

# THARANG

JAN - MARCH 2026

EVENTS &  
ACTIVITIESWORKSHOPS &  
SEMINARSRESEARCH  
SPOTLIGHTPEOPLE  
SPOTLIGHT

INTERSHIP

## Times Now Summit : Director Represents Amrita



**" Love is the only  
medicine that can  
heal the wounds of  
the world."**

**AMMA**

Dr. Maneesha V. Ramesh, Pro Vice Chancellor & Director of the Center, shared insights on sustainability in a discussion with Sumit Lakhutia at the Times Now Summit 2026. She highlighted how the new generation is actively embracing sustainability through structured, impact-driven programs. At the university, student engagement is fostered through initiatives like the Live-in-Labs®, where undergraduate and master's students work in interdisciplinary teams within rural communities to understand real-world challenges and co-create solutions.

At the PhD level, university supports around 100 scholars annually, requiring them to address community problems through research that delivers both academic outcomes and measurable societal impact. Dr. Maneesha emphasized the transformative effect of such exposure, citing examples where students developed practical solutions, including addressing drinking water challenges in rural Andhra Pradesh. These initiatives reflect a unique model of integrating education, research, and societal transformation.

# EVENTS & ACTIVITIES

## Amrita WNA Team Participates in SPARC National Conclave 2026



Dr. Maneesha V. Ramesh, Pro Vice Chancellor & Director of the Center along with Dr. Aryadevi R.D., Assistant Professor, and Dr. Harichandana Ekkirala, participated in the SPARC National Conclave 2026 held on 8–9 March 2026 at Indian Institute of Technology Kharagpur. The conclave focused on the theme, “Collaborative Research with Global Impact: Internationalization of Indian Academia for Viksit Bharat 2047.” The event brought together academicians, policymakers, and researchers from across the country to discuss strategies for strengthening global collaborations and enhancing the international presence of Indian academia. Key discussions emphasized interdisciplinary research, institutional partnerships, and innovative frameworks aligned with the vision of Viksit Bharat 2047.

During the conclave, Dr. Maneesha V. Ramesh chaired sessions with experts and presented the Live-in-Labs® methodology, highlighting its role in enabling joint research initiatives and mission-oriented collaborations.

The Amrita WNA team also interacted with Prof. Rabibrata Mukherjee, National coordinator of SPARC . Also he serves as the SPARC Coordinator for the project, “Enabling Energy-Efficient Communities through Context-Aware IoT Frameworks and Sustainable Software- ECAISS” led by Dr. Aryadevi R.D.

A key highlight of the conclave was the panel discussion on “Internationalizing Indian Higher Education: From Vision to Strategy,” in which Dr. Maneesha participated alongside distinguished academic leaders.

The participation of the Amrita WNA team reflects the institution’s continued commitment to impactful research, international academic collaboration, and globally connected innovation.

## PUBLISHED Q1 JOURNALS

1. **Madhu, Aswathy, and Aryadevi Remanidevi Devidas. "VLCMine: Visible Light Vital Monitoring System in RF-Constrained Mines." *IEEE Access* 14 (2026): 8015-8028.**
2. **Gopal, Lakshmi S., Rekha Prabha, Hemalatha Thirugnanam, Maneesha Vinodini Ramesh, and Bruce D. Malamud. "Social media for managing disasters triggered by natural hazards: a critical review of data collection strategies and actionable insights." *Natural Hazards and Earth System Sciences* 26, no. 1 (2026): 215-250.**
3. **Pfeiffer, Samira, Hari Chandana Ekkirala, Sudha Arlikatti, Souresh Cornet, Saskia Werners, and Maneesha V. Ramesh. "Participatory engagement and lived experiences of early warning and preparedness in two rural communities in Kerala, South India." *International Journal of Disaster Risk Reduction* (2025): 105986.**

# Methane Emission Research on Kerala



Under the guidance of Dr. Alka Singh, Assistant Professor, a research study on methane emissions from paddy fields was conducted in collaboration with Prof. Mark Gessner and Dr. Igor Ogashawara from the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB).

The study measured methane ( $\text{CH}_4$ ) emissions using the closed chamber method, where concentration changes are monitored over time with a portable gas analyser. As part of the DST DAAD PPP Program, the international collaborators visited Amrita University for the methane research under the project “Merging approaches to improve estimates of methane emissions from wetlands”. Field surveys were conducted across paddy fields in Kollam and Alappuzha. The study involved researchers Rajarajan and Rohit, contributing to wetland methane emission estimation and supporting climate and sustainability research.

# Spatio-Temporal Monitoring of Water Quality in Rural Kerala

As part of the ongoing GEL-IoT research project, a team from Amrita WNA, including Ms. Divya S. J. and Ms. Anjana R., under the guidance of Dr. Aryadevi R. D., conducted a field visit to Pulincunnoo (Alappuzha), Varapuzha (Ernakulam), and Kulasekharapuram (Kollam) Panchayats to collect pre-monsoon water samples. The samples are currently undergoing detailed laboratory analysis. Water quality was assessed at 30 locations in Pulincunnoo, while 60 samples each were collected from Varapuzha and Kulasekharapuram. All samples were taken from previously monitored locations, enabling comparative assessment of temporal variations in water quality.

This effort marks significant progress in the GEL-IoT project, which aims to develop spatio-temporal IoT-based solutions for continuous water quality monitoring and community wellbeing.



# Spectroradiometer Survey Enhances Backwater Monitoring in Kerala



A field-based spectroradiometer survey was carried out across the Ashtamudi Lake and Vembanad Lake in Kerala to capture high-resolution spectral signatures of water bodies. This study supports the calibration and validation of satellite observations from Sentinel-2, enabling improved mapping of water quality and ecosystem health in these ecologically sensitive regions. The survey was conducted collaboratively by researchers from Amrita Vishwa Vidyapeetham, including Dr. Alka Singh and Mr. Rohit, along with international collaborator Dr. Igor Ogashawara from the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB). This joint effort, undertaken as part of ongoing Indo-German research initiatives, highlights the importance of integrating field-based measurements with satellite data to enhance environmental monitoring. The outcomes are expected to contribute significantly to sustainable management and conservation of Kerala's vital backwater ecosystems.

## PUBLISHED Q1 JOURNALS

4. Sreekumar, Abhilash, Hemalatha Thirugnanam, Sansar Raj Meena, and Maneesha Vinodini Ramesh. "Enhancing landslide detection in Western Ghats of Kerala, India with deep learning and Explainable AI." **Scientific Reports** 15, no. 1 (2026): 45151.
5. Ekkirala, Hari Chandana, and Maneesha Vinodini Ramesh. "Spatiotemporal assessment of multi hazard risk using graph based analysis for case studies in India." **Scientific Reports** (2026).
6. Surendran, Simi, Maneesha Vinodhini Ramesh, Usha Kumari PV, and Alberto Montresor. "Adaptive scheduling for multimedia and text traffic in ocean networks through queuing theory integrated reinforcement learning." **Multimedia Tools and Applications** 85, no. 2 (2026): 84.

## Virtual Reality for Deep Ocean Mission: Amrita Secures MoES Grant

Amrita Center for Wireless Networks and Applications (Amrita WNA) has secured a research grant from the Ministry of Earth Sciences for the project titled “Virtual Reality (VR) Enabled Deep-sea Exploration and Resource Identification.” The project is led by Dr. Uma G under the guidance of Prof. Balaji H. This initiative contributes to the objectives of the Samudrayan Mission, which focuses on advancing India’s deep-ocean exploration capabilities.



The project proposes a Virtual Reality (VR)–based system to enhance underwater visibility during deep-sea missions. Using HD cameras mounted on submersibles, the system will generate a real-time 360° panoramic view, accessible through a Head Mounted Device (HMD). Integrated object detection and recognition features will help researchers identify marine species and mineral resources, enabling safer navigation and more effective exploration in extreme deep-sea environments.

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## Dr. Aadithyan Appointed as the Editorial Board Member Scientific Reports

Dr. Aadithyan Sridharan, Assistant Professor at the Amrita Center for Wireless Networks & Applications (Amrita WNA), has been appointed as an Editorial Board Member of the prestigious journal Scientific Reports



He received this invitation in recognition of his consistent and high-quality contributions as a manuscript reviewer for more than two years. In this role, Dr. Aadithyan will handle research manuscripts from across the world and contribute to maintaining rigorous peer-review standards. His appointment reflects his academic expertise and active engagement with the global research community, further strengthening Amrita WNA’s presence in international scientific publishing.



<https://www.nature.com/srep/>

# DST Sanctions Consortium Project on Disaster Management

Amrita WNA has secured a research grant from the Department of Science and Technology (DST), Government of India, for a consortium project titled “Development of an Integrated Intelligent Disaster Management System for Mountain Communities in India.” The project is led by Dr. Maneesha V. Ramesh, Director of the Amrita Center for Wireless Networks & Applications (WNA), along with Assistant Professor Dr. Hemalatha T. Amrita WNA will collaborate with partner institutions including IIT Patna, IIT Roorkee, NIT Karnataka, and UPES Dehradun. The project aims to develop intelligent solutions for disaster preparedness and management in mountain regions. The total sanctioned budget for the consortium is ₹2.95 crore.



## INTERSHIP



**Pranav Vinod**

M.Tech – Wireless  
Networks &  
Applications



**Sanjana S M**

M.Tech – Biomedical  
Instrumentation and  
Signal Processing



**S. Narendra Kumar**

M.Tech – Biomedical  
Instrumentation and  
Signal Processing

# Research on Smart Water Distribution Earns PhD for Dr. Nibi K. V.

Ms. Nibi K. V., a PhD scholar at the Amrita Center for Wireless Networks & Applications, has successfully completed her doctoral research under the guidance of Dr. Aryadevi R. D. Her research, titled “Enhancing Water Distribution Management of Kochi, India: Leveraging IoT, AI, and Network Rehabilitation Approaches,” focuses on improving intermittent water distribution systems in Kochi, Kerala.



The study integrates hydraulic modeling, network optimization, IoT-based monitoring, and AI-driven analytics to enhance water supply reliability. Using GIS-based modeling and field validation, the research identified pressure deficiencies and proposed cost-effective network rehabilitation strategies, along with intelligent forecasting models to support sustainable and efficient urban water management.

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## Amrita WNA Received NISAR-UP Grant for Land Deformation Mapping

Dr Alka Singh and Dr Rahul Krishnan from Amrita and Dr Shashi Kumar from Indian Institute of Remote Sensing ISRO obtained NISAR-up grant to work on ground water induced land deformation mapping in India by integrating Gravimetric, interferometric, geologic and geophysical techniques.



The study begins with mapping sinking hotspot regions in India using advanced AI, integrated satellite observations, and CGWB measurements. In these identified hotspots, vertical land subsidence will be quantified using SAR interferometry. To better understand regional stability, detailed field investigations will be carried out across representative sites. These investigations will combine geophysical surveys (using drones, DGPS, GPR, and ERT) with soil and water sampling to characterize both surface and subsurface conditions. It further employs groundwater modeling and climate scenarios (SSP-RCP) to assess future risks and develop sustainable management strategies, while leveraging AI/ML to extend these findings to similar regions nationwide

# Indian Patent Granted on NIR-Based Glucose Monitoring System

Amrita WNA has secured an Indian patent titled “Voltage Intensity Based Systems for Non-invasive Glucose Monitoring Using NIR and Method Thereof.” The patent (No. 575171) has been granted to inventors K. A. Unnikrishna Menon, Maneesha V. Ramesh, Deepak Hemachandran, and Abishek Thekkeyil Kunnath. The innovation proposes a non-invasive technique for monitoring blood glucose levels using Near-Infrared (NIR) technology, offering a promising alternative to conventional invasive methods. This advancement has potential applications in improving patient comfort and continuous glucose monitoring. Notably, Deepak Hemachandran and Abishek Thekkeyil Kunnath were associated with Amrita earlier and contributed to this research during their time at the institution.



# PhD Awarded to Bhavana B. Nair for Research on Flood Monitoring Using AI

Bhavana B. Nair, PhD scholar at the Amrita Center for Wireless Networks & Applications (Amrita WNA), has successfully completed her doctoral research under the guidance of Dr. Shivsubramani Krishnamoorthy (Br. Ramanandamrita Chaitanya).

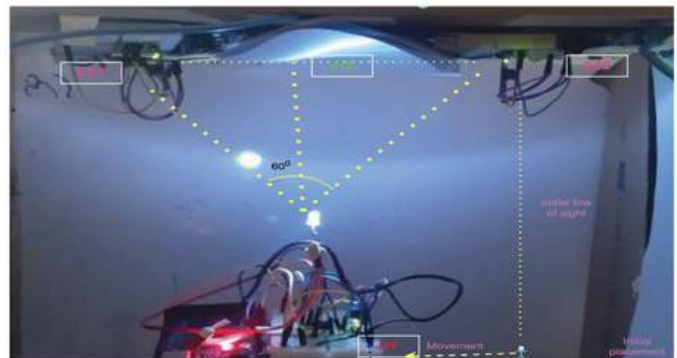


Her research, titled “Computer Vision and Natural Language Processing Based Flood Scene Assessment Using Deep Learning,” focuses on developing an automated multi-modal framework to estimate flood depth using crowdsourced images. The study created the AMRITAFLOODDATA dataset and applied advanced computer vision and NLP techniques to validate visual and textual information. The research supports accurate flood assessment and provides valuable insights for improved disaster monitoring and management.

# RESEARCH SPOTLIGHT

## VLCMine – Safer Communication in Hazardous Environments

Researcher Aswathy M, under the guidance of Dr. Aryadevi R.D., has developed VLCMine, an innovative system designed to improve worker safety in hazardous environments like mines and nuclear facilities. In such places, traditional wireless communication using radio waves is often restricted due to interference and health concerns. VLCMine uses visible light—similar to LED lighting—to transmit data safely and efficiently. The system includes a wearable headcap that monitors vital health parameters such as pulse and temperature, and communicates this information to a ceiling-mounted unit. This enables real-time health monitoring and two-way communication without relying on radio signals. By combining safety, reliability, and energy efficiency, VLCMine offers a promising solution for protecting workers in challenging industrial settings.



## Understanding Multi-Hazard Risks in India :

Dr. Harichandana, under the guidance of Dr. Maneesha V. Ramesh, conducted an important study on how multiple natural disasters interact and evolve over time. The research focuses on two major events in India—the 2023 glacial lake outburst flood in Sikkim and the 2024 landslides in Wayanad, Kerala.



Instead of studying disasters separately, this work looks at how events like heavy rainfall, floods, and landslides are connected and can trigger one another. Using a graph-based approach, the study maps these connections to understand how risks spread from one area to another. The findings highlight that increasing rainfall and climate change are making such multi-hazard events more frequent and dangerous. By combining environmental data with real-world impacts on people and infrastructure, this research offers a smarter way to predict disasters and improve early warning systems, helping communities prepare better and reduce damage.

# LAB VISITS

