

# ARTEMIS: An Earth Observation-based service for monitoring of forest ecosystems

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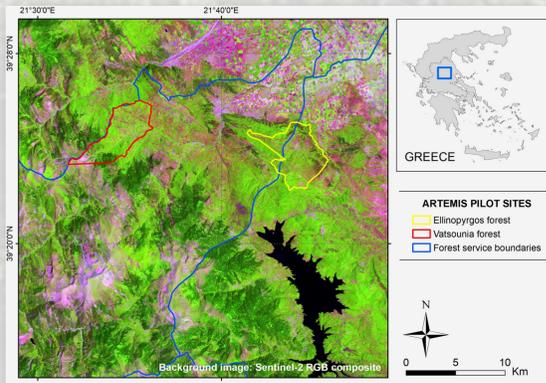
## Scope

The **ARTEMIS project**, funded by the Greek Secretariat for Research and Technology, delivers an **Earth Observation based platform** that provides high quality products and services for assessing forest condition and health in a Mediterranean region. Among the aims of this project is to support forest productivity and economic growth, especially in areas where chestnut production has dramatically declined in the past decades.



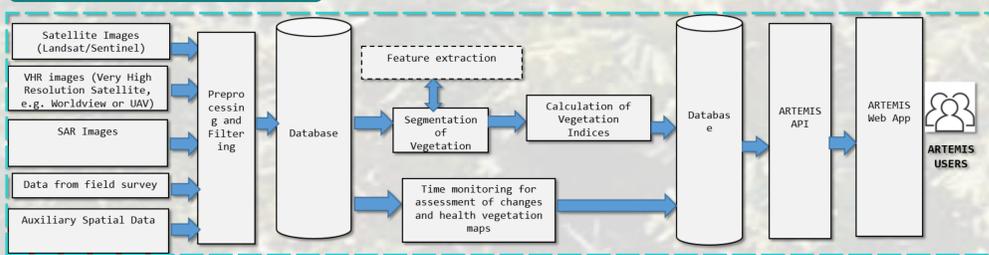
## Development

The selected **forest pilot sites** for the development and implementation of the platform and its modules are located at the region of Thessaly, in central Greece.



This **online platform** has been designed to seamlessly process **Copernicus Sentinel-2** imagery, in order to estimate a set of vegetation indices suitable for forest monitoring. The **architecture** of this platform incorporates a database, various modules that support automation of processing workflows, data storage, visualization and analysis.

### ARTEMIS Architecture



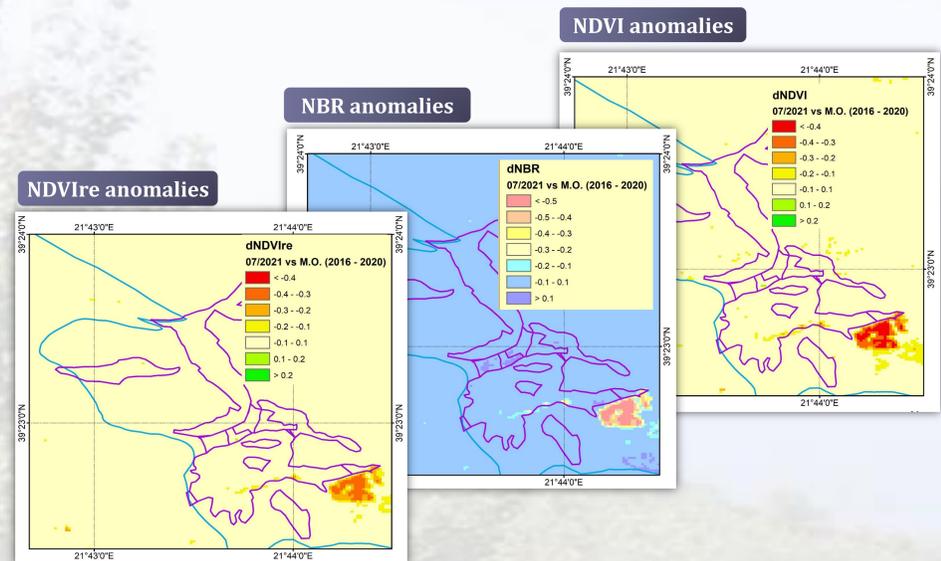
The system performs acquisition and preprocessing of Copernicus satellite imagery by incorporating **Google Earth Engine (GEE) services**. Utilizing GEE provides very fast access to a huge amount of geospatial datasets and high computing capacity. Preprocessing includes also the extraction of specific vegetation indices, broadband and narrowband, which are related to plant physiology and structural characteristics of forests.

### GEE & Data processing



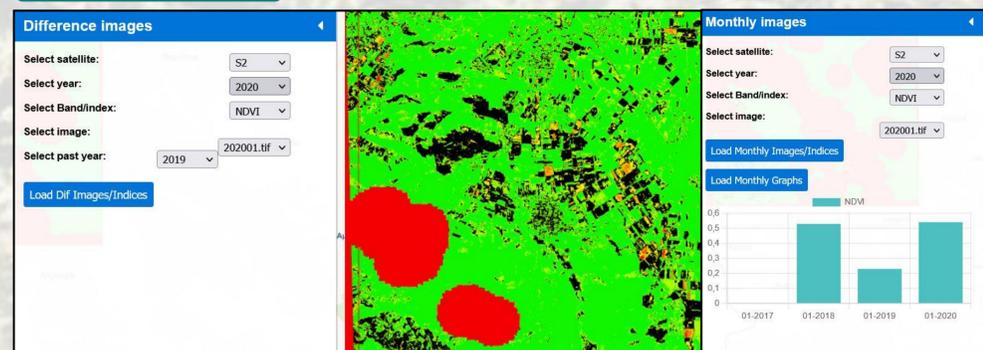
## Implementation

Time series of vegetation indices are generated and used to assess current **vegetation conditions** at a monthly time step, as well as **"vegetation anomalies"** extracted via image differencing techniques or by comparison with the long-term average conditions.



The processed raster and vector data products and statistics are stored in cloud infrastructure and can be visualized via a user-friendly and modern **web-GIS platform**. The visualization of the output products is supported by the Leaflet JavaScript library, which retrieves content, (e.g. maps, images, graphs) via a custom REST API.

### Platform outputs



## Expected impact

The **envisaged operations** of the ARTEMIS platform are summarized as follows:

- Continuous monitoring of forests and crops.
- Early detection of threats and forest degradation.
- Engagement of individual users for monitoring the condition of specific areas by interactively selecting a customized area of interest.
- Fostering decision making and planning of interventions by relevant competent authorities, which will utilize the developed forest monitoring tools when required.

