Bio-Optical Characterization of Water Resources: Implications for Future Satellite Missions

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Overview

Remote sensing technologies are heavily used in the field of earth and environmental sciences for mapping and monitoring of various environmental resources. Advanced knowledge of these technologies is required for the interchange of ideas and concepts among higher education, research, industry, and government. The field of remote sensing has experienced a tremendous growth over the past decade due to the advances in satellite sensor technologies, unmanned aerial systems, and small satellites (CubeSats). The course will mainly cover the broad area of bio-optical modeling used in environmental remote sensing to examine the status of water resources. The suite of bio-optical models will include empirical, semi-empirical, semi-analytical, quasi-analytical, and radiative transfer models. Scaling-up these models to current (Sentinel 2A, 2B, 3A, Landsat OLI, Suomi VIIRS) and future (HYSPIRI, PACE, PRISM) mission will be covered for each category of models. The proposed courses will prepare participants to contribute to the advance earth observation from space, improve scientific understanding, and demonstrate a new approach to combat climate change with potential for improving future operational systems.

The primary objectives of the course are as follows:

i) To improve scientific understanding of the impacts of global climate change on inland and coastal water resources satellite data, models, and findings
ii) To train in the theory, technology, and practical applications of imaging and non-imaging sensors for environmental monitoring such as understanding the operational aspects of remote sensor technologies, experiment design and data collection techniques using in situ sensors
iii) To enhance fundamental understanding of various aspects of modeling including different types of models, calibration and validation, and scaling-up activities to current and future satellite missions
iv) Conducting an efficient and intensive remote sensing curriculum that complements the existing curricula at the host institution
v) Capacity building- Preparing future remote sensing scientists by training students and engaging them to participate in ISRO/NASA-related research
vi) Providing exposure to practical problems and their solutions, through case studies and live projects in remote sensing of water resources and its applications
vii) Building in confidence and capability amongst the participants in the application of remote sensing technologies for bio-optical characterization of water resources

Modules	**A: Lectures : June 25 - June 29 (Forenoon)** **B: Hands-on and Tutorials : June 25 - June 29 (Afternoon)** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ you are an environmental engineer or research scientist interested in Remote Sensing technologies in the field of earth and environmental sciences. ▪ you are a student or faculty from academic institution interested in learning the theory, technology, and practical applications of imaging and non-imaging sensors for environmental monitoring such as understanding the operational aspects of remote sensor technologies, experiment design and data collection techniques using in situ sensors
Fees	The participation fees for taking the course is as follows: **Participants from abroad: US $200** **Industry: INR 10000** **Academic Institutions/ Research Organizations (Faculty): INR 5000** **Academic Institutions (Student): INR 4000** The above fee include all instructional materials, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. Deepak R Mishra is a faculty in the Department of Geography at the University of Georgia, USA. His Research Interest includes Coastal Environment and Remote Sensing.

Prof. Mukunda D Behera is a faculty in the Centre for Oceans, Rivers, Atmosphere and Land Sciences (CORAL) & School of Water Resources at the Indian Institute of Technology (IIT) Kharagpur, India. His Research Interest includes Ecological Climatology and Remote Sensing.

Course Co-ordinator

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