

Atmosphere Initiative

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THREE DECADES
FOR MOUNTAINS AND PEOPLE



Atmospheric changes are increasingly affecting the wellbeing of people and ecosystems in the Hindu Kush Himalayan region. The past decades have seen rising emissions of air pollutants in the region from urban, industrial, and rural sources. There are concerns about:

- deteriorating air quality and increasing negative impacts on health;
- increasing haze and decreasing visibility;
- changes in the amount of sunlight reaching the Earth's surface;
- aerosol effects on cloud microphysics and rain drops;
- changes in the strength and timing of the summer monsoon;
- greenhouse gas induced warming;
- changes in the frequency of extreme precipitation events;
- increasing stratospheric pollution above the Tibetan Plateau;
- deposition of black carbon onto snow and ice surfaces; and
- increasing melting of the Himalayan cryosphere.

The atmosphere ignores international boundaries; emissions from one country can have impacts in other countries. There are still large gaps in our understanding of the changes taking place in the region's atmosphere, their underlying causes, and the effectiveness of various mitigating activities. ICIMOD's Atmosphere Initiative was established on 1 January 2013 as part of the Regional Programme on Cryosphere and Atmosphere to improve our understanding of atmospheric issues and to promote regional cooperation for addressing such issues in the HKH region. We are working to ensure that effective measures and policies are adopted to reduce air pollution and its impacts within the HKH region by improving knowledge and enhancing the capacity of partners in regional member countries.

Initiative objectives

- Improve knowledge about emissions sources, and their socio-economic determinants within and upwind of the HKH region.
- Improve knowledge about atmospheric processes and change in the Hindu Kush Himalayan region through field campaigns, long-term monitoring, remote sensing, and chemistry-transport modelling.
- Improve knowledge about the impacts of atmospheric on climate, ecosystems, cryosphere, hydrology, agriculture, tourism as well as on health and livelihoods of women and men of the HKH region.
- Identify, pilot, and disseminate effective, gender responsive, socio-culturally acceptable and technical feasible mitigation options to reduce their emissions of pollutants into the atmosphere and their impacts.
- Enhance capacity of partners in the region to understand atmospheric processes, changes and their impacts, and to implement appropriate mitigation options.
- Establish an atmosphere knowledge hub at ICIMOD to foster communication and collaboration across borders and to share data and knowledge.
- Make policy recommendations about atmospheric issues at national, regional, and global levels.



Major activities in 2014

- Working with national partners to set up atmospheric observatories at Ichhyakamana, Nepal, and Gedu, Bhutan
- Working with national partners to set up urban/ industrial air quality monitoring stations in Thimphu, Bhutan, as well as Kathmandu, Bhaktapur, and Lumbini, Nepal
- Setting up an in-house atmospheric modeling system capable of forecasting weather and air quality, as well as analyzing effects of mitigation scenarios
- Continuation of Project SusKat (Sustainable Atmosphere for the Kathmandu Valley) in close partnership with the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany, including studies of health impacts
- Active participation in the Climate and Clean Air Coalition (CCAC), with a focus on brick kilns, open burning, health, and regional assessments. Coordinating implementation of the CCAC's work on brick kilns in Asia.
- Setting up a valley-scale experiment to test the effects of fan-assisted biofuel cookstoves on improving health, indoor air quality, and outdoor air quality
- Sponsoring a cookstove design competition.
- Preparation of a compendium of best practices in mitigation
- Co-hosting a training course on the WRF-Chem atmospheric modeling system
- Hosting ICIMOD's Second Annual Regional Atmospheric Science Workshop
- Hosting preparatory meetings about the establishment of an MS/PhD programme in atmospheric science for the HKH region
- Hosting a high-level policy meeting and writing policy briefs
- Hosting a training course on atmospheric issues for journalists
- Preparing a film and website contents for the general public



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