

# RS/EO directory - what is it?

---

The Remote Sensing / Earth Observation directory is just another website (based on GitHub pages) where you can find some useful resources in Remote Sensing (RS) & Earth Observation (EO). From data sources, learning resources, software and processing platforms you can find many potentially useful things! 😊 (Almost) everything around here is alphabetically arranged so I am not organizing things according to my taste or preferences 😊 Let me know if you have suggestions to include here.



## Table of contents

- [Searching, visualizing and downloading RS/EO data](#)
  - [Free satellite data](#)
    - [Multi-platform](#)
    - [Landsat](#)
    - [MODIS](#)
    - [Sentinel](#)
  - [Commercial satellite data](#)
  - [RS/EO-based data sets/sources and 'high-level' products](#)
  - [Catalogs and databases of EO missions](#)
- [Learning RS/EO](#)
  - [Courses](#)
  - [Books](#)
  - [Other websites](#)
- [RS & GIS open-source/free software](#)

- [Free software](#)
- [R packages](#)
- [Commercial software](#)
- [Cloud-based platforms for EO data processing](#)
  - [Free cloud-based platforms](#)
  - [Commercial cloud-based platforms](#)

This page is also available in PDF format [link](#)

## Searching, visualizing and downloading RS/EO data

---

### Free satellite data

#### **Multi-platform**

- . ESA EOLi (ESA client for Earth Observation Catalogue and Ordering Services / not web-based) [link](#)
- . Land Viewer EOS Data Analytics [link](#)
- . NASA Earth Observations (NEO) [link](#)
- . NASA EarthData search [link](#)
- . Planet Explorer Beta [link](#)
- . Sinergise EO Browser [link](#)
- . USGS EarthExplorer [link](#)
- . USGS GloVis [link](#)
- . Vito Data Portal [link](#)

#### **Landsat**

- . USGS ESPA Landsat data ordering interface [link](#)
- . EarthNow! Landsat Image Viewer [link](#)

#### **MODIS**

- . MODIS Web Earth Observation Monitor (webEOM) [link](#)

#### **Sentinel**

- . BOKU Sentinel-2 data pre-processing service [link](#)

- . ESA SciHub Sentinels Data [link](#)
- . Sentinel-2 World cloudless mosaic browser [link](#)
- . Theia/CNES Sentinel-2 data pre-processing service [link](#)

## Commercial satellite data

- . Airbus Satellite Imagery [link](#)
- . ASTRO DIGITAL [link](#)
- . DigitalGlobe [link](#)
- . Planet Labs [link](#)
- . SkyWatch / Techstars [link](#)
- . Urthecast [link](#)

## RS/EO-based data sets/sources and 'high-level' products

- . ASTER GDEM Elevation data [link 1](#) [link 2](#)
- . Copernicus Land Monitoring Service/Products [link](#)
- . EarthEnv (global environmental layers for assessing status and trends in biodiversity, ecosystems, and climate) [link](#)
- . ESA Climate Change Initiative (CCI) / Open Data Portal [link](#)
- . Global 1km Forest Canopy Height ICESat/GLAS [link](#)
- . Global Forest Cover Change (2000-2015) / U. Maryland [link](#)
- . Global Forest Watch [link](#)
- . Global Land Cover Facility (GLCF) / U Maryland / NASA / GOFC-GOLD [link](#)
- . Global Observation for Forest Cover and Land Dynamics (GOFC-GOLD) [link](#)
- . Global PALSAR-2/PALSAR/JERS-1 Mosaic and Forest/Non-Forest map [link](#)
- . Global Tree Density dataset [link](#)
- . GLOBELAND30 (Global Land Cover data at 30m) [link](#)
- . Harmonized Landsat / Sentinel data [link](#)
- . JAXA ALOS Global Digital Surface Model "ALOS World 3D - 30m" (AW3D30) [link](#)

- . JRC Forest cover mapping (1990, 2000 and 2006) [link](#)
- . NOAA/EOG/NCEI (nighttime observations of lights and combustion sources worldwide) [link](#)
- . USGS 30 Meter Global Land Cover [link](#)
- . USGS Early Warning and Environmental Monitoring Program (EWEM) [link](#)

## Catalogs and databases of EO missions

- . Dept. of Space / Indian Space Research Organization [link](#)
- . ESA Satellite Missions Database [link](#)
- . ITC database of satellites and sensors [link](#)
- . NASA missions [link](#)
- . Observing Systems Capability Analysis and Review Tool (OSCAR / WMO) - List of satellites [link](#)
- . Wikipedia List of Earth observation satellites [link](#)

## Learning RS/EO

---

### Courses

- . GIS and Earth Observation University courses [link](#)
- . NASA Applied Remote Sensing Training (ARSET) [link](#)
- . ESA course on FutureLearn: "*Earth Observation from Space: the Optical View*" [link](#)
- . ESA course on "*Radar Remote Sensing*" at eo-college [link](#)

### Books

- . 2016 . *Land Resources Monitoring, Modeling, and Mapping with Remote Sensing* [link](#)
- . 2016 . *Practical Handbook of Remote Sensing* [link](#)
- . 2016 . *Remote Sensing and GIS for Ecologists - using Open Source Software* [link](#)
- . 2016 . *Remote Sensing of Water Resources, Disasters, and Urban Studies* [link](#)
- . 2016 . *Remotely Sensed Data Characterization, Classification, and Accuracies* [link](#)

- . 2015 . *Remote Sensing Image Fusion* [link](#)
- . 2015 . *Remote Sensing Time Series - Revealing Land Surface Dynamics* [link](#)
- . 2014 . *Remote Sensing of Natural Resources* [link](#)
- . 2013 . *Advances in Mapping from Remote Sensor Imagery - Techniques and Applications* [link](#)
- . 2012 . *Remote Sensing of Land Use and Land Cover: Principles and Applications* [link](#)
- . 2011 . *Advances in Environmental Remote Sensing - Sensors, Algorithms, and Applications* [link](#)
- . 2011 . *Introduction to Remote Sensing, Fifth Edition* [link](#)
- . 2010 . *Remote Sensing for Ecology and Conservation - A Handbook of Techniques* [link](#)
- . 2008 . *Advances in Land Remote Sensing System, Modeling, Inversion and Application* [link](#)
- . 2008 . *Earth Observation of Global Change - The Role of Satellite Remote Sensing in Monitoring the Global Environment* [link](#)
- . 2006 . *Remote sensing of the environment: an earth resource perspective* [link](#)

## Tutorials and other useful websites

- . Copernicus EU YouTube channel [link](#)
- . Data recipes / Alaska Satellite Facility (ASF) [link](#)
- . ESA EO Open Science YouTube channel [link 1](#) [link 2](#)
- . IDB (Index DataBase - database for remote sensing indices) [link](#)
- . Science Education through Earth Observation for High Schools (SEOS) Project tutorials [link](#)
- . Tutorial: Fundamentals of Remote Sensing (*Natural Resources Canada*) [link](#)

## RS & GIS open-source/free software

---

### Free software

- . DIVA-GIS [link](#)
- . E-foto (digital photogrammetric workstation) [link](#)
- . EnMAP-Box (software for processing hyper- and multispectral data) [link](#)

- . ESA SNAP (Sentinel Application Platform) [link](#)
- . ESA SNAP sen2cor (atmospheric correction module) [link](#)
- . GRASS GIS [link](#)
- . gvSIG [link](#)
- . ILWIS [link](#)
- . INTERIMAGE (open-source, knowledge-based framework for automatic image interpretation) [link](#)
- . HyperMixTool (hyperspectral imagery tool) [link](#)
- . MultiSpec (freeware multispectral image data analysis system) [link](#)
- . Open Foris Geospatial Toolkit [link](#)
- . Open Jump (open-source java-based GIS) [link](#)
- . Orfeo Toolbox (OTB) [link 1](#) [link 2](#) [link 3](#)
- . Optiks (expandable remote sensing and imagery analysis software platform) [link](#)
- . OSSIM (advanced image processing and geospatial data fusion software) [link](#)
- . polSARpro (polarimetric SAR data processing and educational tool) [link 1](#) [link 2](#)
- . PostGIS (support for geographic objects to the PostgreSQL object-relational database) [link](#)
- . QuantumGIS [link](#)
- . RSGISLib (Remote Sensing and GIS Software Library) [link](#)
- . SAGA GIS [link](#)
- . SPIRITS (Software for the Processing and Interpretation of Remotely Sensed Image Time Series) [link](#)
- . SPRING [link](#)
- . TerraView / TerraLib [link](#)
- . uDig (Java solution for desktop GIS data access, editing, and viewing) [link](#)
- . Whitebox GAT (Geospatial Analysis Tools) [link](#)

## R packages

- . Acquisition and Processing of MODIS Products (*MODIS*) [link](#)
- . Bindings for the Geospatial Data Abstraction Library GDAL (*rgdal*) [link](#)

- . Classes and Methods for Spatial Data (*sp*) [link](#)
- . Creating and preprocessing MODIS time series (*MODISsp*) [link 1](#) [link 2](#)
- . Interactive editing of spatial data in R (*mapedit*) [link 1](#) [link 2](#)
- . Interactive viewing of spatial objects in R (*mapview*) [link 1](#) [link 2](#)
- . Interface to Geometry Engine - Open Source GEOS (*rgeos*) [link](#)
- . Landsat 8 Imagery Rescaled to Reflectance, Radiance and/or Temperature (*landsat8*) [link](#)
- . MODIS data handling (*MODISTools*) [archive-link](#)
- . Radiometric and topographic correction of satellite imagery (*landsat*) [link](#)
- . Geographic Data Analysis and Modeling of raster data (*raster*) [link](#)
- . Remote Sensing Toolbox (*RSToolbox*) [link](#)
- . Simple Features for R / Encode and analyze spatial vector data (*sf*) [link 1](#) [link 2](#)
- . Tools for Reading and Handling Spatial Objects (*maptools*) [link](#)

## Commercial software

- . Agisoft PhotoScan (photogrammetric processing of digital images and 3D spatial model generation) [link](#)
- . ESRI ArcGIS [link](#)
- . Harris Geospatial ENVI [link](#)
- . Hexagon Geospatial ERDAS IMAGINE [link](#)
- . Clark Labs TerrSet/IDRISI [link](#)
- . PCI Geomatics [link](#)
- . Trimble eCognition [link](#)

## Cloud-based platforms for EO data processing

---

### Free cloud-based platforms

- . Google Earth Engine [link 1](#) [link 2](#) [link 3](#)
- . ESA Earth Science Data Cube (ESDC) [link 1](#) [link 2](#)

## Commercial cloud-based platforms

- . Descartes Lab [link](#)
- . Raster Foundry [link](#)
- . SpaceAnalyzer [link](#)