



INSTITUTE FOR CLIMATE CHANGE STUDIES



Three Days National Workshop on **Decoding Climate Change: From Modelling to Machine Learning**



विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

2nd to 4th September, 2024

Hosted by
NIRT





BACKGROUND

Climate change, a pressing global concern, is intricately linked to both human actions and natural processes. Its effects transcend geographical boundaries, impacting ecosystems, economies, and societies worldwide. The increasing intensity and frequency of extreme weather events such as heatwaves, heavy rainfall, droughts, cyclones, and floods highlight the urgency of understanding and addressing this phenomenon. The multifaceted nature of climate change necessitates the use of advanced tools and methodologies, with climate modelling emerging as a critical component in this endeavour. Climate modelling serves as a powerful tool for simulating and predicting the future behaviour of the Earth's climate system. By incorporating various physical, chemical, and biological processes, these models allow researchers to explore different climate scenarios and assess potential impacts. This workshop is designed to delve into the fundamentals of climate modelling, providing participants with the essential knowledge and skills needed to effectively utilize these models in their research.

The curriculum covers a comprehensive range of topics to ensure a robust understanding of climate modelling. One of the critical aspects of climate change research is distinguishing between natural climate variability and human-induced changes. The workshop will address techniques to isolate human-induced climate change signals, enabling researchers to better understand the extent and impact of anthropogenic activities on the climate system. This understanding is crucial for developing targeted mitigation and adaptation strategies. The workshop also explores the exciting potential of Artificial Intelligence (AI) and Machine Learning (ML) in climate change assessment. AI and ML techniques offer innovative approaches to analysing complex climate data, improving model performance, and generating more accurate predictions. Participants will learn how to integrate these advanced technologies into their climate research, enhancing their ability to tackle the challenges posed by climate change. By the end of the workshop, researchers will be empowered to navigate the intricacies of climate modelling and contribute meaningfully to solutions for a sustainable future. This training aims to equip emerging scholars with the tools and knowledge necessary to advance climate science and support efforts to mitigate and adapt to the impacts of climate change.

AIMS

- To introduce the fundamentals of climate modelling
- To explore techniques for isolating human-induced climate change signals.
- To integrate Artificial Intelligence (AI) and Machine Learning (ML) in climate research.
- To foster interdisciplinary collaboration.

WHO SHOULD ATTEND?

Researchers, educators, and early career scientists interested in advancing their knowledge of climate change assessment are encouraged to attend.

WORKSHOP MODE

The workshop is planned to be in offline mode at Kottayam, Kerala.



Resource Persons

Experts from Institutions of National Importance and R & D Organizations:

- Dr. Sabin Thazhe Purayil, IITM Pune
- Dr. Sachin S. Gunthe, IIT Madras
- Dr. Francis P.A., INCOIS
- Dr. S. Abhilash, CUSAT
- Dr. K. S. Kasiviswanathan, IIT Roorkee
- Dr. Athira P., IIT Palakkad
- Shri. Anand Sebastian, IRTC

Topics Covered

- Introduction to Weather, Climate, and Climate Change
- Introduction to Climate Modelling
- Indigenous Measures to Adapt to Climate Change
- Application of AI & ML techniques in Climate Change Assessment

Includes extensive hands-on sessions. Participants are requested to bring their own laptops.

IMPORTANT DATES AND SCHEDULE

- 12-08-2024 ▶ Last date of Application
- 14-08-2024 ▶ Notification of acceptance
- 02-09-2024 ▶ Workshop Day 1
Opening Ceremony
Plenary Talk
Hands on session 1
- 02-11-2023 ▶ Workshop Day 2
Plenary Talk
Expert Lecture
Hands on session 2
- 04-09-2024 ▶ Workshop Day 3
Expert Lecture
Valedictory Ceremony



REGISTRATION

Candidates must complete the online application form (Google Forms Link: <https://forms.gle/JTjY6SwY3NywXB1LA>) not later than 12th October, 2023. The registration fee is Rs. 2,000/- which includes workshop materials, participation in all the events, food, and accommodation. Candidates have to meet their own travel expenses.



ABOUT ICCS

ICCS is a R&D Institution of the Kerala State Council for Science Technology and Environment (KSCSTE), under the Department of Science and Technology, Government of Kerala. The general objectives of ICCS are focused research on State specific impacts of climate change on various sectors and zones of the State and propose appropriate action for climate change management and adaptation strategy in collaboration with other Institutes, Universities and Line departments. At the inception, the institute's initiative was to understand the effects of global climate change on the biosphere, with an ecosystem approach towards biodiversity conservation, sustainable agricultural practices, and disaster risk reduction. With the recent experience of frequent extreme weather phenomenon over the state, the institute has broadened its research over various synoptic and regional weather patterns causing extreme events in projected climate change.



ORGANIZING TEAM

- ▶ **Prof. K. P. Sudheer**
Ex Officio Principal Secretary
S&T Department &
Executive Vice President, KSCSTE
- ▶ **Dr. K. Rajendran**
Director
KSCSTE - Institute for
Climate Change Studies, Kottayam

ORGANIZING SECRETARIES

- ▶ **Dr. C. C. Bajish**
Senior Scientist, ICCS
Mob: +91-9074051401
Email: ccbajish@iccs.res.in
- ▶ **Dr. Sinan Nizar**
Junior Scientist, ICCS
Mob: +91-9567047444
Email: sinan@iccs.res.in