

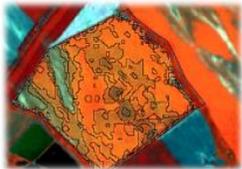
Introduction



The intellectual output of the IRSEL project is e-Learning material containing 20 modules. These modules are used for education at Chinese

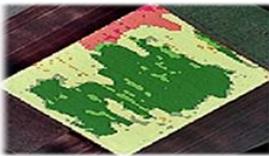
and Thai partner universities (Fujian Normal University (FNU), Yunnan Normal University (YNNU), Asian Institute of Technology (AIT), Khon Kaen University (KKU) and hosted on their Learning Management System. Also, reduced feature of the modules is provided for the public at large at <https://lms.irsel.eu/>

Content of the modules



Module 9-20
Application of Remote Sensing: provide different ways of mapping and supporting the specific situations

Module 1-8
The purpose is to build the fundamentals of Application of Remote Sensing

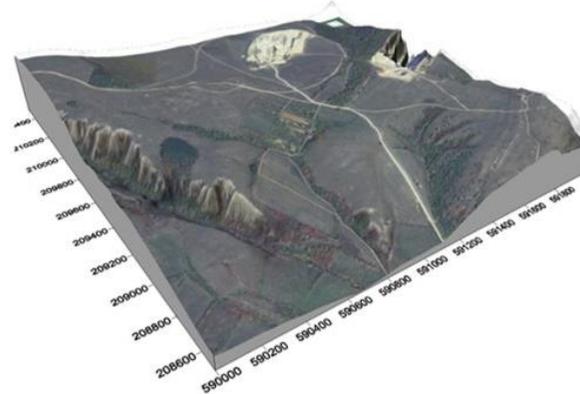


M1 Physical Principles of Remote Sensing: providing physical principles of Remote Sensing (RS), the tool to obtain information on the Earth from decimetre level to km level locally and globally, as well as basic RS image processing techniques and skills, including theories and laws on nature of light, its interactions with the atmosphere and earth surface, also introducing spectrometer.

M2 Data Acquisition, Sensors and Platforms (passive sensing): providing an overview of different sensors and platforms for the acquisition of passive Earth Observation (EO) data, different resolutions (spatial, spectral, temporal, radiometric), main platforms (UAV, airplane, satellite), different types of sensors (frame cameras, scanners).

M3 Data Acquisition, Sensors and Platforms (active sensing): introducing basic and applications of active remote sensing, covering the basics of imaging system and polarimetric of radar, type of sensors, spaceborne and airborne sensors, characteristics of scattering and reflection of microwave energy in various type of surface, and Lidar system concepts.

M4 Airborne Photogrammetry RS Simulation: providing the definition and classification of aerial photogrammetry and RS, understand the mission, history and status of aerial photogrammetry and RS.

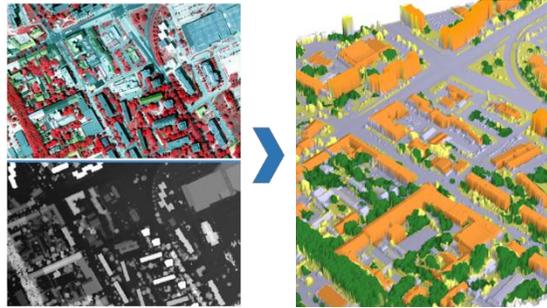


M10 *Remote Sensing and Geographical Information Systems (GIS)*: providing the basics of GIS and data type for integrated with RS data, the integration between GIS and RS data for data acquisition, analysis, and presentation.

M11 *Application of RS in Agriculture*: providing the principles, potentials, and challenges of EO technologies in the context of crop type mapping, change detection and, more generally, crop condition monitoring, the added values of multi-spectral data to retrieve crop bio-physical indicators, and the use of multi-temporal data to study the changes over time.

M12 *Vegetation mapping and monitoring*: providing processing techniques of satellite-borne RS data and analysis for vegetation mapping and monitoring, derived products of vegetation index, water stress etc., to track the length of growing season, vegetation health and anomalies.

M13 *Application of Remote Sensing (optical satellite data) in Forestry*: presenting different application possibilities of Remote Sensing in forestry, tree species classification, biomass / growing stock estimation and change detection.



M14 *Monitoring the environment by using of RS*: introducing RS methods of mapping, monitoring and modelling of the resources for management of the environment and solving environmental problems, methods of analysing environmental problems using RS tools for identification and application to support decision making.

M15 *Application of Remotes Sensing in Water Management*: introducing different water budget components, available terrestrial and satellite-borne data, how to gather and combine them, and procedures of processing.

M16 *Oceans/See and Coastal Monitoring*: overviewing EO solutions of ocean and coastal monitoring, application fields, such as water quality, sea surface monitoring and coastal processes monitoring.

M17 *RS in Archaeology*: introducing airborne and terrestrial RS for detection and identification of archaeological sites, data pre-processing and analysis of the multi various airborne and terrestrial RS to derive an integrated archaeological mapping and interpretation of detected structure and features.

M18 *Application of (optical) Remote Sensing in Urban Environment*: providing the principles, potentials and challenges of EO technologies in land cover mapping, monitoring and change detection within urban environment.

M19 *Disaster Monitoring*: introducing the benefit of satellite images to monitoring disaster as flood, drought, tsunami, Hurricanes, earthquake, pollution.

M20 *Weather and climate monitoring with RS*: introducing basics of satellite meteorology and climatology, principles of data processing and analyses, particular spectral channels applications, the interpretation of processed weather and climate information.



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