

# **Seminar Proceedings**

**One day Seminar**

**on**

## **Remote Sensing and GIS Applications in Flood Risk Management**

**Tuesday, 12<sup>th</sup> September 2023**

**Organised by**



**The Institution of Engineers (India)**

**Kerala State Centre**

**Under the aegis of**

**Civil Engineering Division Board, IEI**

**Jointly with**



**Department of Civil Engineering**

**St. Thomas Institute for Science & Technology**

**Mar Chrysostom Nagar, Kattaikonam P.O. Trivandrum**

## **About the Seminar**

In recent years, Kerala has witnessed some devastating floods, with one of the worst incidents occurring in 2018. Kerala's susceptibility to floods and their associated impacts on human lives, infrastructure, economy, environment and public health was evident from the recent floods and therefore investing in comprehensive flood risk management is crucial for the overall well-being and sustainable development of the state. It requires the collective effort of government authorities, professional bodies, communities and other stakeholders to build resilience and minimize the adverse effects of flooding. This one day seminar under the theme "Remote Sensing & GIS Application in Flood Risk Management" intends to provide an excellent platform to understand the integration of remote sensing and GIS technologies in flood risk management. Researchers have proved that to effectively manage flood risks, it is essential to understand the spatial extent, frequency and intensity of flood events on flood risk management. In this context the seminar has selected four sub-themes to cover the key applications of remote sensing and GIS in flood risk management.

### **Sub-themes:**

- ❖ Flood monitoring and early warning systems
- ❖ Flood mapping and hazard assessment
- ❖ Damage assessment and response planning
- ❖ Community engagement in disaster preparedness

## **Organising Committee**

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Secretary,

Mar Thoma Church Educational Society, Mukkolakkal,

Trivandrum

### **Patron**

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Mr. Ajith R S, Assistant Professor

**Technical Members**

Mrs. Sreeja M D, Assistant Professor  
Ms. Arathy M T, Assistant Professor

The inauguration of the Seminar on Remote Sensing and GIS Application in Flood Risk Management marked a significant milestone in the field of disaster management and environmental science. Hosted by Institution of Engineers, India, Kerala State Centre jointly with the Department of Civil Engineering, St. Thomas Institute for Science and Technology, the seminar aimed to explore the latest advancements in remote sensing and Geographic Information Systems (GIS) technology and their practical applications in flood risk management.

The inauguration ceremony commenced at 10.30 am with a prayer by the students. Dr. A. G. Mathew, Principal, St. Thomas Institute for Science & Technology delivered the welcome

address. Er. P. Balakrishnan Nair, FIE, Member, IEI, KSC, spoke about the importance of the seminar. Presidential Address was delivered by Dr. (Prof.) M. Jayaraju, FIE, Chairman, IEI KSC. The chief guest of the seminar was Dr. K. P Sudheer, Ex Officio Principal Secretary Science & Technology Department, and Executive Vice President of Kerala State Council for Science, Technology and Environment and Chairman Kerala State Pollution Control Board. Dr. K. P. Sudheer is also a Professor in Civil Engineering Department, Indian Institute of Technology Madras. Dr. K. P Sudheer delivered the inaugural address, which set the tone for the seminar. The seminar was graced by the presence of Dr. K. Soman, Former Head, Resources Analysis Division, Centre for Earth Science Studies, who delivered the keynote address, emphasizing the importance of leveraging cutting-edge technology in addressing the growing challenges of flood risk.



### **Technical Session I**

The first technical session was on “**Study of pluvial flooding in Trivandrum city under changing climate conditions**” by **Mr. Rahulraj, Assistant Flood Modeller, Atkins Bangalore**. Mr. Rahulraj highlighted the significance of remote sensing and GIS in flood risk management. He emphasized the need for accurate data and advanced technologies to mitigate the impact of floods effectively. The main focus of the session was about the features of the flood prediction model which was developed for Trivandrum city and its importance in the present scenario. The creation of Flood Hazard map for determining Flood prone areas in Trivandrum city was demonstrated. It was discussed that based on the studies carried out using the model, the low lying and highly urbanized areas of Trivandrum city such as Eastfort and Thampannor are prone

to flood. Dr. (Prof.) M. Jayaraju, FIE, Chairman, IEI KSC honored the speaker with a memento and certificate at the end of the session.



## **Technical Session II**

The second technical session was on “**Disaster Risk Assessment and Mitigation supported by GIS**” by **Dr. (Prof.) K P Sudheer**, FIE, Ex Officio Principal Secretary Science & Technology Department, and Executive Vice President of Kerala State Council for Science, Technology and Environment and Chairman Kerala State Pollution Control Board. The session focused on the use of GIS in Disaster Risk Assessment and Mitigation. Discussion on how GIS technology plays a pivotal role in collecting, analyzing, and visualizing data related to disaster risk, thereby aiding in the development of effective mitigation strategies was made during the session. The session also presented case studies, identified challenges, and outlined future trends in the field of disaster management supported by GIS. Dr. (Prof.) M. Jayaraju, FIE, Chairman, IEI KSC honored Dr. K P.Sudheer with a memento and certificate at the end of the session.



### **Technical Session III**

**Dr. K. Soman**, Former Head, Resources Analysis Division, Centre for Earth Science Studies, Trivandrum delivered the talk during the third technical session on the topic “**Remote Sensing and GIS application in preparation of flood zonation maps for risk management**”. The session provided a comprehensive overview of the application of remote sensing and GIS in flood zonation mapping for risk management. Discussion on the fundamental concepts, methodologies, and challenges was also made during the session. Speaker suggested that by utilizing remote sensing and GIS technologies effectively; communities and authorities can better prepare for and respond to flood events, thereby ultimately reducing the impact on lives and infrastructure. Role of educational institutions through student projects on remote sensing and GIS was also discussed during the session. The speaker, Dr. K. Soman was honored by Dr. (Prof.) M. Jayaraju, FIE, Chairman, IEI KSC with a memento and certificate at the end of the session.





#### **Technical Session IV**

The fourth technical session was on **“Save Kuttanadu from massive floods and provide fresh water for drinking and irrigation purposes”** by **Er. Kurian George**, Rtd. Executive Engineer, KSEB Ltd. Er. Kurian explained about the challenges faced by residents of Kuttanadu, Kerala during floods. The speaker then explained about his proposal on “Room for the water”, a project which ensures the safety of houses and residents in Kuttanadu during floods by providing a space for water to flow. The project concept was openly discussed with the audience. Er. P. Balakrishnan Nair, FIE, Member, IEI, KSC honoured the speaker with a memento and certificate at the end of the session.



### **Technical Session V**

The last technical session was on “**Navigating Floods: Mapping and Assessing Hazards**” by **Dr. N R Chrips**, Scientist, Centre for Environment and Development, Trivandrum. Dr. Chrips explained about different types of flood maps and also on flood mapping. The session also highlighted about in what way urban areas will be affected by storm water runoff due to the impervious surfaces. Different spectral bands of Landsat image were explained towards the end of the session. Er. P. Balakrishnan Nair, FIE, Member, IEI, KSC honoured the speaker with a memento and certificate at the end of the session.





## **Valedictory Session**

The valedictory session commenced at 3.30 pm. Dr. Ganeshan, Member , IEI delivered the welcome address. Er. Raam Krishnan Vinodh Babu Shylaja, MIE Member, Civil Engineering Division Board, IEI spoke about the event. Summation of Seminar Proceedings was delivered by Er. P. Balakrishnan Nair, FIE, Member, IEI, KSC and Dr. Priya A Jacob, Associate Professor from Department of Civil Engineering, St. Thomas Institute for Science & Technology. Shri. Cherian Varghese, Treasurer, Mar Thoma Church Educational Society, Trivandrum and a senior practicing engineer was the chief guest of the session and addressed the audience. The chief guest was honoured with a “PONNADA” by Dr. Ganesan of IEI in commemoration of Engineer’s day. Certificates were distributed to all the participants by the dignitaries. Vote of thanks was delivered by Er. Roy Mathew, MIE, Honorary Secretary of IEI, KSC. Nearly 71 participants along with officials from IEI, KSC attended the one day seminar. Mr. Asish Prasad, Head of Department of Department of Civil Engineering, St. Thomas Institute for Science & Technology delivered the felicitation. The seminar on “Remote Sensing and GIS Application in Flood Risk Management” was a resounding success, fostering knowledge exchange and collaboration among stakeholders in the field. The insights gained from this event will undoubtedly contribute to more effective flood risk management strategies, helping to protect communities and mitigate the impact of flooding. The session concluded with the National Anthem.





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