AMITY UNIVERSITY

Azadi Ka Amrit Mahotsav

nidm

AMITY GLOBAL WARMING CLIMATE CHANGE CLUSTER

THREE DAYS ONLINE TRAINING PROGRAMME
ON

"DISASTER MANAGEMENT OF FLOODS DUE TO CLIMATE CHANGE"

MARCH 22-24, 2022 | **SESSIONS: 10:30AM TO 5:00PM**

Registration Link: https://training.nidm.gov.in/

Joining link for three days training Program: https://amityuni.live/86125993265

CHIEF PATRONS

Dr. Ashok K. Chauhan
Founder President, RBEF
(Amity Education Group)

Shri Taj Hassan (IPS)
Executive Director
NIDM, MHA, GOI

PROGRAM CHAIRS

Prof. (Dr.) Tanu Jindal
Group Additional Pro VC (R&D)
Director, AIETSM and AIWTM
Amity University Uttar Pradesh

Prof. (Dr.) Anil K. Gupta
Head, ECDRM Division,
NIDM, MHA, GoI

SPEAKERS

Dr. Sanjay K Jain
Scientist G & Head
Water Resources
Systems, NIH, Roorkee

Prof. Christopher Chow
Director-SIRM
University of South Australia

Mr. Vijay Shekhawat,
Director- Trade and Investments
Australian Trade and Investment
Commission, Delhi

Dr. Dharma Hagare
Associate Dean International (South Asia)
Western Sydney University, Australia

Dr. Aahis K. Mitra
Scientist-G & Head
(NCMRWF)

Shri M.K. Sinha
Chief Engineer, CWC
Executive Member,
Narmada Control Authority

Dr. Brijesh Kumar Yadav
Head and Professor,
Department of Hydrology,
(IIT) Roorkee

Dr. Sweta Baldya
Consultant ECDRM
NIDM

Dr. Kopal Verma
JC ECDRM
NIDM

Mr. Harshit Sharma
YP, ECDRM
NIDM

Ms. Fatima Amin
YP ECDRM Division
NIDM

Dr. Archana Sarkar
Scientist E
National Institute of
Hydrology (NIH) Roorkee

Prof. Umamahesh NV
Professor
Department of Civil Engineering
NIT Warangal

Prof K V Jayakumar
Emeritus Professor, Department
of Civil Engineering
National Institute of Technology

Dr. R.K. Gupta
Chairman
Central Water Commission

Shri Kunal Satyarthi
Joint Secretary (Advisor)
NDMA, Ministry of Home Affairs
Government of India

Dr. R.K. Srivastava
Professor & Head
G.B. Pant University of Agriculture
and Technology, Pantnagar

Dr. Manoj P. Samuel
Executive Director
Centre for Water Resources
Development and Management
(KSCSTE-CWRDM)

COORDINATORS

Dr. Abhishek Chauhan
Senior Scientist
AIETSM, Amity University, UP

Dr. Sweta Baldya
Consultant ECDRM
NIDM, Delhi

Organizing Team

Ms. Marianna Joseph
Mr. Rajat Tekas
Mr. Vikram Kaushik

Supporting Team

Dr. Laxmikant Bhardwaj
Ms. Jayati Arora
Ms. Pragya Rath

Jointly Organized by:

Amity University, Uttar Pradesh, Sector-125, Noida, India
National Institute of Disaster Management, MHA, GOI

YouTube Links:
Day 1: https://youtu.be/HIqrh06SUSE
Day 2: https://youtu.be/Np0jdz-Knps
Day 3: https://youtu.be/tk6GMhy_StQ

Contents

INTRODUCTION TO THE COURSE

Disaster management training is meant to build the competencies of disaster relief workers and volunteers in improving the preparedness and response time in all levels before and after disasters.

This3-day online training program was organized in collaboration of Amity University, Noida and National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India.

OBJECTIVES:

The primary objective of the training is to provide opportunity for academicians, researchers, practitioners, policy makers and research scholars to undergo training, share and discuss ideas and practices across a range of empirical, theoretical, and applied approaches in mitigation for environment sustainability. This workshop aims to provides a premier interdisciplinary platform for researchers, practitioners, and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered, and solutions adopted in the fields of disaster management. The training will discuss the unprecedented challenges of environmental systems that can be resolved with mitigation models.

- Identify real life cases of successful implementation of disaster management techniques.
- To understand and implement psycho-social care in disaster management
- To develop network among participants for active role in near future

AMITY GLOBAL WARMING CLIMATE CHANGE CLUSTER

Three Days Training Program
On

"Disaster Management of Floods due to Climate Change"

March 22-24, 2022

Time	Event
Day 1 March 22, 2022	**Time : 2:30pm - 05:00pm**
O2:30 -02:35pm	**Welcome to delegates**
02:35 - 02:45pm	Introduction to the theme by **Prof. Tanu Jindal** Group Additional Pro Vice Chancellor (R&D) Domain Head, Natural Resources and Environmental Sciences, Director, Amity Institute of Environmental Toxicology, Safety and Management
02:45 -02:55	Address by **Prof. (Dr.) Balvinder Shukla** Vice Chancellor, Amity University Uttar Pradesh (AUUP)
02:55 -03:10pm	About the training programme by **Prof. (Dr.) Anil K. Gupta** Head, ECDRM, NIDM
03:10 – 03:25pm	Special address by **Shri Taj Hassan** Executive Director, NIDM
03:25 -03:45pm	Special address by **Dr Sanjay K Jain** Scientist G & Head in the Water Resources Systems National Institute of Hydrology "**Water related disasters in Himalayas with focus on Glacial Lake Outburst Floods"**
03:45- 04:00pm	Special address by **Prof. Christopher Chow** Professor Water Science and Engineering and Director of Sustainable Infrastructure and Resource Management, University of South Australia **"Sustainable Infrastructure and Resource Management"**
04:00 -04:15pm	Special address by **Mr. Vijay Shekhawat**, Director- Trade and Investments Australian Trade and Investment Commission, Delhi
04:15 - 04:30pm	Special address by **Dr. Dharma Hagare** Senior Lecturer, Sustainability Engineering, Leader, Nutrient Water and Materials Recycling Group (NeWMaRG),Associate Dean International (South Asia) School of Engineering, Design and Built Environment Western Sydney University **"Use of decentralised wastewater treatment system to satisfy irrigation demand."**
04:30 -04:50pm	Address by **Dr. W. Selvamurthy** President - Amity Science, Technology & Innovation Foundation (ASTIF), DG, ADSI, Chancellor, Amity University Chhattisgarh

04:50 – 05:00pm	**"Way Ahead and Future Roadmaps"** **Dr. Ashok K. Chauhan** Founder President, **Ritnand Balved Education Foundation (**RBEF) Amity Education Group *****
5:00 pm	**Vote of thanks**
Day 2 March 23, 2022	**Time : 10:30am - 01:00pm**
10:30 – 10:40 am	Welcome to delegates and introduction to session theme an experts
10:40 – 11:20 am	Special address by **Dr. Ashis K. Mitra** Scientist-G & Head National Centre for Medium Range Weather Forecasting (NCMRWF) **'NCMRWF Seamleass Modelling System for Disaster Early Warning'**
11:20 - 12:00pm	Special address by Shri**. M.K. Sinha** Central Water Commission **"Floods"**
12:00 – 12:40pm	Special address by **Dr. Brijesh Kumar Yadav** Head and Professor, Department of Hydrology, Indian Institute of Hydrology, (IIT) Roorkee **"Geo-sequestration of CO_2 to Mitigate Climate Change and Floods"**
12:40 – 1:00 pm	**Question Answer session**
1:00 – 2::00 pm	**Lunch**
Day 2 March 23, 2022	**Time : 2:30pm - 05:00pm**
2:30 – 2:50pm	Introduction by **Dr. Anil Kumar Gupta** Head, ECDRM, NIDM
02:50 – 03:15pm	Address by **Dr Sweta Baidya** Consultant, ECDRM, NIDM **" River System and Flood DRR"**
03:15– 03:40pm	Address by **Dr Kopal Verma** JC ECDRM NIDM "**Flood Resilient Infrastructure"**
03:40 – 04:05pm	Address by **Mr Harshit Sharma** YP, ECDRM, NIDM "**Climate Change Adaptation and Disaster Risk Reduction"**
04:05– 04:30pm	Address by **Ms Fatima Amin** YP ECDRM Division NIDM **"Flood mitigation and preparedness strategies"**
04:30 -04:50pm	Address by **Ms. Atisha Sood** NIDM
04:50– 05:00pm	**Question Answer by Eminent Speakers**
05:00pm	Vote of thanks
Day 3 March 24, 2022	**Time : 10:30pm - 01:00pm**
10:30-10;40 am	**Welcome to delegates**
10:40 – 11:10 am	Special talk by **Dr. Archana Sarkar** Scientist E National Institute of Hydrology (NIH) Roorkee

	"Flood Management in India: Current Practice and Future Challenges including Climate Change"
11:10 – 11:40pm	Special address by **Prof. Umamahesh NV** Professor, Department of Civil Engineering, NIT Warangal **"Disaster Management of Floods due to Climate Change"**
11:40 -12:10pm	Special address by **Prof K V Jayakumar** Emeritus Professor, Department of Civil Engineering National Institute of Technology, WARANGAL "**Environmental Flow"**
12:10 – 12:40pm	Special address by **Dr. Sharad K. Jain** Former Director, National Institute of Hydrology Visiting Professor , Civil Engg, Dept, Indian Institute of Technology, Roorkee **"Flood Management with special reference to India"**
12:40 -01:00pm	Question Answer session
01:00 -02:00 pm	Lunch
Day 3 March 24, 2022 Valedictory Time : 2:30pm - 05:00pm	
02:30 – 02:40pm	Welcome to delegates
02:40 – 02:50pm	Review of the training programme by **Prof. Tanu Jindal** Group Additional Pro VC (R&D)
02:50 - 03:10pm	Special address by **Dr. R.K. Gupta** Chairman Central Water Commission
03:10 – 03-30pm	Special address by **Dr. Manoj P. Samuel** Executive Director Centre for Water Resources Development and Management (KSCSTE-CWRDM)
03:30 -03:-50pm	Special address by **Shri Kunal Satyarthi** Joint Secretary (Advisor), National Disaster Management Authority, Ministry of Home Affairs, Government of India
03:50 - 04:10pm	Special address by **Dr. R.K. Srivastava** **Professor & Head, G.B. Pant University of Agriculture and Technology Pantnagar**
4:10 - 4:50pm	**Panel discussion with eminent speakers by** **Dr. W. Selvamurthy** President - Amity Science, Technology & Innovation Foundation (ASTIF), DG, ADSI, Chancellor, Amity University Chhattisgarh And **Dr. D.K. Bandyopadhyay** Chief Advisor FPO, Chairman, Amity Law School
4:50 -5:00pm	**Vote of thanks**

IMPORTANT ANNOUNCEMENTS:

The important housekeeping announcements were announced to ensure smooth flow of the programme on all the three days. These included:

- Join the meeting on time.
- Ensure at least 80% of attendance
- 10-15 minutes for Q & A after each lecture
- Share your questions through the chat box
- The questions must not be posted as Anonymous attendee
- Ensure that the questions are precise
- Refrain from making general comments

Prof. (Dr.) Tanu Jindal, welcomed all the esteemed guests and eminent speakers, Amity staff and NIDM members. Introduction to themes of the conference was done.

She Discussed on the topic "Disaster management of flood due to climate change". During her speech she pointed out the reasons which are responsible for ground water contamination.

She mentioned emerging topics like water pollution, wet land conservation and air pollution. She also wrote a beautiful poem on this day.

Dr. Anil K. Gupta, Head of the Environment, climate and Disaster Risk Management division of NIDM congratulated the team and delivered a keynote on natural disasters. He emphasised on the direct land use issues, river erosion. He suggested that natural disaster can cause loss of life or damage property and typically leaves some economic damage in its wake, the severity of which depends on the affected population's resilience and on the infrastructure available.

He highlighted that in this light, this 3-day online training program has been organized with an aim to develop a systematic knowledge base on Technological, Financial, & Capacity Building Resistance to stress during Disaster and to enumerate on possible pathways, tools, options & strategies for understanding stress and its management & network among participants for playing an active role in near future, if need be

Prof (Dr.) Tanu Jindal

Prof (Dr.) Anil K. Gupta

DAY WISE SUMMARY:

Day 1: March 22nd 2022 of the programme included eminent speakers:

Dr. Sanjay Kumar Jain

The speaker talked about "Water related disasters in Himalayas with focus on Glacial Lake Outburst Floods"

Glaciated regions are highly sensitive to climate change and as a result are receding in most parts of the world. The impact on downstream regions of the two glacial lakes is then evaluated by flood inundation map to access the land exposed to GLOF. He concludes global warming will increase the frequency and risk of GLOF. Mapping and monitoring of lakes needed.

Mr. Vijay Shekhawat

The speaker emphasised that India is one of the world's fastest growing major economies and an attractive market for Australian exporters. The Honorable Shri Narendra Modi, Prime Minister of

India, and the Hon Scott Morrison MP, Prime Minister of Australia, held the 2nd India-Australia Virtual Summit on 21 March 2022.They welcomed the extension of the Australia-India Strategic

Research Fund (AISRF) – a pillar of collaboration on science, technology and research – and the commitment to build on the successful 2021 India-Australia Circular Economy Hackathon.

Mr. Vijay Shekhawat

Dr. Sanjay Kumar Jain

Prof. Christopher Chow-

He discussed on the topic "Sustainable Infrastructure and Resource Management. It was stated that there is need of real time monitoring systems in water. Showed the pipeline system to distribute water. Many variations have been found due to climate change. Use of surrogate water parameters determined from simple and rapid way to detect water quality change. He suggested that surrogate parameter can be extended to microbial detection.

Dr. Dharma Hagare

He emphasized on Use of decentralised wastewater treatment system to satisfy irrigation demand. With the country hurtling towards a water crisis and treated wastewater a possible alternative, using models that are different from the centralized approach, is a sustainable and cost-effective solution. A proposed alternative to India's growing water crisis that is doing the rounds is the recycling and reuse of treated wastewater. This can be one of the measures to reduce the pressure on water resources. This is a cost-effective approach.

Prof Christofer Chow

Dr. Dharma Hagare

Day 2: March 23rd 2022 of the programme included eminent speakers:

Dr. Ashish K. Mitra

He discussed on the topic 'NCMRWF Seamless Modelling System for Disaster Early Warning'. The mission of the Centre is to continuously develop advanced numerical weather prediction systems, with increased reliability and accuracy over India and neighboring regions through research, development and demonstration of new and novel applications, maintaining highest level of knowledge, skills and technical bases.

An Early Warning System (EWS) can be defined as a set of capacities needed to. generate and disseminate timely and meaningful warning information of the. possible extreme events or disasters (e.g., floods, drought, fire, earthquake and. tsunamis) that threatens people's lives.

Shri. M.K. Sinha

He talked on very informative topic “Special talk on management of flood with emphasis on climate change”. The session highlighted adequacy of waterways under new highways, expressways should be under central agencies. Comprehensive plans for flood management in flood affected areas,

Dr. Ashish K. Mitra

Shri. M.K. Sinha

Dr. Brijesh Kumar Yadav

Discussed on Worlds CCS project as The Sleipner project, first industrial Co2 capture and storage project. And its status in India (ongoing). The natural gas produced from the Sleipner West field contains up to 9% CO2, however, in order to meet the required export specifications and the customers' requirements, this has to be reduced to a maximum of 2.5%.

This project is successful in technical and economic ways. It is difficult to meet emissions reduction target without CCS.

Dr Sweta Baidya Das

She discussed the topic "River System and Flood DRR". This session gave knowledge on river bank erosion, land loss, bank degradation etc. It highlights that health risks also associated with flooding but it is still less concerned. Different instrument required for monitoring health risks.

Dr. Brijesh Kumar Yadav

Dr Sweta Baidya Das

Dr Kopal Verma

She talked on topic “Flood Resilient Infrastructure”. This session highlighted the Case study of induced heat risks for migrant populations working at bricks kilns. In India, followed up by adaptation strategies, adaptation roadmaps and Conceptual diagram for integrating health into disaster risk reduction strategies.

Mr. Harshit Sharma

The speaker emphasized the **Climate change and its adaptation,** pointed the emerging topic *Why care about Climate change.* Annual means, seasonal variation and daily patterns of abiotic factors are properties of a climate where organisms can be adapted to. Changes in behavior, physical structure, internal mechanisms and metabolism are forms of adaptation that is caused by climate properties.

Dr Kopal Verma

Mr. Harshit Sharma

Ms Fatima Amin

The session gave the highlights the recent floods in India, structure measures, dams, reservoirs and other water storage. She also emphasizes on drainage improvement, afforestation, flood proofing.

Ms. Atisha Sood

This session gave knowledge how human activities degrading the environment. Effective action to protect health from climate change will only occur if the health sector takes ownership and ensures that climate risk are mainstreamed across all of its function.

Ms Fatima Amin

Ms. Atisha Sood

Day 3: March 24th 2022 of the programme included eminent speakers:

Dr. Archana Sarkar

The session gave overview the pragmatic and cost-effective approach in flood management is required for building of structural and non-structural measures. A climate impact analysis should be incorporated in the policy document.

Prof Umamahesh NV

This session gave knowledge on impacts of climate change on hydroclimatic extremes, dynamics of hydroclimatic events have been changing due to human intervention and climate variability change. It also concludes CORDEX, NEX-GDDP Data sets, IDF curves.

Dr. Archana Sarkar

Prof. Umamahesh NV

Prof. K. V. Jaykumar

He discussed about Environmental Flows, He briefly described about operational of EF in India and different types of models for analysis. Statistics indicate that ecosystem is going to be more likely damaged in the future. The results of the study showed the changes in 33 parameters which reflect the ecological and hydrological changes that took place along the Krishna River due to anthropogenic activities. The Environmental flows describes the quantity, quality and timing of water flows required to sustain freshwater and estuarine ecosystem and human livelihoods and well beings that depend on these ecosystems.

Dr. Sharad K. Jain

This session highlights the flood system views, integrated disaster risk management. Risk can be managed by controlling hazards and vulnerability or both. The flood disaster management works on structural (attempt to modify) and non structural (attempt to reduce vulnerability). Some important findings of IPCC AR6 ex. Climate change have altered amount, seasonality and variability of river discharge, probability of compound events has increased.

Prof. K. V. Jaykumar

Dr. Sharad K. Jain

Shri Kunal Satyarthi

Catch the water, when it falls and where it falls This speaker emphasized that Flooding is a temporary overflow of water onto land that is normally dry. Floods are the most common natural disaster. The main concern now a day that climatic phenomena have been changed their pattern.

Chittod, Jaisalmer are flooded but Cherrapunchi is dry. Also, the pattern of snow fall has been changed. Arabian see has cyclone, intensity, frequency has been changed.

Prof Manoj P. Samuel

Water is at the core of sustainable development and is critical for socio-economic development, healthy ecosystems and for human survival itself. It is vital for reducing the global burden of disease and improving the health, welfare and productivity of populations.

This session emphasized the issues related to climate change. He also described BHUJAL App to measure the depth of water, Smart agriculture model and water footprints.

Shri Kunal Satyarthi

Prof Manoj P. Samuel

Closing the 3-Day training session

1- Welcome address was given by **Prof. Tanu Jindal** (Group Additional Pro VC (R&D), Amity University, Noida. She discussed disaster management and said that disaster management is one of the mandatory courses for teaching. Disaster management is the need of the earth in view of global warming. She also discussed glacier melting and climate change.

2- **Dr. R.K. Srivastava,** Professor & Head, G.B. Pant University of Agriculture and Technology, Pantnagar. He discussed climate change and said that it is due to only increasing the temperature. We are surviving in that increasing temperature of just 1^{o}-2^{o} C. He also discussed microflora and microfauna which are very sensitive to temperature and said that they are very important to the ecosystem. The effect of climate change is also on the honeybee and pollination.

3- **Shri Kunal Satyarthi,** Joint Secretary (Advisor), National Disaster Management Authority, Ministry of Home Affairs, Government of India. He discussed disaster management of floods. He said that the temperature is rising due to the increase of the CO_2 level. He also discussed the cyclone. He said that it is very difficult to early warning.

4- **Dr. Manoj P. Samuel,** Executive Director, Centre for Water Resources Development and Management (KSCSTE-CWRDM). He discussed sustainable management and conjunctive use of surface and groundwater. He said that we are facing the issue of climate change from

the last few years. Due to climate change, flood is a big issue in Kerala. India is the largest extractor of groundwater in the world. The river is the big ecosystem. He discussed challenges & focal areas.

5- **Dr. W. Selvamurthy,** president-Amity Science, Technology & Innovation Foundation (ASTIF), DG, ADSI, Chancellor, Amity University Chhattisgarh. He gave the compliment to the AIETSM team for organizing this event. He discussed technology related to water in future. He said about Amity action plan and India action plan. He suggests that we need action on the ground, creates awareness about climate change.

6- **Dr. D.K. Bandyopadhyay,** Chief Advisor FPO, Chairman, Amity Law School. He discussed climate change, glacier melting, duration of the monsoon, rainfall, and flood. He said that there is six types of flood management techniques. He suggests that research scholars should focus on the new techniques. He said that lots of research is going on the agricultural management, including irrigation pattern and genetically modified seeds.

7- Vote of thanks was given by Dr. Abhishek Chauhan.


Ms. Jayati Arora
Prof. Tanu Jindal
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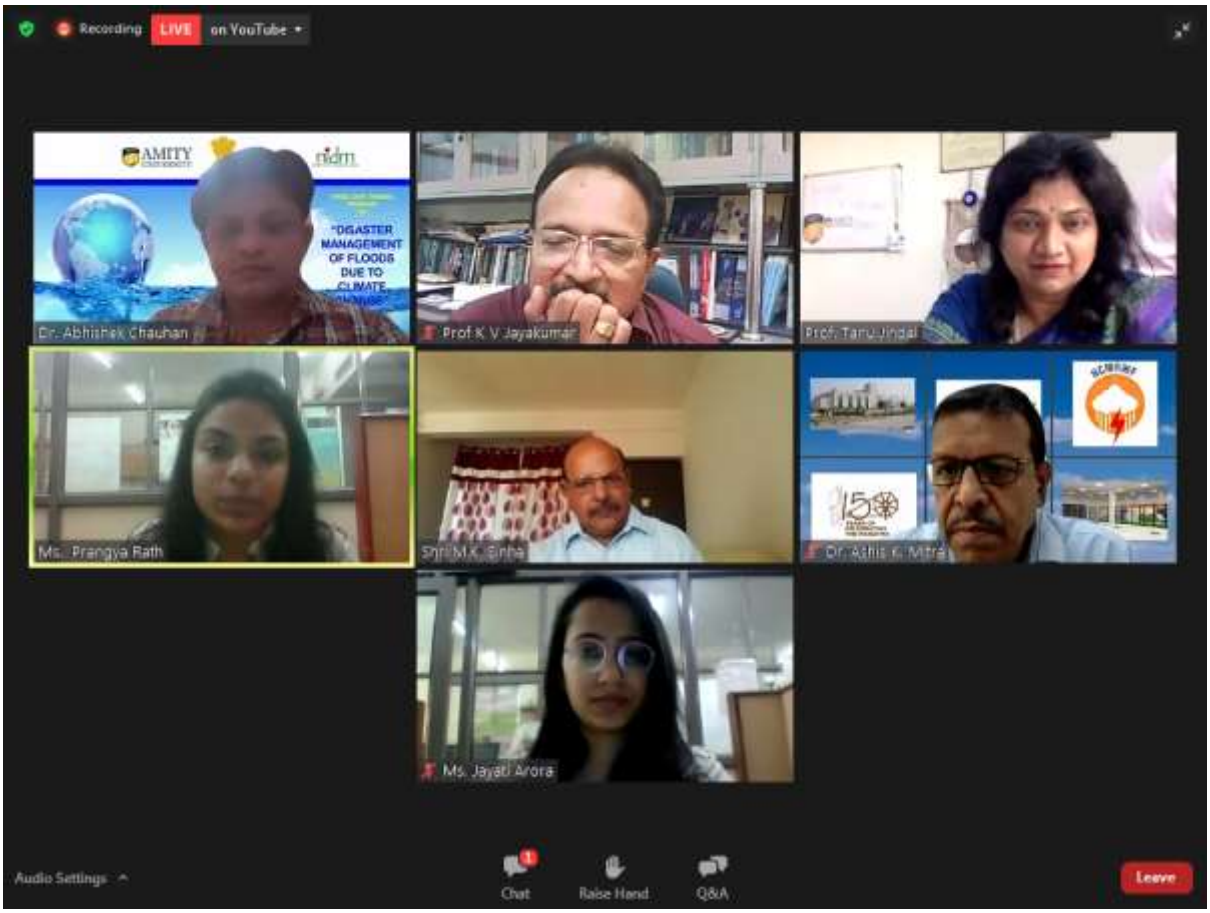
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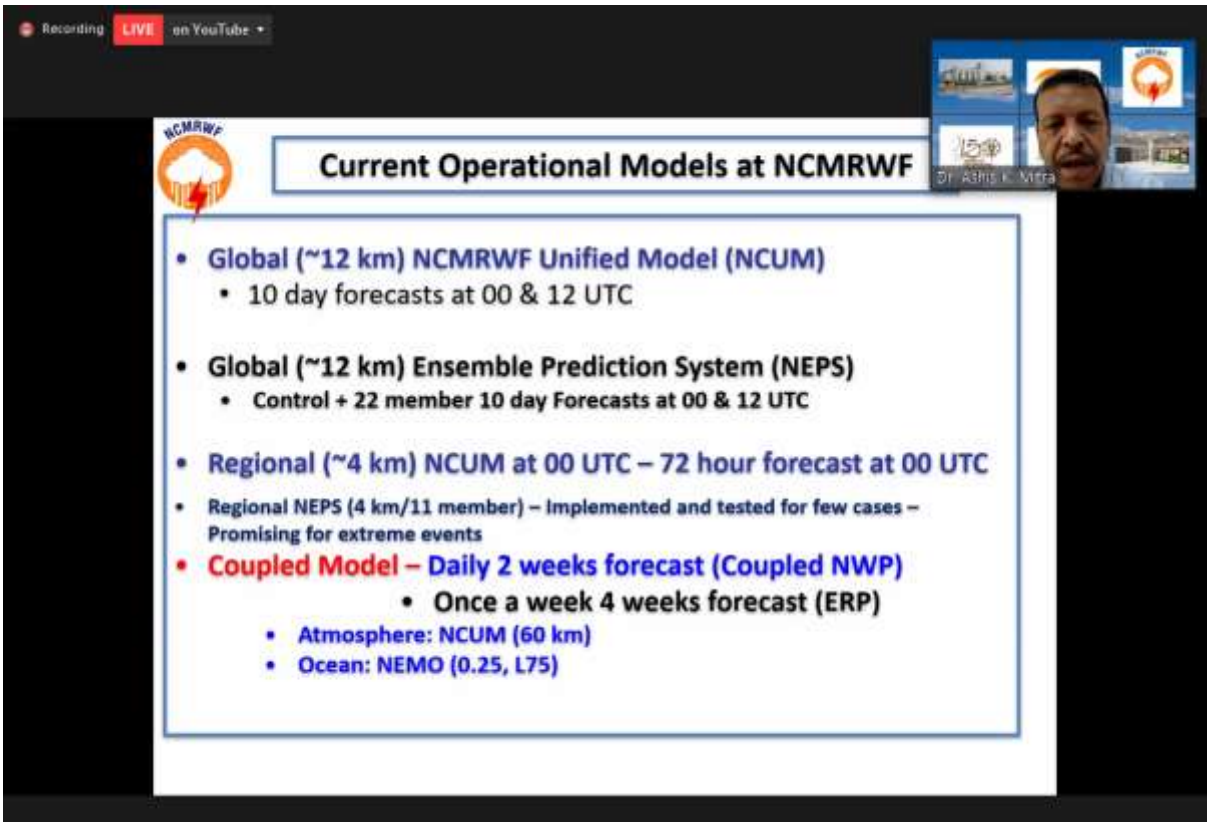
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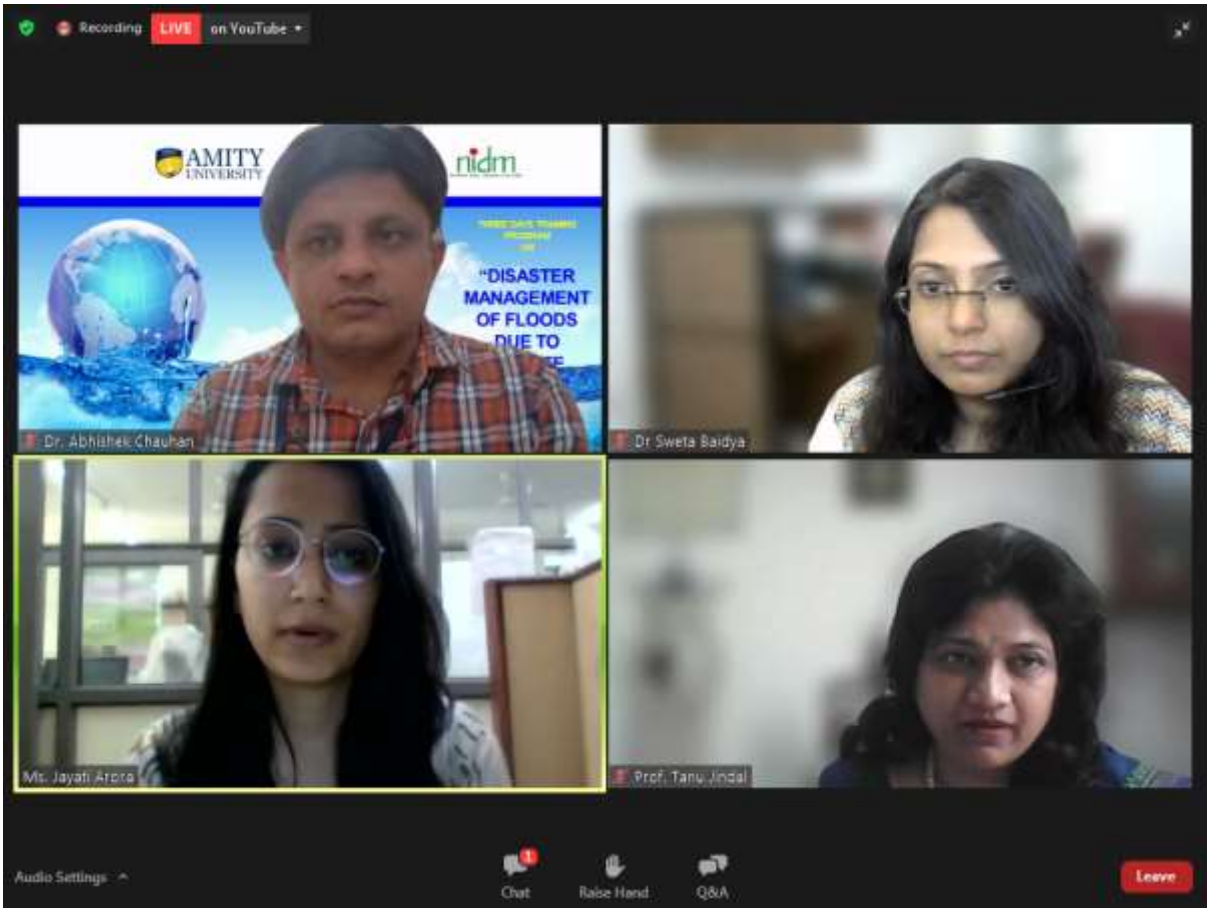
Dr. Ashis K. Mitra
Current Operational Models at NCMRWF
• Global (~12 km) NCMRWF Unified Model (NCUM)
• 10 day forecasts at 00 & 12 UTC
• Global (~12 km) Ensemble Prediction System (NEPS)
• Control + 22 member 10 day Forecasts at 00 & 12 UTC
• Regional (~4 km) NCUM at 00 UTC – 72 hour forecast at 00 UTC
• Regional NEPS (4 km/11 member) – Implemented and tested for few cases – Promising for extreme events
• Coupled Model – Daily 2 weeks forecast (Coupled NWP)
• Once a week 4 weeks forecast (ERP)
• Atmosphere: NCUM (60 km)
• Ocean: NEMO (0.25, L75)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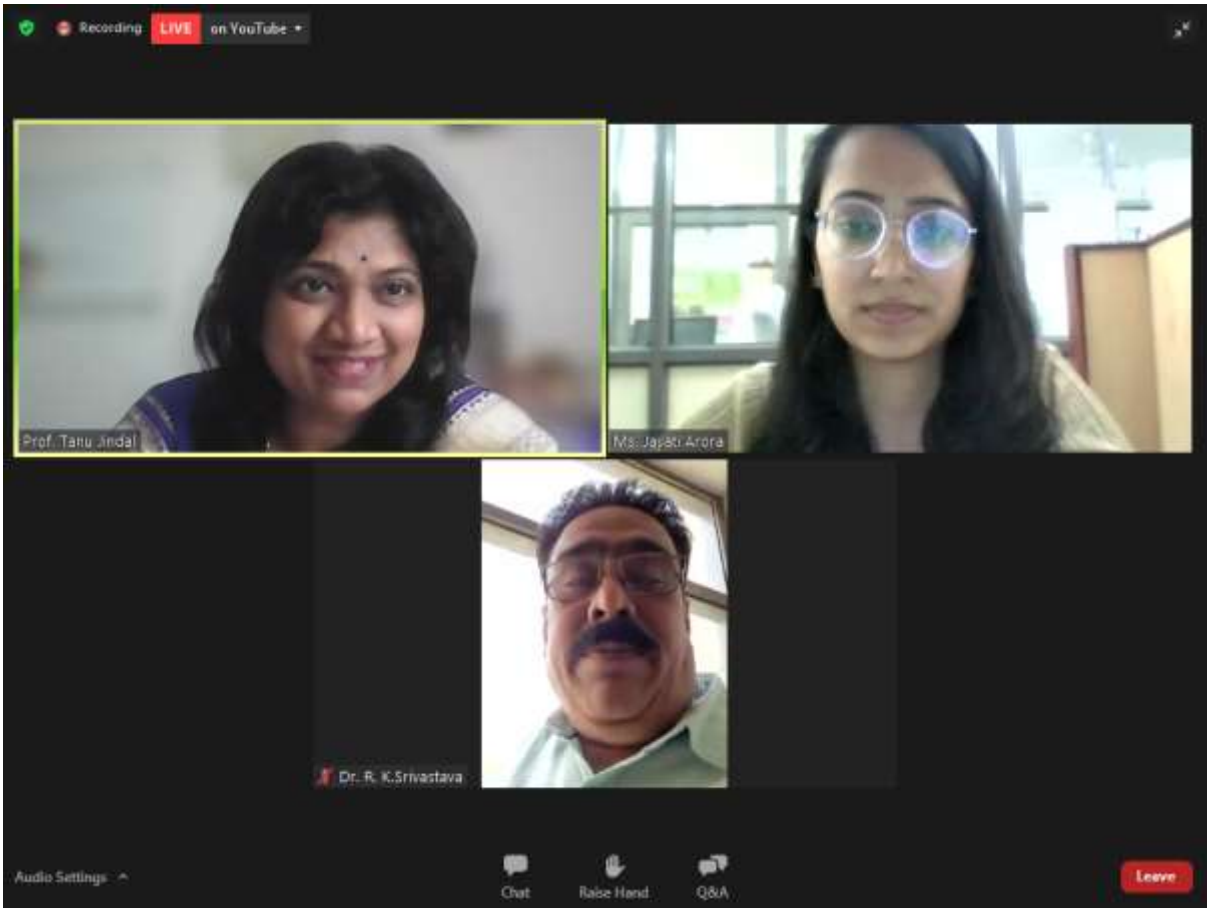
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Chat
Raise Hand
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