



Workshop on
IMPACT OF CLIMATE CHANGE ON WATER
RESOURCES MODELING
Organized by
Department of Civil Engineering,
National Institute of Technology, Tiruchirappalli
15th - 19th December 2023

Overview

Water resources are important to both society and ecosystems. The society depend on a reliable, clean supply of drinking water to sustain our health. Also water is required for agriculture, energy production, navigation, recreation, and manufacturing. Many of these uses put pressure on water resources, stresses that are likely to be intensified by climate change. In many areas, climate change is likely to increase water demand while shrinking water supplies. This shifting balance would challenge water managers to simultaneously meet the needs of growing communities, sensitive ecosystems, farmers, energy producers, and manufacturers. In some areas, water shortages will be less of a problem than increases in runoff, flooding, or sea level rise. Climate change leads to changes in the hydrological cycle, resulting in serious implications on runoff, frequency and intensity of floods and droughts, soil moisture, water quality, water supplies and water demands for irrigation, urban flood and urban heat island. Hence, Climate change is the driving force for changing scenario of water resources system which is utmost essential to understand.

This course focuses mainly on the recent advancements in the field of Water Resources, Climate Change Impacts and agriculture. The short course will comprise of lectures and tutorials by foreign experts, covering topics of climate change, climate change Climate Change model - RCM, GCM, downscaling, Impacts on Flood, River Flows, Crop Yields etc. Impacts on various domains of water resources such as river water quality, irrigation demands and reservoir operation with the sophisticated downscaling methodologies. This course is designed specifically for faculties, research

scholars and private organizations involved in water resources management, to get acquainted with the various advanced various aspects of impacts of climate change on water resources.

Objectives

The primary objectives of the course are as follows:

- Exposing participants to the fundamentals of Climate change on water resources.
- Introduction to various hydrological/climate change models.
- Investigation of the Potential Impacts of Climate Change on Hydrological Responses and Associated Water Resources.
- Providing exposure to practical problems and their solutions, through case studies and liveprojects in water resources systems.

Modules	<p>Module A: Introduction to climate change, Dynamical downscaling/Regional climate modelling, Highlighting the differences between Dynamical and Statistical Downscaling , Application of climate data as proxies for water resources management-SWAT, Applications in water resources management – Drainage design (IDF curves), Development of high- resolution DEM, Climate change impact on crop growth-crop modelling/food security, Highlighting of deriving low cost and yet accurate high resolution digital elevation model.</p> <p>Module B: Recent advancements& challenges in water resources management, Impact assessment of water quality and irrigation management, Tutorial on HEC RAS and HEC HMS models, Climate change mitigation and adaptation strategies, Tutorial on water supply distribution, Sewer network and storm water design models.</p> <p>➤ Number of participants for the course will be limited to 40.</p>
Date of the course	15th -19th December, 2023
Who Should Attend	<ul style="list-style-type: none"> ➤ Students at all levels (B.Tech /MS / M.Tech / PhD) or Faculty from reputed academic institutions and technical institutions. ➤ Executives, Water resource Engineers and researchers from government organizations including R&D laboratories, Ground and surface water division of PWD

Fees	<p>The participation fees for the course is as follows:</p> <table border="0"> <thead> <tr> <th></th> <th style="text-align: right;">Course Fee (including GST 18%)</th> </tr> </thead> <tbody> <tr> <td>Faculty and Scientist</td> <td style="text-align: right;">Rs. 2500 /-</td> </tr> <tr> <td>Students / Research Scholars</td> <td style="text-align: right;">Rs. 1500 /-</td> </tr> <tr> <td>Industrial participants</td> <td style="text-align: right;">Rs. 5000 /-</td> </tr> <tr> <td>Students from Abroad</td> <td style="text-align: right;">US \$ 200 /-</td> </tr> <tr> <td>Faculty and scientist from Abroad</td> <td style="text-align: right;">US \$ 500/-</td> </tr> <tr> <td>Industrial Participants from Abroad</td> <td style="text-align: right;">US \$ 1000/-</td> </tr> </tbody> </table> <p>The above fee includes all course materials, computer use for tutorials and assignments, laboratory equipment usage charges, internet facility.</p>		Course Fee (including GST 18%)	Faculty and Scientist	Rs. 2500 /-	Students / Research Scholars	Rs. 1500 /-	Industrial participants	Rs. 5000 /-	Students from Abroad	US \$ 200 /-	Faculty and scientist from Abroad	US \$ 500/-	Industrial Participants from Abroad	US \$ 1000/-
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Payment Procedure	<p>https://www.onlinesbi.com/sbicollect/ → Accept the terms and conditions → State: Tamil Nadu → Type: Educational Institutions → select: Conference and Workshop NIT Trichy → category: GIAN CIV DCMRRPI 2023” and provide details of payment and submit. Please use the link below for the course registration.</p>														
Registration Form	<p>How to Register?</p> <p>Stage-1: Web Portal Registration: Visit http://www.gian.iitkgp.ac.in/GREGN/index and create login User ID and Password. Fill up the registration form and complet web registration by online payment of Rs. 500/-. This provides the user wit life time registration to enroll in any number of GIAN courses offered.</p> <p>Stage-2: Course Registration: Login to the GIAN portal with the user ID and Password already created in Step 1. Click on Course Registration option at the top of Registration form. Select the Course titled “Impact of Climate Change on Water resources Modelling” to Confirm your registration by clicking on Confirm Course.</p> <p>Step – 3 : Fill the google form using the link given below.</p> <p>https://forms.gle/SRz3PLJJ6fE2wvfD9</p>														

ORGANIZING COMMITTEE

Dr. LIONG, Shie-Yui – PRINCIPAL CO-ORDINATOR



Dr. LIONG, Shie-Yui - prior to his retirement in 2019 Professor Liong was with Tropical Marine Science Institute of National University of Singapore (NUS) from 2004 till 2019 after spending about 20 years with the Department of Civil and Environmental Engineering of NUS. He received his Dipl.-Ing. and Ph.D degrees from University of Karlsruhe (Germany) and Iowa Institute of Hydraulics Research of University of Iowa (USA) respectively. Since 2019 he is a free-lance consultant and actively assisting various professional water related engineering societies.

His most recent research works are: (1) climate downscaling for Southeast Asia domain (80-130E; 15S-26N) and deriving valuable information from the downscaled climate to evaluate the impacts of climate change on water resources, flooding, drought, crop yields. He has been commissioned twice, consecutively, by the government of Singapore to undertake the first-of-its-kind climate change studies (2007 – 2009; 2010-2014); (2) generating accurate and low-cost high resolution spatial Digital Elevation Model based on Satellite data and Machine Learning technique (e.g. Artificial Neural Network). The work was funded by AI-Singapore (2020-2022) in collaboration with DHI (Singapore) as the patron.

Dr. Liong is a 3-time recipient of the Best Paper Award of IAHR-APD Congress (1994, 2002 and 2012). In 2007 he was awarded by the President of Federal Republic of Germany the Order of Merit (“Bundesverdienstkreuz”). He has been invited to give various talks, for examples (1) Distinguished Lecture at 10th Asia-Oceania Geosciences Society meeting in Brisbane, Australia; (2) Plenary Talk at the 10th Hydroinformatics Conference, New York City, USA; and (3) the keynote speaker in the 5th International SIMHYDRO conference, Nice, France.

Dr. R. Manjula – PRINCIPAL CO-ORDINATOR



Dr. R. Manjula is an Associate Professor at the National Institute of Technology, Tiruchirappalli, India. She specializes in water resources engineering including flood and rainfall-runoff modeling. Her expertise also extends to studying the impacts of climate change on water resources and Coastal Engineering. She received notable awards such as 5th rank in Madurai Kamaraj University during 1998 in her B.Tech and received first rank in her M.Tech during 2003 at NIT Tiruchirappalli. She had received research grant to visit NUS Singapore for one month during 2008. Recently she received Scholarship for one month funded research stay at RWTH, University of Aachen Germany and TU Dresden in 2023 under ABCD Centre for Climate Change and future Environmental Leaders. She is an active member of Institution of Engineers (India). With over 40 research publications and journal papers to her name, she is highly regarded for her research contributions in the field of water resource management and wave structure interaction.

Dr. S. SARAVANAN – CO-ORDINATOR



Dr. S. Saravanan is an Associate Professor at the National Institute of Technology, Tiruchirappalli, India. He specializes in remote sensing and GIS applications for disaster modeling, including flood, soil erosion, landslide, and distributed rainfall-runoff modeling. His expertise also extends to studying the impacts of climate change on water resources. he received notable awards and recognition for his work, including the Berkner travel grant (AGU-2013). He was also awarded the Endeavour Post-Doctoral Research Fellowship (2009) from the University of Melbourne, Australia. He has been recognized as the first Indian to be invited for the COE program (2007) at the University of Yamanashi, Japan, and has received an International Travel Grant from DST for presenting a technical paper at the 3rd biennial IWA Young Researchers Conference at Nanyang Technological University, Singapore. He also received the Best Project award (Kurath Alwar Award) in the Engineering/Technology category from P.S.G. College of Technology, Coimbatore in 1999. With over 70 journal papers and 20 book chapters to his name, he

is highly regarded for his research contributions in the field of remote sensing, GIS, Disaster modeling and water resources management.

Course Coordinator Contact

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