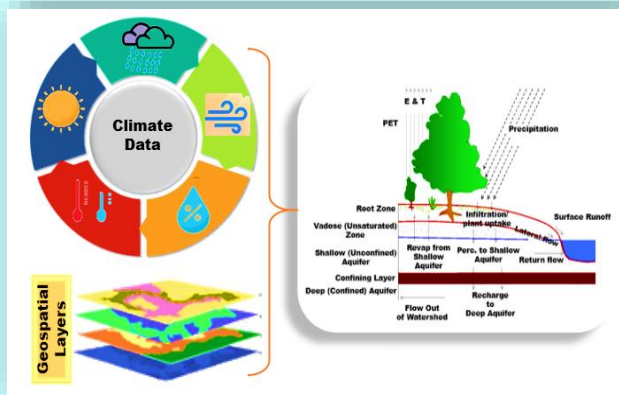


TRAINING COURSE
on
Hydrological Modelling
Using
Soil and Water Assessment Tool
(SWAT)

(24th to 28th June 2024)



**Organized
by**



NATIONAL INSTITUTE OF HYDROLOGY
NORTH WESTERN REGIONAL CENTRE
&
ICAR-CENTRAL ARID ZONE RESEARCH
INSTITUTE
JODHPUR-342003, RAJASTHAN, INDIA

INTRODUCTION

Hydrological modelling is the process of representing the real-world hydrologic system and its characteristics using computer simulation and mathematical analogies. It serves as a powerful approach in addressing a myriad of real-world challenges, from small-scale issues to large-scale environmental concerns. However, several models have been developed, each addressing specific needs; none can claim perfection due to the unpredictable nature of environmental predictions. Instead, we adapt our approach based on the problem's complexity and objectives.

Distributed models, crucial for regional and basin-scale studies, require extensive input data. One widely accepted model among water resources professionals is the Soil and Water Assessment Tool (SWAT), developed through decades of modelling efforts by USDA-ARS, USDA-NRCS, and Texas A&M University. SWAT is extensively used to assess soil erosion prevention, mitigate non-point source pollution, and sustainably manage watersheds at the watershed to river basin scale. A major advantage of SWAT is its minimal calibration requirement, allowing its use on ungauged watersheds. It can predict the relative effects of various scenarios, like alterations in management strategies, climate, and vegetation, on both water quality and quantity. The model provides comprehensive outputs of all water balance components across different time intervals for each watershed.

SWAT Model typically require GIS interface to create its basic inputs. Therefore, this training course is intended to provide hands-on training to the participant using GIS interface-based SWAT model and advanced calibration module SWAT-CUP.

COURSE CONTENT

This training course will consist of a series of lectures supported by hands-on sessions, exercises, conducted in physical mode. The Scientists and Professors, with

vast experience in various subjects, will broadly, cover the following topics in the course:

- ◆ Fundamentals of Hydrological Modelling
- ◆ Applications of RS & GIS in Hydrological Modelling
- ◆ Exploration of Open Data Sources
- ◆ SWAT Model Setup, Calibration, and Validation
- ◆ Visualization and Interpretation of SWAT Outputs
- ◆ Future Prediction under Different Climate Scenarios
- ◆ Sensitivity Analysis

This course is intended to be interactive so that real-world problems and experiences of participants from academia as well as field organizations can be shared and discussed.

ABOUT THE INSTITUTES

National Institute of Hydrology (NIH):

NIH is a premier Research and Development organization under the Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India. It was established as an autonomous society in 1978 with its headquarters at Roorkee, Uttarakhand. The main objectives of the institute are to undertake, aid, promote, and coordinate systematic and scientific work in all aspects of hydrology and water resources management. The Institute was designated as a Science and Technology (S&T) organization in 1987.

The North Western Regional Centre (NWRC) is the 7th Regional Centre of NIH and has been established recently in Jodhpur, Rajasthan. The area of jurisdiction of NWRC covers north-western states i.e., Rajasthan, Gujarat, Haryana, and Punjab. The Centre focuses in conducting field-oriented hydrological investigation, hydro-climatic extremes, rejuvenation of ponds and rivers, and integrated water resources management through close interaction with various State and Central Government departments.

ICAR-Central Arid Zone Research Institute (CAZRI):

CAZRI is a premier organization of the Indian Council of Agricultural Research, under the Department of Agricultural Research and Education, Ministry of Agriculture and Farmers Welfare, Government of India. CAZRI was initially established as Desert Afforestation Station in 1952 at Jodhpur, and finally upgraded to Central Arid Zone Research Institute (CAZRI) in 1959. The institute is mandated to undertake basic and applied research for sustainable agriculture systems in the arid ecosystem; act as repository of information on the state of natural resources and desertification processes and its control; agricultural water management. The CAZRI operates through six divisions, located at the headquarters and five Regional Research Stations (Bikaner, Jaisalmer and Pali in Rajasthan, and Kukma, Bhuj in Gujarat and Leh in the cold arid region) located in different agro-climatic zones to work on location-specific problems.

WHO CAN PARTICIPATE?

The course is intended for Students/Professionals of various governments, Non-government organizations and private organizations actively working in the domain of Water Resources Engineering/ Soil and Water Conservation Engineering /Irrigation Engineering or equivalents. The PG students and research scholars are encouraged to attend this course.

REGISTRATION

There is *no registration fee* for the participation. However, the candidates need to be sponsored by their Institute.

The course material, working lunch and tea for the session will be provided to the registered participants. ***The participants will have to arrange for TA/DA and any other expenditure to participate in the course from their own organization/ institute.*** A certificate will be awarded to the participant after successful completion of the course. Also, *participants are encouraged to carry laptops* for doing hands-on exercises during the course.

It is intended to register only a **limited number of participants (20)** for this training program. The selection of participants will be done by NIH-NWRC Jodhpur on the basis of educational qualification, experience and area of interest of candidates. The prospective participants are requested to register themselves by filling and mailing the attached registration form latest by 30th May 2024.

VENUE

The training course will be held at ICAR-CAZRI, Jodhpur – 342003, Rajasthan, India. from 24th June to 28th June, 2024.

IMPORTANT DATES

Last Date of Registration : 14th June 2024
Intimation of Selection : 17th June 2024
Confirmation by Participants : 19th June 2024

Registration Link:

<https://forms.gle/xdfyHXRtDPTvhFpu7>

All correspondence related to the course should be made with the course coordinators/Co-coordinators.

PATRON

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