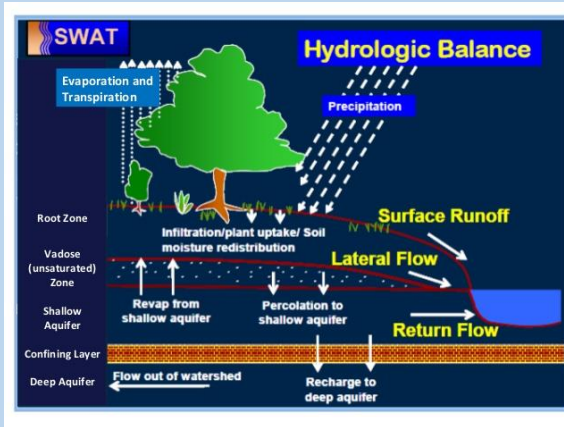
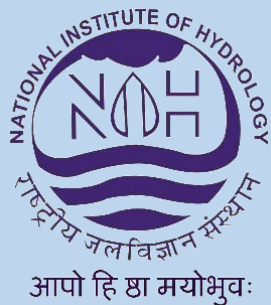


NIH TRAINING COURSE ON



HYDROLOGICAL MODELLING USING SWAT+

May 22-27, 2023



Organized by

**NATIONAL INSTITUTE OF HYDROLOGY,
ROORKEE – 247 667
UTTARAKHAND**

ABOUT THE COURSE:

Water is a vital natural resource. Hydrological modelling is an essential aspect of any development project for planning, designing, executing and managing water resources efficiently. This training course is designed to impart and transfer the working knowledge of using a semi-distributed hydrological model called SWAT.

SWAT, a river basin or watershed scale model, is a physically-based, spatially distributed, continuous model that operates on a daily time step. It is a product of four decades of modelling efforts by USDA-ARS, USDA-NRCS and Texas A&M University. It was developed to predict the impact of land management practices on water, sediment and agricultural chemical yields in large complex watersheds with varying soils, land use and management conditions over long periods. It can incorporate the effects of tanks and the reservoirs/check dams off-stream and on-stream. The major advantage of SWAT is that it does not require much calibration. It, therefore, can be used on ungauged watersheds and predict the relative impacts of alternative scenarios, such as changes in management practices, climate and vegetation, on water quality and quantity. Model output includes all water balance components at the level of each watershed and is available at daily, monthly or annual time steps. SWAT model has been extensively used to address water resources and nonpoint-source pollution problems for a range of scales and environmental conditions across the globe.

SWAT typically uses the ArcSWAT interface to create its inputs that work in the licensed ArcGIS environment. Quantum GIS (QGIS) is a free and open-source GIS that performs most GIS functions as in commercial GIS. Given its robustness and wide use in academic and professional environments, the present training course will be conducted using QSWAT, a QGIS interface for the SWAT+ model.

The training course is intended to introduce participants to QGIS, SWAT+ model and SWAT-CUP, mandatory and optional inputs to the model, preparation of database and set up of SWAT using QSWAT interface. The course will also cover advanced topics including sensitivity analysis, model calibration, validation and uncertainty analysis using SWAT-CUP.

COURSE STRUCTURE

The course is designed for six days duration devoted to SWAT+ set-up, including spatial and non-spatial data preparation, data input, model execution, and visualization and interpretation of results using QGIS interface and model calibration and validation using SWAT-CUP and a field visit.

The course consists of online lectures supported by hands-on sessions on computers to cover both theory and practice in the right proportion. The course will be conducted as a two-way interaction with the participants so that the problems and experiences of participants from academia and field organizations are shared. Broadly, the following topics shall be covered in the course:

- Basics of Hydrological modelling
- Introduction to QGIS
- Data requirement of SWAT+
- Hands-on sessions for preparing spatial datasets for SWAT+ using RS and QGIS
- SWAT+ theory and model applications
- Preparation of non-spatial data
- Introduction to QSWAT interface; model set-up
- Sensitivity, calibration/validation, and uncertainty analysis using SWAT-CUP-SUF12
- Visualization and interpretation of SWAT outputs
- A Case Study of Snowmelt Runoff Modeling using SWAT

By the end of the course, the participants are expected to use the model on their own.

PARTICIPANTS

The training course is intended for PG students, research scholars, technical and scientific staff of central and state government, and working professionals (engineers, scientists, and academicians) in the field of water resources.

COURSE FEE

PG Students/Research Scholar = ₹8,000/-
All Others = ₹10,000/-

Online Fee Payment details:

Account Name: NIH PROJECT
Account No: 4044 0001 0017 4852
Bank: PUNJAB NATIONAL BANK (PNB)
Branch: IIT ROORKEE
IFSC code: PUNB0404400
MICR Code: 247024103

The fee includes the registration kit, working lunch, session teas, field visit, and certificate. For accommodation, the Guest House facility of NIH Roorkee can be availed by the participants on a payment basis, depending on availability.

ABOUT NIH

The National Institute of Hydrology (NIH) is a premier Research and Development organization under the Dept. of Water Resources, River Development and Ganga Rejuvenation of the Ministry of Jal Shakti, Government of India. It was established in 1978, with its headquarters at Roorkee. The main objectives of NIH are to undertake, aid, promote and coordinate systematic and scientific work in all aspects of hydrology. The Institute was declared an S&T organization in 1987.



NIH Main Building at Roorkee

NIH is an ISO 9001:2008 Certified organization. It is a centre of excellence for pursuing research activities in hydrology and water resources, emphasising technology transfer and demand-driven, user-defined, strategic research. The research in the Institute have been carried out under six scientific themes at the headquarters at Roorkee and seven Regional Centres located at Belgaum, Jammu, Kakinada, Jodhpur, Guwahati and Patna and Bhopal.

CONTACT DETAILS:

Course Director:

Dr Sudhir Kumar
Director, NIH Roorkee

Course Coordinator:

Dr Manish K Nema
Scientist-D
Dr Vishal Singh
Scientist-D

Contact Email: swatatnih@gmail.com

REGISTRATION

The intending participants are requested to register by filling out the form at this link ([CLICK HERE](#)) by April 15, 2023.

VENUE

The training course will be hosted by the National Institute of Hydrology, Roorkee, in a physical mode during May 22-27, 2023.



For Registration



For Course Website