
Recommendations (1/2)

- A first key outcome was a clearer understanding that trust in EO-derived information goes beyond technical performance. While validation, metadata, and uncertainty quantification were recognised as essential, the discussion showed that trust was also institutional, depending on transparency, reproducibility, and alignment with established statistical standards and processes
- Second, the session highlighted that the value of EO lay in its ability to integrate into workflows, rather than simply provide additional data. Participants gained insight into how platforms such as SDGs-EYES could support end-to-end processes, from data access to indicator production.
- Third, the session reinforced the importance of co-design and user-oriented development, underlining that usability, documentation, and guidance were critical for uptake, and that early and continuous engagement with users was key to ensuring relevance.



Recommendations (2/2)



- Fourth, the session underscored that the operational deployment of EO for SDG monitoring required robust and scalable infrastructure capable of handling large volumes of satellite data. Beyond raw capacity, platforms needed to adopt modular and open architectures, built around well-documented and interoperable APIs/components, so that they could be extended as user and scientific needs evolved. Infrastructure was not considered a background concern, but rather a strategic prerequisite for reliability, accessibility, and long-term uptake
- Fifth, the session underlined the specific value of EO for the statistical community in terms of timeliness and spatial granularity. EO provided more frequent, consistent, and geographically detailed observations, helping statistical actors complement traditional data sources, detect changes earlier, and produce more disaggregated evidence for SDG monitoring.
- Finally, the session helped identify remaining gaps and priorities for action, including challenges related to scalability, long-term maintenance, interoperability, and skills. It also opened the door to future collaboration opportunities between actors.



Hands on Session SDGs-EYES Platform for SDG Monitoring



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StatEO, 5-7 May 2026 ESA - ESRIN, Italy

Agenda 1/2: SDGs hands-on demo session

11:45 - 11:50	Welcoming and Opening: Setting the scene and aligning the audience. <ul style="list-style-type: none">– Role of Earth Observation for SDG monitoring– Key challenges: trust, usability, integration into workflow <ul style="list-style-type: none">● Monica Miguel Lago (EARSC)
11:50 - 11:55	Introduction to the SDGs-EYES Platform <ul style="list-style-type: none">– What is SDGs-EYES platform (vision, scope, services)– Brief overview of pilots and platform components (from capabilities, gaps to solution) <ul style="list-style-type: none">● Manuela Balzarolo, CMCC
11:55 - 12:10	Hands-on demo (I) Interactive walkthrough <ul style="list-style-type: none">– Navigation of the platform, architecture / show concretely how the platform works– Traceability <ul style="list-style-type: none">● Stefano Natali, SISTEMA
12:10 - 12:35	Hands-on demo (II) <ul style="list-style-type: none">– Navigation of the dashboards, maps,...– Example use case (GHG emissions (FIRE-TRACE), climate risk (Heat Health Risk Assessment))– How users interact with services– Front end Usability <ul style="list-style-type: none">● Jishnu Jeevan & Alessandro D'Anca, CMCC



Agenda 2/2: SDGs hands-on demo session

12:35 - 13:10	<p>Round table discussion (EARSC, CMCC, SISTEMA, ISTAT)</p> <p>From research to operations: advancing SDGs-EYES services panel will move from demo to reflection and uptake</p> <p>Panel perspectives:</p> <ul style="list-style-type: none">• User: Fabio Bacchini (Italian National Statistical Office(NSO) – ISTAT)• Science: Manuela Balzarolo (CMCC)• Co-design & uptake & exploitation: Francesca Piatto (EARSC)• Platform: Stefano Natali, SISTEMA <p>Moderated by: Monica Miguel Lago (EARSC)</p>
13:10 - 13:15	<p>Wrap up and key messages (EARSC)</p> <p>– The session aims to demonstrate how the SDGs-EYES platform supports the transition from Earth Observation data and models to operational, user-oriented services for Sustainable Development Goals monitoring. More specifically, the objectives are threefold.</p>



Uncovering SDGs-EYES

- Boosting the European capacity for monitoring Sustainable Development Goals (SDGs) based on Copernicus
- Building a portfolio of decision-making tools to monitor those SDGs indicators related to the environment from an inter-sectoral perspective, aligning with the EU Green Deal priorities and challenges.



PROJECT KEY INFORMATION

Project number: **101082311**

Duration: **36 Months**
(Starting date: 1 January 2023)

EU contribution: **HORIZON-RIA**

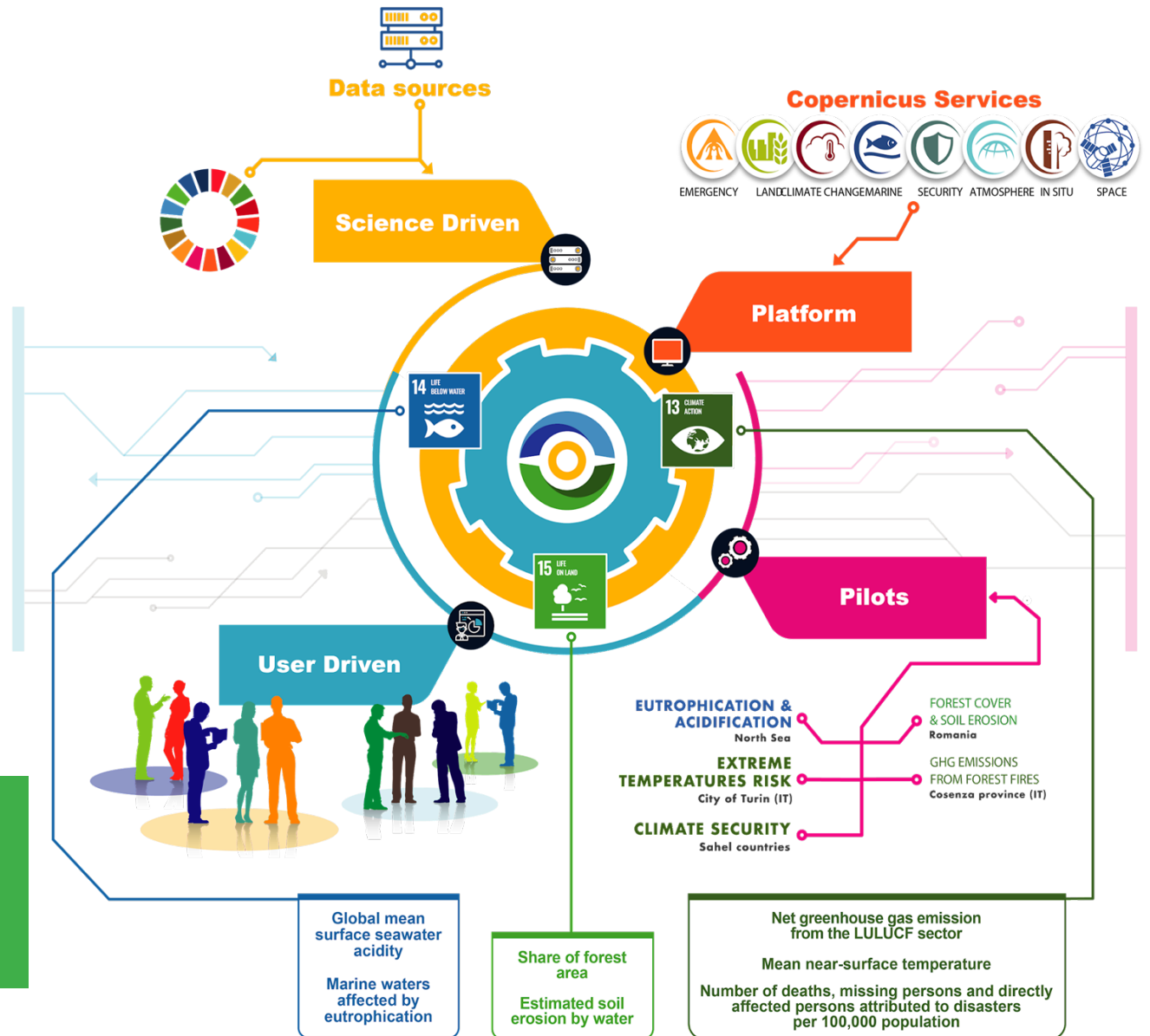
Consortium:
10 organisations from 6 countries

Coordinator:
Fondazione CMCC



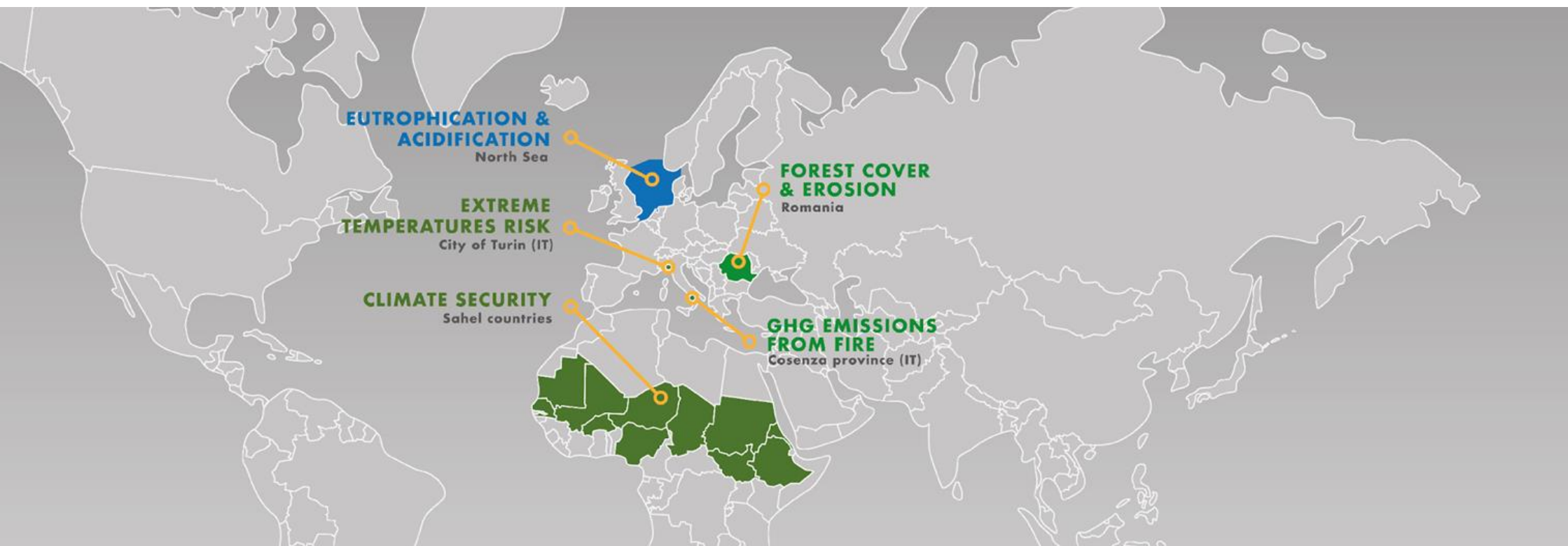
SDGs-EYES methodology

SDGs-EYES brings together research and industry experts together with different stakeholders communities to build a scientific, technological and user engagement framework for monitoring SDGs indicators.



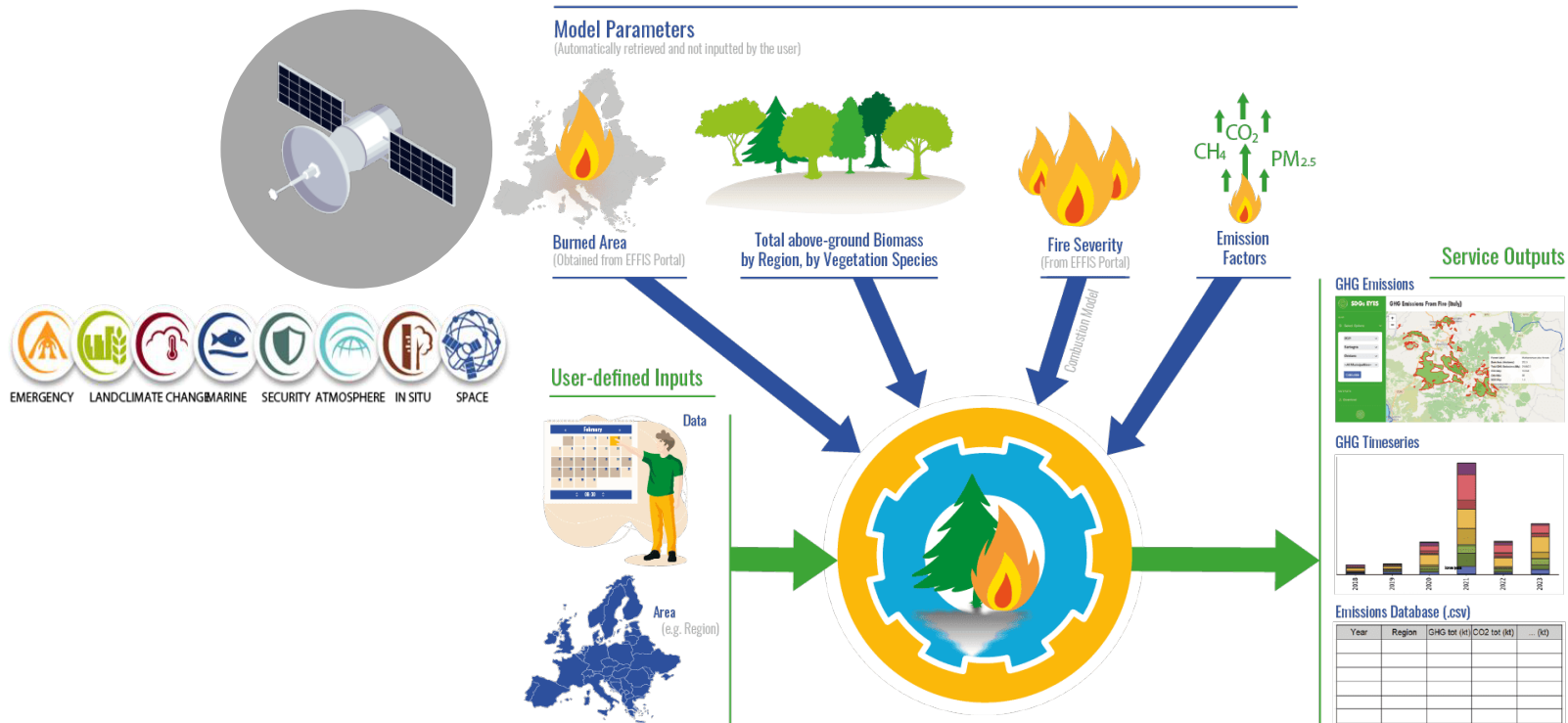
SDGs-EYES pilots

SDGs-EYES methodology is based on a **Pilot-driven approach for demonstration, evaluation and assessment** and an agile development of the SDGs-EYES Copernicus-based Service, closely engaging stakeholders.



FIRE-TRACE service

🔥 Forest fire framework for Tier3 Reporting and Accounting of Country-level Emissions



SDG indicator 13.2.1: Net greenhouse gas emissions

Indicator Eurostat Code 13_21

FIRE-TRACE: Demo

Front end - User interface



SDGs EYES
GHG Emissions From Fire (Italy)

MAP
Select Options

2021
Sardegna
Oristano
--All Municipalities--
Calculate

OUTPUTS
Download

Filter files by name

Name	Last Modified
img	3 months ago
ghgFuncio...	3 months ago
main.ipynb	3 months ago

Back end - Lab version

Launcher x main.ipynb x +

Open in... Python 3 (ipykernel)

3. Visualisation of GHGs over selected region

Go back to the "Table of Contents"

```
[21]: def main():  
    warnings.filterwarnings('ignore')  
  
    # Step 1: Import Data  
    effis_ba = import_data(path_to_effis_shapefile, year, fire_id)  
    burnt_shape, border_shape = crop_shapefile(path_to_country_shapefile,  
                                              path_to_regions_shapefile,  
                                              path_to_provinces_shapefile,  
                                              path_to_communes_shapefile,
```

<https://ghg-emissions.apps.sdgs-eyes.adamplatform.eu/>

SDGs-EYES platform & services



Provide an intuitive & robust mapping tools for NSOs and policymakers



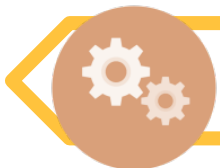
Design a replicable and scalable workflows based on EO data



Increase temporal resolution, reducing timeliness



Improve spatial scale and provide geographically explicit data



Enhance current methodology and accuracy of SDGs monitoring



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A Copernicus-Based Services for Monitoring SDGs

Leadership: SISTEMA

Involved Partners: CMCC



SDGs EYES

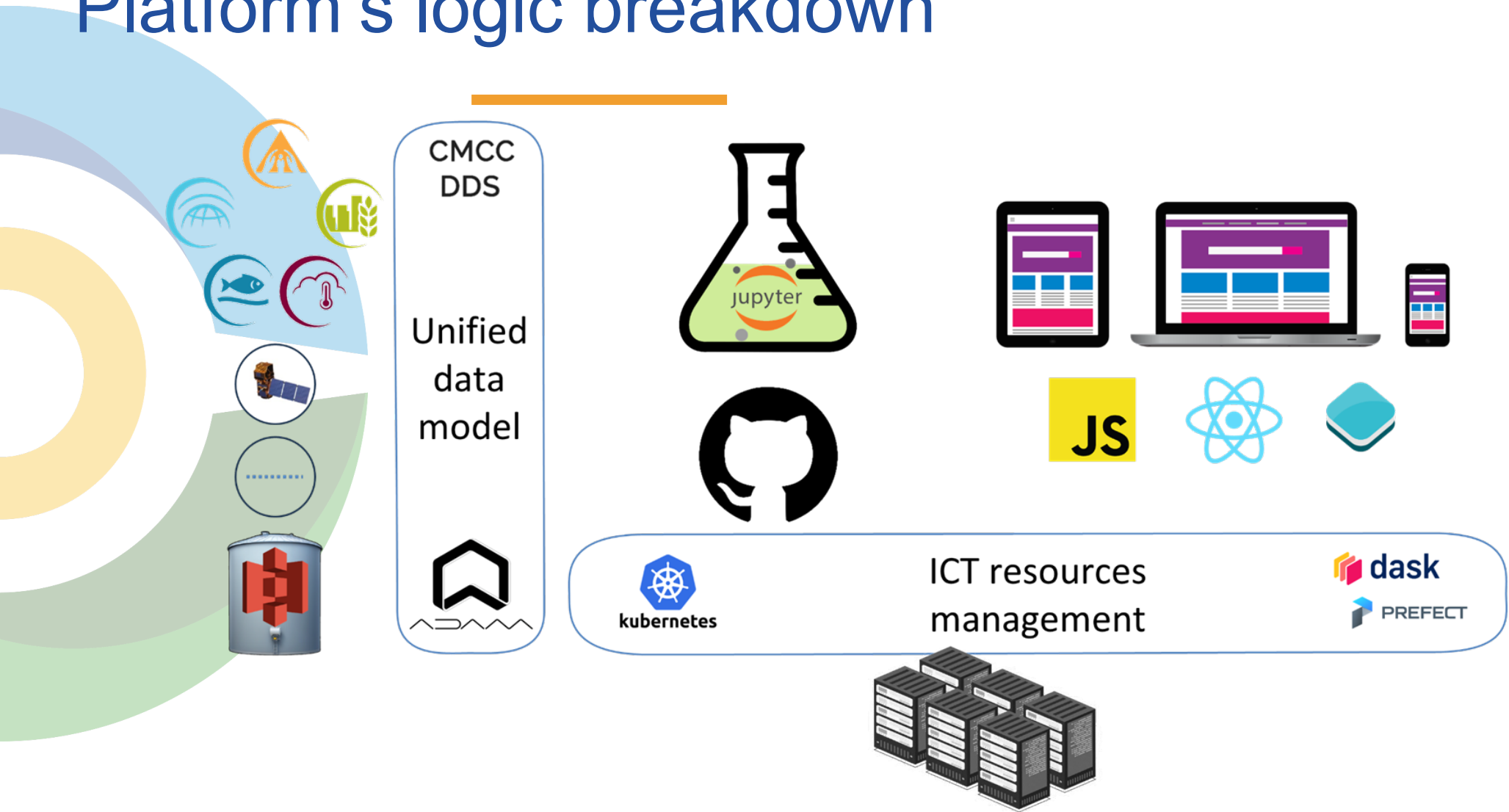
The SDGs EYES Platform



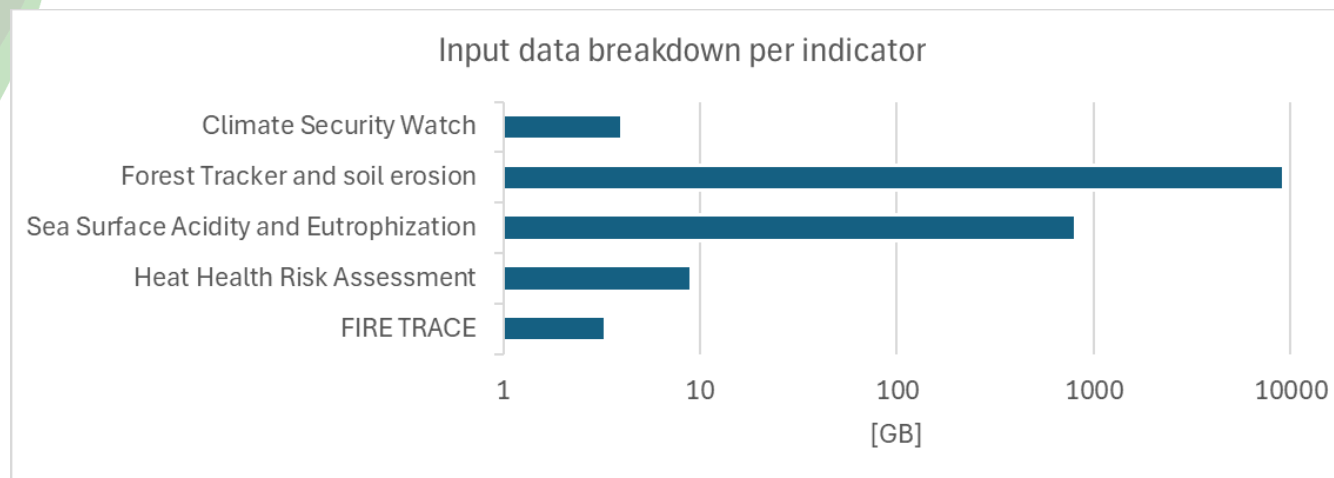
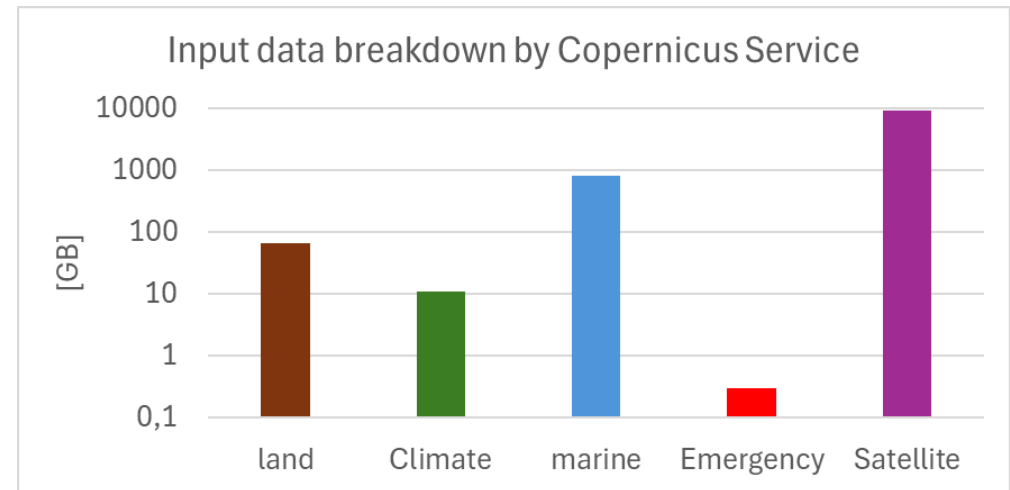
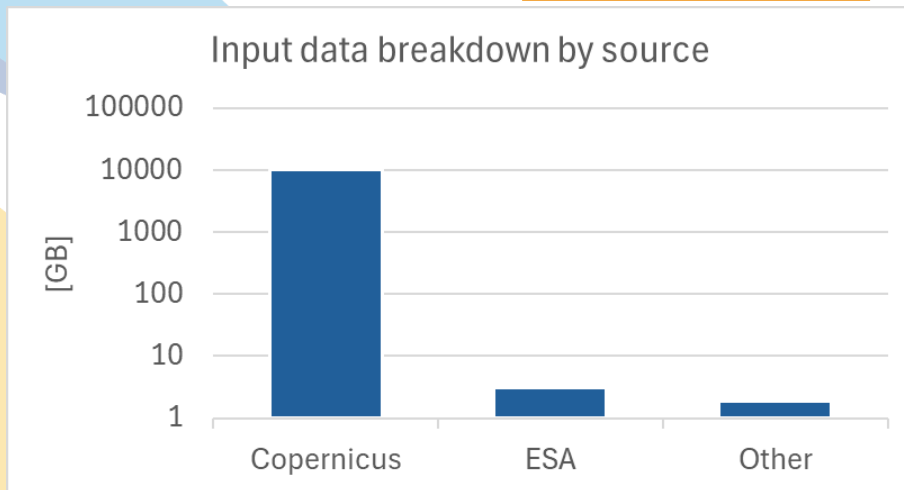
The SDGs-EYES platform aims at:

- being the **unique endpoint** for the SDGs-EYES indicator's access and exploitation
- Providing operational functions to **discover, access, process** and **exploit** the indicator products
- allowing **comparing** and **creating** new SDG indicators' products
- Becoming the **reference platform** for the SDGs indicators **community**

Platform's logic breakdown

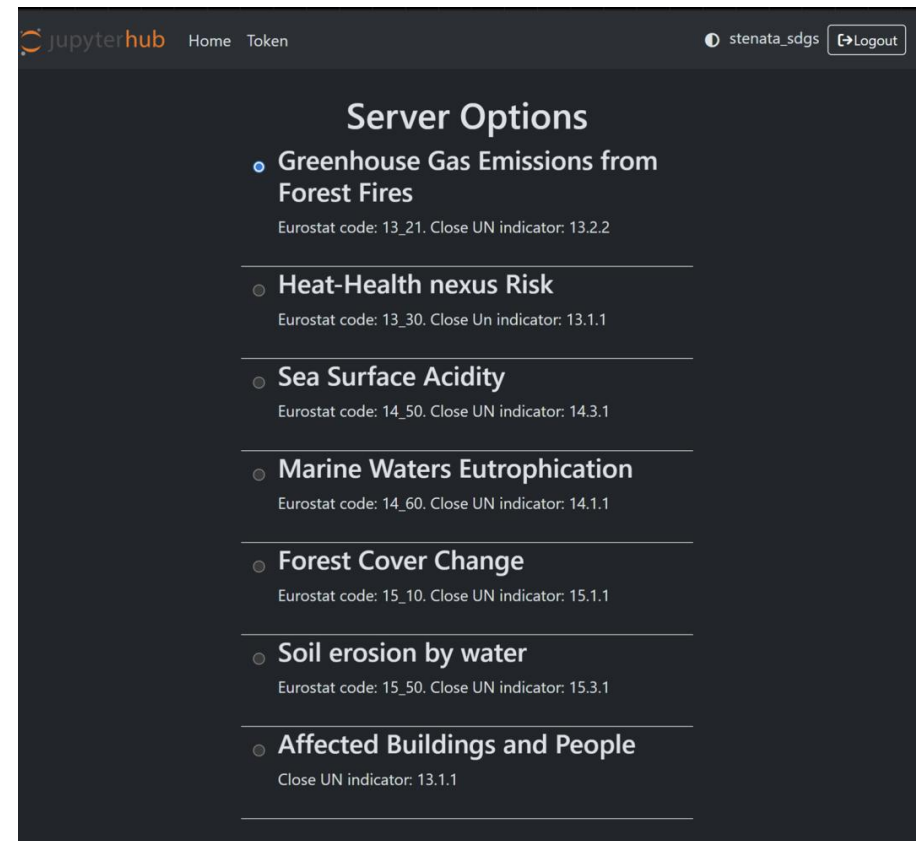
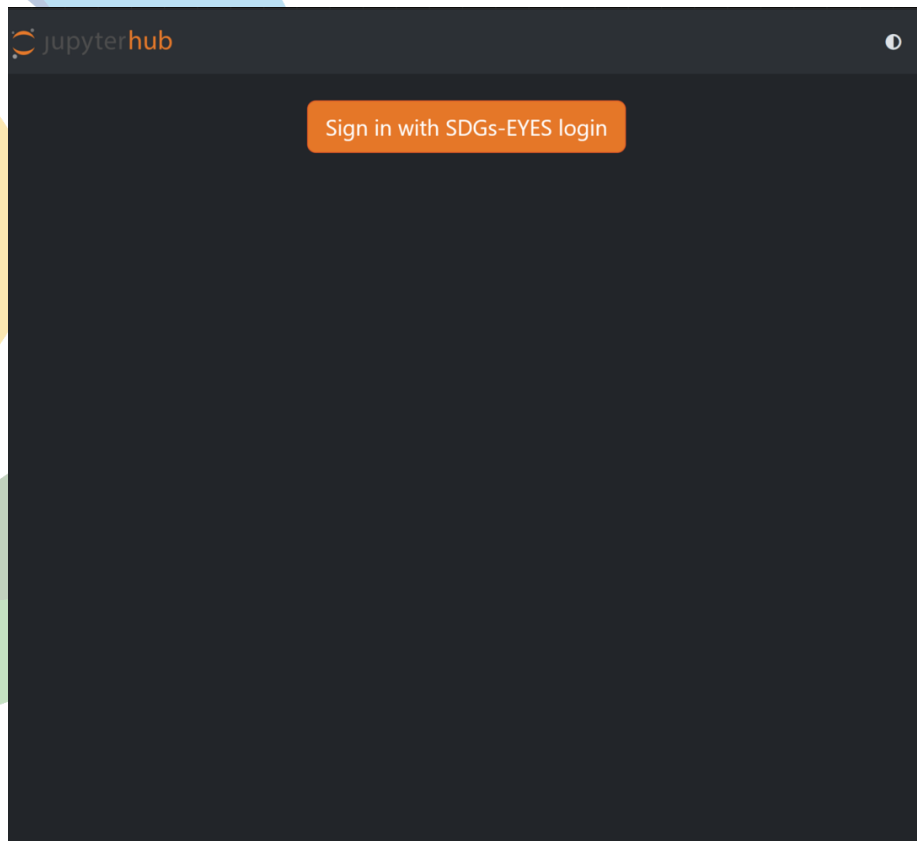


Data summary



Results: the laboratory

<https://jup.sdgs-eyes.adamplatform.eu/>



Results: the la

File Edit View Run Kernel Tabs Settings Help

Filter files by name

/ pilot1 / notebooks /

Name	Last Modified
old	last year
get_ghg_emissions_v2.0.ipynb	3 months ago

Name

- folder pilot1
- folder work
- baselibs.ipynb

Name

- data
- notebooks
- outputs_41865010
- outputs_84452833
- results
- systematic_cache
- tutorial

Launcher get_ghg_emissions_v2.0.ipynb Python 3 (ipykernel)

Retrieve GHG emissions from forest fires

Author: Chiara Aquino
Date: 12 March 2024

This script provides the functions used to calculate GHG emissions from forest fires. GHG emissions are calculated using the model from in Chiriaco et al.(2013):

$$\text{GHG emissions} = A \times B \times C \times D \times 10^{-3}$$

where:

- GHG emissions = amount of GHGs released as a result of fire [kgton of GHG];
- A = burnt area [ha], provided by input data (EFFIS)
- B = mass of available fuels, in [kg dry matter ha⁻¹]
- C = combustion factor, portion of biomass combusted [dimensionless]
- D = emission factor [g GHG kg⁻¹] for each GHG compound.

Reference

Chiriaco, M.V., Perugini, L., Cimini, D., D'Amato, E., Valentini, R., Bovio, G., Corona, P. and Barbati, A., 2013. Comparison of approaches for reporting forest fire-related biomass loss and greenhouse gas emissions in southern Europe. *International Journal of Wildland Fire*, 22(6), pp.730-738.

```
[2]: !pip list
```

```
[1]: #import Libraries
import geopandas
import pandas as pd
import numpy as np
import matplotlib
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import functools
import time
import logging
```



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SDGs-EYES Front-End Ecosystem

Presenters: Jishnu Jeevan, Alessandro D'anca
Organization: CMCC, Italy.



SDGs EYES

Introduction and Requirements



The **SDGs-EYEs** web interface is an interactive tool that allows even non-technical users to visualize SDGs-EYEs **indicators**.

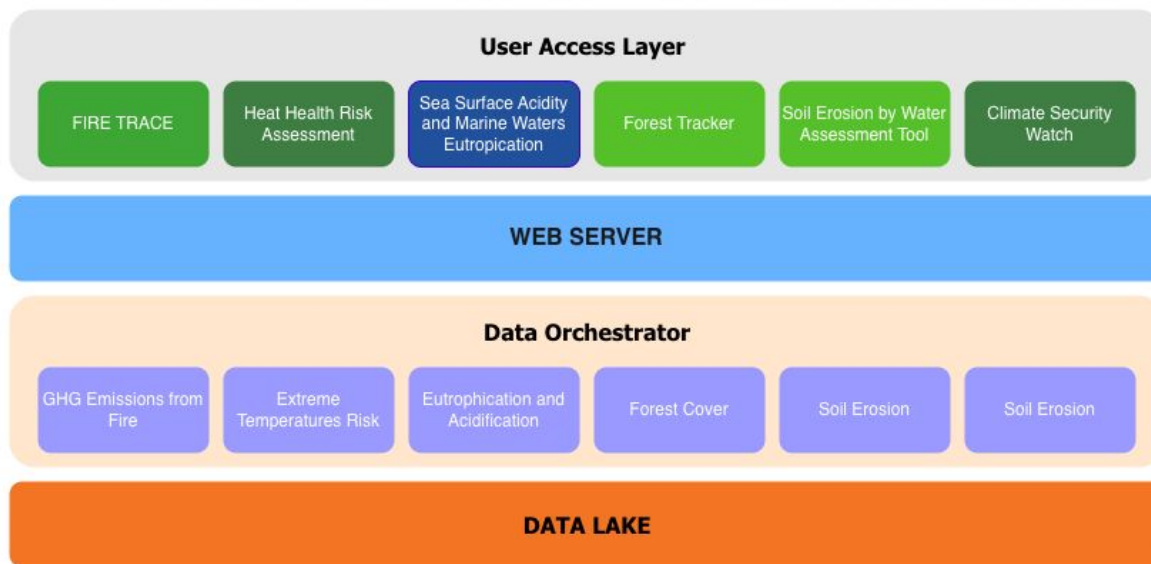
Usability: Web-based interface with interactive maps/graphs for non-technical users.

Fast response: Optimized backend + pre-processed data for quick loading of indicators.

Robustness: Modular architecture separates data, processing, and UI for reliability and easy maintenance.

Concurrency management: Orchestrated workflows and async processing support multiple users and requests simultaneously.

System Architecture



Data Layer: Provides Earth observation data from Copernicus services (land, marine, climate) as the foundational input for all indicators and analyses.

Processing Layer: Handles data transformation and indicator computation through automated, containerized workflows to ensure scalable and reproducible processing.

Application / Frontend Layer: Delivers results to users through interactive web applications, enabling visualization, exploration, and decision support across pilots.



Front-End Technology Stack



Prefect Server

Utilized for complex **Data Orchestration** and workflow management across all pilots.



Backend Logic

Hybrid approach using **Flask (3.0.3)** and **Node.js** for specialized services.



S3 Bucket Storage

Scalable **Cloud Storage** for raw Copernicus data, processed results, and metadata.



GIS & Mapping

Interactive spatial visualization using **Folium (0.19.4)** and **Leaflet**.



UI Framework

Bootstrap 5 with HTML5/CSS3 for professional, responsive pilot interfaces.

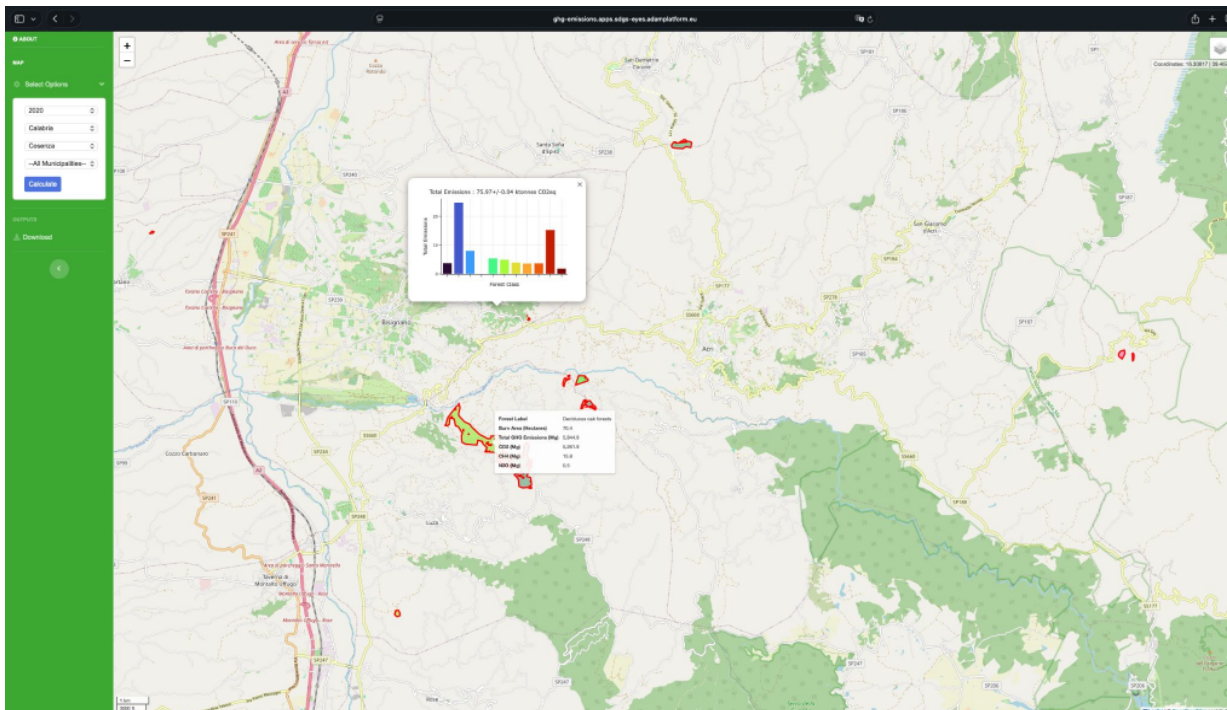


Data Analytics

GeoPandas, Plotly, & Chart.js for indicator trends and GHG emission plots.



FIRE-TRACE



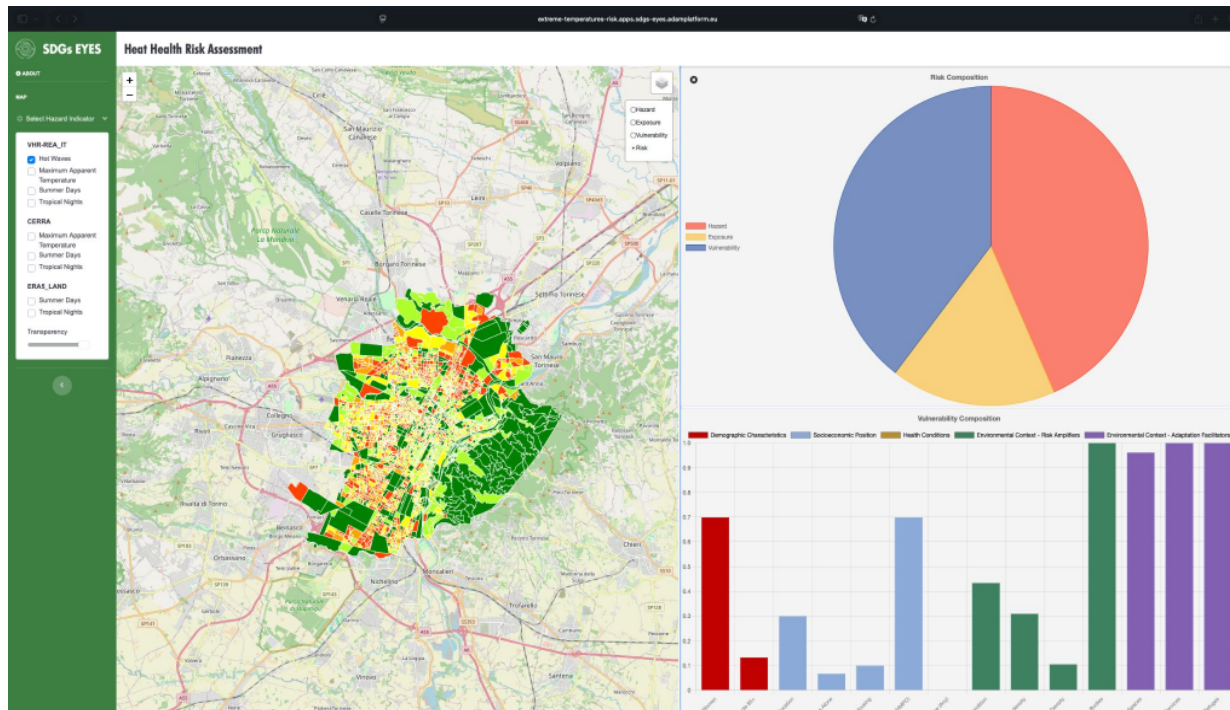
Tracks greenhouse gas (GHG) emissions from forest fires in Europe to assess progress toward EU climate targets (based on Intergovernmental Panel on Climate Change guidelines).

Uses datasets from National Forest Inventory of Italy, Copernicus EFFIS, and Corine Land Cover Level IV.

Allows users to select year and location (Region, Province, Municipality) to compute emissions.

Provides detailed insights per fire area: forest type, burned area, and emissions (CO₂, CH₄, N₂O).

Heat Health Risk Assessment



Helps to monitor and respond to heat-related health risks in Turin.

Integrates climate, population, and vulnerability data to identify high-risk areas at census tract level.

Interactive map shows key risk drivers (health, social, environmental factors) with visual breakdowns of vulnerability.

Enables evidence-based decisions for targeted interventions, public health planning, and cross-sector collaboration.

Links



FIRE-TRACE:

<https://ghg-emissions.apps.sdgs-eyes.adamplatform.eu/>

Heat Health Risk Assessment:

<https://extreme-temperatures-risk.apps.sdgs-eyes.adamplatform.eu/>

SDGs-EYES Platform:

<https://sdgs-eyes.eu/resources/the-sdgs-eyes-platform/>



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