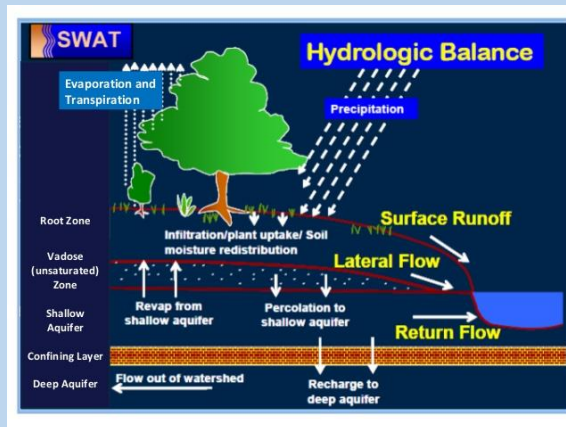


NIH TRAINING COURSE ON



HYDROLOGICAL MODELLING USING SWAT

Sep 21-25, 2020



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Organized by

**NATIONAL INSTITUTE OF
HYDROLOGY, ROORKEE**

ABOUT THE COURSE:

Water is a vital natural resource. For planning, designing, execution and management of water resources efficiently, the hydrological modelling is an essential aspect of any development project. 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 as well as on-stream. The major advantage of SWAT is that it does not require much calibration. It, therefore, can be used on ungauged watersheds, can predict 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. The 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 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 five 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.

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 as well as 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-SUF2;
- 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 targets the PG students, research scholars, technical and scientific staff of central and state government, and working professionals (engineers, scientist, and academicians) in the field of water resources.

ABOUT NIH

National Institute of Hydrology (NIH) is a premier Research and Development organization under the Dept. 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. 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 as an S&T organization in 1987.



NIH Main Building at Roorkee

The Institute is an ISO 9001:2008 Certified organization. Over the years, the Institute has grown as a centre of excellence for pursuing research activities in hydrology and water resources with emphasis on technology transfer and demand-driven, user-defined, strategic research. The research in the Institute have been carried out under six scientific divisions at the headquarters at Roorkee, four Regional Centres located at Belgaum, Jammu, Kakinada and Bhopal and two Centres for Flood Management Studies at Guwahati and Patna.

COURSE FEE: NIL.

REGISTRATION:

The intending participants are requested to register themselves by filling the form at This link [\(CLICK HERE\)](#). A sponsorship certificate or nomination letter needs to upload while filling the form.

COURSE DIRECTOR:

Dr J V Tyagi
Director, NIH Roorkee

COURSE COORDINATOR:

Dr Vishal Singh
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AWARD OF CERTIFICATE:

A Certificate shall be provided to the working professional and students based on 70% attendance and 40% in the online examination.

NOTE:

There is very limited no. of seats for the course. Registration will be done on first come first serve basis.