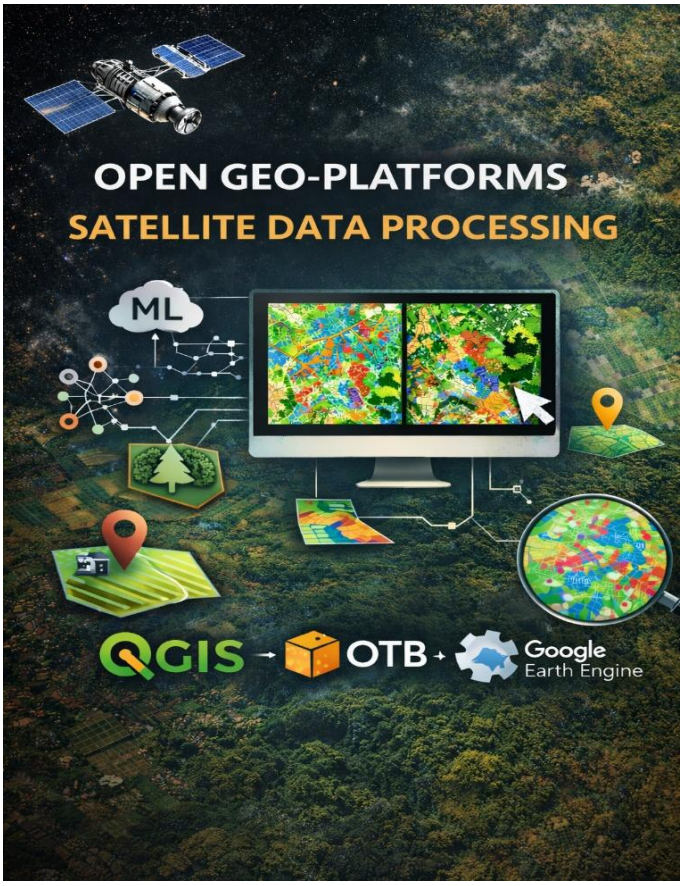
## 5-Day Training Programme

# Introduction to Open Geo Platforms for Satellite Data Processing

# (April 20 – 24, 2026)

## Brief:




Advances in Earth Observation (EO) missions and the rapid evolution of open-source geospatial platforms have significantly transformed the way satellite data is processed, analysed, and utilized. The emergence of Big EO data management and analysis platforms has provided an effective alternative for the processing, storage, and dissemination of large volumes of satellite data, eliminating the need for extensive data downloads and high-end computational infrastructure at the user end. These platforms empower users with on-demand data access, standardized and scalable workflows, and advanced machine learning tools, enabling efficient extraction of feature information for a wide range of Earth Observation applications.

This 5-day training programme is designed to provide hands-on exposure to few popular open geo EO platforms such as Bhuvan, USGS, GEE, ISRO - Boonidhi for data download & processing using FOSS tools like QGIS, machine learning–based data processing tools OTB, GDAL, & APIs, enabling participants to efficiently extract thematic information from various satellite imagery for diverse applications.

The programme emphasizes practical learning, open-source tools, and reproducible workflows, aligned with current industry and research needs.

- ## Objectives of the Training

The key objectives of the programme are to:

- Introduce participants to the open geospatial ecosystem and freely available EO data platforms
- Familiarize participants with satellite imagery characteristics and preprocessing techniques
- Provide practical understanding of feature extraction methods using spectral, spatial, and textural information
- Demonstrate the application of machine learning techniques for feature extraction and classification
- Enable participants to design end-to-end workflows using open-source tools such as QGIS, OTB, and Google Earth Engine
- Promote adoption of open geo platforms for operational, academic, and research applications

- ## Course Coverage (Indicative)

- Overview of open EO data platforms (Bhuvan, USGS, Copernicus, GEE)
- Multispectral satellite imagery and processing
- Feature extraction techniques:
    - Spectral indices (NDVI, NDBI, MNDWI, etc.)
    - Texture and spatial features
    - Object-based image analysis (segmentation)
- Machine learning approaches for feature extraction:
    - Random Forest
    - Support Vector Machine
    - Introduction to Neural Networks
- Hands-on sessions using:
    - QGIS
    - Orfeo Toolbox (OTB)
    - Google Earth Engine
- Accuracy assessment and validation techniques
- Case studies and real-world applications

## Features & Benefits

Participants will gain the following benefits upon completion of the programme:

- Practical skills in handling and analysing satellite imagery using open-source platforms
- Ability to extract meaningful geospatial features using machine learning techniques
- Exposure to operational workflows used in real-world geospatial applications
- Enhanced understanding of feature extraction for applications such as land use/land cover mapping, agriculture, water resources, and urban studies
- Improved capability to integrate open geo platforms into research, teaching, and professional work
- Networking with professionals and experts from the geospatial domain

## Who Should Attend?

- Professionals from government and private geospatial organizations
- Researchers and scientists working in Remote Sensing & GIS
- Faculty members and academicians
- Postgraduate and doctoral students in geospatial sciences
- Industry professionals involved in EO data analytics

## Training Methodology

- Expert lectures
- Demonstrations
- Extensive hands-on sessions
- Practical exercises using sample satellite datasets
- Interactive discussions and case studies

## Outcomes

By the end of the programme, participants will be aware of few popular GEO Platforms available on free and subscription basis, familiarize with the interface, download data and analyse using inbuilt workflows and tools. Get hands-on exposure using desktop-based tools for processing EO data, feature extraction from satellite imagery, applying machine learning techniques, and generating reliable geospatial outputs for decision-making and research.

## Eligibility & Selection

Applicants Preferably, must hold a Master's degree in Science, a Bachelor's degree in Engineering, or a Graduation degree with at least 2 years of relevant experience. Requisite Knowledge of remote sensing and GIS shall be beneficial. Selection will be based on eligibility, domain experience, and prior exposure to remote sensing tools.

## How to apply?

Duly filled application forms with sponsorship certificate are invited from working professionals of State Government / Central Government Departments, NGOs, Industry and Faculty/Research Scholars from Academic Institutions who are working in the domain of satellite data processing for Geospatial Applications. The duly filled application form should reach NRSC, Hyderabad by speed post (EMS) at address given below by April 3rd, 2026. Candidates can send a scanned copy of the application form to training@nrsc.gov.in (attachment < 4 MB) along with fee payment details as advance copy and duly send the originals by speed post to reach the address mentioned below before the due date.

## Course Fee & Admission

The course tuition fee given in below table, to be paid by Electronic Bank Transfer to NRSC account. Visit our website for more details. Tuition fee does not include lodging & boarding charges. Kindly enclose and send duly filled application form with sponsorship certificate to reach us on or before the due date. Selected Applicants shall be intimated by email/mobile and will be provided accommodation in NRSC Guest House II inside the campus on twin sharing basis, food is served by NRSC canteen at a nominal price. *Right of admission reserved with NRSC.*

| Course fee (Rs.) for individual applicants | |
|---|---|
| Central Govt./State Govt./PSUs/Pure Govt. Organizations/Govt. Academic Colleges/Institutes | Industry/Autonomous Bodies & its Institutes, Private Orgn./NGOs/Private Academia/Other Institutes)* |
| Rs. 10,000/- | Rs. 10,000/- |

*Training, Education and Outreach activities conducted by NRSC are taxable services under Govt. of India GST law. As these services are classified under SAC 999293 – Commercial Training and Coaching Services, a standard GST rate of 18% (or the applicable notified rate) is to be remitted to Govt. of India by the service receiving organization under RCM (Reverse Charge Mechanism).

## Postal Address & Contact:

Group Head, TPCD
Training Education & Outreach Group,
National Remote Sensing Centre
Indian Space Research Organisation
Dept. of Space, Govt. of India
Opp. Shapur Nagar Substation
IDA Jeedimetla
Hyderabad-500 055
Ph: 040 - 2388 4566, 4567, 4458, Email: *training@nrsc.gov.in*