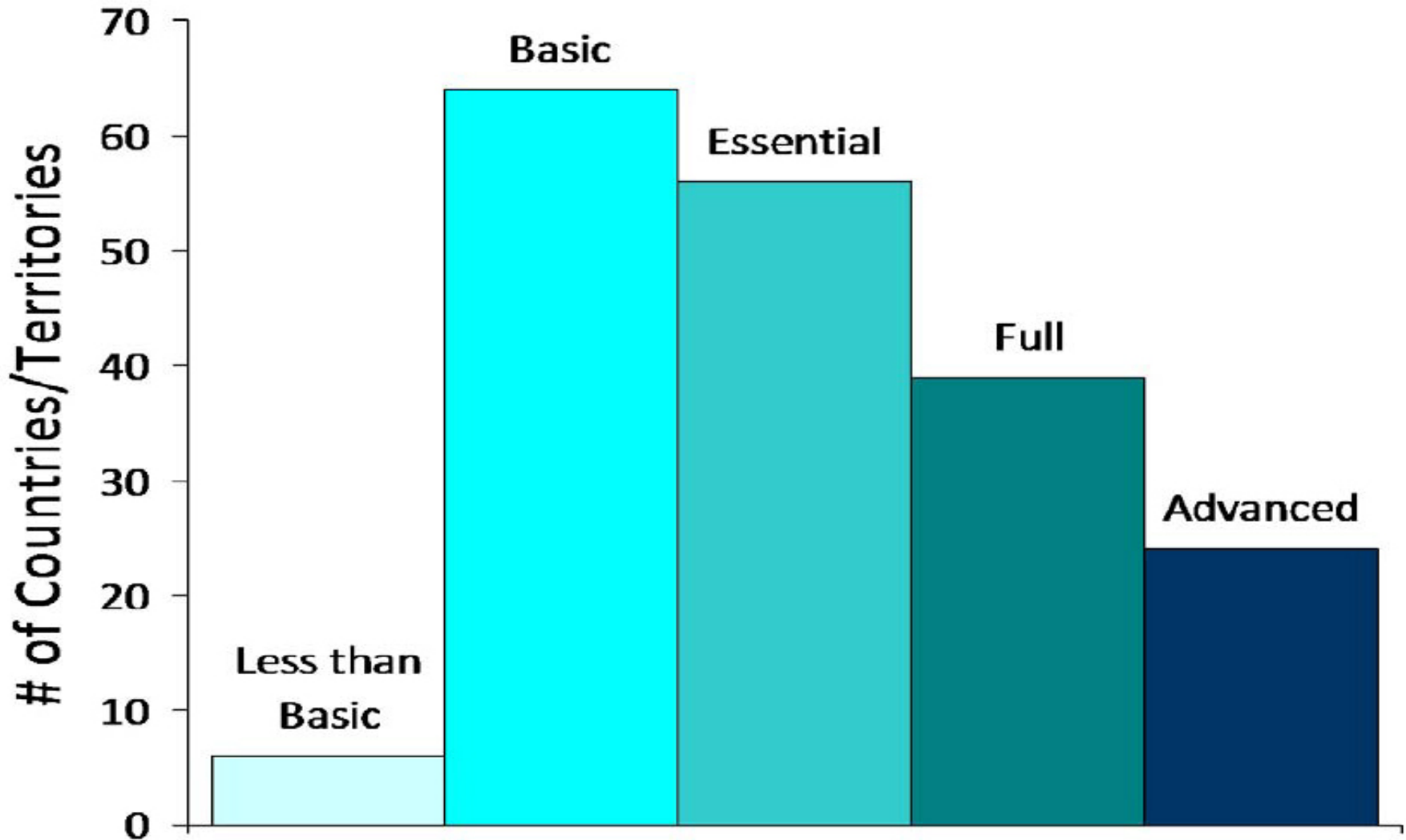


# Current level of services in different countries (1)



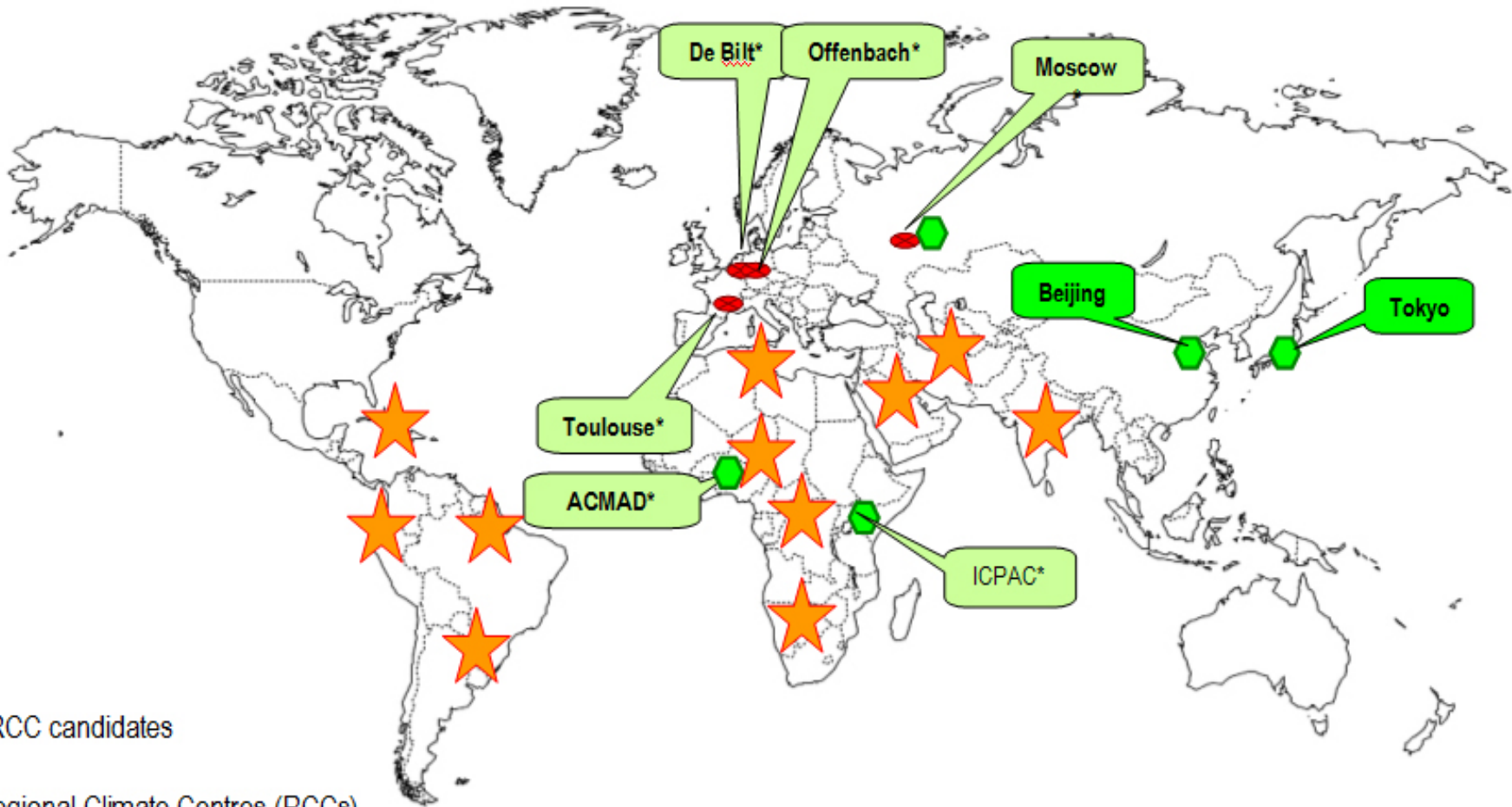


## Current level of services in different countries (2)





# Overview of WMO RCC implementation worldwide (as of December 2011)



★ RCC candidates

⬡ Regional Climate Centres (RCCs)  
(\* Pilot phase)

● RCC Network Nodes (Pilot)





# User Interface Platform





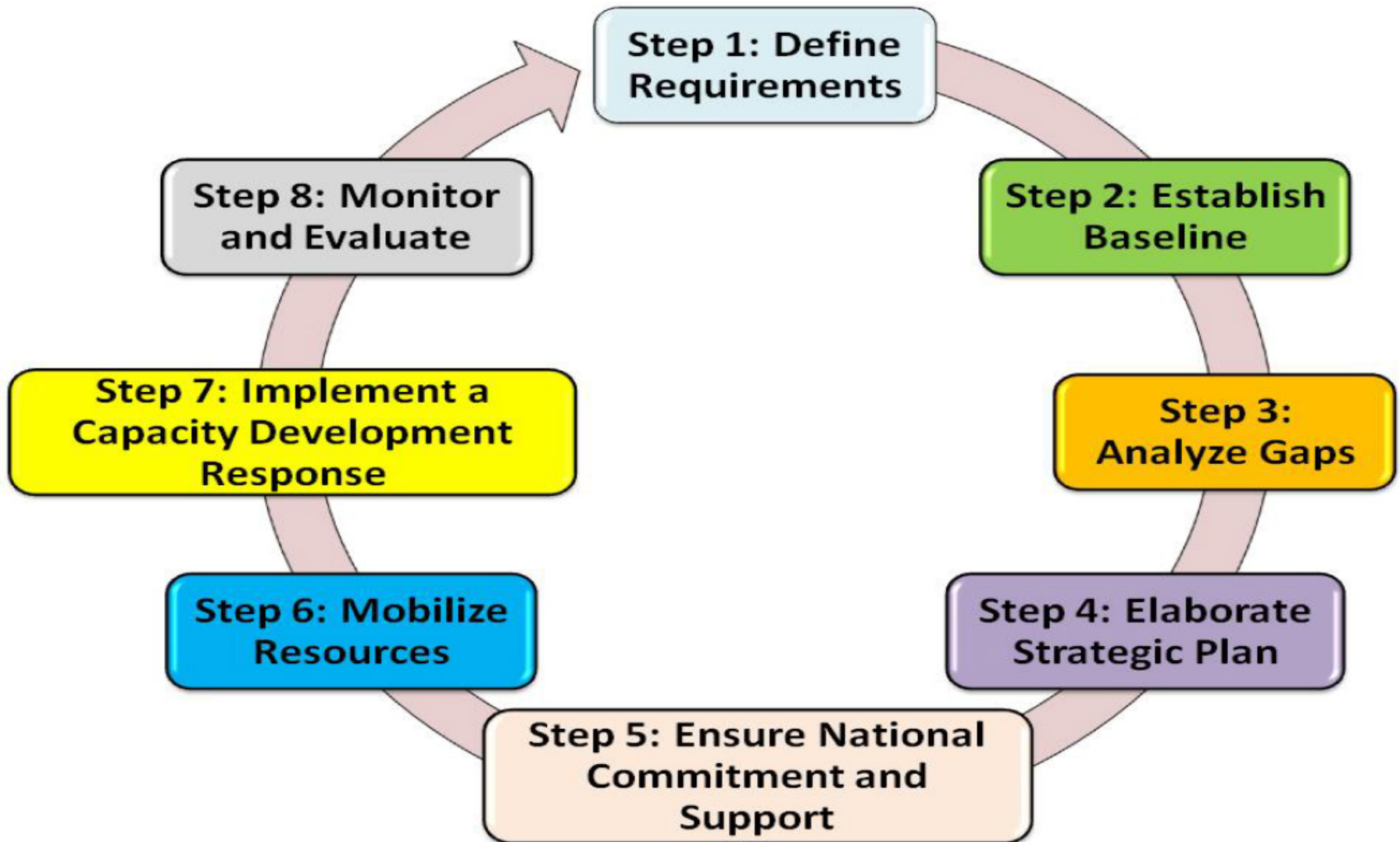
## Capacity Development will extend GFCS benefits to the developing world



- ✓ Human resources
- ✓ Continuing education
- ✓ On-the-job training
- ✓ Graduate studies
- ✓ Equipment
- ✓ Disposable materials



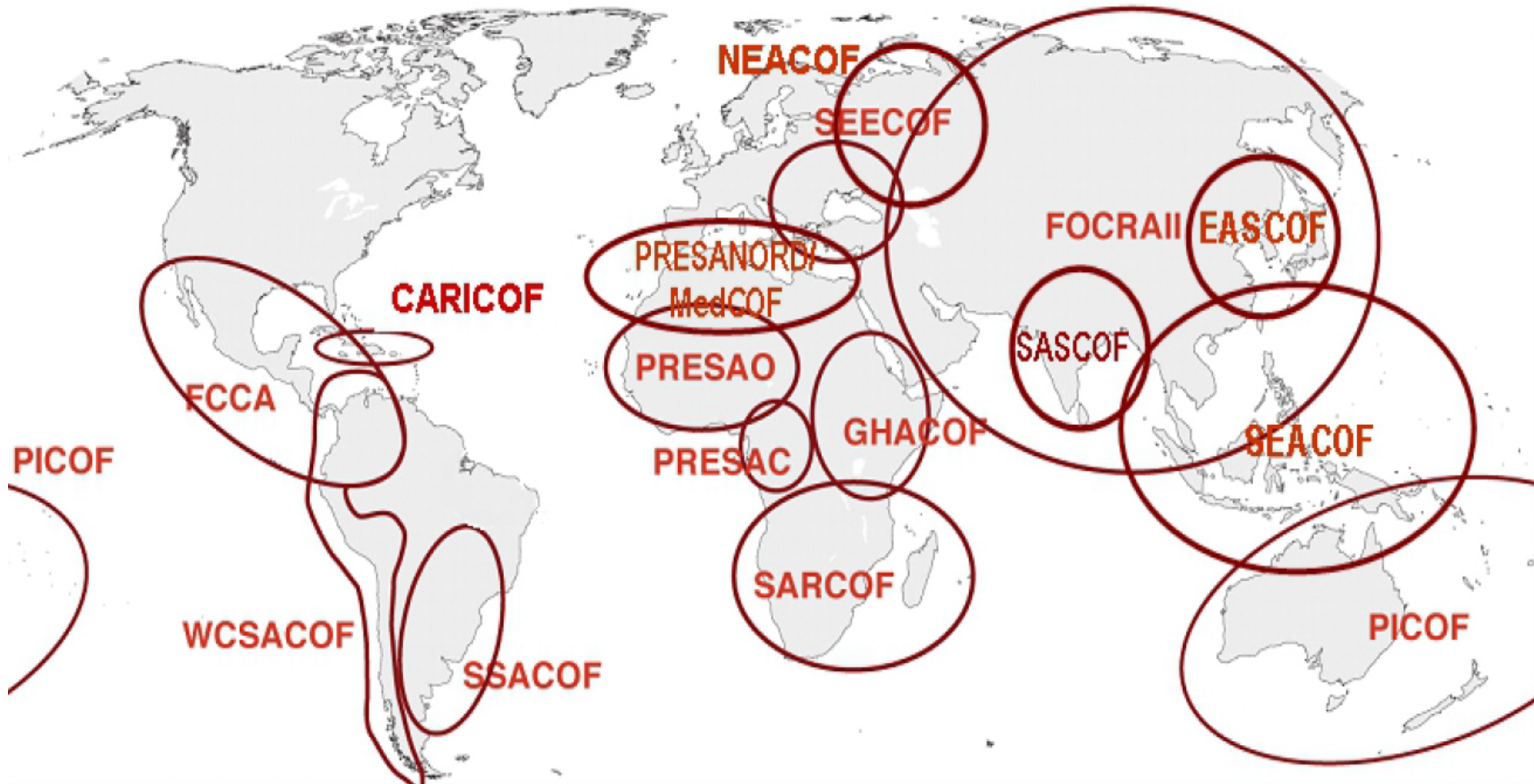
# GFCFS capacity development cycle







# RCOFs as pre-existing GFCS elements

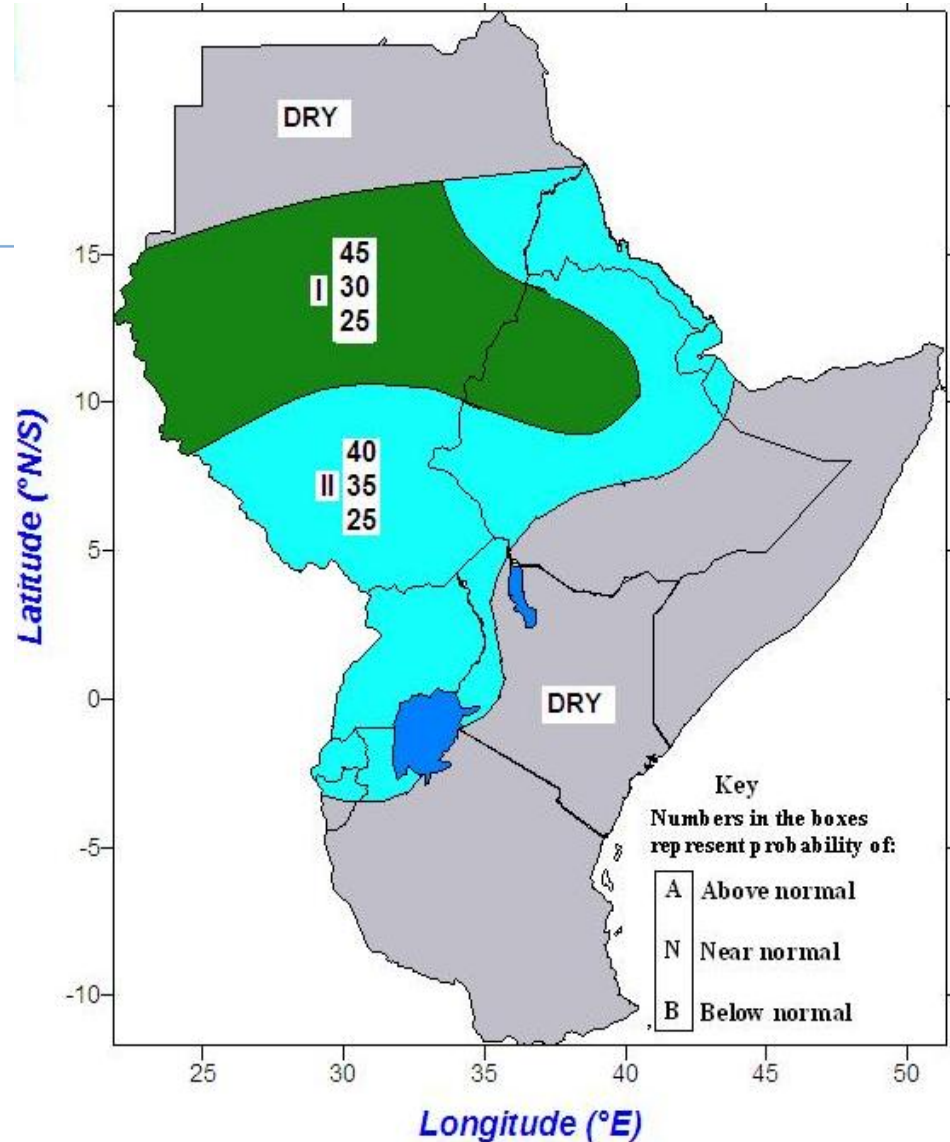




## Examples of initial GFCS elements



**31<sup>st</sup> Greater Horn of Africa Climate Outlook Forum (GHACOF 31); Djibouti, May 2012**



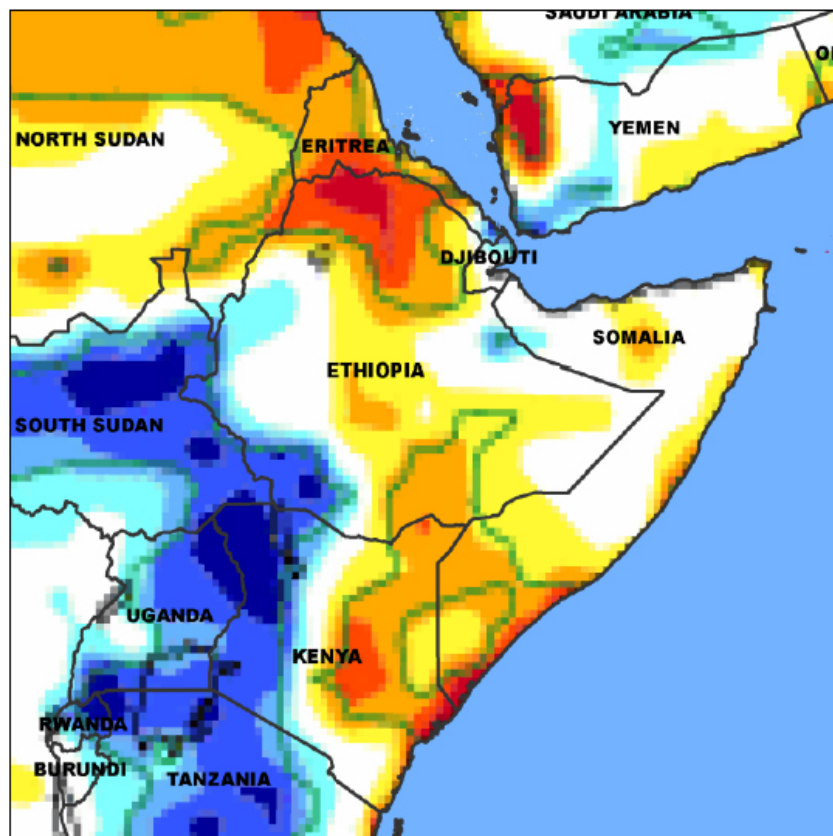
**IGAD Pilot RCC: Greater Horn of Africa consensus-driven climate outlook; July - September 2011**



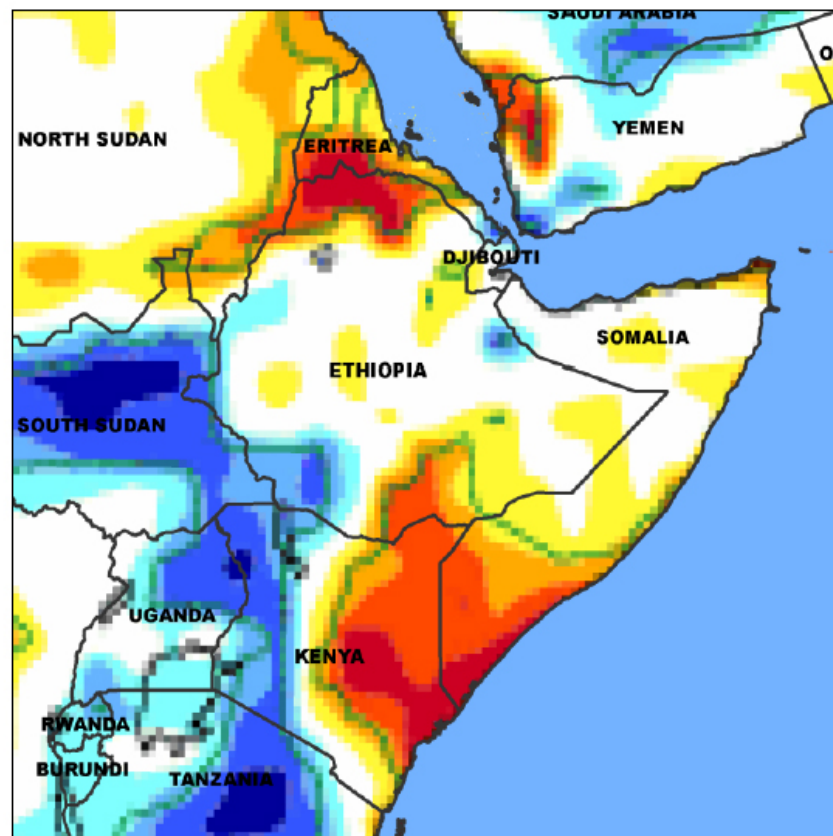
# ECMWF Seasonal Forecast. Issued 15/09/2011

## Probability of Temperature above the median

October 2011 - December 2011



November 2011 - January 2012



ECMWF forecasts for temperature in October-December (left) and November-January (right). Yellows to reds indicate increasing probabilities of hotter than usual conditions while blue shades show decreasing probabilities. The likelihood of hotter than usual conditions over most of the Horn of Africa during this period is evident and is enhanced during the key stages of the cropping season.

Source : European Centre for Medium Range Weather Forecasts (ECMWF)



World Food Programme

wfp.org





# SPECIAL CLIMATE-HEALTH OUTLOOK BULLETIN

African Centre of Meteorological Application for  
Development  
Centre Africain pour les Applications de la Météo-  
rologie au Développement

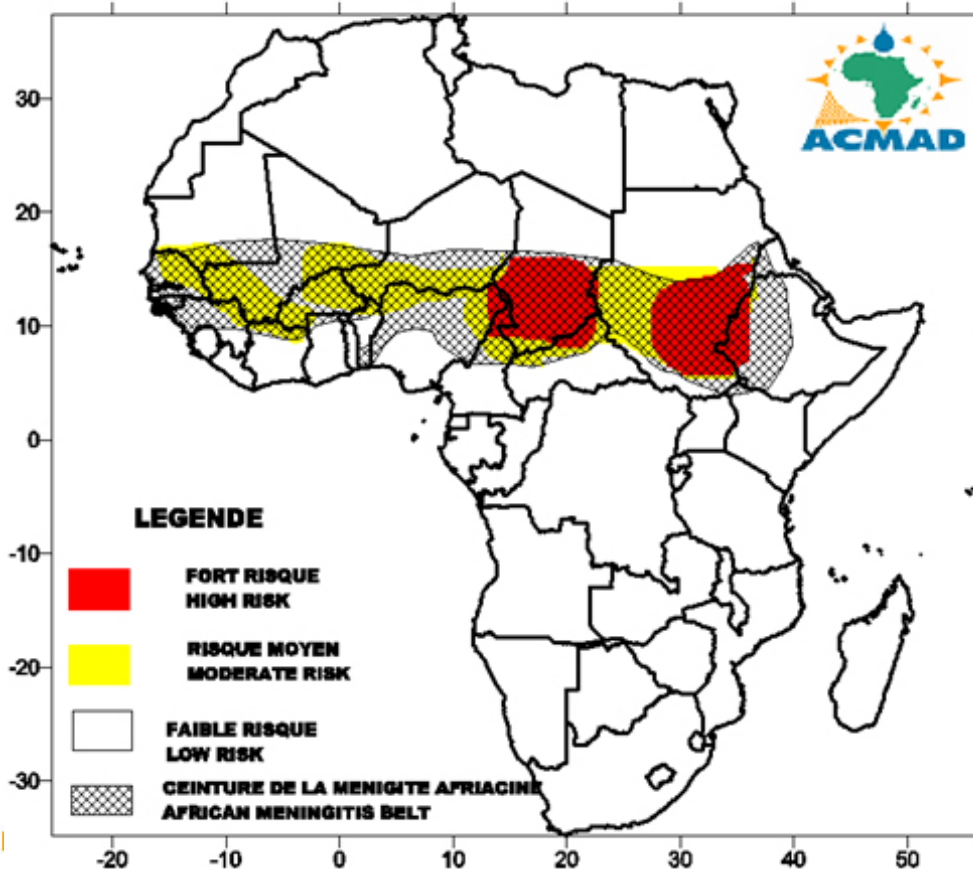


Direction Générale ACMAD, BP 13184, 85 Avenue des  
Ministères, Niamey – Niger  
Tél. (227) 20 73 49 92, Fax : (227) 20 72 36 27, E-mail :  
[dgacmad@acmad.ne](mailto:dgacmad@acmad.ne), Web : <http://www.acmad.org>

## MENINGITIS RISK ZONES IN AFRICA

N° 003 of 27 February 2012

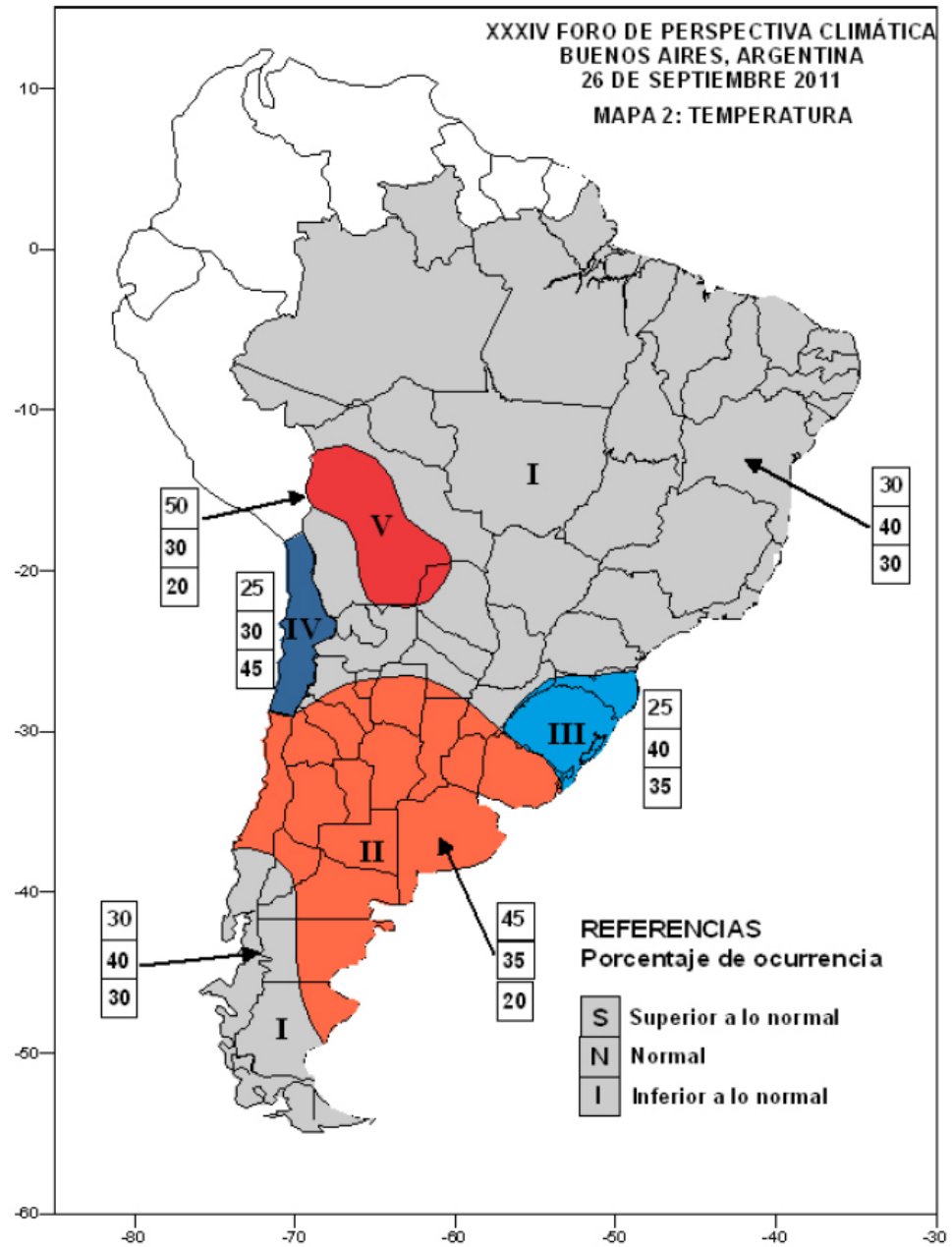
ZONES A RISQUE D'EPIDEMIES DE MENINGITE/ MENINGITIS RISK ZONES  
SEMAINE DU 27 FEV AU 04 MAR 2012/ WEEK OF 27 FEB TO 04 MAR 2012



- ✓ ACMAD-issued Potential meningitis risk zones
- ✓ Practical health and vaccination information for population at risk
- ✓ Several other health products in use
- ✓ Issuing Centres require more support to enhance scope and outreach



# Initial GFCS elements: consensus-based forums for South and East (right) and West (bottom) South America





## Possible initial implementation activities & projects

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- ✓ **Establish Framework leadership & management**
- ✓ **Define national mandates in climate services provision**
- ✓ **Strengthen capabilities in disaster risk reduction**
- ✓ **Improve communication between climate, agriculture and food security communities**
- ✓ **Enhance partnerships between climate services and water resources management**
- ✓ **Develop national working groups in climate and health**
- ✓ **Improve decision-making on climate-related risks**
- ✓ **Strengthen climate information regional infrastructure**
- ✓ **Advance in data recovery and digitizing**
- ✓ **Launch pilot projects**





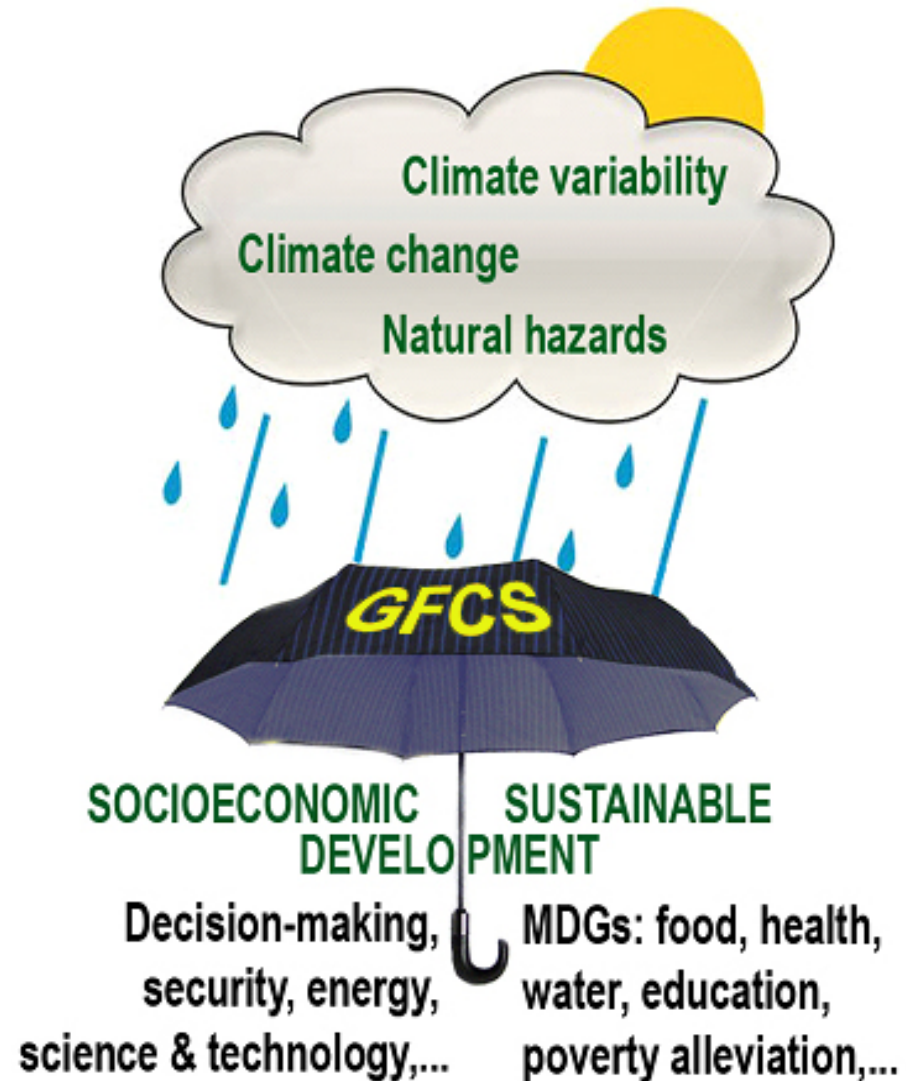
## Fundraising: contributions to the GFCS Trust Fund

<b>Kind</b>	<b>Donor</b>	<b>Amount</b>
<b>Monetary support</b>	<b>Norway</b>	<b>10 M USD</b>
	<b>Switzerland</b>	<b>0.5 M CHF</b>
	<b>India</b>	<b>125 k USD</b>
	<b>China</b>	<b>100 k CHF</b>
	<b>Hong Kong (China)</b>	<b>5 k CHF</b>
<b>Staff &amp; in-kind support</b>	<b>Germany</b>	<b>Full-time staff</b>
	<b>Australia, UK, USA</b>	<b>Part-time staff</b>
	<b>Portugal</b>	<b>Material</b>



# Summing-up

- ✓ 3 closely-related issues:
  - *Adaptation to climate variability and change*
  - *Disaster risk reduction*
  - *Sustainable development & societal benefits*
- ✓ Requirements:
  - *Reinforcing developing countries' adaptive capabilities*
  - *Multidisciplinary partnerships across all sectors*
  - *Capacity building to be seen as an investment, not an expenditure*
- A key opportunity:
  - *A Global Framework for Climate Services*





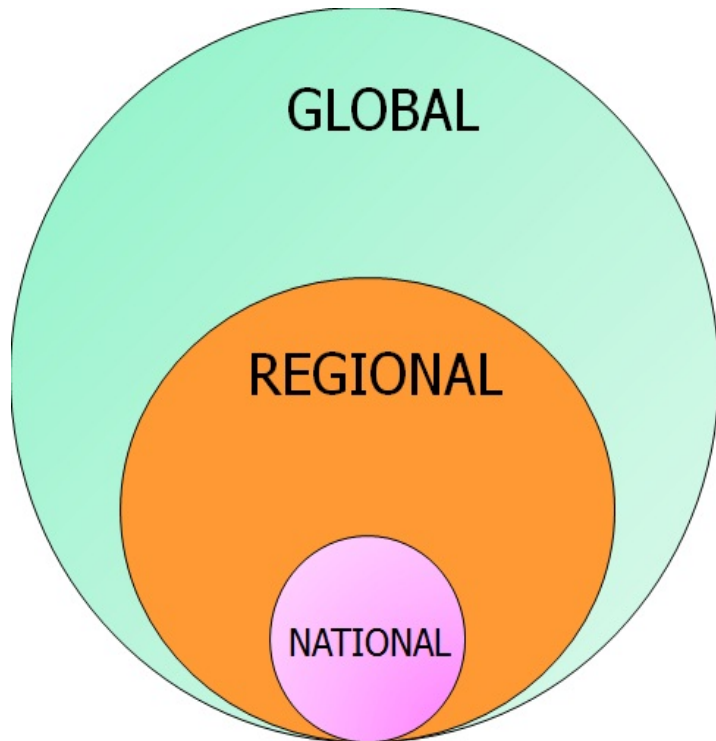
Thank you  
**CECMWF**







## 3 GFCS scales (examples)



1. **WMO Global Producing Centres, Global Seasonal Climate Updates, Global Climate Observing System, WCRP Coupled Model Intercomparison Project (CMIP), ...**
2. **WMO Regional Climate Centres, Regional Climate Outlook Forums, European Composite Observing System, Regional Baseline Climatological Networks, WCRP-Coordinated Regional Climate Downscaling Experiment, ...**
3. **NMHSs, national observing networks, national climate data bases, national long-range forecasts, national climate monitoring products, national climate applications, national research activities, ...**



# Observations and Monitoring

