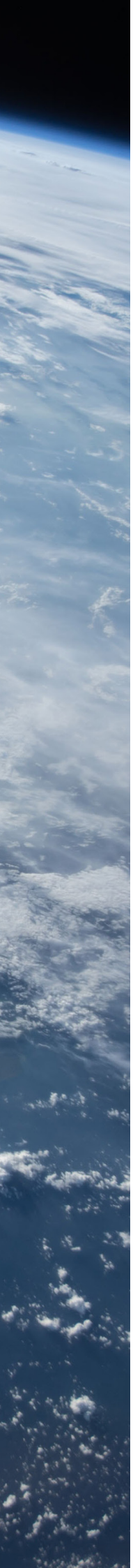
ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

EARTH OBSERVATION TECHNOLOGIES

Application and development of innovative data acquisition, modelling, processing solutions for EO data, with the aim to improve the quality and the type of the products

The University of Bologna is active in research activities on Earth Observation technologies with a particular focus on methods, algorithms, data fusion, numerical modelling and simulations.



The research of the University of Bologna covers a wide range of topics:

- Algorithms and processes for radiometric pre-processing of airborne and satellite images
- Radiometric calibration and validation by ground measurements
- Algorithms and processes for geometric processing of UAV, airborne and satellite images, GNSS integration
- Development of forward and inverse methods in the Remote Sensing of the atmosphere
- Numerical modelling and simulations, adaptive sampling, design of experiments, statistical methods
- Development and validation of new algorithms and indexes for change detection and monitoring from EO data
- Classification techniques for EO images
- Development and validation of novel algorithms for the assimilation of solar-induced chlorophyll fluorescence (ESA-FLEX Earth Observation Mission), Cal-Val activities towards ESA-Sentinel-3 data assimilation
- Altimetry data generation from satellite missions
- Processing of Aerial and Terrestrial LiDAR data, feature extraction algorithms
- Three-dimensional digital surface modeling by UAV, aerial and satellite imagery by advanced image matching procedures
- Data fusion of multisource datasets (multispectral/thermal/radar), integration of geospatial data in multi-scale GIS solutions
- Methods for data quality evaluation and accuracy assessment
- Applications in the framework of Copernicus program

HIGHLIGHTS

Over the years the University of Bologna has been involved in national and international **projects and experiments** funded by ESA and the EU, among them: **FLEXDVM**, **Sen3Exp**, **Photosynthesis**, **FLEX-BRIDGE**, **FLEX L1B to L2**.

Different research groups have established an extensive network of collaborations with several institutions and research centers at national and international level, such as: ASI (Italian Space Agency), ESA, CNR (National Research Council – Italy), PNRA (National Program for Antarctic Research), INAF (National Institute for Astrophysics), INGV (National Institute for Geophysics and Volcanology).