About the Training Program

The uses of satellites in disaster management are becoming more integral in recent times for reducing reaction time and providing accurate information to rescue and disaster control operations. Landslides and avalanches are among the major hydro-geological hazards that affect large parts of India besides the Himalayas, the Northeastern region is badly affected by landslide problems of a bewildering variety. Landslides in this region pose chronic problems, causing recurring economic losses worth billions of rupees. For Mitigation and Management with early warning, satellite technology can help in predicting disasters and taking precautionary actions. They can analyze climate change and map areas for relief operations with the data collected from the satellites. To enhance the capabilities of the NE Regions on application of space technology for disaster management, the training program on 'Remote Sensing and Geospatial Technology for Landslide Mitigation and Management in North Eastern Region' is organized by NIT Mizoram in its campus at Aizawl, Mizoram with support from TIH, IIT Tirupati.

Objectives of the Training Program

Overall objective of the training program is to strengthen knowledge base of Government officials and State Disaster Management Authority officials regarding recent advancement in space technology for Landslide Mitigation and Management.

- To acquaint participants with varied applications of space technology in disaster risk reduction.
- To learn and demonstrate the use of space technology applications for Landslide Monitoring, Mapping and Management.
- To familiarize with space technology application in assessment and monitoring of hazards and update participants with recent advancement in space technology and its usage in North Eastern region.

About Indian Institute of Technology, Tirupati

IIT Tirupati is incorporated under the Institutes of Technology Act, 1961 and having its campus at Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh-517619. It is the first among the 3rd phase of IITs, announced in 2014, to have its foundation stone laid in March 2015. It started functioning with the support of its mentoring institute, IIT Madras, from the academic year of 2015-16 and is currently offering the programmes - BTech, MTech, MSc, MPP, MS(Research) and PhD. The pedagogy is aimed at nurturing innovation, creativity, quality, teamwork, communication skills, ethics, and societal interaction.

About Technology Innovation Hub at IIT Tirupati

Positioning and Precision Technologies (PPTs) are indispensable tools for monitoring, integrating, and analyzing spatially and temporally distributed resources to aid in effective decision-making across multiple domains. These technologies include remote sensing (non-invasive), Geographical Information Systems (GIS) and Global Positioning Systems (GPS). The Technology Innovation Hub (TIH) primarily focus on Public Private Partnership (PPP) model to generate revenue through: (i) Research and development sponsorship from industries, government and start-ups in form of innovative products and services in PPT; (ii) linkage with industries, accelerators and Venture Capital to create funding ecosystem; (iii) training and consulting; (iv) standards development and policy creation for rapid adaptation of PPT across various stakeholders; and (v) databank creation across strategic areas of PPT. IIT Tirupati Navavishkar I-Hub Foundation (IITTNiF), a not-for-profit Section-8 company, is set up to host the Technology Innovation Hub (TIH) in Positioning and Precision Technologies (PPT). For more details please visit: https://iittnif.com

About National Institute of Technology, Mizoram

NIT Mizoram is one of the 31 NITs established in 2010 and located in state capital Aizawl in Mizoram. It functions at a temporary campus and offers BTech, MTech, and PhD degree. The Institute actively organizes the training program of same kind through state-of-the-art technologies.

Contents

Theory/Lecture Sessions:

- Satellite based earth observations and Remote sensing technology with concepts of digital image processing and Visual interpretation for Disaster Management
- Overview of Geographic Information Systems (GIS), Global Positioning System (GPS) and Indian Regional Navigation Satellite System (IRNSS)
- Concepts of Disaster Mitigation and Management (DMM) and Disaster Risk Reduction (DRR) & NIDM initiatives towards Disaster Management in NE regions
- ISRO's initiative for landslide mitigation and management in NE region
- Application of Microwave Remote Sensing and Geophysical investigations in detection of landslide and surface deformation
- Landslide investigation and mapping techniques, Landslide image interpretation
- Landslide susceptibility modelling using Geospatial inputs
- Overview of UAV for disaster monitoring and mitigation and DInSAR applications for landslide monitoring and mapping
- Applications of Geospatial Technology in Geological and Hydrological Hazards
- Advanced Geoinformatics tools for landslide induced GLOF hazards management
- Geocomputation, Online GIS and Geo-web services for Disaster Risk Reduction and Overview of Geospatial Technology and its role in mainstreaming DMM and DRR
- Role of machine learning techniques for Landslide Mitigation and Management
- Strategy for support to development of early warning system for landslide and related disasters & Landslide Hazards : Geotechnical Aspects and Management Policies

Practical Sessions:

- Image Processing and Digital Image Interpretation
- Integrating with RS imageries and other spatial non spatial data in GIS
- Landslide detection and mapping in Satellite Imagery and processing
- Field visit to nearby landslide sites, Ground Truthing and collection of data using handheld GPS

Target Participants

The workshop is designed for professionals from Central/State Govt. engaged in geospatial data analysis related research and projects aligned to Landslide Mitigation and Management in North Eastern Region.

Registration

There is no registration fee to attend the Training Program. The participants need to fill the registration form online: https://iittnif.com/registration

Training Program Organising Core Committee

Patron: Prof. S. Sundar, Director, NIT Mizoram
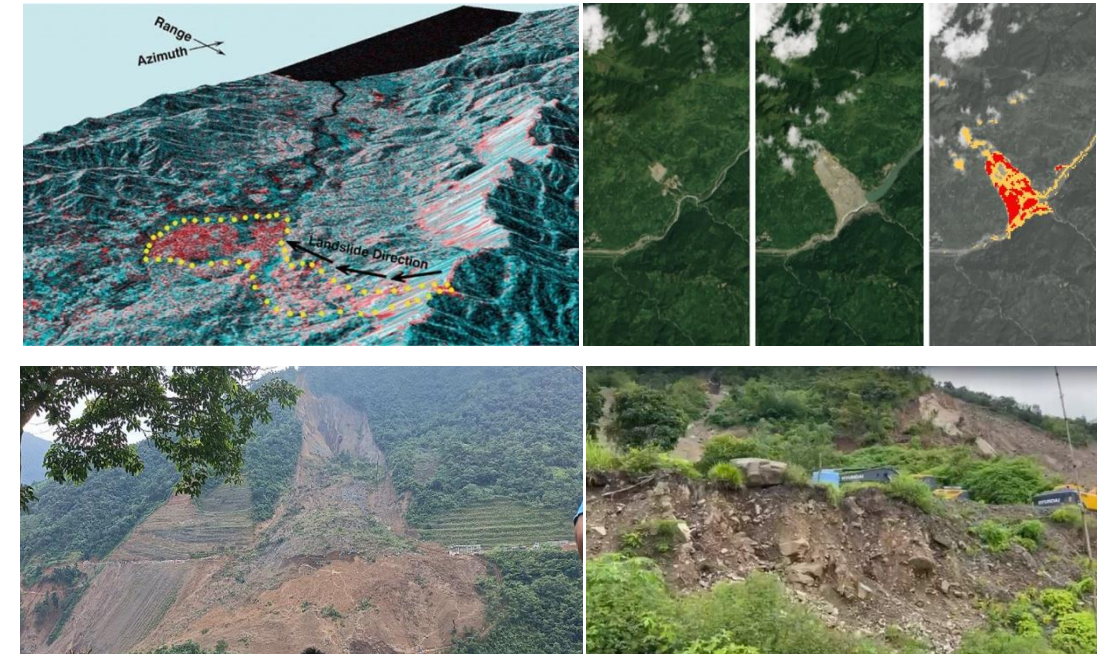**Coordinators: i) Dr. Bijayananda Mohanty,** NIT Mizoram
      ii) Dr. Sandeep Kumar Das, NIT Mizoram
TIH Coordinators: i) Dr. Roshan Srivastav, IIT Tirupati
      ii) Ms. Gomathi, IITTNiF

TRAINING PROGRAM
on
REMOTE SENSING AND GEOSPATIAL TECHNOLOGY FOR LANDSLIDE MITIGATION AND MANAGEMENT IN NORTH EASTERN REGION

24 – 28 JULY, 2022

Venue: National Institute of Technology, Mizoram

Sponsored By

IIT Tirupati Navavishkar I-Hub Foundation (IITTNiF)
Technology Innovation Hub in Positioning and Precision Technologies
(https://iittnif.com/initiatives/skill-development)

Organised By

National Institute of Technology, Mizoram

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5 DAYS TRAINING PROGRAM ON
Remote Sensing and Geospatial Technology for Landslide Mitigation and Management in North Eastern Region
PROGRAMME SCHEDULE

Date and Day	Session - I 09:30 - 11.00 AM	Session - II 11:30 AM - 1:00 PM	Session - III 2.00 - 3:15 PM	Session - IV 3:30 - 5:30 PM
24.07.2022 (Sunday)	**Inauguration ceremony** and Introduction to participants about the program	Concepts of Disaster Mitigation and Management (DMM) and Disaster Risk Reduction (DRR) & NIDM initiatives towards Disaster Management in NE regions	Satellite based earth observations and Remote sensing technology with concepts of digital image processing and Visual interpretation for Disaster Management	Image Processing and Digital Image Interpretation
25.07.2022 (Monday)	Overview of Geographic Information Systems (GIS), Global Positioning System (GPS) and Indian Regional Navigation Satellite System (IRNSS)	Landslide investigation and mapping techniques, and Landslide image interpretation & Landslide susceptibility modelling using Geospatial inputs & applications of UAV for landslide monitoring and mapping	Advanced Geoinformatics tools for landslide induced GLOF hazards management & Strategy for support to development of early warning system for landslide and related disasters	Integrating with RS imageries and other spatial non-spatial data in GIS and Landslide detection and mapping in Satellite Imagery and processing
26.07.2022 (Tuesday)	ISRO's initiative for landslide mitigation and management in NE region	*FIELD VISIT TO NEARBY LANDSLIDE SITES IN MIZORAM* **(External Experts & Dr. Bijayananda Mohanty and Team with all participants)**		
27.07.2022 (Wednesday)	Applications of Geospatial Technology in Geological & Hydrological Hazards	Geo-computation, Online GIS and Geo-web services for Disaster Risk Reduction & Overview of Geospatial Technology and its role in mainstreaming DMM and DRR	Application of Microwave RS and Geophysical investigations in landslide and surface deformation studies	Demonstration of Web services for Disaster Risk Reduction (DRR) in Different Web Platforms
28.07.2022 (Thursday)	Landslide Hazards : Geotechnical Aspects and Management Policies	Geological Survey of India action plan for Landslide hazard mitigation and management	Discussions, Feedback and suggestions	**Valedictory Ceremony**

Tea Break: 11.00-11.30AM & 3.15-3.30PM and Lunch Break: 1.00-2.00PM