







UNOOSA-ESA-ISRO-NASA Earth Observation Training for Agriculture

Overview of ISRO Training on Remote Sensing Applications for Crop Mapping and Monitoring (5th and 7th October 2021)

> BY DR. S.P. AGGARWAL ISRO

Training Overview

Title: Remote Sensing Applications for Crop Mapping and Monitoring

Duration and dates: 2 days, October 5 and October 7, 2021

Time: 1000 hrs - 1600 hrs IST (+5.30UTC)

Mode of training: Virtual through MS Team

Organization of the Course: 2 lectures and one hands-on each day

Medium of instructions: English

Faculty: ISRO, CESBIO and other international centres

Learning Objectives: To understand the utilization of EO data for crop mapping and monitoring to ensure the food security

Registration and other details:

https://isat.iirs.gov.in/specialcourse/cropmonitoring.php



Course Content: Day 1

L1- Overview of Remote Sensing and EO systems

Overview of Remote Sensing and Current EO missions that provide data for agricultural studies.

L2- Remote Sensing Applications of Agriculture

The theme "Agriculture "has remained the largest application and user of the optical and microwave datasets since last two decades and continues to be so in the present. Large volume of datasets from ISRO, NASA and ESA series of satellites, SAR ranging from ERS series to RISAT and Sentinel caters to innumerable applications.

Various agricultural applications from crop acreage, condition and yield monitoring, drought and flood assessment, inputs for pest and disease monitoring will be discussed here with special emphasis on the Indian context.

D1- Hands-on: Image interpretation and Digital image processing

Image Interpretation: IRS satellite data product RGB formation, FCC generation and image interpretation using FCC with respect to different land use land cover classes. Digital Image Processing: Supervised classification (AOI formation, different classification algorithms, Image classification)

Course content: Day 2

L3- Global crop mapping concepts (for major crops such as rice, wheat, corn, soybean), – techniques, tools and stakeholders

The various mapping techniques prevalent in the global scenario for various field crops will be covered. The past crop monitoring missions and their evolution in the current context.

L4- Remote sensing applications for rice crop mapping and monitoring (both optical and SAR)

Use of optical and microwave data for Rice crop mapping and monitoring using different global EO missions.

D2-Hands-on: Rice crop mapping and driving inputs for yield modelling (using optical and SAR data, on Google earth engine)

Pre-processing of Sentinel 1 SAR data, Classification of rice crop and crop mapping using temporal backscatter signature and using AI/ML scheme. Generation of driving variable for yield estimation- Pre-processing of Sentinel-2 MSI data, deriving rice planting date from time series NDVI (Sentinel 2), Computation of NDVI and LSWI over rice area using Sentinel 2 pre-processed data, Estimating water scalar, Estimation of incident photo-synthetically active radiation (IPAR), Estimating fraction absorbed PAR (fAPAR) from sentinel NDVI.



THANK YOU

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spa@iirs.gov.in