	Faculty Development Program	
TLCE TEACHING LEARNING CENTER OF EXCELLENCE VIT, VELLORE உழைப்பே உயர்வு தரும்		VIT Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

Title : Mathematical modeling and observations on extreme events
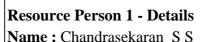
Date : 2025-03-17 - 2025-03-21
Time : 10:00 - 17:30
Venue : CDMM 213 SEMINAR HALL

Event Outcome

- Knowledge of different mathematical and statistical modelling system in real time monitoring and forecasting of extreme events
- Importance of initial conditions in improving forecast accuracy in mathematical models and statistical models
- Cloud based remote sensing data processing
- Explore innovative applications of remote sensing data in areas such as climate change monitoring and disaster risk assessment
- A brief idea about extreme events in a changing climate and its impact and importance in terms of reduce loss of life, economic benefits, disaster preparedness and decision-making support

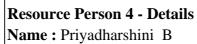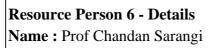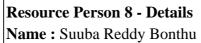|	
	Resource Person 1 - Details **Name :** Chandrasekaran S S **Designation :** Professor Higher Academic Grade, School of Civil Engineering **University/ Company :** VIT, Vellore **Address :** India, 632014.
	Resource Person 2 - Details **Name :** Ganapathy G.p **Designation :** Professor Higher Academic Grade, Centre for Disaster Mitigation and Management **University/ Company :** VIT, Vellore **Address :** India, 632014.
	Resource Person 3 - Details **Name :** Surendar M **Designation :** Associate Professor Grade 1, Centre for Disaster Mitigation and Management **University/ Company :** VIT, Vellore **Address :** India, 632014.
	Resource Person 4 - Details **Name :** Priyadharshini B **Designation :** Assistant Professor Sr. Grade 2, Centre for Disaster Mitigation and Management **University/ Company :** VIT, Vellore **Address :** India, 632014.
	Resource Person 5 - Details **Name :** Kuvar Satya Singh **Designation :** Assistant Professor Sr. Grade 2, Centre for Disaster Mitigation and Management **University/ Company :** VIT, Vellore **Address :** India, 632014.
	Resource Person 6 - Details **Name :** Prof Chandan Sarangi **Designation :** Assistant Professor, CIVIL EnGINEERING **University/ Company :** IIT Madras, Chennai **Address :** India, 632014.
	Resource Person 7 - Details **Name :** Mutukuru Gangireddy Muni Reddy **Designation :** Professor, Civil Engineering **University/ Company :** Andhra University, Vellore **Address :** India, 632014.
	Resource Person 8 - Details **Name :** Suuba Reddy Bonthu **Designation :** Scientist, National Centre for Sustainable Coastal Management **University/ Company :** NCSCM Chennai, Vellore **Address :** India, 632014.

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	Resource Person 9 - Details **Name :** Dip Narayan Ganguly **Designation :** Scientist, National Centre for Sustainable Coastal Management **University/ Company :** National Centre for Sustainable Coastal Management, Chennai **Address :** India, 632014.
	Resource Person 10 - Details **Name :** Yesubabu Viswanadhapalli **Designation :** Scientist, National Atmospheric Research Laboratory **University/ Company :** National Atmospheric Research Laboratory, Gadanki **Address :** India, 632014.
	Resource Person 11 - Details **Name :** Dr Sridhara Nayak **Designation :** Chief Scientist, Research and Development Centre **University/ Company :** Japan Meteorological Corporation, Tokyo **Address :** Japan, 1058431.
	Resource Person 12 - Details **Name :** Dr Sachithanandam V **Designation :** Scientist, National Institute of Ocean Technology **University/ Company :** National Institute of Ocean Technology, Chennai **Address :** India, 632014.
	Resource Person 13 - Details **Name :** Deviram Garlapatti **Designation :** Scientist, National Institute of Ocean Technology **University/ Company :** National Institute of Ocean Technology, Chennai **Address :** India, 632014.
	Resource Person 14 - Details **Name :** K VENKATARAMAN **Designation :** FORMER DIRECTOR, ZSI **University/ Company :** ZOOLOGICAL SURVEY OF INDIA, KOLKATA **Address :** India, 632014.
	Resource Person 15 - Details **Name :** Arunava Ray **Designation :** Assistant Professor Sr. Grade 1, Centre for Disaster Mitigation and Management **University/ Company :** VIT, Vellore **Address :** India, 632014.

Resource Person's Profile :

1. Profile of Chandrasekaran S S

Chandrasekaran S. S.. Professor, Geotechnical engineering, School of Civil Engineering, VIT, Vellore, India

2. Profile of Ganapathy G.p

Dr. G.P. Ganapathy is a highly experienced professional in
disaster mitigation and management, specializing in multi-
hazard management and climate change and disaster risk
reduction. He is a Professor (HAG) at the Centre for Disaster
Mitigation and Management, VIT, Vellore, with a career marked
by significant contributions to research, teaching, and public
service. His expertise spans earthquake hazard assessment, landslide and flood mapping, soil
bioengineering, and disaster education.

3. Profile of Surendar M

Dr. Surendar M is associate professor at CDMM VIT Vellore and has done Ph.D from Indian Institute of Technology Bombay and Research Area are Remote Sensing, Cryosphere, Synthetic Aperture Radar, Disaster Management and Mitigation, Artificial Intelligence in Remote Sensing

4. Profile of Priyadharshini B

Prof. Priyadharshini B, CDMM, VIT Vellore has done PhD from IIT Kharagpur and having experience
Areas of Specialization
Aerosol ground and satellite-based measurements
Chemical characterization of aerosols
Exposure assessment of air pollutants
Urban air quality and human health
Aerosol receptor modeling

5. Profile of Kuvar Satya Singh

Dr. Kuvar Satya Singh has done Ph.D from Indian Institute of Technology Kharagpur and his Research Area are Mathematical modelling of extreme events (Tropical cyclones, Heavy rainfall events), Initial Values Problems Variational Data Assimilation).

6. Profile of Prof Chandan Sarangi

Dr. Chandan Sarangi is an earth system scientist who completed his Post Doctorate Research from the Pacific Northwest National Laboratory, Richland, WA, USA, and Integrated Ph.D. from IIT Kanpur, India. His under graduation is from NIT Warangal, India. He has extensive experience in Aerosol-cloud-climate interactions, Impact of climate change on Cloud systems and rainfall, Impact of aerosols on Evapotranspiration and land-atmosphere interactions.

7. Profile of Mutukuru Gangireddy Muni Reddy

Mutukuru MUNI REDDY, Professor in Civil Engineering of Andhra University, Visakhapatnam.
Having experience in costal erosion and its impact on coastal infrastructure.
and coastal protection strategies in changing climate.

8. Profile of Suuba Reddy Bonthu

Dr. Subbareddy Bonthu is a Research Scientist at National Centre for Sustainable Coastal Management, Ministry of Environment, Forest and Climate Change, Government of India Chennai, Tamil Nadu, India. Having experience in high-performance computing for running mesoscale models, numerical storm surge models, and other software packages.

9. Profile of Dip Narayan Ganguly

Dr. Dipnarayan Ganguly is a Scientist at National Centre for Sustainable Coastal Management, Ministry of Environment, Forest and Climate Change, Government of India Chennai, Tamil Nadu, India.

Having experience in climate Change and Coastal Disaster Management: An ICZM approach

and Building Climate Change Resilience Through a Sustainable Blue Economy and Marine Spatial Planning

10. Profile of Yesubabu Viswanadhapalli

Dr. Yesubabu Viswanadhapalli is a Scientist at National Atmospheric Research Laboratory (NARL), Department of Space of the Government of India and going to discuss on two different topics namely

Impact of Land Use and Land Cover (LULC) on the Simulation of Extreme Rainfall Events over Southern Peninsular India and

Role of Orthography on the Occurrence of Extreme Precipitation Events over Kerala and Tamil Nadu Region

11. Profile of Dr Sridhara Nayak

He obtained his PhD from IIT Kharagpur in 2014. Then, he served as a Researcher at the National Research Institute for Earth Science and Disaster Resilience in Japan until 2017. Following that, he held the position of Associate Professor at Kyoto University in Japan until 2022. Currently, he holds the title of Chief Scientist at Japan Meteorological Corporation.

12. Profile of Dr Sachithanandam V

Dr. Sachithanandam V is a Scientist under deep Ocean Mission Vertical 6 at National Institute of Ocean Technology (NIOT)

Ministry of Earth Sciences Government of India. His topics will cover

Impact on Marine Ecosystem in the tropical Island during extreme weather condition: Mitigation measure.

2. Mangrove act a barrier of coastal communities, protecting them from storm surges, tsunamis, and erosion by stabilizing shorelines and reducing wave energy

13. Profile of Deviram Garlapatti

Dr. Deviram Garlapatti is a Scientist at National Institute of Ocean Technology, Ministry of Earth Sciences, Government of India. His talk will be on Decoding microbial diversity and eDNA signatures across India east and west coasts.

14. Profile of K VENKATARAMAN

Dr K. Venkataraman, Former Director of ZSI MOEFCC GOVT OF INDIA

He has played a pivotal role in National Biodiversity Authority as a Founder Secretary and coordinated the implementation of thematic National Biodiversity Strategy Action Plan, and Action plan for biophysical monitoring of coral reefs in Andaman and Nicobar Islands and Gulf of Mannar Biosphere Reserve.

15. Profile of Arunava Ray

Dr. Arunava Ray is Assistant Professor at Centre for Disaster Mitigation and Management, VIT Vellore. His talk will be on Climate change and its effect in hilly areas.

In a changing climate, the frequency and intensity of extreme events like heatwaves, droughts, heavy rainfall, landslides, cyclones, earthquakes, and droughts are on the rise. To mitigate the devastating impacts of these events on lives and property, accurate and timely forecasting is crucial. Satellite remote sensing plays a vital role in this endeavour by providing critical data on various aspects of these events. For instance, satellites can monitor the formation and intensification of tropical cyclones, track changes in sea surface temperature, map areas affected by floods, landslides, and droughts, assess the extent and severity of wildfires, monitor changes in snow cover and ice extent, and observe atmospheric conditions such as temperature, humidity, and wind patterns. This wealth of information, combined with sophisticated mathematical models including numerical weather prediction model and statistical tools, allows for improved prediction and early warning systems, enabling communities and authorities to take proactive measures to minimize the damage and save lives.

Key points about the importance of extreme event forecasting:

o Life-saving potential

o Economic benefits

o Disaster preparedness

o Climate change adaptation

o Decision-making support

WRF, Grid Analysis and Display System, QGIS, and GEE cloud data processing

Coordinator's: **Prof. KUVAR SATYA SINGH 17080 - Assistant Professor Sr. Grade 2 - CDMM**
Prof. SURENDAR M 18821 - Associate Professor Grade 1 - CDMM