THE GLOBAL FRAMEWORK FOR CLIMATE SERVICES

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WORLD CLIMATE CONFERENCE - 3 ESTABLISHES A GLOBAL FRAMEWORK FOR CLIMATE SERVICES (GFCS)

Geneva, 3 September 2009 – World Climate Conference-3 (WCC-3), which has brought together from 31 August to 4 September 2009, in Geneva, Switzerland, around 2500 climate scientists, sectoral experts and decision-makers today established a Global Framework for Climate Services "to strengthen production, availability, delivery and application of science-based climate prediction and services."

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The goal of the GFCS is to:

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.

Or, in simple terms,

To give people likely to be affected by climate variability and climate change the information they need to best deal with these issues.

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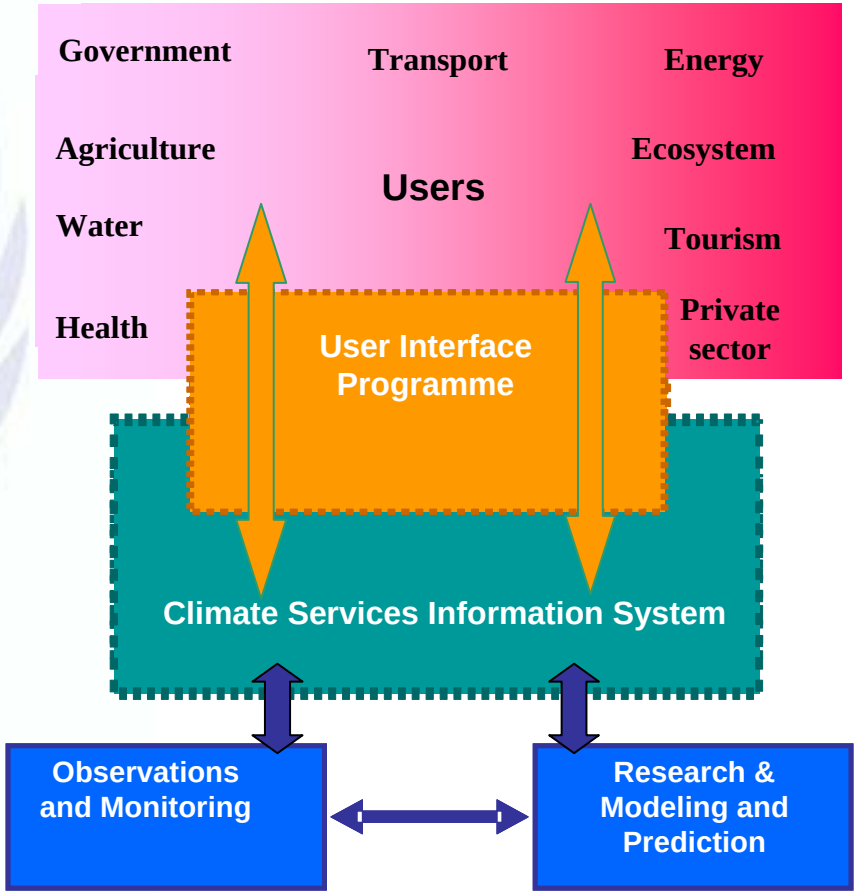
Components of Global Framework for Climate Services



Why do we need a GFCS ?

Climate change and climate variability is linked to:

- Food Production
- Human Health

- Human Safety

and just about every other aspect of life on this planet. We don't understand all the linkages, or whether impacts will be beneficial or otherwise in many cases. In some cases we do have a good understanding of likely impacts.

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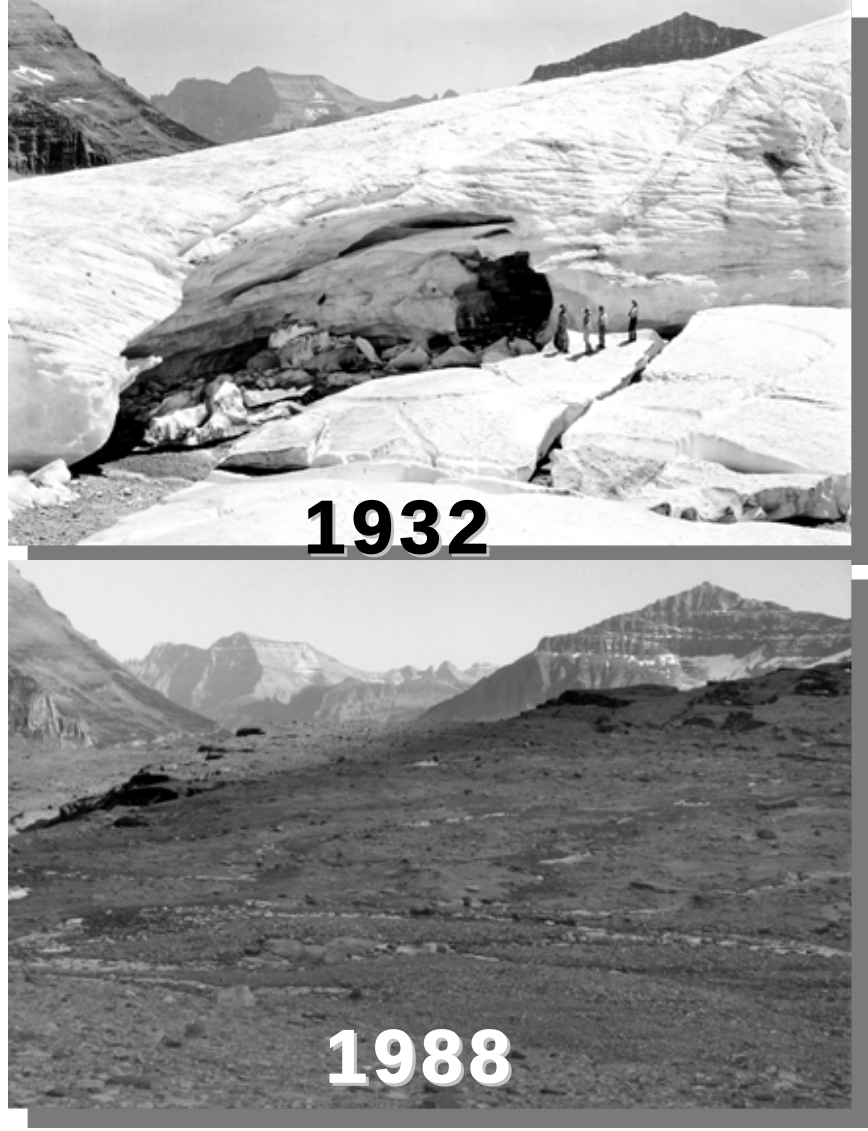
FOOD AVAILABILITY

According to the World Bank, it would take only a three-foot rise in sea level to cover half the rice fields in Bangladesh, a country of nearly 160 million people. Such an increase would also inundate much of the Mekong Delta, which produces half the rice crop in Vietnam, the world's No. 2 rice exporter. And it would submerge parts of the 20 or so other rice-growing river deltas in Asia.

FOOD AVAILABILITY

Melting mountain glaciers are of even more concern. The World Glacier Monitoring Service in Switzerland recently reported the 18th consecutive year of shrinking mountain glaciers around the world, from the Andes to the Rockies, from the Alps to the mountain ranges of Asia. The disappearance of glaciers in the Himalayas and on the Tibetan plateau threatens to shrink food supplies most sharply. Their annual ice melt sustains the major rivers of India and China—the Indus, Ganges, Yangtze and Yellow—during the dry season. And this water in turn supplies irrigation systems.



Boulder Glacier, Glacier National Park, Montana, USA
http://nrmsc.usgs.gov/repeatphoto/

FOOD AVAILABILITY

Yao Tandong, one of China's leading glaciologists, warned last year in the journal Nature that two-thirds of the country's glaciers could be gone by 2050. China is the world's leading producer of wheat. India is No. 2. These two countries also dominate the world's rice harvest. Most of the crops in China and India are irrigated, and the vanishing of mountain glaciers in Asia represents the biggest threat to the world food supply seen to date.

In the Himalayas the 30.2 km-long Gangotri Glacier is receding rapidly: the rate of retreat in the last three decades is about 23 m/yr (Hasnain *et al.* 2004)

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HUMAN ACTIVITY

→ *CO_2 AND OTHER GREENHOUSE GASES* →

GLOBAL, REGIONAL AND LOCAL CLIMATE AND ENVIRONMENTAL CHANGE

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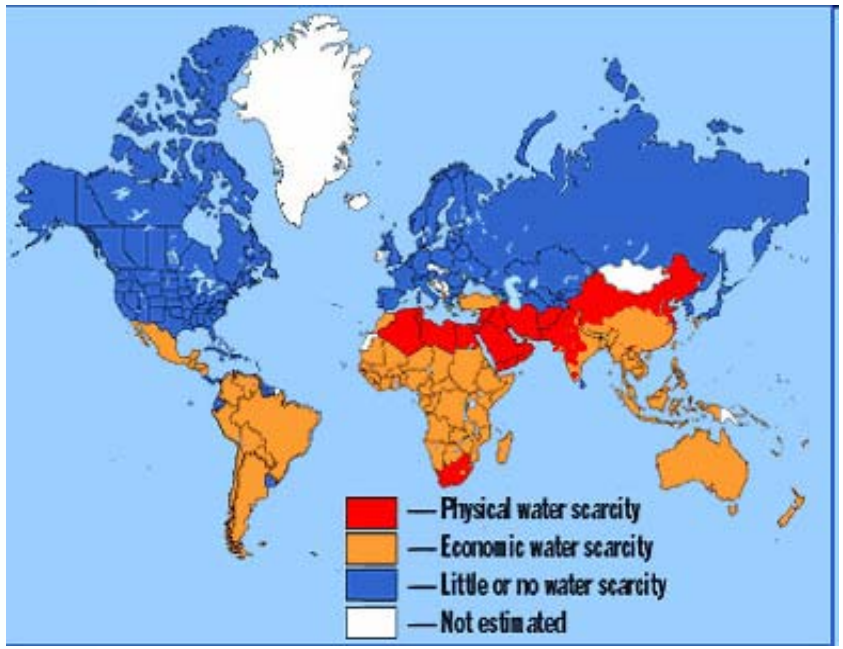
CHANGES TO AGRICULTURAL PRODUCTION

↓

ALTERED RESOURCE AVAILABILITY

← *FOOD SHORTAGE* ←

DISPUTATION OVER WATER AND OTHER ISSUES



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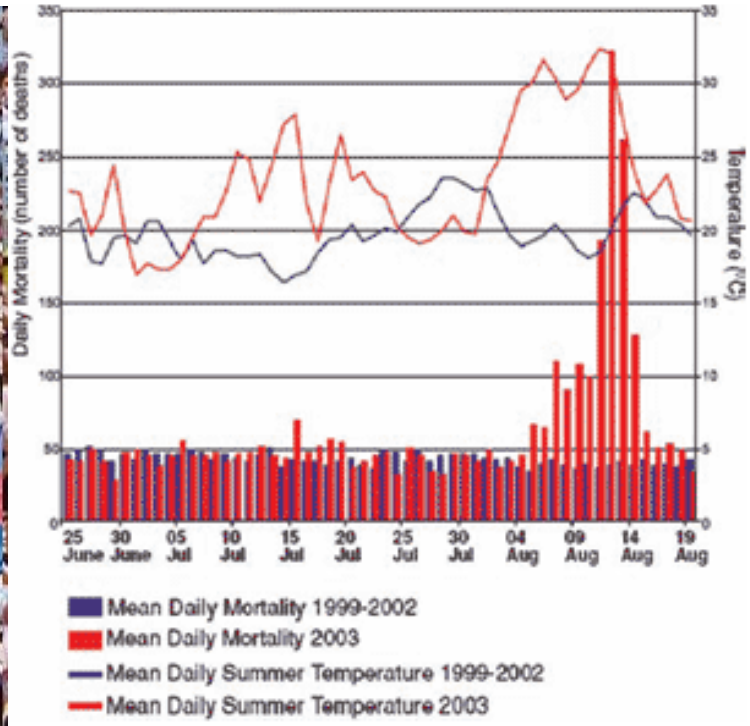
HUMAN HEALTH

The 2003 European heat wave — involving temperatures that were 18°F (10°C) above the 30-year average, with no relief at night — killed 21,000 to 35,000 people in five countries. Starting in August 2003, it caused more than 14,800 deaths in France. Belgium, the Czech Republic, Germany, Italy, Portugal, Spain, Switzerland, the Netherlands, and the UK all reported excess mortality during the same period, with total deaths in the range of 35,000. In France, death rates were much higher for people aged 75 and over (60%).



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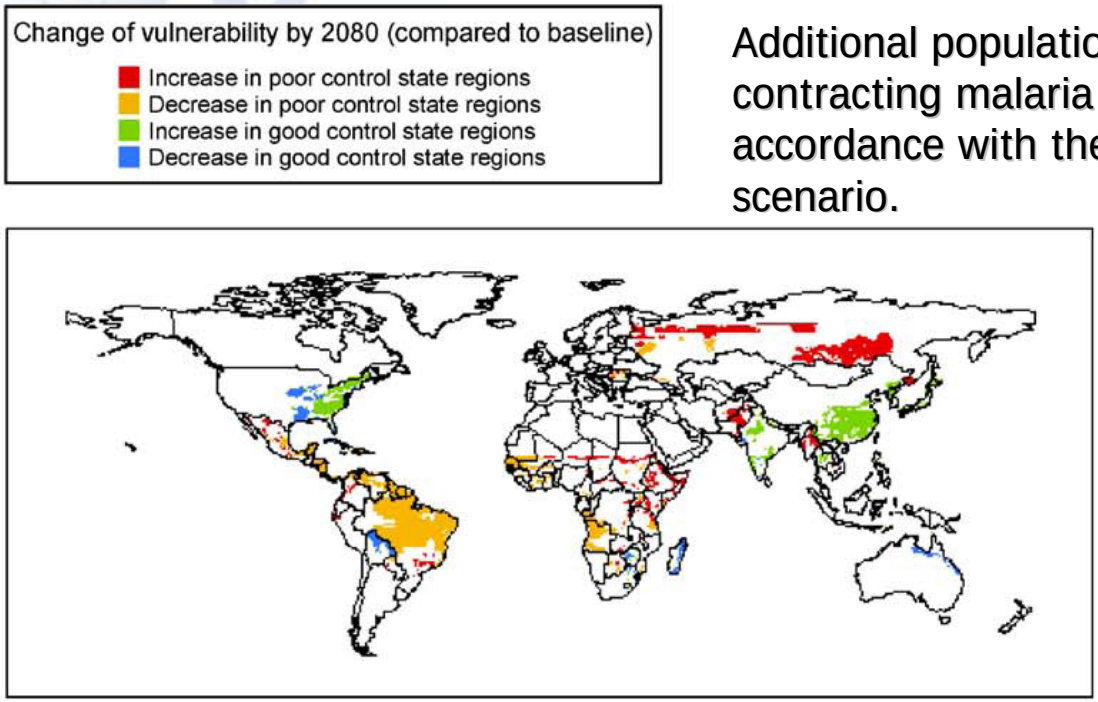
HUMAN HEALTH

The Intergovernmental Panel on Climate Change (IPCC) projections of increased temperature and precipitation suggest the emergence of more disease-friendly conditions in regions that did not previously host diseases or disease carriers. Climate change accelerates the spread of disease primarily because warmer global temperatures enlarge the geographic range in which disease-carrying animals, insects and microorganisms--as well as the germs and viruses they carry--can survive. In addition to changing weather patterns, climatic conditions affect diseases transmitted via vectors such as mosquitoes (vector-borne disease) or through rodents (rodent-borne disease).



Additional population under risk of contracting malaria in 2080 in accordance with the SRES A1F1 scenario.

After: M. van Lieshout, R.S. Kovats, M.T.J. Livermore, P. Martens, 2004, *Climate change and malaria: analysis of the SRES climate and socio-economic scenarios.* Global Environmental Change 14 (2004) 87–99.

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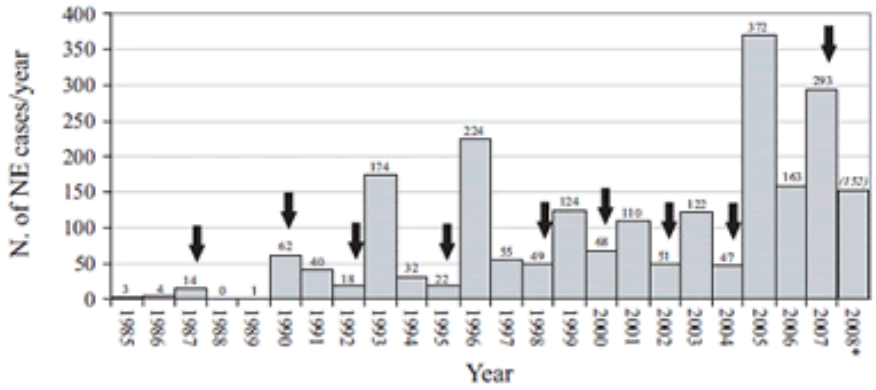
HUMAN HEALTH

Climate-sensitive diseases are among the largest global killers. Diarrhea, malaria and protein-energy malnutrition alone cause more than 3.3 million deaths globally in 2002, with 29% of these deaths occurring in the Region of Africa. Deadly diseases often associated with hot weather, like the West Nile virus, Cholera and Lyme disease, are spreading rapidly throughout North America and Europe because increased temperatures in these areas allow disease carriers like mosquitoes, ticks, and mice to thrive.



Various strains of hantavirus have become worrisome for Europe, Spain, and Portugal, most of Italy, Greece, and western Russia. In 1997, over 9,000 people contracted the virus and 34 cases were fatal (Clement, et al. 2009). Nephropathia epidemica (NE), a disease caused by hantavirus, has increased from a handful of cases annually in the 1980s to an average of 300 cases per year within the past three years (Weinhold, 2009).

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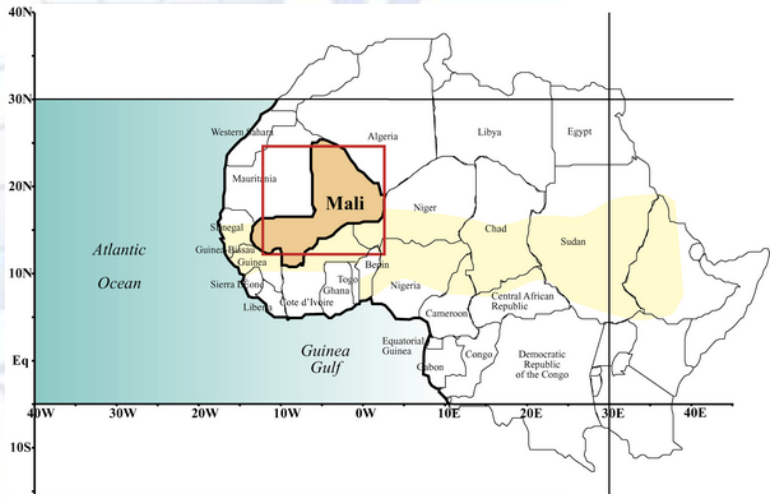
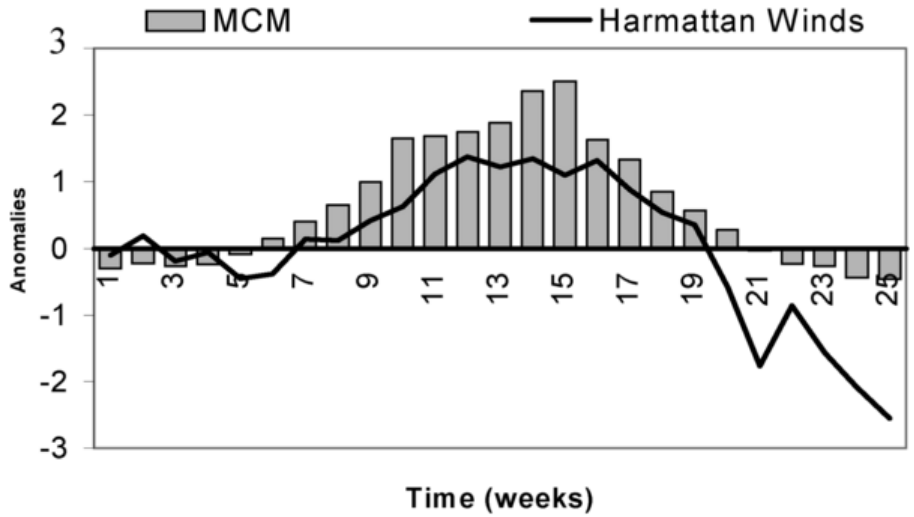
HUMAN HEALTH

The study by Sultan et al (2005) provides a clear, quantitative demonstration of the connections that exist between meningococcal meningitis (MCM) epidemics and regional climate variability in Africa. This statistically robust explanation of the MCM dynamics enables the development of an understanding of the likely impacts of climate change on meningitis epidemics in the future in West Africa.



The “Meningitis Belt” in West Africa



Temporal Patterns of Epidemics and Climate
Weekly means of the Harmattan wind index over the 1994–2002 period and mean seasonal pattern of the number of cases of MCM (in standardized anomalies).

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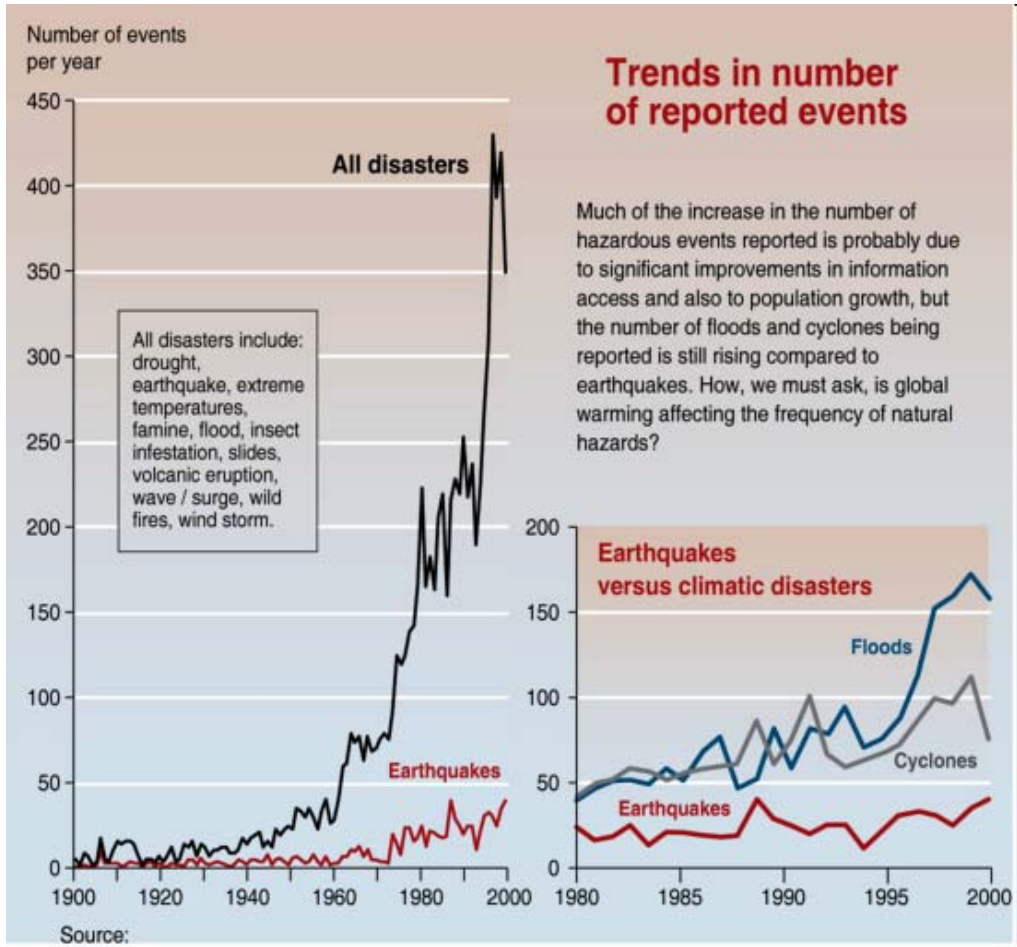
HUMAN SAFETY

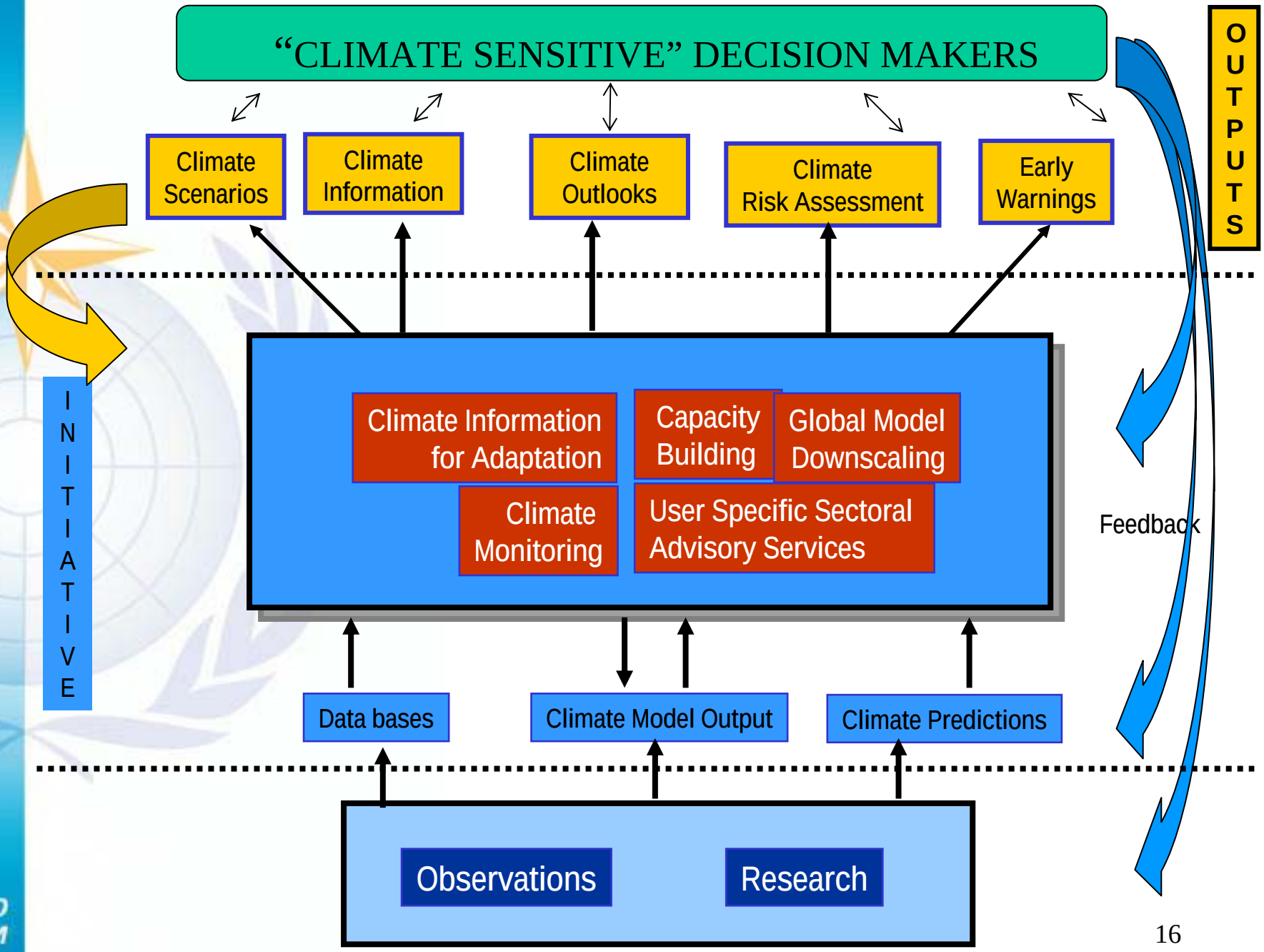
Disaster risk reduction is critically important to adapting to the changing climate. Disaster risk reduction and adaptation to climate change share the same ultimate goal of reducing vulnerability to weather and climate hazards.



Linking Climate Change Adaptation and Disaster Risk Management for Sustainable Poverty Reduction

http://ec.europa.eu/development/icenter/repository/env_cc_varg_adaptation_en.pdf

- Inadequate provision of high-resolution meteorological data for detecting trends and validating models
- Shortages or poor access to physical (e.g. hydrological) and socioeconomic datasets for assessing risk
- Insufficient incorporation of implications of climate change in risk assessments
- Analyses of potential climate change impacts stop short of identifying practical adaptation options
- Gaps in awareness and understanding of risk and climate change projections
- Relatively weak coordination mechanisms regarding climate change adaptation
- Under-development of a preventive, disaster risk reduction approach
- Threat of discontinuity in policies, structures, programmes, plans
- Projects that address climate change in disaster management are fragmented and tend to be donor-driven
- Disaster emergency response continues to divert funds
- Barriers to investment in risk reduction and adaptation


"CLIMATE SENSITIVE" DECISION MAKERS
OUTPUTS
Climate Scenarios
Climate Information
Climate Outlooks
Climate Risk Assessment
Early Warnings
INITIATIVE
Climate Information for Adaptation
Capacity Building
Global Model Downscaling
Climate Monitoring
User Specific Sectoral Advisory Services
Feedback
Data bases
Climate Model Output
Climate Predictions
Observations
Research

World Meteorological Organization
Working together in weather, climate and water

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources.

WMO has a membership of 188 Member States and Territories (since 24 January 2007). It originated from the International Meteorological Organization (IMO), which was founded in 1873. Established in 1950, WMO became the specialized agency of the United Nations in 1951 for meteorology (weather and climate), operational hydrology and related geophysical sciences.

It coordinates the global delivery of weather-, climate- and water-related services through National Meteorological and Hydrological Services. These are the WMO's current **USER INTERFACE,** the GFCS will have this capability plus much more.

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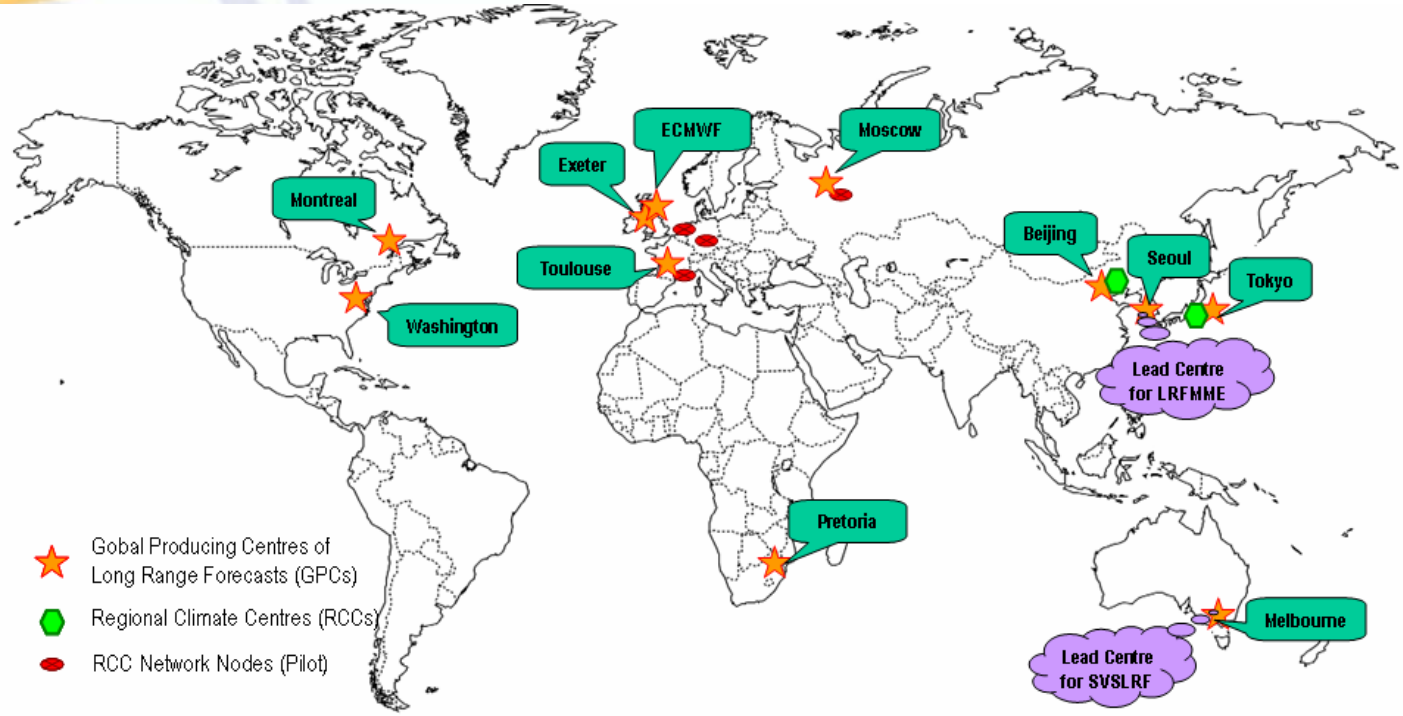
WMO's current nodes for climate service provision



SVSLRF: Standardized Verification System for Long Range Forecasts
LRFMME: Long Range Forecast Multi-Model Ensemble

The name for the process of continuous interaction between service users and service providers.

The key element of the GFCS:

To be provided by NMHSs, universities, non-government organisations and the private sector.

The Framework will make services widely available, provide the guarantee of scientific integrity and set service standards.

WCRP

The World Climate Research Programme (WCRP), sponsored by the International Council for Science (ICSU), the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and is uniquely positioned to draw on the totality of climate-related systems, facilities and intellectual capabilities of 188 countries. Integrating new observations, research facilities and scientific breakthroughs is essential to progress in the inherently global task of advancing understanding of the processes that determine our climate.

WCRP

World Climate Research Programme (WCRP)

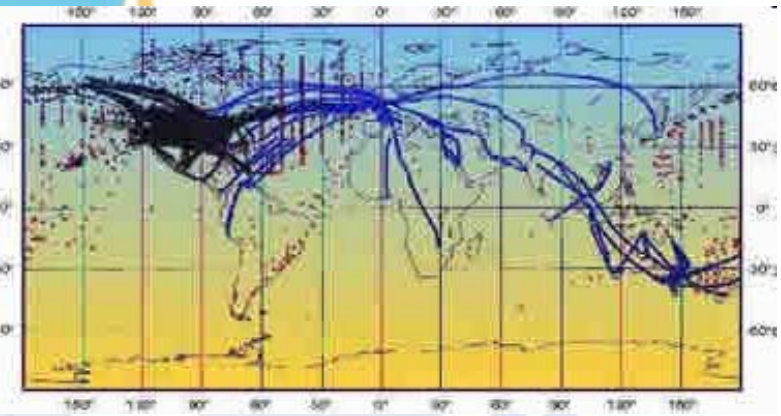
Established in 1980 with two major objectives:

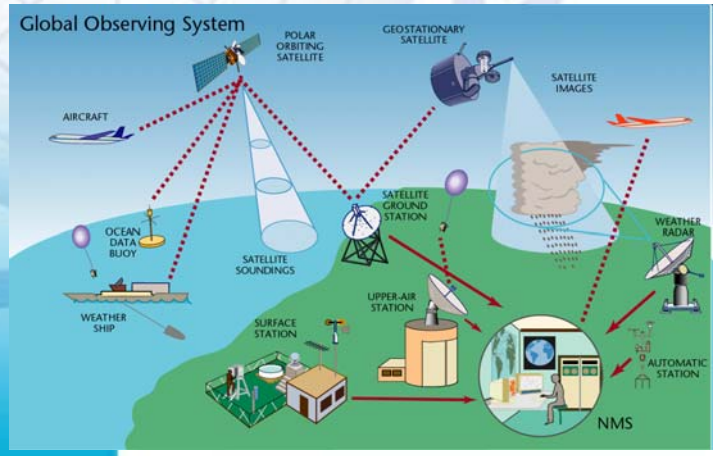
to determine the extent to which climate can be predicted, and to determine the extent of human influence on climate.

These remain its goals.

It is now possible to address the seamless prediction of the climate system from weekly weather to seasonal, interannual, decadal and centennial climate variations and anthropogenic climate change. Advances in understanding and in new technology for observations and computing also make it possible to contribute to the broader questions of Earth system modelling and the use of comprehensive Earth system models for investigating the habitability of our planet, and contributing to the socio-economic welfare and the sustainability of modern societies and their supporting environments.

WIGOS





The **WMO Integrated Global Observing System (WIGOS)** is a concept for a comprehensive, coordinated and sustainable system of observing systems. WIGOS is based on all WMO Programmes' observational requirements. It will provide a single focus for the operational and management functions of all WMO observing systems as well as a framework and mechanism for interactions with WMO co-sponsored observing systems enabling integration, cooperation and coordination taking into account the multiplicity of perspectives and observing domains covered by WIGOS. Through the WMO Information System (WIS), it will ensure availability of required data, metadata and products according to identified requirements.

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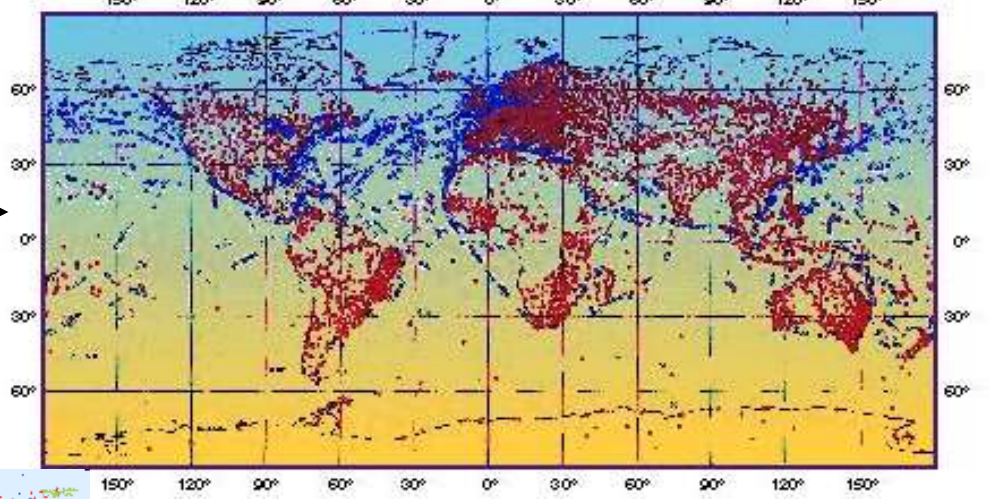
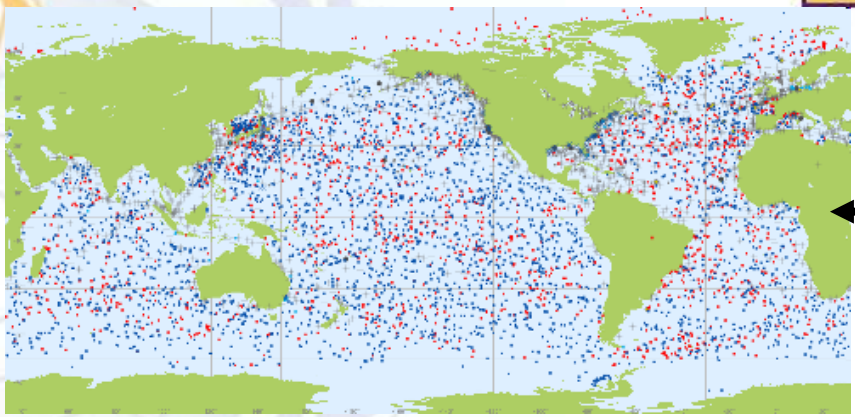
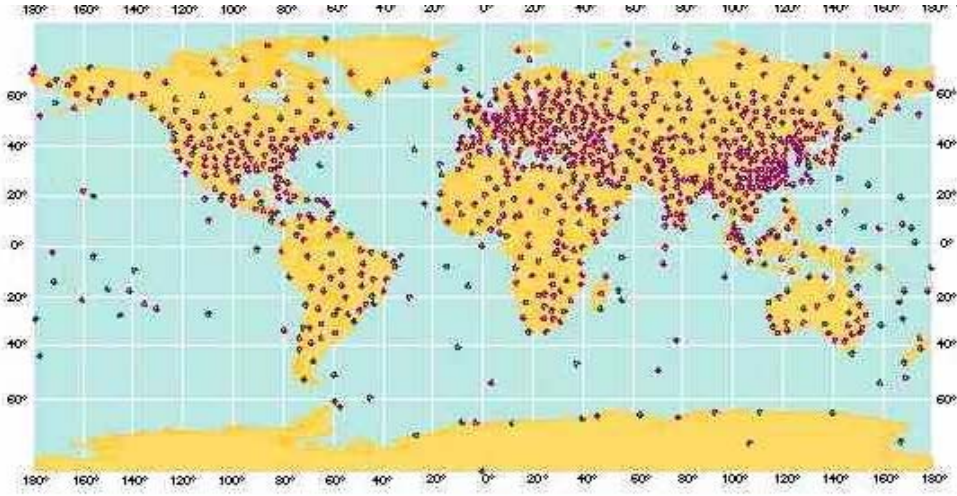
Ship- and land-based surface observations





Ocean observations from drifting buoys

Land-based radiosonde stations



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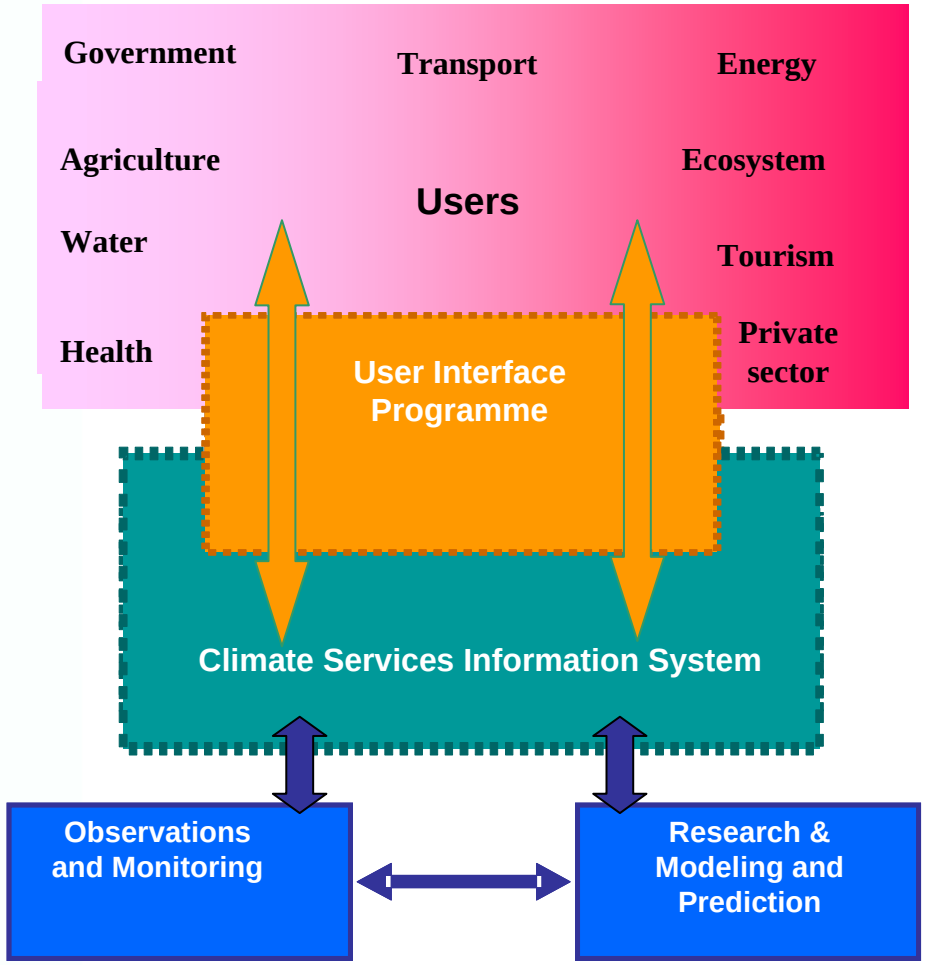
Government
Transport
Energy
Agriculture
Ecosystem
Users
Water
Tourism
Health
Private sector
User Interface Programme
Climate Services Information System
Observations and Monitoring
Research & Modeling and Prediction

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If we fail to make the Framework happen the world will not know.

The engineer designing the dam spillway in South America will not know she lacks the necessary information because we could not reach agreement. The people drowned because inadequate coastal levees were breached will not understand that the design failed because the engineers did not have proper advice on sea levels or storm intensities in a warming world. Farmers planting the wrong crops and tending animals not best suited to the changing climate in Africa will not know why they were not told of better adaptation options. Proposals to aid agencies will fail without the authors understanding that with the Framework in place they would have had the necessary data to build a much stronger case for assistance.

Against all of this, there is no downside from making the Framework happen.

Thank you for listening

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