#### **About WIHG**

Wadia Institute of Himalayan Geology (WIHG), an Autonomous Institute of DST, Govt. of India, has been involved in pursuing both basic and applied researches in geosciences to unravel the orogeny of the Himalaya, and provide an improved understanding on seismo-genesis, geo-dynamics, climate-tectonic interactions, biotic evolution and extinction, glacial dynamics, river systems, geo-hazards (landslides, floods, and earthquakes), natural resources (geo-thermal, minerals/ores, hydrocarbons, springs), anthropogenic impact etc., towards the well-being of the population and safeguarding the properties and structures in the Himalaya and adjoining regions. The Institute also serves as a database/ national reference center for Himalayan Geology. It is equipped with state-of-the-art laboratories and field equipment facilities for geo-scientific data acquisition, data analysis/processing, and interpretation. Besides analytical data generation, the Institute also provides consultancy services related to geo-engineering projects, geo-resources and natural hazards.





The Himalayan Mountains are part of the geo-systems that are experiencing processes associated with tectonics, climate change and anthropogenic activities. In recent times, India's recurring geological disasters, particularly in the Himalaya, have attracted attention world-wide. This especially calls for scientific investigations, effective management and plausible mitigation of Himalayan disasters.

The government of Uttarakhand is organizing the 6<sup>th</sup> World Congress on Disaster Management (WCDM) in Dehradun, in collaboration with Uttarakhand State Disaster Management Authority (USDMA), Disaster Management Initiatives and Convergence Society (DMICS), and Uttarakhand State Council for Science & Technology (UCOST) from 28 November - 1 December 2023 with the overarching theme of "**Strengthening Climate Action and Disaster Resilience**", having specific focus on 'Mountain Ecosystems and Communities'.

As a participating organization, Wadia Institute of Himalayan Geology (WIHG), is organizing a Pre-Congress Workshop on "**Himalayan Hazards: Way Forward**", on 24<sup>th</sup> November 2023, under the framework: Mountain Specific Hazards and their Management, as part of the 6<sup>th</sup> WCDM in Dehradun. The Workshop is focused on deliberations through plenary talks and display of posters on the following sub-themes:

- Landslide Management for Sustainable Development
- Glacier Hazards and Plausible Mitigation
- ▶ Seismic Risks and Advances in Earthquake Science
- Mountain Fluvial Extremes and Risk-Management



HIMALAYAN HAZARDS: WAY FORWARD HHWF-2023 Wadia Institute of Himalayan Geology 33, G. M. S. Road, Dehradun - 248001 UTTARAKHAND











# **PRE-CONGRESS**



# 24<sup>th</sup> November 2023

# 6 TH WORLD CONGRESS ON DISASTER MANAGEMENT

JOINTLY ORGANISED BY GOUK, USDMA, UCOST, DMICS

28 Nov - 1 Dec 2023



# Landslide Management for Sustainable Development

In a fragile Himalayan landscape, any alteration to the mountain ecosystem are marked by longer periods of retrieval, which sometimes undergo a continuous process of degradation. In recent times, rapid climate change has led to extreme events such as the heavy rainfall, which along with human interactions have increased the probability of landslides and flash floods.

Hence, it is required to comprehend the causes of landslides, through exchange of geotechnical knowledge, implementation of new technologies like LiDAR mapping, and installation of earlywarning systems, and thereby adopting new dimensions to mitigation.

This theme is proposed to be organized with the following topics:

- Emerging Technologies in Landslide Management
- Resilience, Preparedness and Community-based Landslide Management

#### **Glacier hazards and Plausible Mitigation**

The significant reduction in the Himalayan Cryosphere and the subsequent rise in related risks have generated global apprehension with regard to availability of water for populations residing in low land and mountainous regions, and the need for mitigation of glacial hazards.

The cryosphere hazards include a range of abrupt phenomena, such as glacial lake outburst floods (GLOFs), glacier detachments, rock ice avalanches, and debris flow. Himalayan riskscapesen compass not only the physical characteristics of the region but also the socio economic conditions and environmental governance that shape them. Therefore, it is essential to understand current site-specific interactions among cryosphere changes, related hazards, and adaptation strategies, local environmental knowledge, individual and organizational capacities for developing guidelines to reduce and mitigate glacial risk.

This theme is proposed to be organized with the following topics:

- Glacier Disasters: Causes, Impacts and Mitigation
- Early Warning Systems for Cryospheric Hazards: Challenges and Solutions

#### Seismic Risks and Advances in Earthquake Science

Earthquakes cause huge losses to the vulnerable populations with low resilience to disaster risks. Moreover, lack of resources, non-existent early warning systems, and fragile infrastructures contribute to the magnitude of disaster to lives, livelihoods, assets, economy, environment, etc. It might take years for a disaster-hit community to recover socially and economically. A great earthquake is an extreme event that occurs with instantaneous effects on infrastructure and society.

Since in the last 300-500 years no major/great earthquake has occurred in the Central Himalaya, it is envisaged for a future destructive earthquake. But we do not know the time and magnitude. We need to critically look into the assessment of such scenario and emphasize on seismic-resilient constructions to minimize the damages/losses, and develop early warning systems.

This theme is proposed to be organized with the following topics:

- Earthquakes in the Himalaya: Tectonic Prospecting
- ▶ Technological Advances: Earthquake Forecasting and risk management

#### **Mountain Fluvial Extremes and Risk-Management**

The flow characteristics of the Indus-Ganga-Brahmaputra rivers are crucial to understanding the fluvial extremes and associated water management issues. Water availability and its sharing, and release/ supply, protection from devastating flash floods during monsoon, are associated with the fluvial dynamics. The continuous monitoring and management of material fluxes (sediment and water) by the rivers are crucial to safeguard the ecology of the downstream region.

This theme is proposed to be organized with the following topics:

- Extreme Events: Causes, Management and Early Warning
- Mountain Community and Water Resources





## **Organizers for HHWF-2023**

#### Chairman

Dr. Kalachand Sain Director, WIHG

Convenor Dr. Swapnamita Vaideswaran Scientist, WIHG +91-9760010758 Email: swapnamita@wihg.res.in

**Dr. Naresh Kumar** Scientist, WIHG, nkd@wihg.res.in

#### Convenor, 6<sup>th</sup> WCDM, 2023

**Dr. Ananda Babu** President, DMICS

### **Chief Patrons**

**Lt. Gen. Gurmit Singh** PVSM, UYSM, AVSM, VSM (Retd.) Hon'ble Governor of Uttarakhand

Shri Puskar Singh Dhami Hon'ble Chief Minister of Uttarakhand

#### Dr. Jitendra Singh

Hon'ble Minister of State (Independent Charge) for S&T Govt. of India

#### Patrons

**Dr. Dhan Singh Rawat** Minister of Higher Education, GoUK

**Prof. Abhay Karandikar** Secretary, DST

Dr. Akhilesh Gupta Secretary, SERB

**Dr. Ranjit K. Sinha** Secretary, Disaster Management, GoUK

**Prof. Talat Ahmed** Chairman, Governing Body, WIHG

Dr. Shailesh Nayak Chairman, Res. Advisory Committee, WIHG

**Prof. Durgesh Pant** DG, UCOST & Chairman, Scientific & Technical Committee, 6<sup>th</sup> WCDM



