



EO4EU Platform

AI-enabled easy access to Earth observation data



**ACCESS
THE EO4EU PLATFORM**

EO4EU PLATFORM: HOW IT WORKS



Data Sources

EO4EU seeks to improve access to Earth Observation (EO) data from various European platforms. Key sources include Copernicus services, DIAS platforms, and future initiatives such as Destination Earth.

Semantic Annotations

The platform will be capable of discovering, processing, and combining datasets without prior knowledge of their structure, using machine learning and advanced semantic annotations.

Learned Compression

Machine learning-based compression techniques will reduce the size of data to be transferred and stored, improving efficiency and lowering network and storage demands.

Platform as a Service (PaaS)

EO4EU employs a microservices and event-driven architecture, hosted on a PaaS layer. It uses Kubernetes to support scalable and manageable microservices deployment.

User Experience

The platform includes a range of tools: a graphical user interface for visual analytics, a workflow editor, command line interface, API, and extended reality features to enhance usability and engagement.

Communications

A message-based middleware (Message Bus) ensures reliable and consistent communication across the system, supporting replication, distribution, and backup across different infrastructures.

EO4EU Platform 4USERS



Policy Makers and Decision Makers

- Utilise the platform to gain insights for environmental policies, urban planning, and disaster management.
- Rely on easy-to-use dashboards and summarized data outputs.



Scientist, Researchers and Academia



Industry and Business Stakeholders



Environmental, Climate and Disaster management agencies



Citizens and Public Organisations

Top features 4U

Through the EO4EU Platform, you can access some of the largest and most trusted EO data sources in one place and use added value features such as:



Combine data: Interpolate and extrapolate datasets

With the Fusion Engine, the user will be able to combine datasets from different spatio-temporal snapshots.



Access raw EO data

Access raw EO data through natural language queries, explore datasets by description, and retrieve them via an OpenEO-based API for further use.



Rerun everything with ease

Choose your ML algorithm, Fusion, FaaS function in the Marketplace and execute it following the description and the user guide.



Immersive experience through VR

EO4EU is bringing virtual reality interface powered via augmented/extended reality technology.



Easy-to-use interface for technical and non- technical users

The platform enables interactive data visualisation and analysis with smart tools, and supports easy execution of custom code for efficient processing.



Readily available AI and ML resources

The platform offers accessible AI/ML tools to support task-specific model training and run labelling algorithms for applications like crop, locust, and fire detection.

EO4EU PLATFORM TOOLS 1/2



Decision-making and policymaking are at the heart of our data analytics and visualisation tools. We offer real-time data analysis, interpretation of environmental observations, and interactive mapping. Our smart search engine is text and annotation-based, and we provide personalised dashboards, all fuelled by data analytics based on statistical metrics.

Our approach to decision-making and analysis is unique. We're introducing a Graph-Based Text Representation, enabling us to extract informative features from the entire knowledge graph. This encompasses structural and textual aspects, providing you with a more comprehensive understanding of the data.

We're taking data visualization to a whole new level with our extended reality (XR) system. This immersive experience includes an augmented reality (AR) interface that lets you visualise and analyse EO data in the real-world using geolocation technology. Furthermore, our virtual reality (VR) interface brings EO data to life in 3D virtual environments, compatible with various VR devices.

EO4EU PLATFORM TOOLS 2/2

AI/ML Marketplace

Our AI and ML Marketplace is your one-stop destination for artificial intelligence and machine learning resources. The EO4EU Platform offers a comprehensive selection of AI and ML models, algorithms, techniques, metadata, and data models for processing and communication, programming code, and documentation.

Generic Machine Learning Pipeline for Semantic Annotation

We understand that labelled data can be a limitation. Our Generic Machine Learning Pipeline is designed to minimise the need for use-case-specific labelled data. It empowers you to learn a robust and transferable representation of input data in a latent space, all in an unsupervised manner. We employ approaches like SimCLR, which is a simple framework for contrastive learning of visual representations. We also keep an eye on emerging techniques in this rapidly evolving field.

Fusion Engine

Our Fusion Engine is the heart of context awareness. It combines data readings from different sources selected by you, the user, and processes them through various algorithmic pipelines. These pipelines refine the data and even create new products. All this is done with the utmost efficiency, utilising high-performance computing (HPC) and GPU environments. Each pipeline runs in the Kubeflow environment, ensuring seamless communication through the EO4EU message bus.

Serverless FaaS

Our serverless Function as a Service (FaaS) capabilities provide you with a cloud computing service that lets you run code in response to events without the complexity of managing infrastructure. This means you can focus on your tasks, and we handle the rest.

Use Cases

Improving Civil Protection Activities

Enhances emergency management through real-time EO data for natural and man-made hazards. Builds upon a civil protection platform in Italy and Greece.

How the platform helps

It enables faster, more informed decisions by integrating EO data with AI, improving emergency preparedness and coordination.



Food Security

Evaluates climate impacts on agriculture to enhance food security. Tracks crop risks from pests and extreme weather.

How the platform helps

It strengthens early warning systems with EO-based indicators, improving crop risks forecasts and adaptive farming responses.



Environmental Pests (Locust Monitoring)

Supports locust impact prediction in regions like Yemen using EO and climate data. Aids humanitarian response and agricultural planning.

How the platform helps

The platform enhances locust monitoring by combining EO and climate data, helping predict outbreaks and guide timely interventions.



Ocean Monitoring

Optimises shipping routes to save time and fuel. Targets efficiency for long-haul container vessels.

How the platform helps

It enables faster, more informed decisions by integrating EO data with AI, improving emergency preparedness and coordination.



Soil Erosion

Asses erosion risks by combining rainfall data and land characteristics. Utilises proven empirical models for erosion prediction.

How the platform helps

It delivers spatial erosion risk assessments using EO inputs, aiding land managers in targeting conservation measures.



Personalised Healthcare (PASYFO)

Offers tailored pollen allergy forecasts to improve quality of life. Helps users manage symptoms more effectively.

How the platform helps

It offers tailored pollen forecasts, empowering allergy sufferers to manage symptoms more effectively through daily planning tools.



Forest Ecosystems

Identifies ecosystem services in managed forests using EO. Focuses on wood production and climate regulation functions.

How the platform helps

It quantifies ecosystem services, helping forest managers make sustainability-driven decisions and support climate resilience.

