
Countries and Programs Inventory Panel SCERIN

GREECE - Centre for Research and Technology Hellas

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Visual Analytics Lab
Information Technologies Institute
Centre for Research and Technology Hellas (CERTH)

CERTH/ ITI short presentation

Institutes

Today CERTH includes the following five institutes with indicated major fields of research:

- **Chemical Process & Energy Resources Institute (CPERI)**
Sustainable & Clean Energy, Environmental Technologies, Chemical & Biochemical Processes, Advanced Functional Materials
- **Information Technologies Institute (ITI)**
Informatics, Telematics and Telecommunication Technologies
- **Hellenic Institute of Transport (HIT)**
Land, Sea and Air Transportation as well as Sustainable Mobility services
- **Institute of Applied Biosciences (INAB)**
Agri-biotechnology, Health Translational Research, Informatics for big bio-data
- **Bio-economy and Agro-technology Institute (IBO)**
Agrotechnology, Mechatronics, Biomedicine and Kinesiology



Research units

- Image and Signal Processing
- Computer & Cognitive Vision
- Pattern Recognition and Machine Learning
- Human Computer Interaction
- Virtual and Augmented Reality
- Artificial Intelligence
- Security and Surveillance
- Biomedical Applications
- Environment, Geoscience and Remote Sensing
- Communications and Networking
- Multimedia, Database and Information Systems
- Social Media Analysis
- e-Government
- Cultural and Educational Technology
- Integrated Commercial Solutions

CERTH/ ITI short presentation



Information Technologies Institute (ITI) has a **track record** of

- ✓ more than 175 participations in research projects funded by the European Commission
 - ✓ more than 160 participations in research projects funded by Greek National Research Programmes and Consulting Subcontracts with the Private Sector (I&T Industry)
 - ✓ more than 200 publications in scientific journals over the last six years
 - ✓ more than 500 paper presentations in international conferences over the last six years
- (for the complete record please visit <http://www.iti.gr/>)

Participating Team: **Eoservices team** operating within the Visual Analytics laboratory

Main expertise in spaceborne image analysis, development of geoinformation analysis modules, spatial analysis and handling with multiscale maps and their metadata, generation of remote sensing products used in ecosystem and biodiversity monitoring, multi-criteria and multi-modal data assessment, and uncertainty handling.



<http://www.eoservices.tech/>

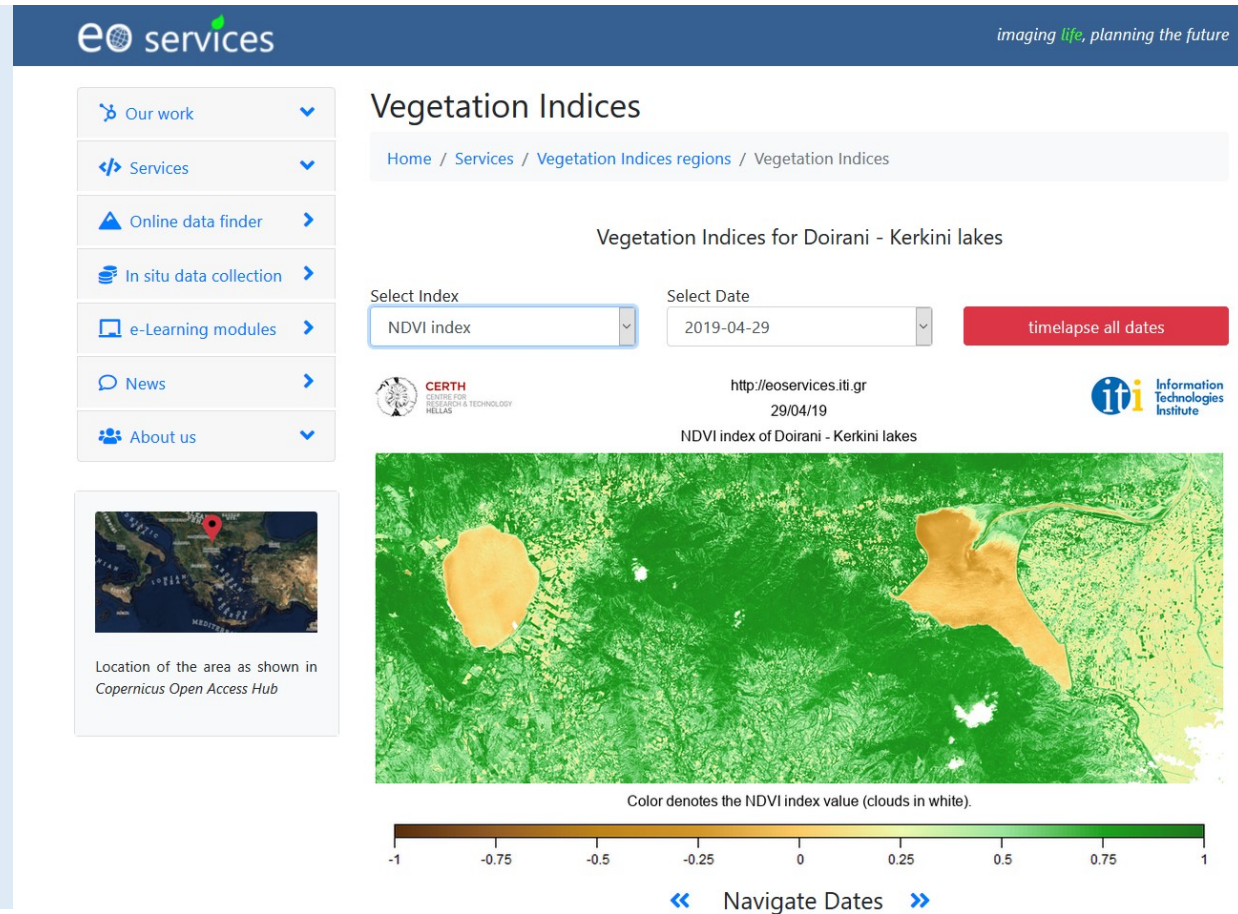


EOSERVICES.ITI.GR

Eoservices team track record

- ✓ Development of numerous online data services developed for the ECOPotential Virtual Laboratory (HydroMap, WaterMask, PhenologyMetrics, PhenologyChanges, LandMetrics, etc.)
- ✓ Provisioning of many vegetation indices and inundation maps based on Sentinel data for various areas in Greece
- ✓ [Online data finder](#)
- ✓ [In-situ data collection](#)
- ✓ [e-Learning modules](#)
- ✓ Participation in various research projects

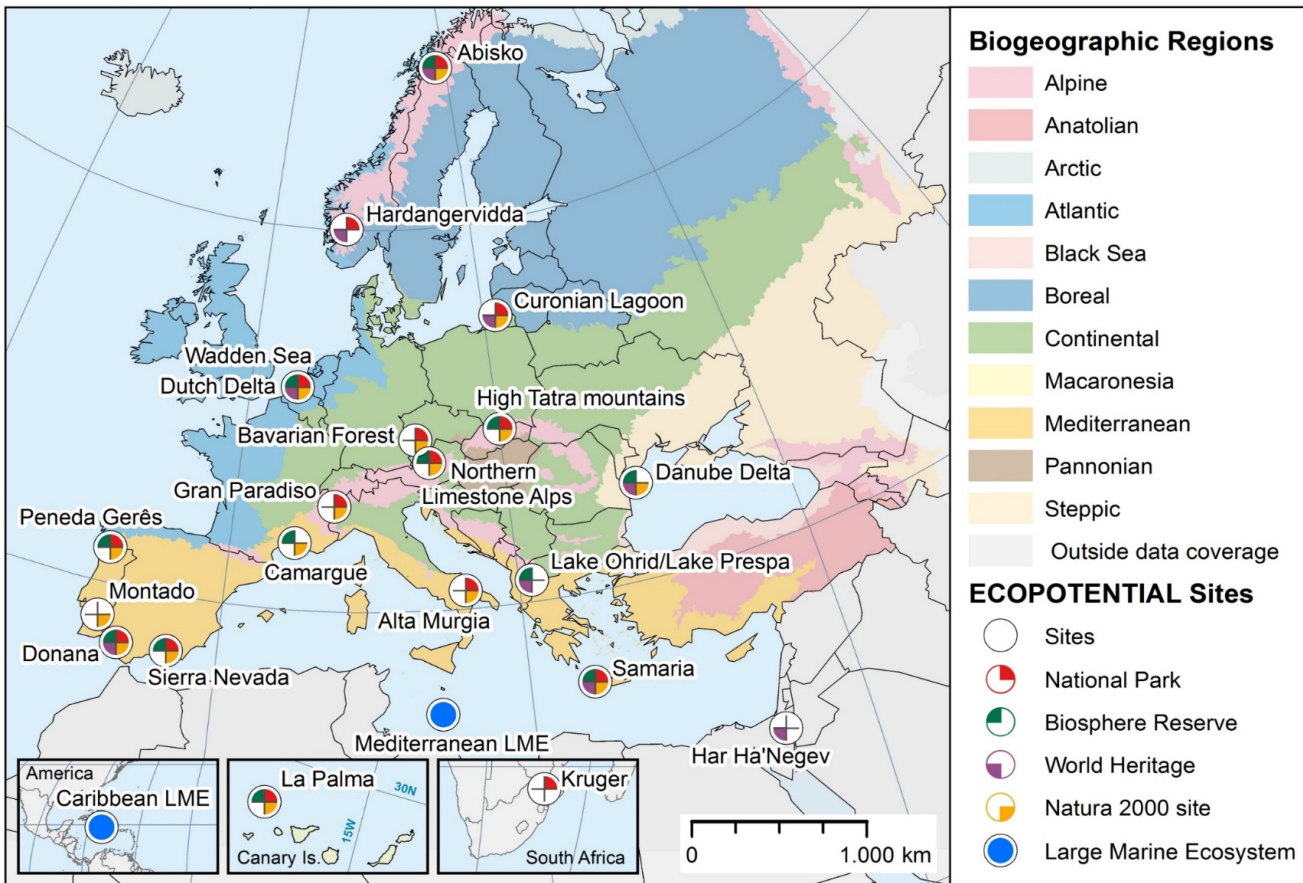
<http://eoservices.iti.gr/>



The screenshot displays the 'eoservices' website interface. The top navigation bar includes the 'eoservices' logo and the tagline 'imaging life, planning the future'. A sidebar on the left contains a menu with options: 'Our work', 'Services', 'Online data finder', 'In situ data collection', 'e-Learning modules', 'News', and 'About us'. The main content area is titled 'Vegetation Indices' and shows a breadcrumb trail: 'Home / Services / Vegetation Indices regions / Vegetation Indices'. Below this, the specific area is identified as 'Vegetation Indices for Doirani - Kerkini lakes'. The interface includes a 'Select Index' dropdown menu set to 'NDVI index' and a 'Select Date' dropdown menu set to '2019-04-29'. A red button labeled 'timelapse all dates' is positioned to the right. The URL 'http://eoservices.iti.gr' and the date '29/04/19' are displayed above a satellite-style map of the Doirani - Kerkini lakes region. The map is color-coded by NDVI index value, with a legend below it ranging from -1 (dark blue) to 1 (dark red), with 0 being white. A note states 'Color denotes the NDVI index value (clouds in white)'. Navigation arrows labeled 'Navigate Dates' are located at the bottom of the map area.

ECOPOTENTIAL H2020 flagship project

improving future ecosystem benefits through earth observations (2015-2019)



A large EU project that focuses its activities on a targeted set of internationally recognized Protected Areas, blending Earth Observations from remote sensing and field measurements, data analysis and modelling of current and future ecosystem conditions and services.

www.ecopotential-project.eu



EuroGEOSS Showcases: Applications Powered by Europe (2019-2023)

Vision: To develop operational services with and for users and to create a conducive environment whereby the strengths of Europe are exploited towards addressing societal challenges, fostering entrepreneurship and supporting sustainable development.

- S1: The Food and Sustainable Agriculture showcase
- S2: The Health Surveillance showcase
- S3: The Renewable Energy showcase
- S4: The myEcosystem showcase**
- S5: The Water resources management showcase
- S6: The Disaster Resilience showcase
- S7: The Climate showcase



54 partners



20 countries



7 thematic areas (showcases)

27 pilots



ECOPOTENTIAL group

www.ecopotential-project.eu



eLTER group

www.lter-europe.net

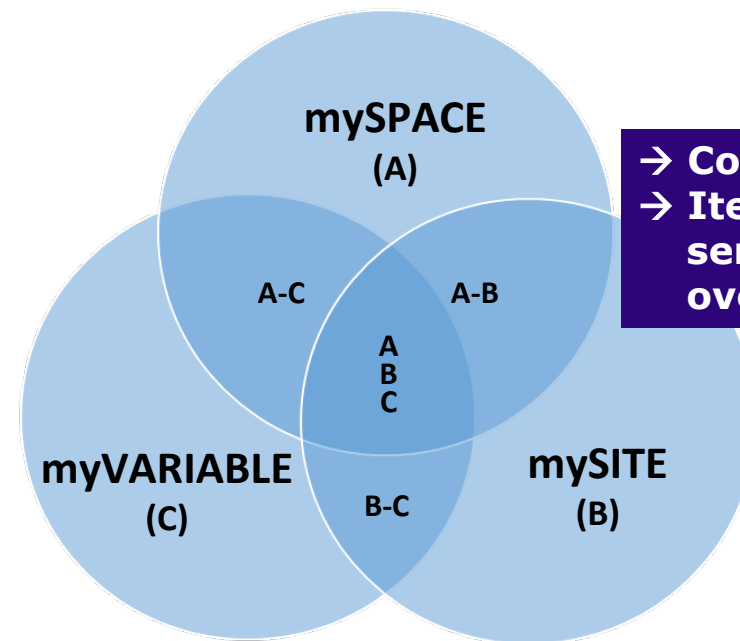


GEOBON and GLOBIS-B group

www.geobon.org



'INTEGRATION / ASSESSMENT'
RS based information to complement
in-situ data and advice management



→ Co-design legacy
→ Iteratively co-developed
services (expertise
overlap)

'INDICATORS'
for research, reporting
and assessment

'In-situ INFRASTRUCTURES / OPERATION'
Site metadata and data gathering to
understanding change in benchmark
ecosystems

AQUACYCLE ENI CBC MED project



Towards Sustainable Treatment and Reuse of Wastewater in the Mediterranean Region «AQUACYCLE» (2019-2022)

Coordinated by CERTH (with 2 institutes participating)
Geographic coverage: Spain, Malta, Tunisia, Lebanon, Greece
Total budget: ~3M

The goal is to provide a multi-functional e-tool able to acquire, store, manage heterogeneous data & provide personalized water resource management services to end users. E-tool is based on a model which:

- performs multi-criteria analysis on data that can be exploited to irrigate an area of interest defined by user
- evaluates reference condition (soil, cultivation, relief, management practices) and real precipitation regime in comparison with the management goals set for the plot, the proximity to water resources and the available water volume at the water reuse facilities

The e-tool **provides recommendation for action**, along with the **driving factors**. In addition, it will be inferred if water availability is adequate to allow cultivation of a specific crop at a region of interest given its irrigation needs and soil type.



ODYSSEAS project (national)

Intelligent and Automated systems for enabling the design, simulation and development of integrated processes and products - ODYSSEAS

Team involvement:



✓ Supply a **field spectrometer** of high spectral resolution with the ability of signal recording within the optical and infrared portion of the spectrum (370-1700nm)

✓ Various application areas and new research lines

- ❖ Discrimination of vegetation species (among others, identification of endemic and non-plant species in plant communities, distinction of varieties of the same plant species)
- ❖ Study on plant characteristics and status by focusing on biotic and abiotic factors (e.g. identification of plant diseases, water stress detection)
- ❖ Quality monitoring to support the agri-food sector (e.g. via the identification of advanced maturation or deformations/ impacts on fruits)
- ❖ Soil monitoring (e.g. concentration of organic materials, moisture, salinity, heavy metal contamination etc.)

New research line: **Open Data Cube** applications



The Open Data Cube (ODC) is an **Open Source Geospatial Data Management and Analysis Software project** that helps you harness the power of satellite data in an efficient and easy way.

What does it provide?

ODC allows **analysis-ready satellite data** to be packaged in "cubes" in order to minimize data preparation complexity. It also yields rapid results, and utilizes an international global community of contributors.

Data Cube capabilities Data cube allows the user to easily calculate **metrics**, including:

Data cube modules for Analysis Ready Data

Land

- Urbanization
- Spectral Indices
- Slip
- NDVI anomaly
- Fractional Cover

Water

- Coastal Change
- Water Detection
- Water Quality TSM

General

- Cloud Coverage
- Custom Mosaic3

International cooperation



Elected Chairman of the European Association of Remote Sensing Laboratories Special Interest Group Land Use and Land Cover



GEOBON ECOFUN



Co-Lead to the GEO Global Ecosystem Initiative (GEO ECO) of the GEOBON Flagship within the Group on Earth Observations



Activity Lead at the South Central and Eastern European Regional Information Network (SCERIN) of the GOFC-GOLD and GTOS (Global Terrestrial Observing System), in relation with the evaluation of the Global Land Cover Maps 'Global/Continental land cover products validation and intercomparison in the SCERIN area and member of the Mediterranean Regional Information Network (MedRIN).



Copernicus Academy Member



Adjunct Professor at the Center for Advanced Mediterranean Agronomic Studies



With a smile and a vision

Thank you
for your attention

At your disposal
for questions/ clarifications



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