



Natural-hazard Symposium for the Indian Himalayas

## 2<sup>nd</sup> Natural Hazard Symposium for Indian Himalayas

October 12-13, 2022

### Highlights



The 2<sup>nd</sup> edition of the *Natural Hazard Symposium for the Indian Himalayas* is organized by the Department of Hydrology, Indian Institute of Technology Roorkee during October 12-13, 2022. At the outset, Prof. Ajit Kumar Chaturvedi, Director, IIT Roorkee inaugurated the symposium by emphasizing the necessity for technology and engineering solutions to manage risks in order to construct a more flexible and resilient present and future.

Prof. Brijesh Kumar Yadav (Head, Department of Hydrology), Prof. P. Arumugam (Dean, International Relations), Prof. Axel Bronstert (Director, Institute for Environmental Sciences and Geography, University of Potsdam, Germany), and Prof. Ankit Agarwal (NSIH Convener) shared their perspectives on current and future Himalayan research. The proceedings of the conclave were released by all the dignitaries with a vote of thanks by Dr. Julien Malard.



**Session 2** was moderated by Prof. Ashutosh Sharma (IIT Roorkee) in which Prof. Axel Bronstert (University of Potsdam) discussed Mountain Hydrology and Sediment Processes under Global Change and shared his perspectives on the impacts of global change in the High Alps of Austria. Prof. N. K. Goel (IIT Roorkee) presented his overview of the Operational inflow forecasting system for Tehri dam and discussed the various stages in operational forecasting and associated challenges at each stage. **Session 3** was moderated by Prof. Sumit Sen (IIT Roorkee) wherein speakers including Dr. Stephana Calmant (IRD, France), Dr. Adrien Paris (Co-founder and CEO, Hydromatters), Dr. Julien Malard (IRD, France) presented on hydrology from space and citizen science.



Their twofold discussion was on the use of satellite products in the field of hydrology and centralized and decentralized data management system. **Session 4** was moderated by Prof. Ankit Agarwal in which



Dr. Wolfgang Schwanghart and Dr. Jürgen Mey focused broadly on the Geomorphic analyses of digital elevation models (DEMs) with MATLAB using TopoToolbox. This short course offered hands-on training in the structure, syntax and workflow of the software. It also provided a quick entry point towards programming in digital terrain analysis and enabled the participants in self-reliant analyses of DEMs in geomorphological research.

The 2<sup>nd</sup> day of the **Natural Hazard Symposium for Indian Himalayas** started with **session 5** moderated by Prof. Thanga Raj Chelliah (IIT Roorkee) in which Dr. Jürgen Mey, University of Potsdam, discussed the Late Quaternary glaciation of the Western Himalaya/Karakoram drainage development and outburst flooding. Dr. Wolfgang Schwanghart focussed on developing and analysing a database of hydropower damages due to natural hazards. Mr. S. L. Kapil, Director, NHPC presented on the seismic hazard analysis of hydropower projects in the Himalayas. He also highlighted that the increased seismicity stress in the Himalayas is becoming a challenge in building up new hydropower projects. Prof. Manoj K Jain (IIT Roorkee) moderated and presented in the **Panel discussion (session 6)** together with Dr. Wolfgang Schwanghart, Prof. Ajanta Goswami (IIT Roorkee), Dr. Arijit Roy (IIRS, Dehradun) and Ms. Somya Bhatt (GIZ) on the topic 'concurrent and compounding multi-hazards in the Himalayan region'. The panellists deliberated the climatic, environmental and socio-economic drivers of natural hazards



and risks associated with compound extremes, the issues and challenges of cryospheric studies and methods of mapping glaciers and glacial lakes in the Indian Himalayas. **Session 7** was moderated by Dr. Praveen Kumar (IIT Roorkee) in which Dr. Oubanas Hind discussed the river discharge and bathymetry estimation from SWOT and multi-mission. The session was followed by an open space discussion wherein early career researchers (Mr. Kamal Rana, Mr. Alexander Palakias, Mr. Ravi Kumar Guntu and Mr. Vivek Kumar) presented their research work.



The valedictory session of the symposium was graced by the chief guest Prof Ashwini Kumar Sharma (DOFA, IIT Roorkee), Prof. D. S. Arya, (Dean, Administration), Prof. Brijesh K. Yadav (Head Department of Hydrology, IITR). They highlighted the importance and contribution of science as well as society to the mitigation of natural hazards in the Himalayas. A token of appreciation was given to all the dignitaries by the Chief Guest and Head of the Department. The convener, Prof. Ankit Agarwal summarized the 2-day activities and appreciated the team effort and support of different departments which led to the success of the symposium. The symposium ended with a vote of thanks presented by the organizing secretary Prof. Ashutosh Sharma.

