



International Symposium

Benefiting from Earth Observation

Bridging the Data Gap for Adaptation to
Climate Change in the Hindu Kush-Himalayan Region



4 - 6 October 2010, Kathmandu, Nepal

<http://geoportal.icimod.org/symposium2010>

Background

The Hindu Kush-Himalayan (HKH) region is the youngest, highest, and one of the most fragile mountain systems in the world. Known as the 'water tower' of Asia, the region boasts the largest concentration of snow and glaciers outside the polar regions and contains the headwaters of the 10 largest river basins in Asia. The HKH region is a reservoir of biodiversity and includes all or part of four Global Biodiversity Hotspots. More recently, climate change has placed the Himalayan region at the centre of international attention as one of the most vulnerable ecosystems in the world, as it is leading to severe impacts on mountain and downstream communities and their environments. The dynamics of the life support systems that rely on the HKH ecosystems are threatened, and the traditional adaptation and coping mechanisms of the local people are losing their effectiveness. ICIMOD and its national and international partners are working to build regional capacity and develop relevant knowledge bases in relation to key strategies and policies for improving adaptation to climate change for mountain communities at risk.

Earth observation in the Himalayan context

The systematic collection of data and information about the HKH mountain system is critical for improved understanding of climate change, and its trends and impacts, and for predicting future scenarios. Data and information derived from earth observation are proving increasingly vital for gaining insights about regional status and trends, especially about climatic and broader environmental changes of a transboundary nature, and their implications at the global level. ICIMOD is promoting geo-information and earth observation technology and applications for sustainable mountain development in the HKH



region through its Mountain Environment and Natural Resources' Information System (MENRIS) Division. Together with its partners, ICIMOD is promoting regional cooperation; access to, and use of satellite data, technology and know-how; the filling of data gaps, the dissemination of knowledge on climate change adaptation and sustainable mountain development and engagement with the Global Earth Observation System of Systems or GEOSS.

Objectives

The primary objective of the international symposium is to foster regional and international cooperation to promote the use of, and access to, earth observation for improved scientific knowledge and understanding to support adaptation to climate change in the HKH region. More specifically, it aims to

- build synergies with national, regional, and international initiatives for the sharing of earth observation data in order to develop a regional database and relevant products;
- promote regional cooperation among ICIMOD's regional member countries to foster Himalayan spatial data infrastructure (H-SDI) to support climate change adaptation;
- promote a common approach and methodology to develop key earth observation applications in the areas of

climate change adaptation for improved scientific knowledge and understanding; and

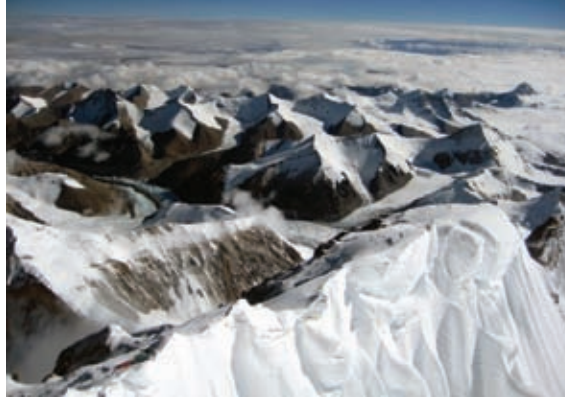
- provide a regional platform for the strengthening of international networking through sharing and mutual learning.

Sessions

The symposium will have the following major themes, in individual sessions, on the application of earth observation data and technology, under the overarching theme of climate change adaptation in the HKH region.

1. Remote sensing of the cryosphere

The cryosphere, which encapsulates water in the solid form, is a key natural resource for socioeconomic development, and is in a state of rapid depletion under the influence of global temperature increases, which are particularly pronounced in the region. The absence of regular monitoring mechanisms have resulted in gaps in our understanding of cryogenic processes and the magnitude of changes, and have led to a poor understanding of future scenarios for water resources and related hazards. The cryosphere also plays an important role in global atmospheric circulation, thus changes to the Himalayan cryosphere are not only a regional issue but also a global concern, and demand major policy change focused towards adaptation and preparedness. The objective of this session will be to exchange and share knowledge and experience in the field of cryosphere mapping, focusing particularly on glaciers and snow, and on hydrological applications for modelling of water availability scenarios. This forum will also be useful in building a consensus among regional stakeholders on mechanisms for a way forward to establish a regional cryosphere mapping and monitoring system for the HKH region.



This session will include the following sub-themes:

- Snow cover mapping and monitoring
- Glacier mapping and change detection
- Monitoring and predicting water availability
- Understanding the dynamics of the cryosphere – operational services and research

2. Spatial decision support systems (DSS) for ecosystem management

The HKH region is highly heterogeneous with a wide range of habitats, and varied microclimates and ecological conditions, resulting in a high level of biodiversity. It is home to some of the world's most threatened and endemic species; a large number of people in the region live in poverty and depend upon these biological resources for their subsistence. The region continues to face enormous pressures as a result of changes taking place globally, which have negative impacts on biodiversity conservation, ecosystem services, and the wellbeing of people living in the mountains. However, the link between climate change and biodiversity is poorly understood. This session will provide a platform for sharing experiences on innovative geospatial tools and methods aimed at coping with the challenges presented by the impacts of climate change on mountain ecosystems. The papers in this session will present innovative



Data access, timeliness, appropriateness, data sharing, training, and transnational cooperation are the key elements of an appropriate disaster management framework for the international and national communities. This session will draw the attention of policymakers and scientists to an integrated approach to link earth observation, in situ data, and models, to develop climate change adaptation strategies that reduce the risks

development approaches and recommendations for policy decisions and future initiatives.

This session will include the following sub-themes:

- Impacts of climate change on biodiversity
- Livelihood options for adapting to climate change
- Earth observation for ecosystem assessment and management
- Decision support tools and approaches for ecosystem management

3. Space-based information for disaster management

The impacts of climate change are already becoming evident in the HKH region in the form of a higher incidence and intensity of natural disasters. It is increasingly clear that the lives and livelihoods of the people of this region are at risk. The HKH region is among the most vulnerable regions in the world to natural hazards, particularly those induced by weather and climate, and these often lead to disasters impeding socioeconomic development and poverty reduction efforts. Earth observation has proven to be an invaluable source of information and enables the disaster management community to make critical decisions for better preparedness and to improve initial assessments of the nature and magnitude of damage and destruction.



from disasters in mountain areas. The objectives of this session will be to share information on activities being implemented in the field of disaster risk mapping and management, to explore new technologies and ideas using earth observation systems, and to seek possible methods of integrating various kinds of data related to natural hazards and disasters.

The session will include the following sub-themes:

- Minimising risks due to climate induced disasters
- Earth observation for hazard and vulnerability mapping
- Forest fires and their impact on the climatic system
- Rapid response mapping and regional/international cooperation

4. Land cover change, and carbon stock

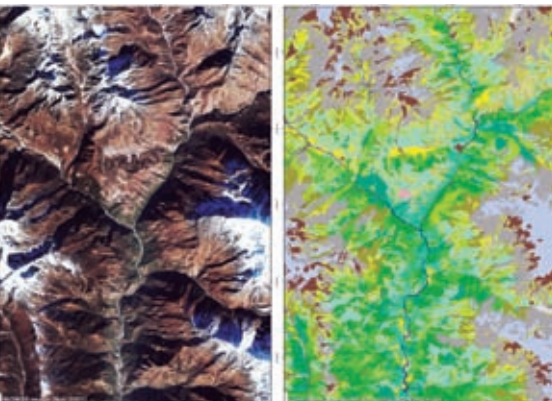
Reliable land cover and land cover change analysis and assessment are essential for the sustainable management of natural resources; understanding and mitigating climate change; modelling of ecosystems and biogeochemical cycling; and to address other important issues such as food security and carbon stocks. Land cover physiognomies reveal ongoing processes of deforestation, desertification, urbanisation, loss of biodiversity and ecosystem functions, and water and energy management. In situ and satellite-based land observation efforts, as well as different disciplines (e.g., geography, ecology, geology, and forestry), use and refer to land cover as one of the most obvious and easily detectable indicators of land surface features. Satellite remote sensing is an essential data source providing regular data that contribute to the estimation of status and trends, including historical trends, of land use/land cover and carbon density in landscapes. Progress in remote sensing science and operations needs to be better clarified and linked to opportunities, applicability, and limitations to establish robust national monitoring systems. It is important to provide stakeholders in 'reducing emissions from deforestation and forest degradation' (REDD) with clear and widely agreed knowledge on the performance of satellite remote sensing for investment decisions related to monitoring.

The key topics covered in the session are:

- Harmonising and standardising a land cover database
- Forest cover mapping and change assessment
- Remote sensing tools and methods for carbon stock
- Assessing carbon stocks and modelling

5. Transboundary air pollution monitoring

Aerosols play an important role in all problems connected with air pollution, ranging from very local effects to regional problems such as acid deposition, stratospheric ozone loss, and climatic change. Aerosols also have an impact on human health and agricultural productivity. However, the HKH region faces enormous challenges in



the systematic collection of scientific data and information on atmospheric air pollution due to difficult terrain, harsh climatic conditions, and inaccessibility. Earth observation has been a valuable tool in monitoring, assessing, and mapping atmospheric pollution and providing time series data at various spatial scales.



This session will focus on the use of earth observation in the following topics:

- Remote sensing of air quality
- Regional climate implications of air pollution
- Impacts of air pollution on health and agriculture
- Remote sensing of black carbon

6. Spatial data infrastructure for climate change adaptation

Geoinformation and earth observation technologies, together with decision support tools and information and communication technologies (ICT), have greatly changed the way in which issues in relation to livelihoods, resource management, and environmental conservation have been addressed. The problem of insufficient data and information in the HKH region in relation to understanding and addressing the issues of climate change is further aggravated by difficulties in finding and using existing information. There is a clear need, at all levels, to be able to access, integrate, and use spatial data from disparate sources to guide decision making. The concept of spatial data infrastructure (SDI) has emerged to address this need, and includes the collection of technologies, policies, and institutional arrangements that

facilitate the availability of, and access to, spatial data. SDI provides a basis for spatial data discovery, evaluation, and application for users and providers, thus increasing the ability to make sound decisions collectively at the local, regional, and global levels.

This session will focus on the issues related to the availability and accessibility of earth observation data for climate change studies and will cover the following:

- Climate information services
- Integration of earth observation data in climate change modelling
- Regional climatic database and sharing and exchange
- Regional SDI for climate change

The symposium will also bring together earth observation related industry partners to exhibit relevant data and products in parallel with the technical sessions.

A special event will be organised for young people and students for raising awareness of Earth observation and climate change. The symposium will provide an excellent opportunity to them for mutual sharing as well as regional and international networking.



Information for participants

The participants are expected to include scientists researchers, academics, development practitioners, policymakers, and other professionals from ICIMOD's regional member countries (Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan); international participants and resource persons; representatives of donor agencies and regional and international space agencies; partners from industry; students; and people from other mountain regions around the world.

Registration fees

International participants	US\$ 250
ICIMOD RMC participants	US\$ 150
Local participants (Nepal)	US\$ 50

Venue

Hotel Soaltee Crowne Plaza, Kathmandu, Nepal

Submission of abstracts

email **soft copy** in **Microsoft Word** to
symposium2010@icimod.org

or mail to: International Symposium 2010
c/o ICIMOD/MENRIS
GPO Box 3226 Kathmandu, Nepal

Important deadlines

For paper presentation

Submission of abstract	30 Jun 2010
Notification of acceptance	15 Jul 2010
Registration (for presenters)	30 Jul 2010
Submission of print ready version	24 Sept 2010

For poster presentation

Submission of abstract	30 Jul 2010
Notification of acceptance	15 Aug 2010
Registration (for presenters)	30 Aug 2010

Late date for registration (for all participants)	31 Aug 2010
Symposium dates	4-6 Oct 2010

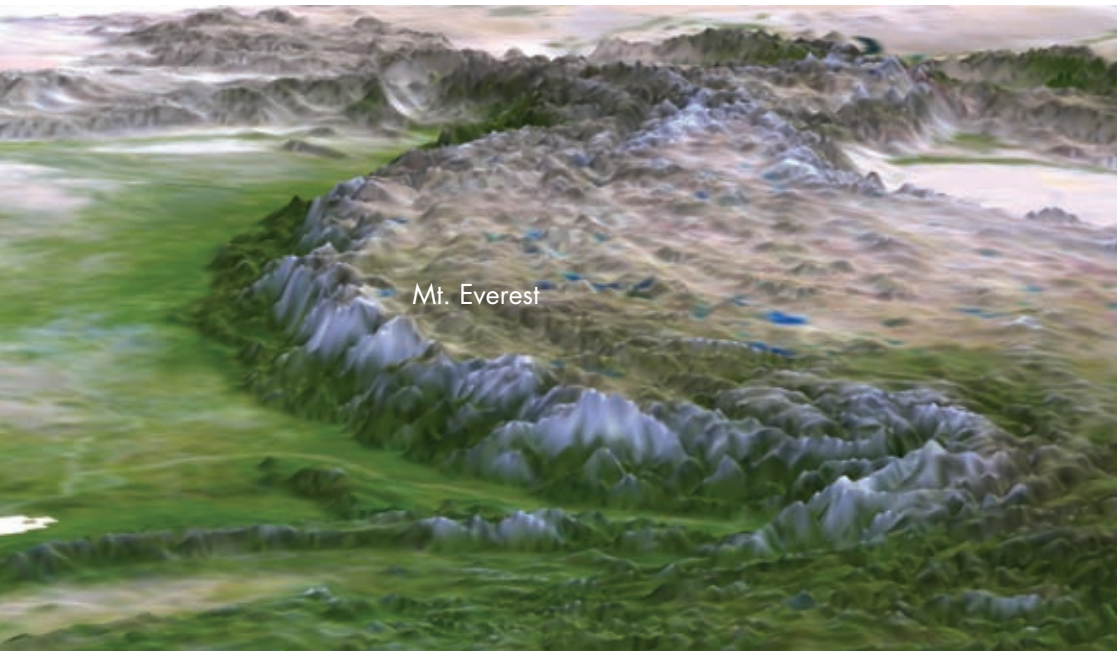
Guidelines

Paper

Duration – 15 minutes, Discussion – 5 minutes
Abstract – 400 words max. (Arial 10, single space)

Poster

Abstract – 250 words max. (Arial 10, single space)
See symposium website for details



Mt. Everest

Organisers

**International Centre for
Integrated Mountain Development (ICIMOD)**
www.icimod.org; <http://geoportal.icimod.org>



The Group on Earth Observations (GEO)
www.earthobservations.org



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Supporting organisations



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