IIRS Outreach Programme

The IIRS outreach programme, which was started in 2007 with 12 Universities/ Institutions has now grown substantially to 3800+. The beneficiaries of the programme may include:

- Central/State/Private Universities & Academic Institutions
- Central & State Government Departments
- Forest Resource Professionals
- State Forest Departments/Forest Training Academies
- Research Institutes
- Geospatial Industries
- NGOs

About IIRS

Indian Institute of Remote Sensing (IIRS) under Indian Space Research Organisation (ISRO), Department of Space, Govt. of India is a premier Training and Educational Institute set up for developing trained professionals in the field of Remote Sensing, Geoinformatics and GNSS Technology for Natural Resources, Environmental and Disaster Management. Formerly known as Indian Photo-interpretation Institute (IPI), founded in 1966, the Institute boasts to be the first of its kind in entire South-East Asia. While nurturing its primary endeavour to build capacity among the user community by training mid-career professionals, the Institute has enhanced its capability and evolved many training and education programmes that are tuned to meet the requirements of various target groups, ranging from fresh graduates to policy makers including academia. IIRS also conducts e-learning programme on Remote Sensing and Geo-information Science (http://elearning.iirs.gov.in).

Forestry and Ecology Department

Forestry and Ecology Department (FED) is the oldest department of IIRS, established in 1966 with the aim of providing training and skill development on the utility of aerial photography for forest mapping, resources inventory, monitoring and resource management for forest managers in particular and scientific community in general. The scope and activities of the Department have evolved and enlarged over the years keeping pace with technological advancements. FED strives to achieve excellence and remain in the forefront for research and capacity building in RS and GIS applications in forestry and ecology. The Department has a history of very strong research group contributing to the methodology development and execution for various nation-wide research projects for forestry sector in the country.

Contact Details

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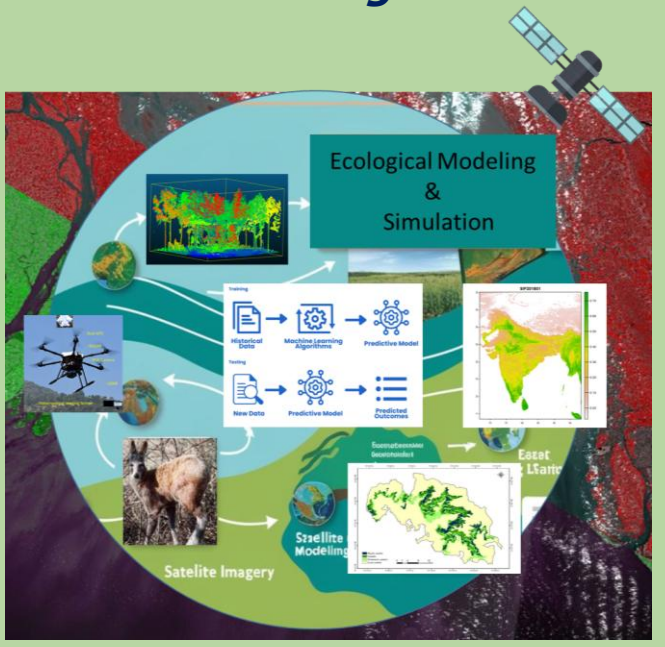
161th IIRS Outreach Programme



Recent Trends in Ecological Modelling & Simulation

Date: May 19-23, 2025

Organised by

Indian Institute of Remote Sensing
Indian Space Research Organisation
Department of Space, Govt. of India
Dehradun
www.iirs.gov.in

About the Course

Ecological modeling and simulation have long been indispensable tools for understanding the dynamics of ecosystems, predicting their responses, and informing conservation decisions. Historically, many ecological models were either spatially coarse or aspatial, limited by computational power and spatially explicit ecological and environmental data. The advancements in ecological modeling are significant, moving from simple statistical models to more complex process-based, mechanistic, and agent-based models. However, modelling complex, often non-linear, models over large and heterogeneous landscapes require integration of geospatial capabilities. Geospatial technology, encompassing GIS, Remote Sensing, GPS, and the vast array of spatial data they generate, has immensely benefited ecological modeling. Remote sensing provides spatially continuous information about the Earth's surface at various spatial and temporal resolutions. This includes crucial ecological variables such as land cover type and change, vegetation indices (like NDVI and EVI) reflecting plant health and productivity, leaf area index, biomass estimates, surface temperature, and even indicators of physiological function like Solar-Induced Fluorescence (SIF). This datasets serves as essential input for driving, parameterizing, and validating ecological models across scales ranging from local to globe. GIS technology complements remote sensing by providing powerful tools for managing, integrating, analyzing, and visualizing diverse spatial datasets. Ecological models are inherently spatial, influenced by environmental gradients, and the spatial distribution of habitats and populations. GIS allows ecologists to integrate remotely sensed data with ground-based observations, environmental variables for performing spatial analyses that reveal patterns and relationships crucial for model development. The increasing availability of 'big data' from new satellite missions, drone technology, and environmental sensor networks, combined with advances in machine learning and cloud computing, promises even more detailed, dynamic, and predictive ecological simulations.

Overview of Program

The course is conducted through IIRS outreach facility. IIRS has successfully conducted 163 courses so far through its outreach programme with 5,82,369 participants from 3219+ Institutions/ Universities (as of 31st January, 2023) spread across India.

Objective of the Course: To familiarize the ecologist, forest managers, academicians, and researchers on the utility of ecological models and simulation for ecosystem studies.

Course Content: An overview of advances in "Ecological Modelling and Simulation"; Advances in modelling forest carbon stock using EO data; Advances in biodiversity assessment using geospatial technology; Advances in modelling forest carbon and water fluxes using in-situ, satellite and models; Advances in soil erosion modelling using geospatial technology.

Target Participants

The course is designed for Professionals, researchers and students (at least Graduate) engaged in the field of Forest Management, Conservation, Vegetation Ecology, Environmental Studies, Geospatial Technology and Modelling.

Registration Fee

There is no registration fee.

Course Registration

Participants can register through 2 different methods

- **Registration through Nodal centres.** The participant's registration must be approved by the coordinator of nodal centers.
- **Registration as "Individual Participants"-** The participants with individual registration will be automatically approved. All the registered participants will get their login credentials for ISRO Learning Management System (LMS)- https://isrolms.iirs.gov.in .

Programme Reception

Nodal Center participants can attend the course live via any web browser through the e-class portal of IIRS, Dehradun i.e. https://eclass.iirs.gov.in. And Individuals can attend the course live via any web browser through the LMS portal of IIRS, Dehradun i.e. https://isrolms.iirs.gov.in .

Important links

- Courses updates and other details will be available on URL – https://www.iirs.gov.in/EDUSAT-News
- To participate in this programme the interested,organisations/universities/departments/institutes have to identify coordinator at their end. The identified coordinator will register online his/her institute as nodal centre in IIRS website (https://elearning.iirs.gov.in/edusatregistration/coordinator)
- All the participants have to register online through registration page by selecting his/her organization as nodal centre on below link: https://elearning.iirs.gov.in/edusatregistration/student
- The participants can register and see their application status through URL- https://elearning.iirs.gov.in/edusatregistration In case, the application is pending for approval then participants are advised to contact the coordinator of respective nodal center.

Award of Certificate

Registered through Nodal centres : Based on the attendance and examination, participants will be awarded a "Course Participation Certificate."

Individual Registration: A certificate for "Course Participation" will be awarded to everyone who devotes at least 50% of the total session's hours of the course. The certificate will be available for download on the ISRO LMS platform.