Regional Stakeholder Consultation on Climate Services for the Third Pole Region

Jaipur, India

9-11 March 2016

UNESCO,s Experience of Addressing Climate impacts, adaptation and vulnerability in Mountain Systems

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United Nations Educational, Scientific and Cultural Organization

"...international environmental institutions can't make states do what they don't want to do, but citizens can. It is increasingly clear that treaties only set rules for implementation but on citizen activism and national environmental leadership. If citizens start to demand strong environmental policy from their own governments, the number of treaties and summits will save the Earth."

The Skeptical Environmentalist

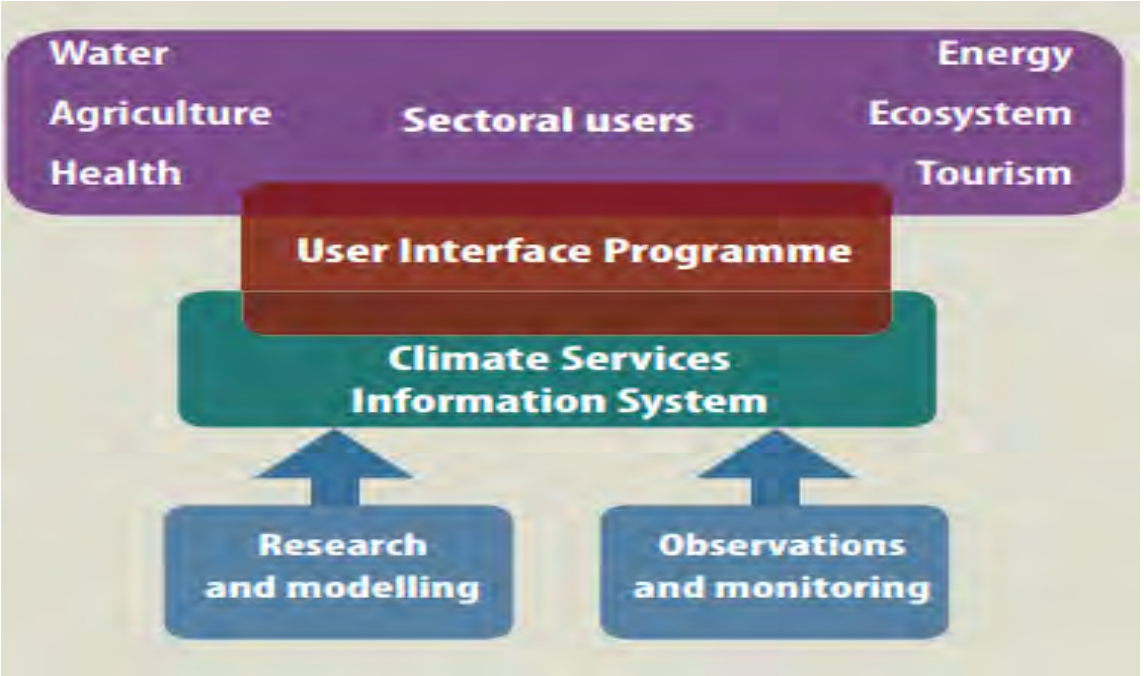
The UNESCO STRATEGY FOR ACTION ON CLIMATE CHANGE

The UNESCO Enhanced Plan of Action for the Strategy for Action on Climate Change (through 2011) is structured around three main strategic objectives:

1. building, making available and maintaining the climate change knowledge base: science, assessment, monitoring and early warning;
2. promoting mitigation of and adaptation to climate change, including through enhanced education and public awareness; and
3. moving towards a climate-neutral UNESCO.

UNESCO and the World Meteorological Organisation are the co-conveners for the cross-cutting area within the United Nations System for climate knowledge: science, assessment, monitoring and early warning.

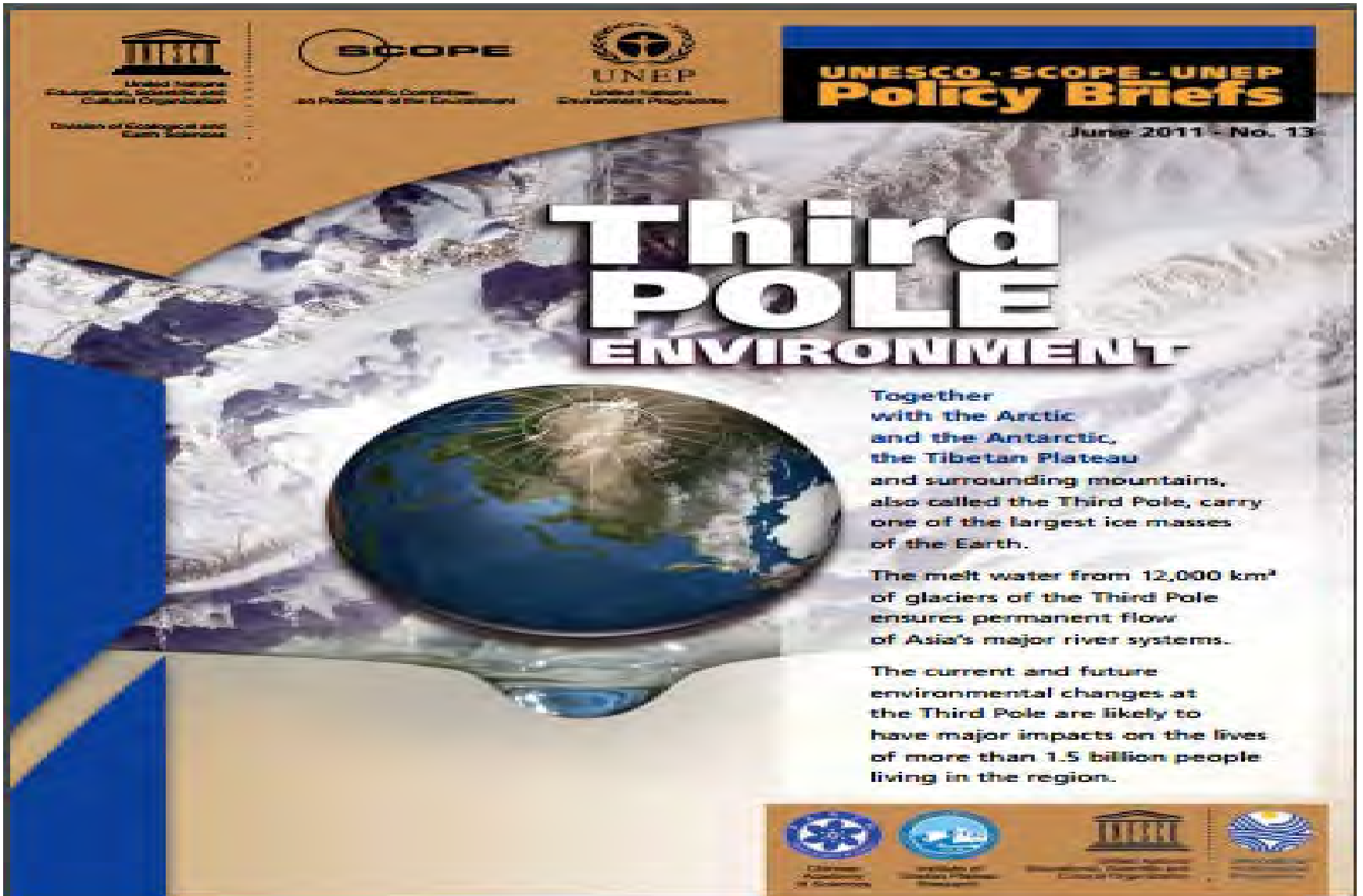
- UNESCO and WMO works together as part of UN-wide collaboration on Global Framework for Climate Services to guide and develop climate services to bridge the gap between the IPCC assessment reports and the services required to adapt to climate variability and change at regional and sectoral levels.
- UNESCO provides advanced educational training for the next generation of climate scientists, by both science-related category I centres/institutes, the UNESCO-IHE Institute for Water Education and the Abdus Salam International Centre for Theoretical Physics (ICTP), for water management and Earth science and meteorological modelling, respectively.



UNESCO interdisciplinary climate change knowledge base

- UNESCO's International Hydrological Programme (IHP), International Geoscience Programme (IGCP), Man and the Biosphere (MAB) Programme, Intergovernmental Oceanographic Commission (IOC), provides valuable data, information and tools on key areas of concern in climate change
- It promotes the use of information and communication technologies and improved monitoring and modelling tools to predict and deal with floods and droughts, and the production of the United Nations World Water Development Report with many examples specific to Mountain regions and the third pole.

UNESCO-SCOPE-UNEP Policy Brief on Third Pole Environment



The 4th Third Pole Environment (TPE) Workshop April 2014 in Dehradun, India

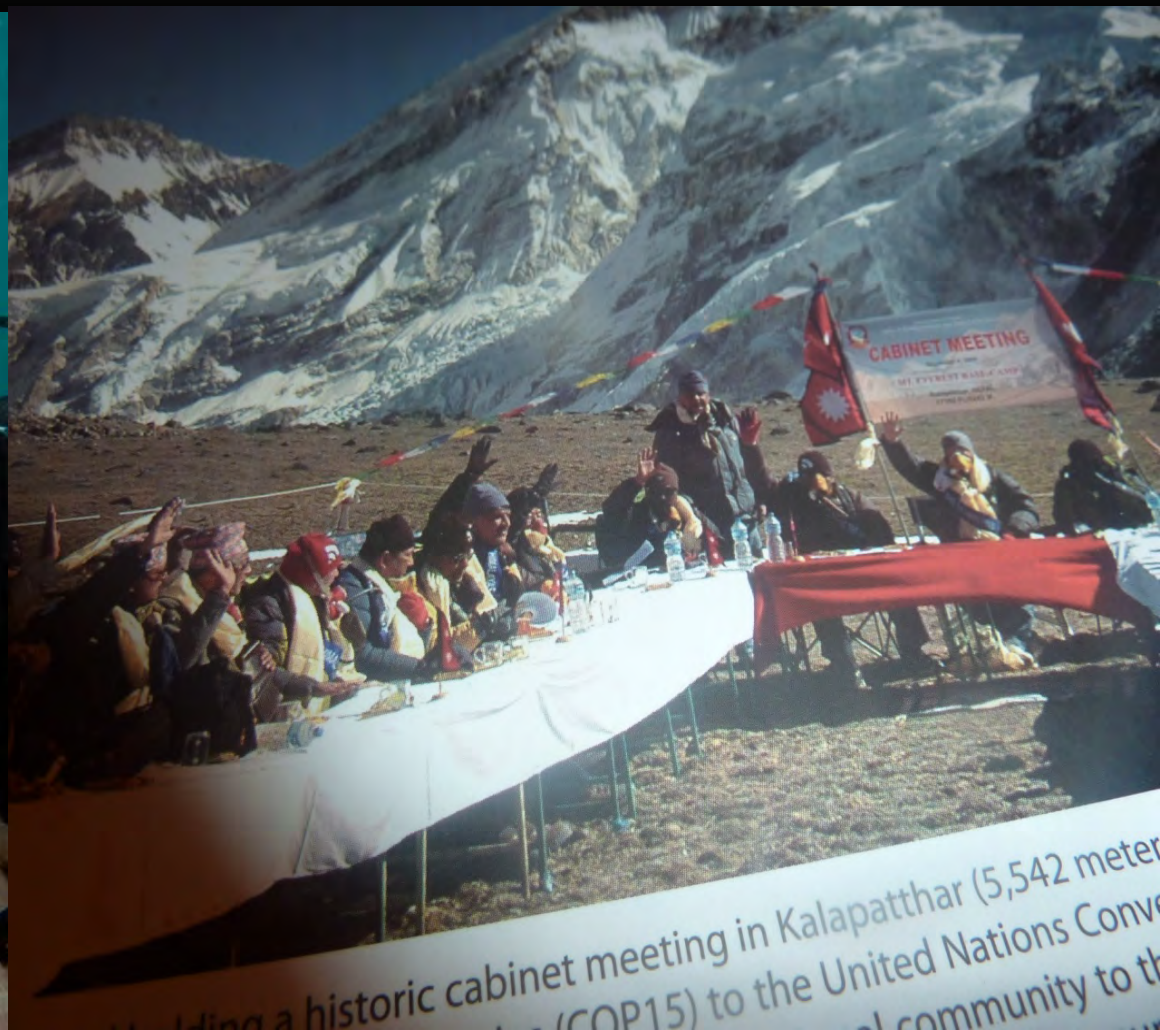
- " Human-Nature Relationship in the Third Pole Region", "Climate changes in the past and at present in polar region on Earth ", “Ecosystem and Geology”, as well as “TPE Mass Balance Working Group report” and the TPE Precipitation Working Group report.

UNESCO Sites: A Climate Change Observatory

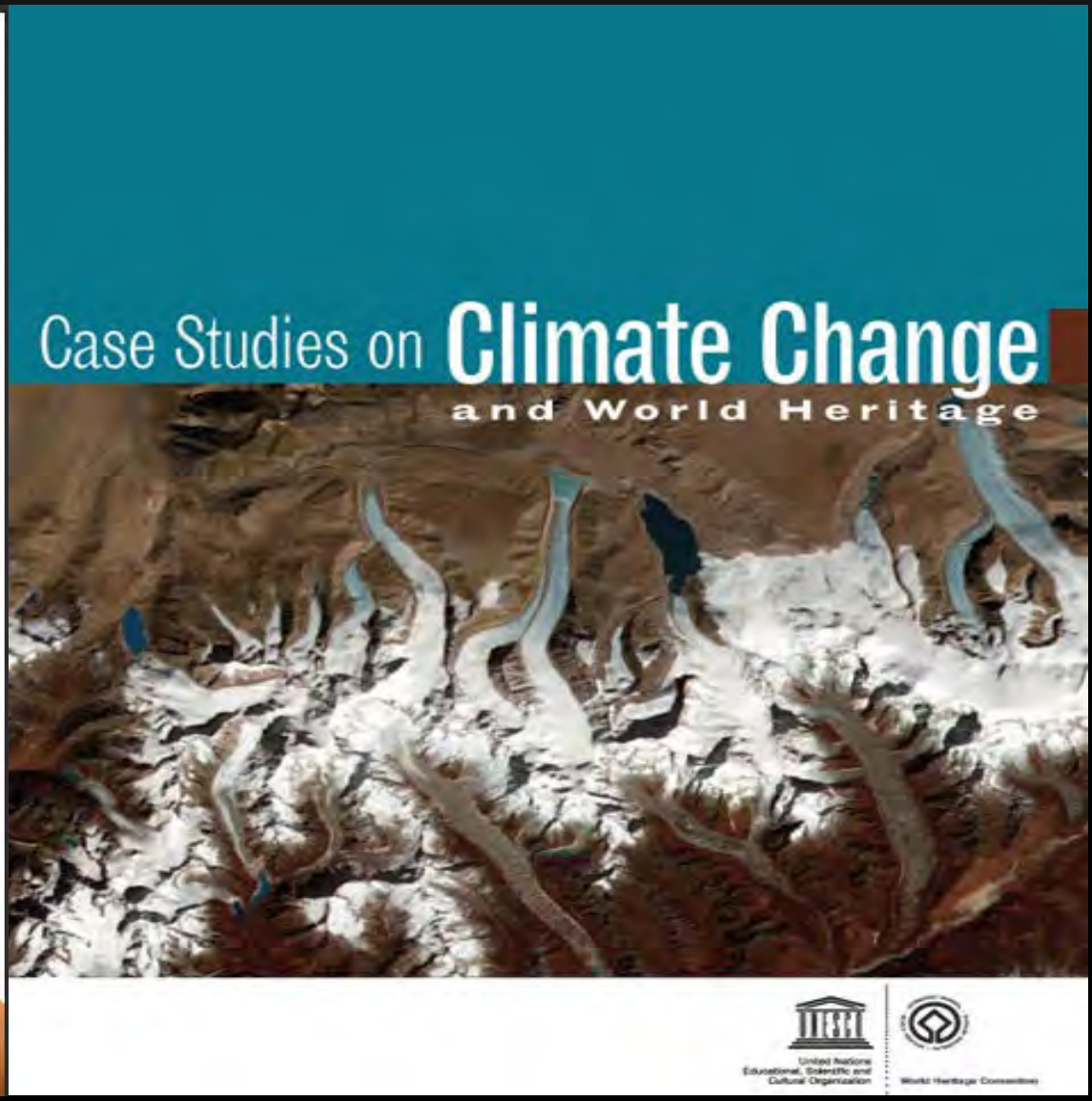
- UNESCO sites serve as global field observatories for climate change.
- Studies are currently on at several sites, and the results are used to plan tailored adaptation and mitigation measures.
- The iconic value of these sites means they also serve as a useful platform to share information on applied and tested monitoring, mitigation and adaptation processes, and to raise awareness on the impacts of climate change on human societies and cultural diversity, biodiversity and ecosystem services, and the world's natural and cultural heritage.

CLIMATE CHANGE IN HIMALAYA

- Nepal organized a Cabinet Meeting at Kalapatthar, near the base camp of the Mount Everest, and issued the “Kalapatthar Declaration” following Maldivian underwater Cabinet meeting



SAGARMATHA NATIONAL PARK- MELTING OF GLACIERS AFFECTING WILDLFIE SUCH AS SNOW LEOPARD



UNESCO-MAB Project:

- **GLOCHAMOST (Global and Climate Change in Mountain Sites – Elaborating Coping Strategies for Mountain Biosphere Reserves), on-going**

- **Follow-up project to GLOCHAMORE (Global Change in Mountain Regions), 2003-2005, 6th Framework Programme of the EU + University of Vienna, MRI and UNESCO-MAB**

- Nandadevi Biosphere Reserve in India, Sagarmatha in Nepal


MRI/UNESCO INTERNATIONAL WORKSHOP
GLOBAL CHANGE RESEARCH
in Mountain
Biosphere
Reserves
BIODIVERSITY
CONSERVATION
RESEARCH
MONITORING
EDUCATION
TRAINING
SUSTAINABLE
DEVELOPMENT
Mountain Biosphere Reserves for global change study

United Nations
Educational, Scientific and
Cultural Organization

South &
Central Asia
Network

SACAM

South & Central Asia MAB Network

Mountain biosphere reserves as study/monitoring sites for global change:

- contain protected areas (natural or near-natural environments);
- contain areas that are economically used;
- most BRs dispose of long-term climatic data and species list;
- BRs contain also people → impact of global change on human societies;
- Partnership of biosphere reserve managers and scientists.

Research Strategy themes (GLOCHAMORE project)

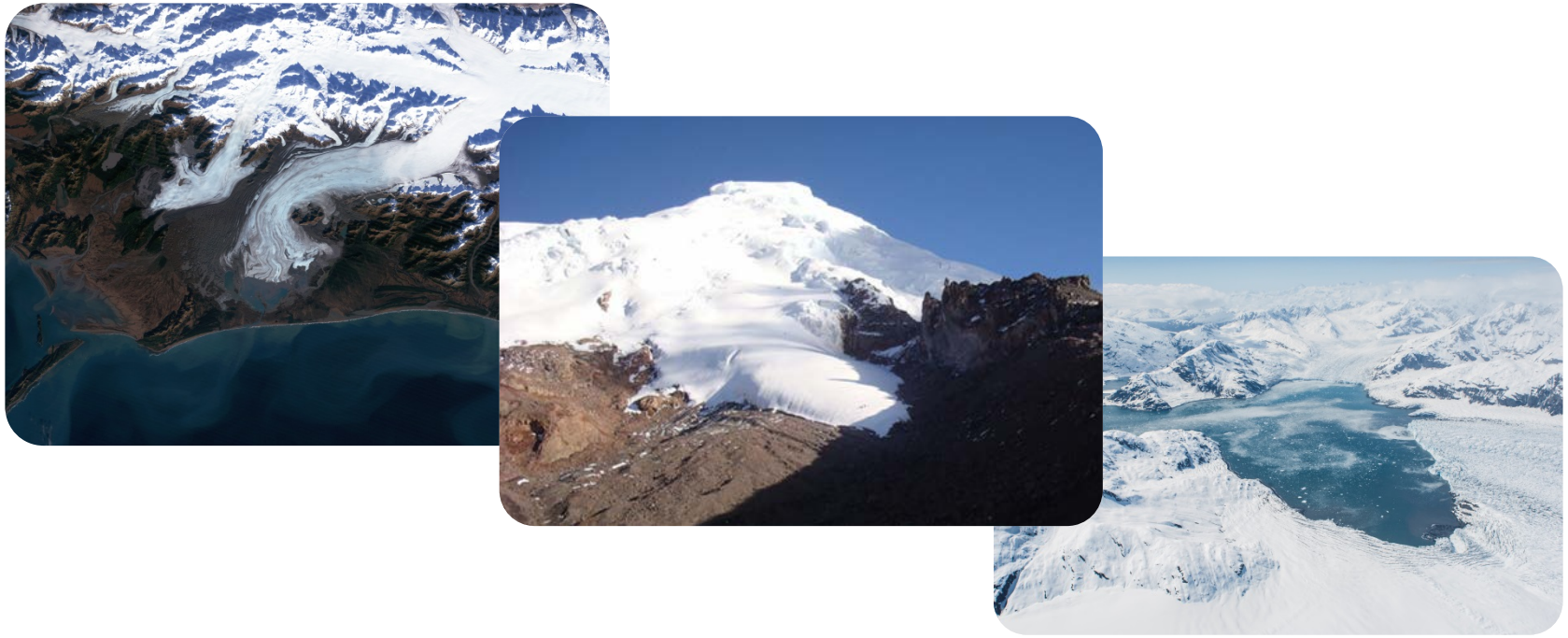
1) Climate
2) Land use change
3) Cryosphere
4) Water systems
5) Ecosystem function & services
6) Biodiversity
7) Hazards
8) Human and animal health
9) Mountain economies
10) Society and global change

Partnerships between people and the nature

Nanda Devi Biosphere Reserve

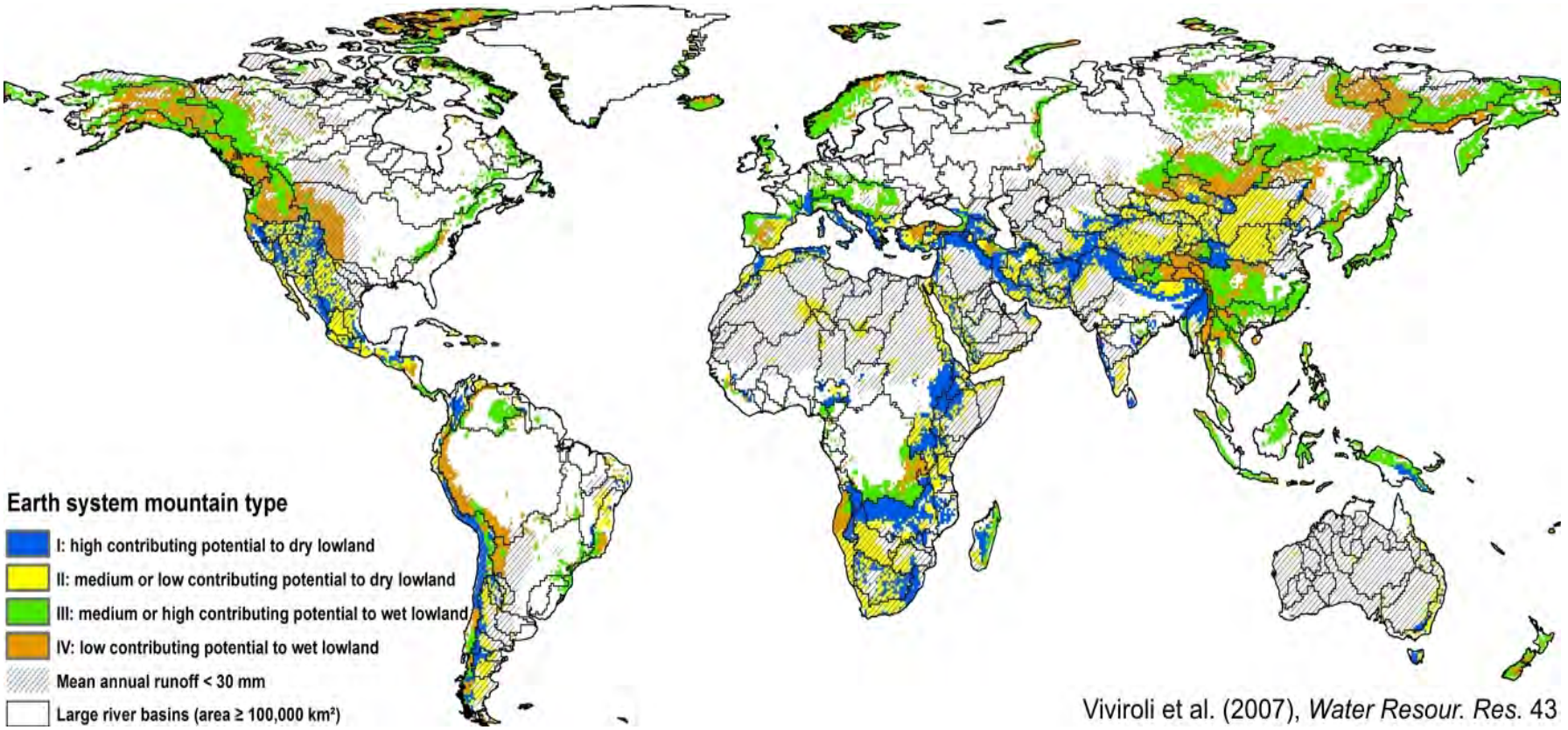
Worldwide inventory of existing perennial ice and snow masses

The **need** for a **worldwide inventory** of existing **perennial ice and snow masses** was first considered during the International Hydrological Decade, declared by UNESCO for 1965-1974.



Mountain Ecosystem Services

Provisioning services: Water



Viviroli et al. (2007), *Water Resour. Res.* 43

Water Security: key challenges of the 21st century
Some key facts

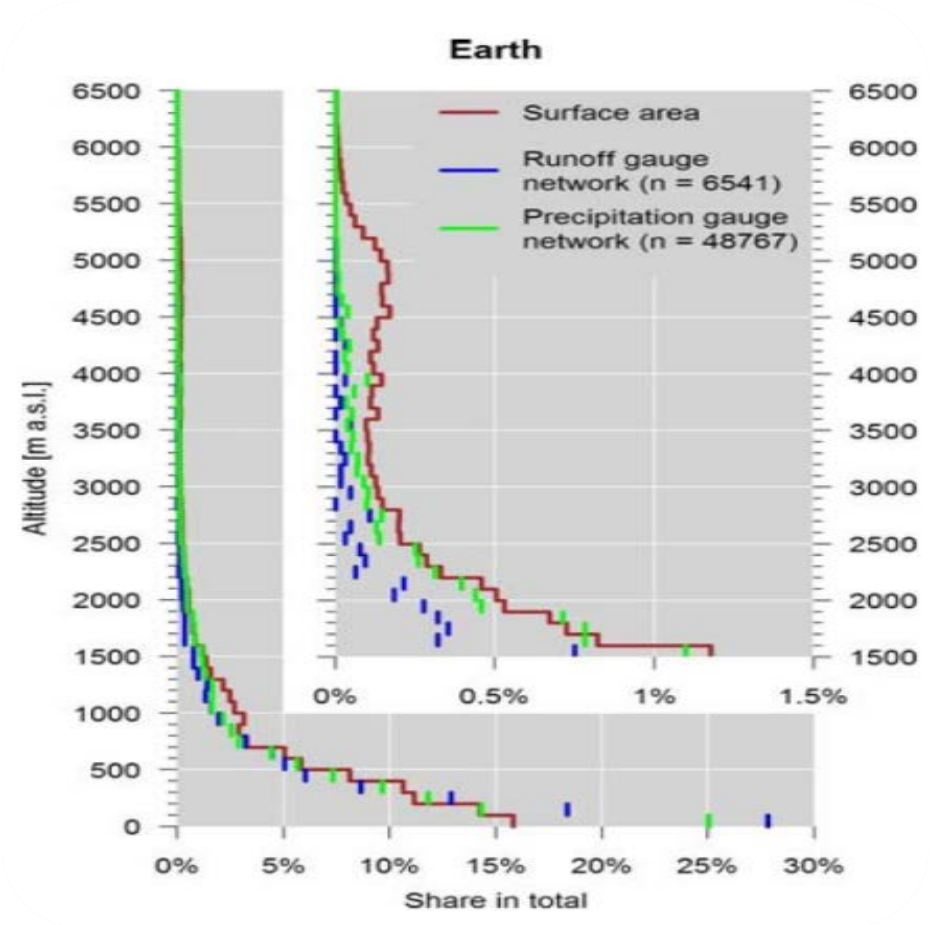
In many regions, changing precipitation or melting snow and ice are altering hydrological systems, affecting water resources in terms of quantity and quality (*medium confidence*).

Glaciers continue to shrink almost worldwide due to climate change (*high confidence*), affecting runoff and water resources downstream (*medium confidence*).

Climate change is causing permafrost warming and thawing in high-latitude regions and in high-elevation regions (*high confidence*).

IPCC AR5 WG2 **SPM** *(2014)*

Alpine Regions are Data Scarce



Altitudinal distribution of global runoff stations represented in the GRDC archive and global precipitation station network represented in the GPCC archive compared to global hypsography of the land surface area (without Greenland and Antarctica). The inset shows a magnification for altitudes above 1500ma.s.l. (Viviroli et al. 2011).

Delivering responses: IHP-VIII

IPCC's Fifth Assessment Report WG-2 on Impacts, Adaptation and Vulnerability (AR5) 2014: **Risks and Challenges**

IHP-VIII:

Water security: Responses to local, regional and global challenges

Water Security is defined by UNESCO as:

"the capacity of a population to safeguard access to adequate quantities of water of acceptable quality for sustaining human and ecosystem health on a watershed basis, and to ensure efficient protection of life and property against water related hazards — floods, landslides, land subsidence and droughts."

IHP-VIII Responses: 6 Themes, 3 Axes 2014-2021

Improve knowledge and innovation to address water security challenges.

Snow and Ice Networks

Regional Glaciological Centre in Almaty Kazakhstan

GTNH PHI - LAC

WGSI IHP - LAC

Working Group on Snow, Ice and Glaciers (GTNH)-LAC

High Level Panel session: Climate Change Impacts on Water Resources and Adaptation policies in Mountainous regions

Project: The Impact of Glacier Retreat in the Andes: International Multidisciplinary Network for Adaptation Strategies 2012-2016

"The Impact of Glacier Retreat in the Andes: International Multidisciplinary Network for Adaptation Strategies" Lima, Peru 29-30, May 2012

"Melting snow and glaciers in the Andes: Science, technology and policy for adaptation to cope with complexity in the context of climate change", 12-15 September 2011, Santiago, Chile

Science policy workshop
Impacts of Global Climate Change on Snow, Glaciers and Water Resources in the Andes: Policy recommendations for Adaptation Strategies **Quito, Ecuador 20-21 November 2013**

UNIVERSITY AT ALBANY
State University of New York

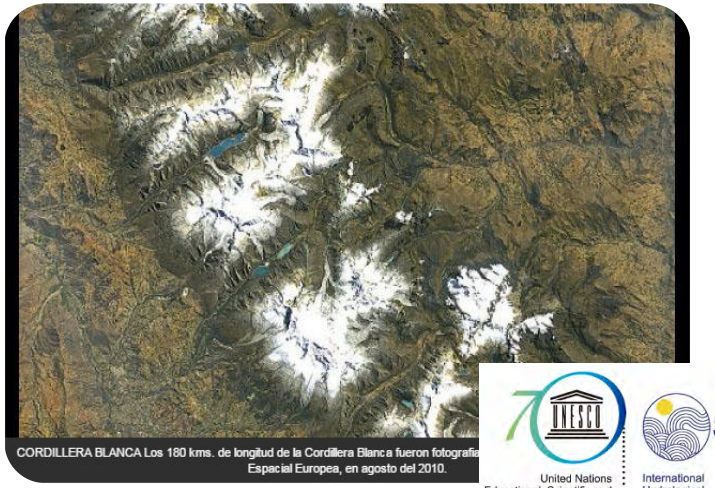
CONDESAN
Consorcio para el Desarrollo Sostenible de la Ecorregión Andina

International Network for Alpine Research Catchment Hydrology INARCH-GEWEX

- INARCH: to better understand alpine cold regions hydrological processes, improve their prediction and find consistent measurement strategies.

- To achieve this objective it is necessary to develop transferable and validated hydrological model schemes of different complexity that can support research in data sparse mountain areas dominated by elements of snow, permafrost and glacier cover.

- **INARCH was accepted by The Global Energy and Water Cycle Exchanges Project (GEWEX))**



From COP20 to COP21: Exhibition

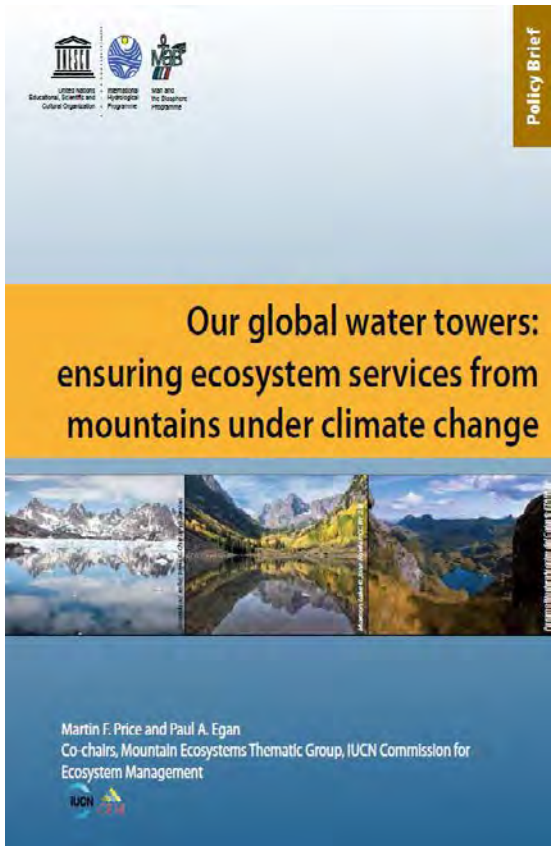
LIMA COP20 | CMP10
CONFERENCIA DE NACIONES UNIDAS SOBRE CAMBIO CLIMÁTICO 2014

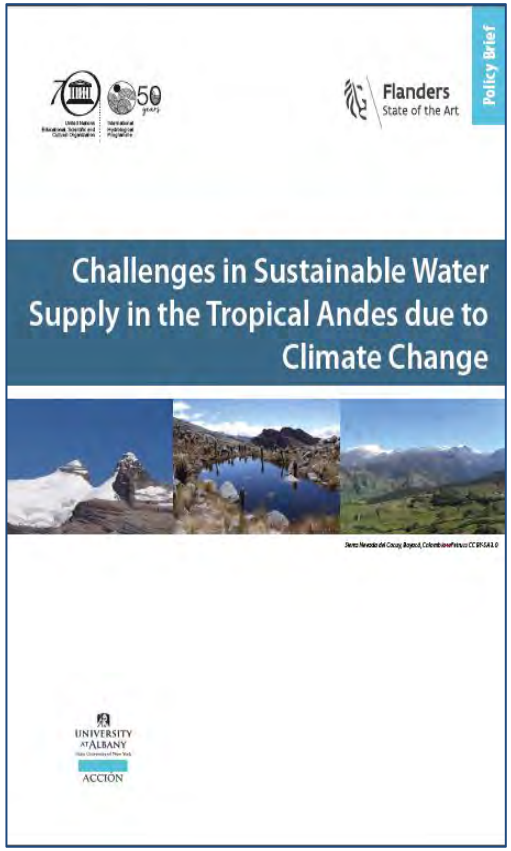
COP21 · CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

'Climate change impacts on mountain regions of the world‘

'Mountains: early warning systems for climate change‘

Publications





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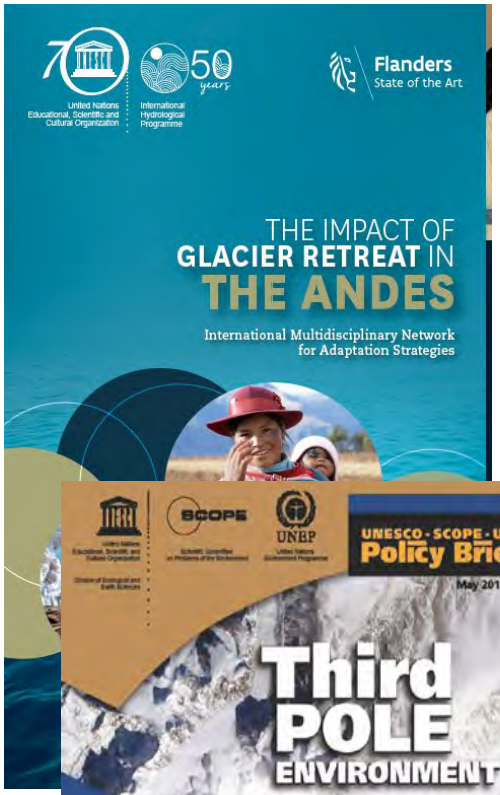
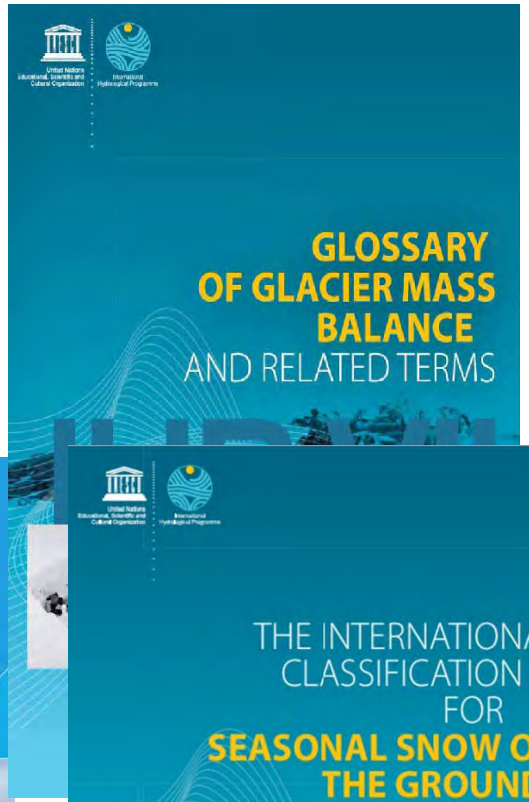
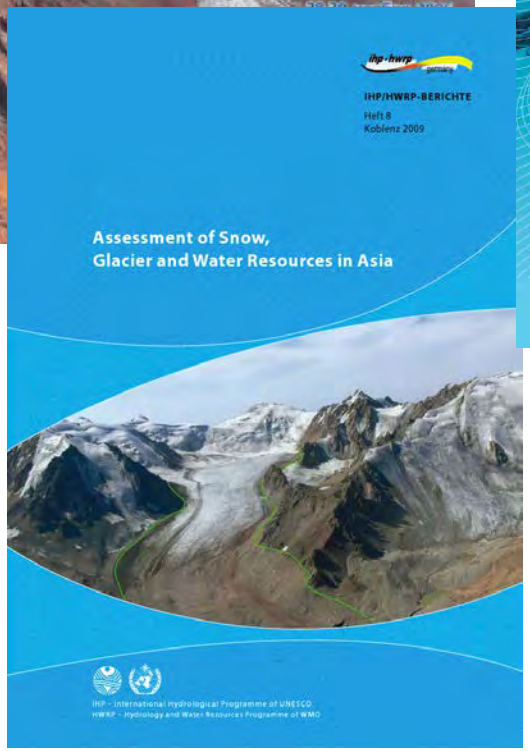






Inception meeting Paris 9-10 February 2015

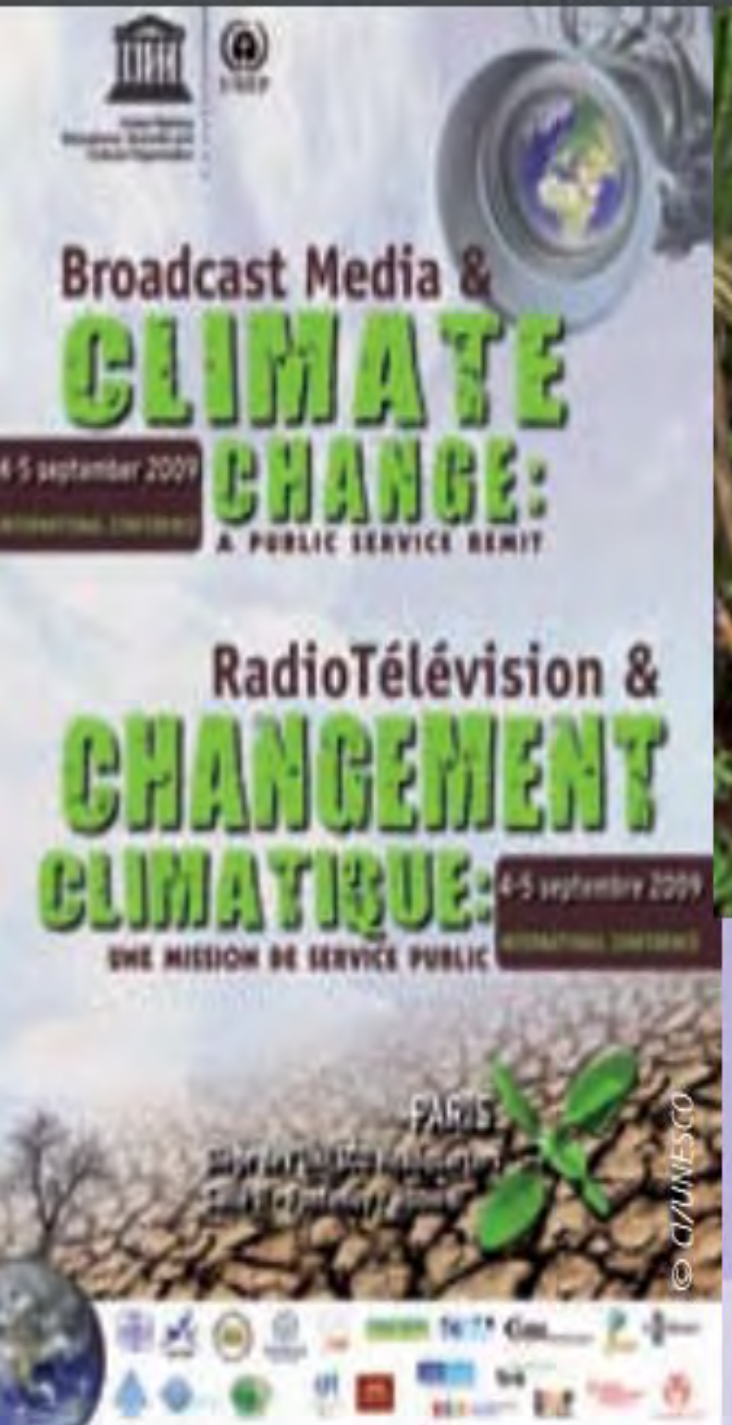
"Addressing Water Security: Climate Impacts and Adaptation Responses in Africa, the Americas, Asia and Europe"

Addressing Water Security: Climate Impacts and Adaptation responses in Africa, the Americas, Asia and Europe

VULNERABILITY ASSESSMENT, MAPPING AND IMPLEMENTATION OF ADAPTATION STRATEGIES

RAISE AWARENESS ON POTENTIAL IMPACTS OF CLIMATE CHANGE ON MOUNTAIN GLACIERS AND DOWNSTREAM WATER SUPPLY

DEVELOPMENT OF A GLOBAL KNOWLEDGE FORUM



Biologists conducting the 2009 Mycoblizt in the Atherton Tablelands, Queensland.

Fostering universal access to information and knowledge, building the investigative capacities of journalists, to function as well-informed knowledge brokers on climate change issues. Environmental journalism courses are conducted South and Central Asia, Southern Africa and in the Caribbean


Changing Minds
not
the Climate
education, science
and culture for
sustainable development

Thank you