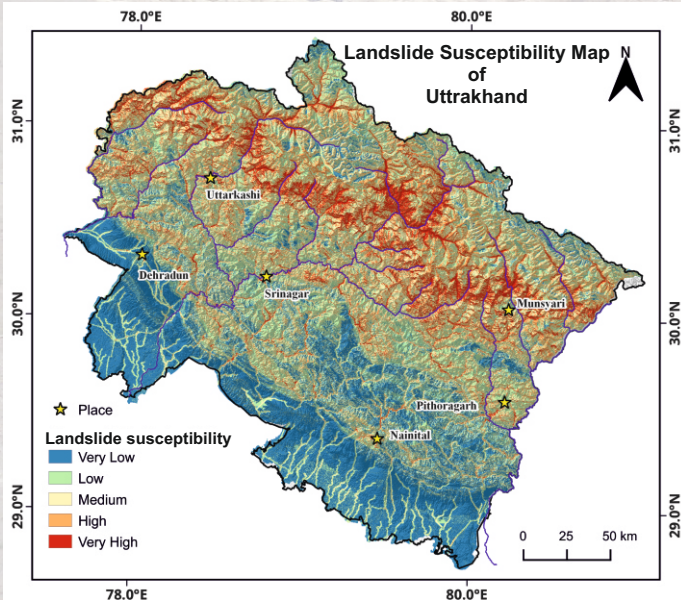




About Wadia Institute

Wadia Institute of Himalayan Geology (WIHG), an autonomous Institute of DST, Govt of India, has been involved in pursuing research both in basic and applied geosciences to provide an improved understanding on geodynamics, climate-tectonic interactions, biotic evolution, glacial dynamics, river system, geohazards (due to landslides, avalanches, flash-floods, earthquakes), georesources (geothermal, minerals/ores, hydrocarbons, springs), anthropogenic impact etc. The institute also serves as a database/natural reference centre for Himalayan Geology. It is equipped with state-of-the-art laboratories and field equipment facilities for acquisition, analysis/processing, and interpretation of geo-scientific data. Besides analytical data generation, the Institute also provides consultancy services related to geoengineering projects, georesources and natural hazards projects.



ORGANIZING COMMITTEE

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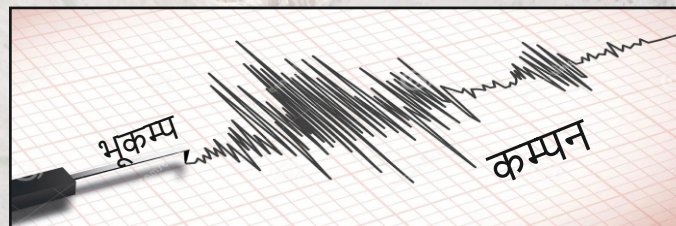
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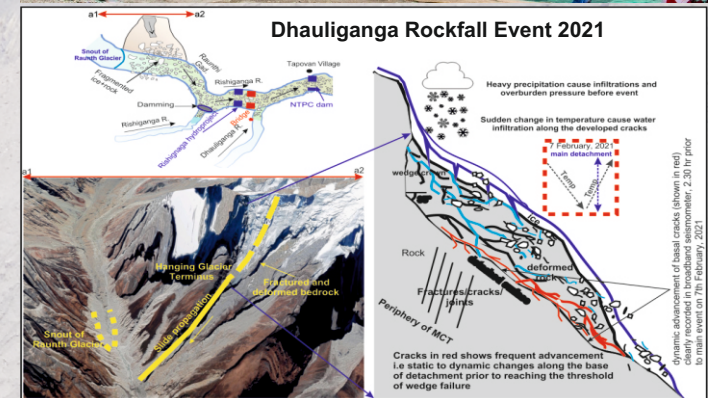
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विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY



One-day Workshop on 15th Edition of **Himalaya Diwas** on **Climate Change, Natural Disasters and Eco-system of Himalaya** (September 9, 2024)



Wadia Institute of Himalayan Geology
33, GMS Road, Dehradun - 248001
Uttarakhand

Theme: Climate Change, Natural Disasters and Eco-System of Himalaya

The "Himalaya Diwas" aims to raise awareness and promote collective action to safeguard this critical ecosystem. The vision was to observe "Himalaya Diwas" on Sept. 9th across all Himalayan states in India, from Jammu & Kashmir to Arunachal Pradesh. The Himalayan Mountains are part of the geo-system that are under-going wide range of natural and anthropogenic processes associated with climate change, tectonics, seismogenesis, and human developmental activities. The Himalaya, an iconic natural treasure and a vital source for natural resources, ecosystem and livelihoods has a great opportunity for the investment and progress in terms of infrastructure development. However, the increasing population pressure and changing climate have grave implications for the sustenance of human health, activities, and habitation. The Himalaya is being affected by diverse kinds of natural disasters with variable intensities related to landslides, glaciers/snow avalanches, glacial-lakes outbursts, flash floods, cloud bursts, lightening, forest fires, earthquakes etc. Every year different parts of the Himalaya are experiencing these calamities where Uttarakhand and Himachal states are worsely affected in recent years. Kedarnath disaster of 2013, Dhualiganga rockfall event of 2021, Joshimath subsidence of 2023, Kullu-Manali flash flood of 2023 are the major calamities with cascading landslide episodes of each year. The "Himalaya Diwas" can serve as a platform to raise awareness about the urgent need to address climate change and disaster preparedness. This one-day deliberations will cover several aspects of livelihood, eco-system and natural resources for the Himalayan region.

In that context, the Wadia Institute is organizing a one-day Workshop at its premises to celebrate the 15th edition of Himalaya Diwas for covering following sub-themes:

- ❑ Ecology and Natural Resources
- ❑ Glaciers and its Hazards
- ❑ Landslide Mitigation
- ❑ Earthquakes-resilient Structure
- ❑ Panel Discussion on Natural Disaster in Himalaya: Challenges and Measures

Ecology and Natural Resources

Over 51 million people live, practice hill agriculture and remains vulnerable in fragile and diverse ecosystem of the Himalaya. Also, the Himalayan ecosystem provides ecological security of the Indian sub-continent through thick forest cover, feeding perennial rivers through glaciers and lakes, conserving bio-diversity, and spectacular landscapes for sustainable tourism. The rivers originating from the Himalaya are the source of agriculture irrigation, drinking water, and hydro-power electricity. Glacial melt and irregular monsoon may impact the rivers ecosystem and its related dependency mentioned above. A vital necessity is required for the coupling between the Himalayan ecosystem and the climate change for the Himalayan Sustainable development. There is a need to establish a system for the Himalayan environment, natural resources and health of ecosystem.

Glaciers and its Hazards

The significant reduction in glaciers, and expansion of glacier-lakes at the high altitude pose threat of hazards and water scarcity for populations in downstream and mountainous regions. The glacial hazards include glacier detachments, rock-ice avalanches, debris flow, glacier-lake outburst floods, etc. Therefore, it is essential to understand the site-specific interactions between glacial dynamics and associated hazards, develop early warnings for mitigation of related risks. The movement and recharge route i.e. transient ground waters mapping and construction of appropriate embankment for water storage can be an effective measure to meet the water crisis at remote blocks of Dehradun district. The cooperation and joint efforts of countries residing along Himalaya, Indian Himalayan states, planning commission, the Ministry of Environment and Forests can fulfil this goal.

Landslide Mitigation

Every year landslides occur in the Himalaya due to natural processes, environmental degradation, anthropogenic activities or increased urbanization. The Frequency and intensity of landslides and flash floods have increased under the influence of Climate Change scenario, as have been recently witnessed in the Uttarakhand and Himachal Himalaya. Hence, it is required to comprehend the causes of landslides, through geotechnical knowledge,

implementation of new technologies like LiDAR mapping, and installation of early-warning systems for adopting new dimensions to mitigation.

Earthquake-resilient Structure

The earthquakes cause huge natural disasters affecting highly vulnerable areas and populations with low capacities and resilience to disaster risk. Disasters occur when natural hazards meet high vulnerability and low resilience coupled with a lack of information and data on risks. Moreover, lack of resources, weak or non-existent early warning systems, and fragile infrastructure all contribute to the magnitude of disaster losses in lives, livelihoods, assets, economy, environment, etc. It might take years for a disaster-hit community or country to recover socially and economically. The great earthquake is an extreme event that occurs without any warning and has instantaneous effects on infrastructure and society. The complex evolution of the Himalayan Orogeny originated from the India-Asia collision and convergence governs the location of several large/great earthquakes viz. 1897 Shillong (Mw 8.2), 1905 Kangra (Mw 7.8), 1934 Bihar–Nepal (Mw 8.2), 1950 Assam (Mw 8.4), 2005 Kashmir (Mw 7.6), and 2015 Gorkha earthquake (Mw 7.8). The central Himalaya including Uttarakhand had recently experienced a number of strong earthquakes, especially 1991 Uttarkashi, and 1999 Chamoli which caused destruction and casualties to the surrounding regions. However, since the last 300-500 years no major/great earthquake has occurred in this region and therefore the region is also marked as Central Himalayan seismic gap. It highlighted the need for seismic resilient construction in the Himalayan region to minimize the economic losses caused by such events.

