

Land Cover and Land Use Changes and their Impacts on Climate

Overview

Land cover and land use are critical and growing components of climate change analyses. They play a key role as a driver of climate change (through impacts on the biogeochemistry, e.g., carbon and nitrogen cycles, as well as on biogeophysics, e.g., water and energy) and a component of mitigation strategies (managed carbon sinks, bioenergy, agriculture-related non-CO₂ emissions reductions), and many adaptation strategies involve changes in land use or land management. India, with per capita land availability of ~0.25 ha per person compared to the global average of ~2.3 ha per person, is characterized by a long history of land cover and land use change (LCLUC) activities, such as intensive cultivation and overgrazing of pasturelands. With growing population, coupled with increasing LCLUC activities and their impact on climate, India's land use planners are facing a challenge, to enhance food production, and simultaneously minimize environmental degradation from LCLUC. India being one of the ten most forest-rich nations of the world, has received increasing attention under the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism to protect its forests to help mitigate climate change, preserve its rich biodiversity, and support ecosystem services. This course addresses human modification of the LCLUC activities in India and around the global, the resulting effects of LCLUC on biogeochemical and biophysical, and on climate, and our ability to control LCLUC activities and their impact on climate under an ever-increasing human population conditions. This course is designed with the principles of collaborative learning, constructivism, and active participation in mind. Participants will be encouraged to share their thoughts and engage in problem solving.

Course participants will learn these topics through lectures and hands-on software experience. Also, case studies and will be shared to stimulate research motivation of participants.

Modules	A: Remote Sensing and LULCC : Oct 29 B: Free and Open Source Software hands on : Oct 30 - Oct 31 C: Climate change and its analysis: Nov 1 - Nov 2 Number of participants for the course will be limited to fifty.
You Should Attend If...	<ul style="list-style-type: none">▪ Executives, engineers and researchers from climate science, land use science and environmental/ infrastructural designers, service and government organizations including R&D laboratories, and land planners, City managers.▪ Students at all levels (BTech/MSc/MTech/PhD) and faculty from reputed academic institutions and technical institutions.
Fees	The participation fees for taking the course is as follows: Participants from abroad : US \$500 Industry/ Research Organizations: INR 15000 Academic Institutions: INR 8000 The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Prof. Atul Jain is a Professor at the University of Illinois, USA. Dr. Jain's research focuses on understanding how interactions among the climate system alter the carbon cycle, and to provide useful projections of future changes in global carbon and resultant future climate change. He directs a number of research projects primarily oriented towards improving our understanding of the impacts that man-made and natural trace gases may be having on the Earth's climate.



Dr. Bharath H Aithal is an Assistant Professor of Indian Institute of Technology, Kharagpur. His research interest is urban informatics, Disaster management, development of models to visualise urban land use change, Land surface temperature modeling and SDSS.



Dr. Arkopal Goswami is an Assistant Professor of Indian Institute of Technology, Kharagpur. His research interest is Urban Transport Planning, Preservation of Roadway Infrastructure, Performance Management and Multimodal Transport Planning. He has 10 years of experience working for public and private transportation agencies in India and United States of America.

Course Co-ordinator

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