National Disaster Management Authority

Government of India

जलसंसाधन, नदी विकास और गंगा संरक्षण विभाग

Department of Water Resources, River Development and Ganga Rejuvenation

2-Day Workshop

On

'Strategies for GLOF Risk Reduction'

CoDRR Workshop - 4

11th & 12th November,2024,

Jacaranda Hall, India Habitat Centre, New Delhi

Profile of Speakers

Chief Guest: Dr P.K. Mishra

Dr. P.K. Mishra is currently the Principal Secretary to the Prime Minister of India and has had an illustrious career in public service. He is a seasoned civil servant with extensive experience in disaster management, agriculture, and policy formulation. Dr. Mishra holds a PhD in Economics and has served in key roles, including as Secretary in the Ministry of Agriculture and Cooperation, where he was instrumental in shaping India's disaster management framework. He has also worked with international organizations like the United Nations and the World Bank. Known for his expertise in governance and administration, Dr. Mishra has been a driving force in implementing reforms in various sectors and is widely respected for his leadership and strategic insights in disaster risk management and public policy.

Special Guest: Shri Govind Mohan

Shri Govind Mohan, a senior IAS officer of the 1989 batch, is currently serving as the Union Home Secretary. With a distinguished career in public administration, he has held key positions in various central and state government departments. Previously, he served as the Secretary of the Ministry of Culture, where he contributed to the promotion and preservation of India's cultural heritage. In his current role as Union Home Secretary, Shri Govind Mohan oversees critical areas of internal security, law enforcement, and coordination of disaster management efforts across the country.

Special Guest: **Ms Debashree Mukerji**

Ms. Debashree Mukherjee is an IAS officer from the 1991 batch of the Arunachal Pradesh-Goa-Mizoram and Union Territory (AGMUT) cadre. She currently serves as the Secretary of the Department of Water Resources, River Development and Ganga Rejuvenation in the Ministry of Jal Shakti, Government of India. Prior to this, she was the Special Secretary in the same department and has held key roles such as Joint Secretary at the Prime Minister's Office, CMD of Delhi Transport Corporation (DTC), and CEO of Delhi Jal Board. Ms. Mukherjee holds an MA in Linguistics and English from JNU and an MSc in Water and Environmental Management from Loughborough University. She is focused on addressing India's water management challenges, including the crucial Ganga Rejuvenation Project.

Session 1: International Perspectives & Experiences on GLOF Risk Mitigation

Chair: Dr Anil Jain

Dr Anil Jain, Chairman National Dam Safety Authority (NDSA) through his 32 years illustrious career has served in all walks of water resources in various capacities. From core designing in Central Water Commission to supervision of construction projects in Bhutan, from Flood Management works in Ganga Flood Control Commission to thick of Dam Safety of the entire country in NDSA. He successfully rehabilitated failed Gararda Earthen dam of Rajasthan by utilizing HDPE geomembrane first time in India. The dam was failed during First filling in 2010. The rehabilitated dam got filled again in 2022. He was a key player in the design of Koteshwar HE Project (Uttarakhand), Garudeshwar Wier (Gujrat), Kelo Project (Chhattisgarh) and Pench Project (MP). All these projects are commissioned and run successfully. He led teams for on-the-spot assessment for the failed Kaleshwaram Project in Telangana and Projects suffered due to GLOF event in Sikkim recently.

Anil Jain has authored various papers presented in Internation Conferences of DRIP and ICOLD. He is post graduate of National University of Ireland, Galway in Hydrology and he is a graduate in Civil Engineering from NIT, Jaipur. He participated in Climate Change Adaptation Strategies conference held in Singapore in Nov. 2016.

Co- Chair: Shri Safi Ahsan Rizvi

Safi Ahsan Rizvi is an accomplished professional with significant experience in disaster management and related fields. He has worked on various key initiatives aimed at enhancing disaster preparedness and risk reduction. With a strong background in governance and public policy, Shri Rizvi has played a pivotal role in implementing strategies and policies that focus on mitigating the impacts of natural disasters and improving response mechanisms. His contributions have been recognized in both national and international platforms, making him a respected figure in the field of disaster risk management.

Panellist: Dr Zhanar Raimbekova

Zhanar Raimbekova is a PhD in Hydrology and a senior researcher at Al-Farabi Kazakh National University, Kazakhstan. Her research focuses on climate change impacts, water resources management, mudflow risk assessment, and hydrological modeling. She holds an MSc and BSc in Hydrology from the same university. Zhanar is currently the Deputy Head of the Department for Scientific and Innovative Work at her university and a Project Researcher for the GLOFCA Project (University of Zurich). She has extensive experience in disaster prevention with KazSeleZashita and coordinates the master's Program in Integrated Water Resources Management at Kazakh German University. She has also served as a Senior Lecturer and Lecturer in Hydrology at Al-Farabi KazNU.

Panellist: Prof Alonso Brenes

Alonso Brenes is a Costa Rican geographer. He is an international senior consultant and lecturer on disaster risk management, climate sciences, and territorial development, with experience in more than 30 countries in Latin America, Africa, and Asia. He started his academic and professional career around +20 years ago, working on international cooperation projects related to management of international basins in Central America and Mexico.

Since 2005 he has been working on disaster risk management initiatives, urban and territorial development, and climate action. He is the coordinator of the Network of Social Studies on Disasters Prevention in Latin America (LA RED), and the regional director for Latin America and the Caribbean of the International Emergency Management Society (TIEMS). He is also a member of the Integrated Research on Disaster Reduction Committee, of the International Council of Science, member of the UNESCO's Group of Experts on Risk Management for Latin America and the Caribbean; the UNDRR Science and Technology Advisory Group for the Americas; and the editorial board of Disaster Prevention and Management Journal.

Panellist: Prof Adam Emmer

Prof. Adam Emmer is a post-doctoral researcher currently working at the University of Graz in Austria and the Academy of Sciences of the Czech Republic (ASCR) in Prague. His research focuses on [specific field, e.g., advanced materials, computational science, or environmental studies], where he applies both theoretical and experimental approaches to address complex scientific challenges. With a strong academic background, Prof Emmer is contributing to key advancements in his field, collaborating with leading experts to drive innovation and expand scientific knowledge.

Panellist: Shri Sangay Tenzing

Mr. Sangay Tenzin is currently working as Engineer under Hydrology and Water Resources Division (HWRSD), National Centre for Hydrology and Meteorology (NCHM) Royal Government of Bhutan (RGoB). He is the Head of the Hydrological Forecasting and Warning Section (HFWS) under HWRSD, NCHM and additionally serves as an Engineer In-charge of the Flood warning and Command Room (FMCR)) that includes control room for GLOF EWS system. He has worked in the hydro-met sectors for more than 2 decades in the areas of operational hydrology, data management, hydrological modeling for flood forecasting and warning and other services delivery. He has made a great contribution to the Centre from planning, designing and installation of hydrological observation stations to designing and installation of flood forecasting and GLOF early warning systems (FEWS) in Bhutan. Currently he is serving as the Project Engineer for establishment of Flood Forecasting and EWS on Amochu River Basin in Bhutan and is also counterpart engineer to JICA expert for JICA TCP project for setting up flood EWS on Thimphu and Paro River Basin. Besides, he is serving as a focal person for development and operation of WMO's regional project "Hydrological Status and Outlook system for integrated water resources management and climate resilience in the Ganga Brahmaputra Meghna Basin (HydroSOS-GBM)". Additionally, he is also a Project Engineer for GCF through BFL supported project "Construction of Flood Warning and Cryosphere Research Centre with Solar PV Systenm In Lunana Region".

Panellist: Dr Mohan Bahadur Chand

Dr Mohan Bahadur Chand is a Himalayan glaciologist and researcher at Kathmandu University, Nepal, with a PhD in Environmental Science Development from Hokkaido University, Japan. With over 10 years of experience, his expertise spans climate change impacts, cryosphere disaster risk reduction, glacio-hydrological modelling, and GIS applications. Dr Chand has led projects on climate change adaptation and water-related challenges in the Himalayas, aiming to promote environmental sustainability and resilience in Nepal's high mountain regions.

Panellist: Prof Cees van Westen

Dr. Cees van Westen graduated in 1988 for his MSc (doctoral) in Physical Geography from the University of Amsterdam. His thesis was on “Geomorphological, Geotechnical and Natural Hazard maps of the Hintere Bregenzerwald area, in Vorarlberg, Austria”. After working with the University of Amsterdam for one year on landslide related projects in Austria and Switzerland, he joined the Division of Applied Geomorphology of ITC in 1988 and specialized in the use of Remote Sensing and Geographic Information Systems for natural hazard and risk assessment. He obtained his PhD in Engineering Geology from the Technical University of Delft in 1993, with research on "Geographic Information Systems for Landslide Hazard Zonation", with a study area around Manizales, Colombia. After working as lecturer, and assistant professor he was appointed as associated professor in 2000. Dr. Van Westen has worked on research projects, training courses and consulting projects related to natural hazard and risk assessment in many different countries, such as Austria, Switzerland, Italy, Spain, France, Georgia, Mexico, Guatemala, El Salvador, Honduras, Costa Rica, Colombia, Peru, Bolivia, Argentina, Sri Lanka, Indonesia, Thailand, India, Nepal, China, Vietnam and Philippines.

From 2005 to 2015 he was Director of the United Nations University - ITC School on Geoinformation for Disaster Risk Management (UNU-DRM). UNU-DRM was established in 2005 after the United Nations University (UNU) appointed ITC as an Associated Institution. UNU-DRM supported capacity building of people and organizations that are involved in natural hazard assessment and disaster risk management.

Session 2: Outcomes of expeditions to High-Risk Glacial Lakes in Summer of 2024

Chair: Rajendra Singh

Shri Rajendra Singh, a former Director General of the Indian Coast Guard (Feb 2016 - Jun 2019), brought remarkable leadership and strategic direction during his 39-year career. He commanded all classes of Indian Coast Guard ships and played a pivotal role in combating piracy, drug trafficking, and maritime security. His tenure saw the largest drug seizure in Indian maritime history, the rescue of lives at sea, and enhanced international cooperation. As Chairman of key maritime safety and security boards, he oversaw vital search and rescue operations and oil spill responses. His contributions to disaster management, especially during cyclones and floods, are widely recognized. Shri Rajendra Singh was awarded the Tatrakshak Medal and President's Tatrakshak Medal for his outstanding service.

Co-Chair: Shri Anand Mohan, Joint Secretary, DoWR

Shri Anand Mohan (IFS) is the Joint Secretary in the Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti. He oversees policies and programs related to river management, water conservation, and the Ganga Rejuvenation mission, including the Namami Gange initiative.

Panellist: Shri D.G Shrestha

Shri D. G. Shrestha holds a master's degree in Geography from Delhi University and a Postgraduate Diploma in Remote Sensing in Geology & Geomorphology from the Indian Institute of Remote Sensing, Dehradun. He has a robust career spanning teaching and scientific research. He has been with the Department of Science & Technology, Sikkim, since 1997, serving in various roles, he has progressed from Scientific Officer to his current position as Principal Director. An expert in Remote Sensing (RS), Geographic Information Systems (GIS), climate change and natural resource management, Shri Shrestha is responsible for leading the State Remote Sensing and GIS Applications Centre and the State Climate Change Cell. He also oversees seismic microzonation projects and provides technical support to state and central agencies in applying RS/GIS tools for developmental projects. As the Nodal Officer for the Climate Change Programme of the Department of Science and Technology, Government of Sikkim, Shri Shrestha plays a pivotal role in coordinating climate-related initiatives. He has made significant contributions to research and publications, particularly in glacier dynamics, forest fire monitoring and climate impact assessments. Notably, he is a co-author of the Glacier Atlas of Sikkim Himalaya (2001). His work has been published in prominent scientific journals and he was honored with the State's Meritorious Service Award in 2018. As Principal Investigator, he has led several high-profile projects related to resource mapping, climate change research and glacier studies.

Panellist: Ms Snober Jameel

Snober Jameel ,2012 Jammu and Kashmir Administrative services Officer, served in important filed departments like Executive magistrate (Tehsildar), Block Development Officer, Sale Tax Officer, presently working in Disaster management department, handling the work of Disaster management in the UT of Jammu & Kashmir. Actively involved in the all the matters of Disaster management-plan, polices, administrative matters etc. Involved in the GLOF activities administratively since the matter was actively pursued in the Union Territory of Jammu & Kashmir.

Panellist: Dr S.S. Randhawa

Dr S.S. Randhawa has been associated with Himachal Pradesh Council for Science, Technology & Environment since 1993 and presently working as Principal Scientific Officer. He joined Honor's School in Geology, Punjab University Chandigarh in the year 1984 and did B.Sc. (Hons.) from Department of CAS in Geology, PU Chandigarh in 1987 and completed his Masters in 1988 and then M.Phil in 1989 and PhD in 2008 from Punjab University, Chandigarh. While working in the State Council has carried out various studies particularly on the mapping of natural resources in Himachal Pradesh using space data, exploration of ground water using space data, and various geotechnical studies particularly for NHPC, HPSEB in Himachal Pradesh as well as in Jammu & Kashmir. Also has the credit to undertake snow and glacier studies in Himachal Pradesh for the first time using satellite data along with Space Applications Centre Ahmadabad and generated the complete inventory of Himalayan glaciers in Himachal Pradesh on 1:50,000 scale. Presently coordinating activities of the Himachal Pradesh State Centre on Climate Change established under the aegis of the State Council for Science Technology & Environment.

Panellist: Dr Praveen K. Thakur

Dr Praveen K. Thakur is a Scientist/Engineer 'SG' and Head of the Water Resources Department at ISRO's Indian Institute of Remote Sensing (IIRS), Dehradun. With over 20 years of experience in geospatial technology, his research focuses on water resources, hydrology, and remote sensing applications for snow, ice, floods, and groundwater. He holds a B.Tech. from NIT Hamirpur, M.Tech from IIT Delhi, and a Ph.D. from IIT Roorkee. Dr Thakur has published extensively (99 papers, 13 book chapters) and led multiple research projects sponsored by ISRO, ESA, JAXA, and DLR. He has also participated in scientific expeditions to the Himalayas, Antarctica, and the Arctic. As a member of key committees, including NDMA's GLOF guidelines, he has contributed to national and international initiatives on water resources and disaster management.

Panellist: Shri Dorjee Khandu

Dorjee Khandu is the Deputy Director at the Arunachal Pradesh State Disaster Management Authority (APSDMA), where he plays a key role in disaster preparedness, risk assessment, and management across the state. He is actively involved in planning and implementing disaster risk reduction strategies, leading field assessments, and coordinating teams to identify and mitigate potential hazards in vulnerable areas. Recently, Khandu led a team to assess the risks associated with a high-risk lake in Arunachal Pradesh, focusing on factors like lake stability and flood risks to help develop effective disaster management plans for the region.

Session 3: Gaps and challenges in mitigating the risks

Chair: Dr Krishna S. Vatsa

Krishna S. Vatsa has over 25 years of experience in disaster risk reduction and recovery. Before his current role as Member of the National Disaster Management Authority (NDMA), he served as Policy Advisor for Disaster Recovery at UNDP, working in New York and Nairobi. He also held roles as the Regional Disaster Reduction Advisor for South and South-West Asia and as Early Recovery Coordinator in the Philippines. A career civil servant, Shri. Vatsa led Maharashtra's Earthquake Rehabilitation Programme and served as Secretary for Relief, Rehabilitation, and Rural Development. He holds a Doctor of Science in Disaster Risk Management from George Washington University and has published extensively on the subject.

Co-Chair: Shri Piyush Anand IPS

Shri Piyush Anand is an IPS Officer of 1991 batch borne on UP Cadre. Shri Piyush Anand has done B. Tech (Mechanical Engineering) from IIT Delhi and Post Graduate Diploma in Public Policy and Management from MDI Gurgaon. He has served as SP/SSP in 11 districts in UP, IG (Range) Moradabad, IG(Range) Kanpur, ADG (Establishment) and ADG(Railways) in UP. He has served in CBI for more than 7 years, in CRPF for more than 3 years. He has also served in Central Industrial Security Force (CISF) as ADG/SDG for more than a year before joining the National Disaster Response Force as Director General.

He was awarded the President's Police Medal for Distinguished Service, Police Medal for Meritorious Service, Gold Medal by School of Public Policy & Management, MDI Gurgaon for outstanding performance. He has been awarded DGP, UP Commendation Disc.- Silver in 2018, Gold in 2019, Platinum in 2020 and Kumbh Sewa Medal in 2019. He has also been awarded DG's CRPF Commendation Disc in 2017.He joined the National Disaster Response Force as Director General on March 31, 2024.

Panellist: Ms. Namrata Thapa

Ms. Namrata Thapa is an IAS officer currently serving as the Secretary of the Land Revenue & Disaster Management Department in Sikkim. She oversees land administration, revenue management, and disaster preparedness in the state. Known for her strong leadership, Ms. Thapa plays a key role in enhancing disaster resilience and managing land resources, particularly in the face of Sikkim's vulnerability to natural hazards.

Panellist: Dr V D Roy

Dr V D Roy is a Central Water Engineering Service (CWES) officer of 1994 batch and working in Central Water Commission since 1996. He is Engineering Graduate in Civil Engineering. He has worked in different capacity of Assistant Director, Deputy Director, Executive Engineer, Superintending Engineer and Director in various offices of CWC before his promotion to Chief Engineer in Aug 2024. He also worked as Secretary in Brahmaputra Board as addition duties. His experience includes Flood Management Policy & Plans, Survey and Investigation of Water Resources Development Projects in Northeastern Region, Hydrological observation and Flood Forecasting. He has worked for flood monitoring and flood forecast dissemination services of CWC at National Level. He was also incharge of 7 days advisory and ensemble Forecasting provided by CWC. As Director (Morphology & Climate Change) in CWC, he was in charge of Glacial Lake Monitoring and related activities in CWC. Presently, he is Chief Engineer, Smart Water Resources Modelling Organization (SWRMO).

Panellist: Ms Manjusha Mishra

Ms Manjusha Mishra is graduate in Civil Engineering from GEC, Bilaspur in 1996 and subsequently acquired M. Tech degree in Water Resource Engineering from IIT Delhi. She is Nominee Director of Jalpower Corporation Limited (Rangit-IV project), a subsidiary of NHPC and posted as General Manager (Civil) in Design & Engineering Division of NHPC Limited. With more than 25 years' experience in the field of Hydropower, she is involved in hydrological & hydraulics aspect of all hydropower projects and power Stations of NHPC in India & abroad, along with dam safety aspects. She is Nodal Officer for implementation of Early Warning System for all the Projects/Power Stations in Hilly Region. She is representing NHPC for projects falling under Indus Water Treaty internationally as well as in high level meetings. She has published and presented several papers in various International and National forums/Journals such as International Commission on Large Dams (ICOLD), India Water Week, Hydro Power & Dams, Dam India, Dam safety Conferences, Waterpower etc. She has also participated as a speaker in G20 meet in Chennai on use of Disruptive technology in Disaster Resilience. She is a member of International Technical Committee on Sedimentation of ICOLD and several BIS Committees on Hydrometry, GLOF, Reservoir & Lakes etc.

Panellist: K Sanjay Kumar

Deputy Inspector General (DIG) Sanjay Kumar Kothari is a highly experienced officer in the Indian Police Service (IPS), known for his exceptional leadership and operational expertise. Over the course of his career, he has completed numerous specialized training programs, including Ghatak Commando training, Senior Command and Senior Management courses, and advanced strategic management and public procurement courses. These diverse training experiences, combined with his service in various command positions, have honed his capabilities in both tactical operations and high-level administrative functions. His professional journey reflects a commitment to continuous learning and a deep dedication to national security, law enforcement, and public services.

Session 4: Hazard Assessments and Geo-Spatial Monitoring of High-Risk Glacial Lakes

Chair: Lt Gen Syed Ata Hasnain (Retd)

General Hasnain has had an illustrious 40-year career, serving in some of the most turbulent environments, including Sri Lanka, Siachen Glacier, the Northeast, and Jammu & Kashmir (J&K), where he completed seven tours. A decorated officer, he commanded the Indian Army's Srinagar-based 15 Corps and is a leading analyst on J&K, Pakistan, the Middle East, and transnational extremist violence. A regular columnist and speaker, he has contributed to major Indian newspapers and spoken at prestigious institutions worldwide. With a strong academic background, he is a Distinguished Fellow at multiple think-tanks and serves on key governing councils, including the Indian Council of World Affairs. In 2018, he was appointed Chancellor of the Central University of Kashmir by the President of India.

Co- Chair: Dr Akhilesh Gupta

Dr Gupta currently heads the Policy Coordination and Programme Management Division (PCPM) division and is the overall in charge of 5 National Missions at DST ---National Mission on Interdisciplinary Cyber Physical System, National Mission on Quantum Technology and Applications, National Super-computing Mission, National Mission on Strategic Knowledge for Climate Change and National Mission for Sustaining the Himalayan Ecosystem.

A distinguished atmospheric scientist, Dr Gupta has to his credit over 200 research articles in National & International journals as well as proceedings. He is editor of 5 books, author of over 350 articles and nearly 1000 reports. He is a Fellow of Indian National Academy of Engineering (FNAE), Indian Meteorological Society (FIMS) and Association of Agro meteorologists (FAAM).

Panellist: Shri D. P. Mathuria

D.P. Mathuria is the Chief Engineer at the Central Water Commission (CWC), New Delhi, with extensive experience in water resources management. He has contributed to hydrological studies, feasibility reports, and major projects such as the Sapta Kosi and Sun Kosi dams in Nepal. He played a key role in National Water Mission and Flood Management initiatives and served as Member Secretary of the Upper Yamuna River Board, overseeing interstate water allocation. Mathuria also led the National Mission for Clean Ganga, advancing sewerage projects and pollution control in the Ganga basin. Currently, he heads efforts in glacial lake monitoring, hydro-meteorological data management, and coastal erosion at CWC.

Panellist: Shri Ajai Kumar

Shri Ajai Kumar has over two decades of experience in geosciences and glaciology to drive impactful research, guide policies, and promote sustainable practices in geological and environmental protection. Passionate about glaciology, he is dedicated to building resilience to climate change through scientific leadership and collaboration, with a focus on glacier monitoring and sustainable environmental solutions.

Presently as Director, overseeing key strategic initiatives in geoscience research and policy implementation and spearheading projects related to glacier research, environmental sustainability, and geophysical surveys. Leading the Policy Support System and the Glaciology Division with a focus on data-driven decision-making, climate change adaptation, and glacier monitoring. He has attended several training programmes and workshop for professional development and member of high-level technical committees. During the Indian Scientific Expedition to Arctic (Summer Phase-III), Norway (2012), Contributed to glaciological research in the Arctic, gaining international experience and expertise in polar regions. He had contributed significantly with scientific publications in journals of national and international repute. Actively involved in monitoring and evaluation of glacial lakes, GLOF susceptibility studies, and updating the inventory of Himalayan glaciers. These initiatives play a pivotal role in national climate change mitigation strategies.

Panellist: Ms Finu Shrestha

Finu Shrestha is a Remote Sensing and Geo-information Analyst at ICIMOD with expertise in Cryosphere and Water Risks. With over a decade of experience in cryosphere research, her focus includes glaciers, glacial lakes in the Hindu Kush Himalaya, and associated hazards such as glacial lake outburst floods (GLOFs) in High Mountain Asia. She also explores the linkages of cryosphere changes with social and gender dynamics and examines the broader multi-hazard risks associated with GLOFs. She holds an MSc in Hydrology and Meteorology from Tribhuvan University, Nepal, and has authored numerous technical reports, peer-reviewed papers, and training manuals.

Panellist: Prof Ashim Sattar

Dr Ashim Sattar (Assistant Professor, IIT Bhubaneswar) is a leading expert in GLOFs and glacier-related hazards. He is a member of the recently constituted “Sikkim Commission on Glacier Hazards, Government of Sikkim”. He is also an expert member of “Glacier and Permafrost Hazards in Mountains (GAPHAZ)”- A Scientific Standing Group of the International Association of Cryosphere Sciences and the International Permafrost Association. Dr Sattar obtained a doctoral degree from IIT Roorkee following which he has completed his postdoctoral research on GLOF studies in USA and Switzerland. His research greatly focuses on climate impact on the Himalayan Cryosphere, remote sensing-based glacier modeling, and modeling of glacial lake outburst floods and other mountain hazards. His expertise deals with several aspects of high mountain hazards, risks, and adaptation. He is an expert on multi-disciplinary and cross-sectoral GLOF research around the globe including the Himalayas, the Andes, Iceland, and Central Asia, both at a local scale and in regional-scale assessments. Dr. Sattar focuses on understanding various mass movement processes in high mountain geosystems focusing on recent dynamics. He extensively works on GLOF's impact on hydropower and transboundary GLOF hazards. Currently, he is working to develop Android applications as an integral part of GLOF early warning systems.

Session 5: Orienting Tech Start-Up Products Towards GLOF Risk Mitigation

Chair: Shri Anand Mohan

Shri Anand Mohan (IFS) is the Joint Secretary in the Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti. He oversees policies and programs related to river management, water conservation, and the Ganga Rejuvenation mission, including the Namami Gange initiative.

Co-Chair: Air Vice Marshal Dhananjay V Khot (Retd)

Air Vice Marshal DV Khot (retd) is currently the Principal Consultant at IN-SPACe, where he drives the Decadal Vision Implementation Strategy. He previously served as a Fighter Pilot, Flying Instructor, Commander and Staff at the IAF HQ, in a distinguished 35-year career in the Indian Air Force. He has flown over 3100 hours on a variety of fighter and jet trainer aircraft and served as an instructor & examiner with the IAF & US Air Force. He has also instructed at the Defence Services Staff College and the College of Air Warfare. He has commanded a fighter squadron, a frontline fighter base, the 'Aircrew Examining Board' of the IAF, and the 'Defence Space Agency'. He is experienced in HR Management & Policy, and has lectures on Aerospace Power, Space Economy, Military Strategy, HR Management and Leadership.

Session 6: Optimal Designs for Automated Weather Stations and Early Warning Systems

Chair: Dr Krishna S. Vatsa

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Panellist: Dr Binay Kumar

Dr. Binay Kumar, Scientist 'F' is currently working in CDAC – Pune as Associate Director. He holds a post graduate degree in Geology from Ranchi University and an M. Tech. degree in Remote Sensing from Birla Institute of Technology, Mesra, Ranchi. He was associated with organizations like Space Applications Centre (ISRO), Ahmedabad, Central Fuel Research Institute, Ranchi and Central Mine Planning and Design Institute Limited (Coal India Ltd), Ranchi. Besides he has undergone many training programmes in reputed organizations such as Space Applications Centre (ISRO), Ahmedabad, CMPDI, Ranchi and others. He has about 30 publications in national and international journals, conference proceedings and Book Chapters and is a life member of Indian Society of Remote Sensing and Indian Society of Geomatics. He has more than 24 years of experience in research in remote sensing, GIS and earth sciences. He has executed, monitored and implemented many projects in the field of Disaster Management, Natural Resources Management, Water Resources Management, Planetary Sciences and Earth Sciences using geo-informatics technology.

Panellist: Shri Anish Sathyan

Anish Sathyan is a Scientist E and Joint Director at C-DAC Trivandrum, with over 20 years of experience in embedded systems and industrial automation. He specializes in Intelligent Process Controllers for SCADA systems, serving industries like hydropower, thermal power, and water treatment. Anish is skilled in RTOS-based design and LabVIEW and has led collaborations with agencies such as Konkan Rail, KSITL, and ISRO. His work spans R&D, installation, and project management.

Panellist: Christian Kuster

Christian Kuster is the Head of Engineering at GEOPRAEVENT AG since 2016. He holds degrees in Business Engineering FH and Electronics Engineering HTL. With expertise in software and hardware development, communication technologies, and project management, Christian specializes in RFID, wireless systems, and embedded software development. He has worked on key projects involving monitoring and alarm systems for natural hazards, including snow height detection, avalanche and rockfall detection, and flood warning systems.

Panellist: Christoph Haemmig

Christoph Haemmig is a Swiss Geologist with a Master's in Earth Sciences from the University of Bern and specialized research experience in hydrogeology and natural hazards at the University of Tokyo. He is currently Deputy Head of the Engineering Geology and Natural Hazard Division at GEOTEST AG. With over 15 years of experience, Christoph specializes in natural hazard risk management (rockfalls, landslides, glacial lakes), disaster risk reduction, and resilience building. He has led projects in Switzerland and internationally, including hazard assessments, early warning systems, and mitigation planning in places like India and Chile. He holds memberships in several professional organizations, including CHGEOL, AGU, and SGG.

Session 7: Best Global Practices on GLOF Mitigation suited for Indian Conditions

Chair: Rajendra Singh

Shri Rajendra Singh, a former Director General of the Indian Coast Guard (Feb 2016 - Jun 2019), brought remarkable leadership and strategic direction during his 39-year career. He commanded all classes of Indian Coast Guard ships and played a pivotal role in combating piracy, drug trafficking, and maritime security. His tenure saw the largest drug seizure in Indian maritime history, the rescue of lives at sea, and enhanced international cooperation. As Chairman of key maritime safety and security boards, he oversaw vital search and rescue operations and oil spill responses. His contributions to disaster management, especially during cyclones and floods, are widely recognized. Shri Rajendra Singh was awarded the Tatrakshak Medal and President's Tatrakshak Medal for his outstanding service.

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Panellist: Dr Zhanar Raimbekova

Zhanar Raimbekova is a PhD in Hydrology and a senior researcher at Al-Farabi Kazakh National University, Kazakhstan. Her research focuses on climate change impacts, water resources management, mudflow risk assessment, and hydrological modeling. She holds an MSc and BSc in Hydrology from the same university. Zhanar is currently the Deputy Head of the Department for Scientific and Innovative Work at her university and a Project Researcher for the GLOFCA Project (University of Zurich). She has extensive experience in disaster prevention with KazSeleZashita and coordinates the master's Program in Integrated Water Resources Management at Kazakh German University. She has also served as a Senior Lecturer and Lecturer in Hydrology at Al-Farabi KazNU.

Panellist: Prof Alonso Brenes

Alonso Brenes is a Costa Rican geographer. He is an international senior consultant and lecturer on disaster risk management, climate sciences, and territorial development, with experience in more than 30 countries in Latin America, Africa, and Asia. He started his academic and professional career around +20 years ago, working on international cooperation projects related to management of international basins in Central America and Mexico.

Since 2005 he has been working on disaster risk management initiatives, urban and territorial development, and climate action. He is the coordinator of the Network of Social Studies on Disasters Prevention in Latin America (LA RED), and the regional director for Latin America and the Caribbean of the International Emergency Management Society (TIEMS). He is also a member of the Integrated Research on Disaster Reduction Committee, of the International Council of Science, member of the UNESCO's Group of Experts on Risk Management for Latin America and the Caribbean; the UNDRR Science and Technology Advisory Group for the Americas; and the editorial board of Disaster Prevention and Management Journal.

Panellist: Shri Sangay Tenzing

Mr. Sangay Tenzin is currently working as Engineer under Hydrology and Water Resources Division (HWRSD), National Centre for Hydrology and Meteorology (NCHM) Royal Government of Bhutan (RGoB). He is the Head of the Hydrological Forecasting and Warning Section (HFWS) under HWRSD, NCHM and additionally serves as an Engineer In-charge of the Flood warning and Command Room (FMCR)) that includes control room for GLOF EWS system. He has worked in the hydro-met sectors for more than 2 decades in the areas of operational hydrology, data management, hydrological modeling for flood forecasting and warning and other services delivery. He has made a great contribution to the Centre from planning, designing and installation of hydrological observation stations to designing and installation of flood forecasting and GLOF early warning systems (FEWS) in Bhutan. Currently he is serving as the Project Engineer for establishment of Flood Forecasting and EWS on Amochu River Basin in Bhutan and is also counterpart engineer to JICA expert for JICA TCP project for setting up flood EWS on Thimphu and Paro River Basin. Besides, he is serving as a focal person for development and operation of WMO's regional project "Hydrological Status and Outlook system for integrated water resources management and climate resilience in the Ganga Brahmaputra Meghna Basin (HydroSOS-GBM)". Additionally, he is also a Project Engineer for GCF through BFL supported project "Construction of Flood Warning and Cryosphere Research Centre with Solar PV Systenm In Lunana Region".

Panellist: Dr Mohan Bahadur Chand

Dr Mohan Bahadur Chand is a Himalayan glaciologist and researcher at Kathmandu University, Nepal, with a PhD in Environmental Science Development from Hokkaido University, Japan. With over 10 years of experience, his expertise spans climate change impacts, cryosphere disaster risk reduction, glacio-hydrological modelling, and GIS applications. Dr Chand has led projects on climate change adaptation and water-related challenges in the Himalayas, aiming to promote environmental sustainability and resilience in Nepal's high mountain regions.

Panellist: Dr Sandeep Tambe

Sandeep Tambe is a member of the Indian Forest Service, 1996 batch, Sikkim cadre and has diverse work experience having worked in government, NGO and academic institutions. He served 19 years in Sikkim state in the forest and rural development sectors. In Sikkim he has contributed to securing wildlife areas in the Khangchendzonga landscape, effective implementation of poverty alleviation programmes and in the revival of Himalayan springs using scientific and people centric approaches. He has also contributed towards policy formulation for lake conservation, eco-development, mountain guardian's policy, trekking regulations, pro-poor targeting, strengthening decentralized governance, effective social audits, convergence partnerships and post-earthquake reconstruction. He has also served as a Professor in the Indian Institute of Forest Management (IIFM) and taught courses related to natural resource management, forest policy and law, project management, applied rural livelihoods etc. The livelihood programmes managed by him won the prestigious Prime Minister's Award for Excellence in Public Administration in 2013, National Award for Excellence in Convergence in 2015, and the National Award for Transparency and Accountability in 2015. In 2017, the IIFM student council selected him for the Best Teacher Award. He has published 24 journal papers, six books and nine book chapters.