



## EIFFEL- Ambitions & Expected Results

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Learn more here:





## Earth Observation applications for climate change adaptation & mitigation

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# Project Scope

Revealing the Role of  
GEOSS as the Default  
Digital Portal for  
Building Climate  
Change Adaptation &  
Mitigation Applications

H2020 project EIFEL is a game changer in the domain of climate change adaptation and mitigation by harvesting the benefits of the GEOSS data. The project will offer to the Earth Observation community the ground-breaking capacity of exploiting existing GEOSS datasets and will also build upon prior knowledge, with minimal new data collection activities. Added-value services interoperable with GEOSS will be designed, using cognitive search and metadata augmentation tools based on Artificial Intelligence, including Natural Language Processing. These tools will leverage advanced cognitive features to extract meaningful information from and enrich GEOSS metadata.



# EIFFEL in a nutshell



## Why is EIFFEL a game changer in the domain of climate change adaptation & mitigation?

The project will offer to the Earth Observation community the ground-breaking capacity of exploiting existing GEOSS datasets and will also build upon prior knowledge, with minimal new data collection activities.

## 5 pilot applications from different geographic areas & climate regions

- > Water & Land Use Management
- > Sustainable Agriculture
- > Transport Management
- > Sustainable Urban Development
- > Disaster Resilience

19 partners

8 European countries



@eiffel4climate

eiffel4climate project

www.eiffel4climate.eu

Revealing the role of GEOSS as the default digital portal for building climate change adaptation & mitigation applications

## What makes EIFFEL different?

### EIFFEL is here to:

- > **Exploit** the untapped potential of available GEOSS datasets, i.e. satellite, in-situ, modelling, crowd-sourced, by creating AI-based cognitive search tools;
- > **Leverage** techniques of Explainable AI to develop tangible indicators for Climate Change impacts;
- > **Contribute** to GEO's new infrastructural feature, the GEO Knowledge Hub, a digital repository providing access to knowledge needed to build GEOSS-driven applications;
- > **Foster** the co-design of Climate Change adaptation and mitigation applications by bringing onboard the decision makers who are working towards the Paris Agreement goals at local, regional and national scales;
- > **Develop** using co-creation, a set of Climate Change adaptation and mitigation applications in different and quite diverse GEO Societal Benefit Areas, in order to demonstrate the project innovations.





## The Consortium

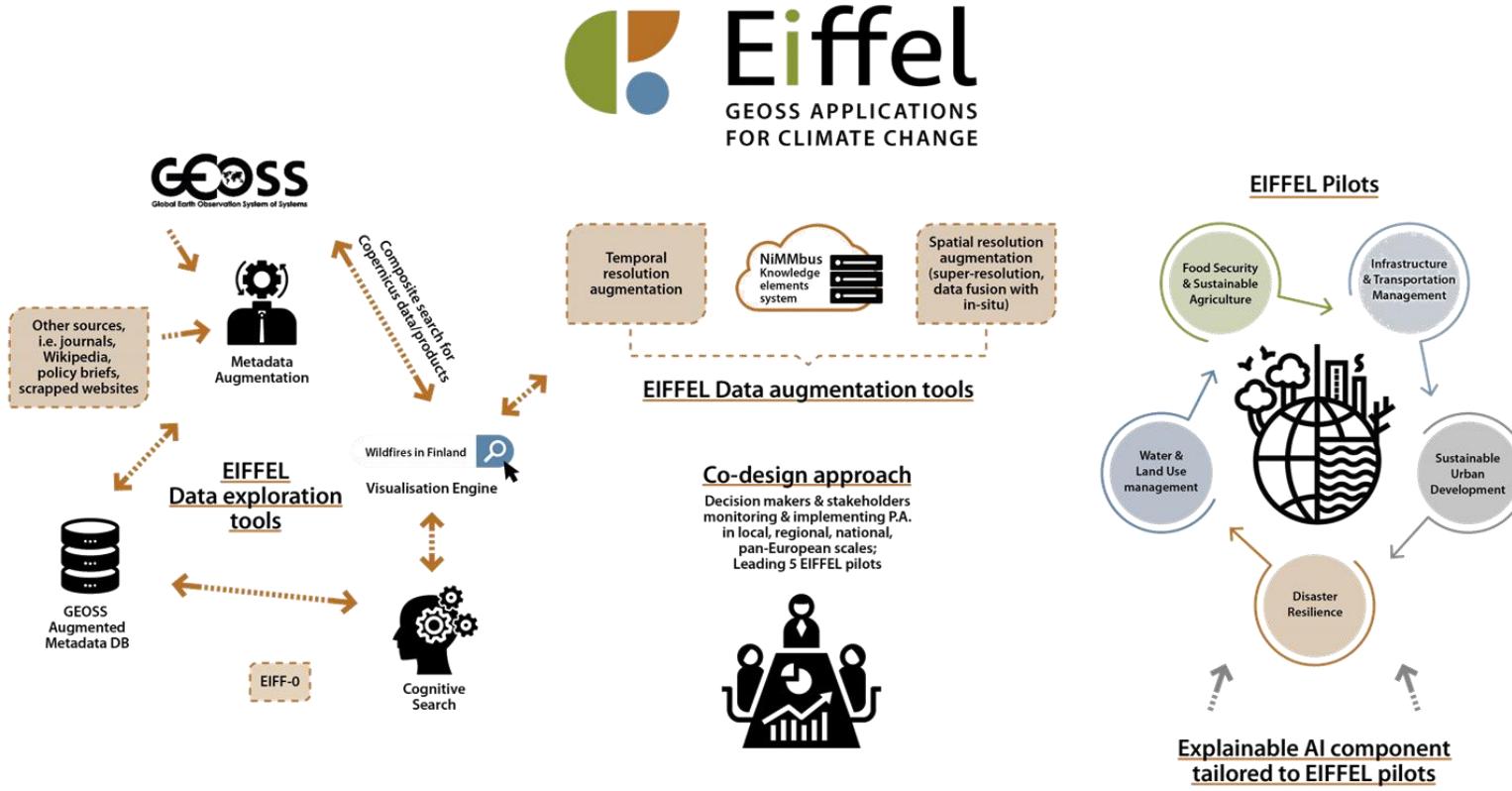
- **19** partners
- **8** European countries
  - Greece
  - Spain
  - Netherlands
  - UK
  - Lithuania
  - Switzerland
  - Finland
  - Germany

**9** Uni/RI, **5** SME, **5** Stakeholder Organisations  
(Environment Institutes, Public/Port Authorities)





## Project Overview



LC-CLA-19-2020 - Integrated GEOSS climate applications to support adaptation and mitigation measures of the Paris Agreement

### Project Information

#### EIFFEL

Grant agreement ID: 101003518

#### DOI

10.3030/101003518

#### Start date

1 June 2021

#### End date

31 May 2024

#### Funded under

SOCIETAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials

#### Total cost

€ 4 999 466,25



#### EU contribution

€ 4 999 466,25

#### Coordinated by

INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS

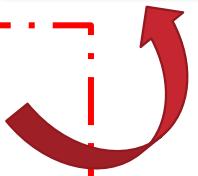
Greece

**Project Officer** → Izabela Freytag



## “Horizontal” Technical Objectives: GEOSS Data Exploration & Augmentation

Session 2



- ✓ EIFFEL **ontology**: Semantic representation of EO data (**Linked Open Data**) focused on Climate Change.
- ✓ EIFFEL **visualisation** engine: **Semantic and visual** queries
- ✓ **NLP**-based **cognitive search** for GEOSS datasets: Data-driven learning of domain-specific concepts and semantic relations
- ✓ **Augmenting** GEOSS **metadata**: Add missing keywords, link external info, provide analytics insights
- ✓ Stochastic methods for **augmenting the temporal resolution** and quality of Climate Change-related datasets
- ✓ **Augmentation of the spatial resolution** of Climate Change-related datasets using super-resolution and data fusion (in-situ)
- ✓ **Analysis-Ready EO Data** for the EIFFEL Climate Change applications and Pilots using descriptive parameters.



## “Vertical” Climate Change mitigation applications – Pilots



### Pilot 1

Water & Land-Use Management  
Regional Scale & Cross-border



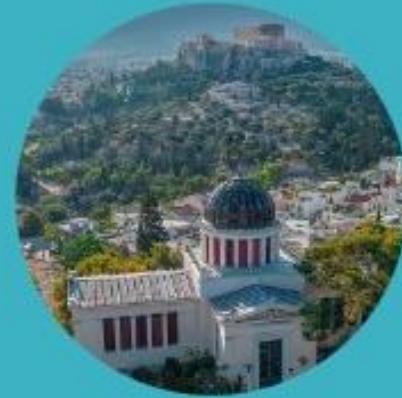
### Pilot 2

Sustainable Agriculture  
National Scale



### Pilot 3

Infrastructure & Transport Management  
Regional Scale



### Pilot 4

Sustainable Urban Development  
Local / Regional Scale



### Pilot 5

Disaster Resilience.  
Drought, forest fire & pest risk assessment  
Regional / National Scale

# EUROGEO WORKSHOP 2022



## EIFFEL Tool Suite - Data Exploration

**Eiffel**  
GEOS APPLICATIONS  
FOR CLIMATE CHANGE

**Cognitive Search Engine**

Search... Advanced Search Options

Items per page: 10 1 - 10 of 102 > See similar searches

Title	Description	Organisation id	Organisation Description	Count
Weather forecast for Athens	Weather forecast for the public encoded in JSON format	DCPC	DCPC for IWWIS at Hong Kong Observatory	2
Dissolved trace metals concentrations obtained during R/V Hakuhō-maru KH-14-3 cruise	Dissolved trace metals concentrations obtained during R/V Hakuhō-maru KH-14-3 cruise	adbdid	Arctic Data Archive System	1

Map showing locations in Europe and the Mediterranean Sea.

**Eiffel**  
GEOS APPLICATIONS  
FOR CLIMATE CHANGE

**Cognitive Search Engine**

Q Back to search

**PIACENZA - Water Level - Unknown**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi mattis pulvinar ex accumsan porta. Nullam condimentum feugiat tellus. Donec vestibulum.

Dataset type: simple

Dataset's identifier: a2dd6ef3-00cc-436a-87bd-8f5ff729f6c

Keywords: RER, Hydrology, Surface Water, meter, Length, Quality controlled data, Field Observation, Unknown

Format: simple

Originator Source: Source identifier: Source title:

Online Resources: Resource: http://hydroserver.ddns.net/italia/hsl-emr/index.php/default/services/cuahsi\_1\_1.asmx? WSDL: Resource: http://gs-service-production.geodab.eu/gs-service/services/essi/view/geoss/gwis? request=plot&onlineId=urn:uuid:b3cc5b16-fbd8-4885-bf5f-2f75db1f83e4

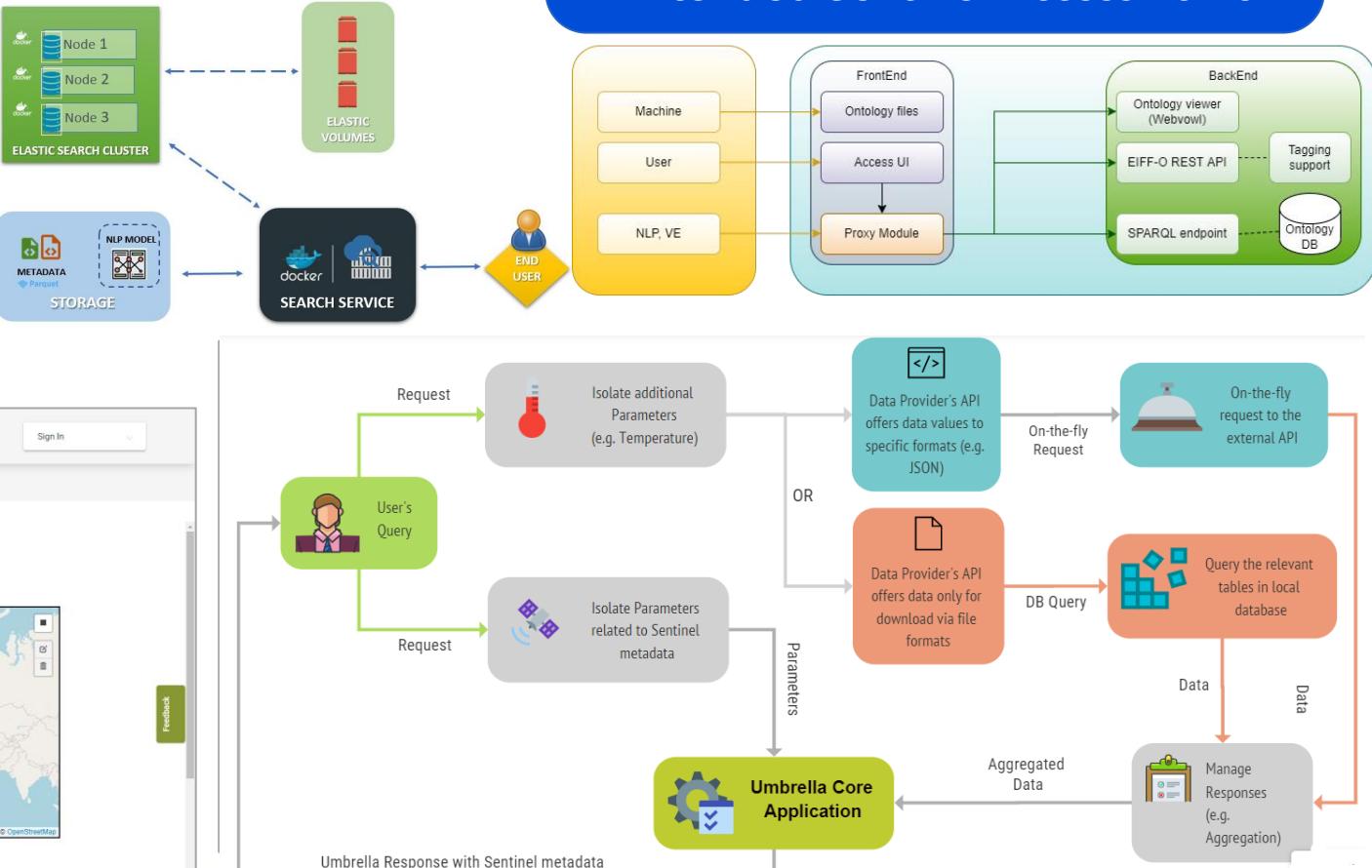
Temporal Extent: Thu Feb 01 1900 - Thu Jun 27 2019

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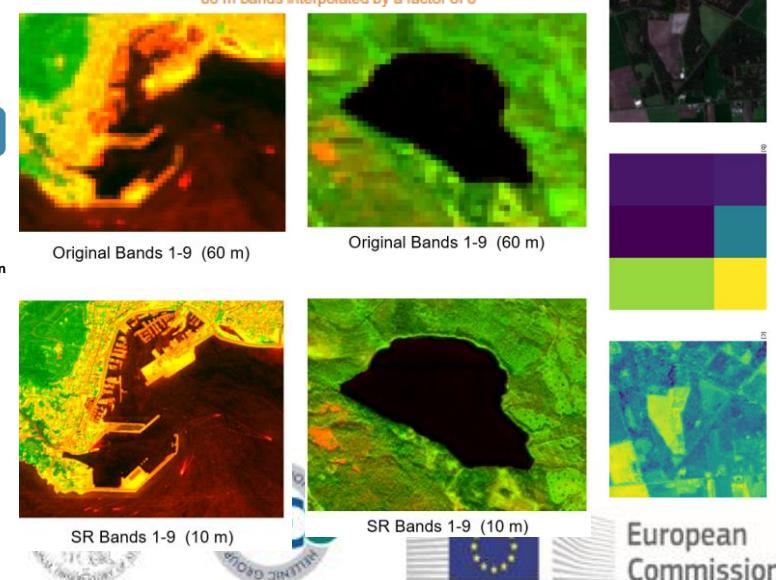
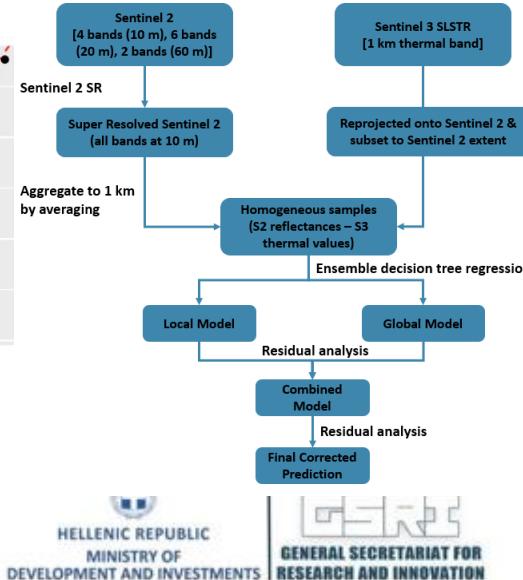
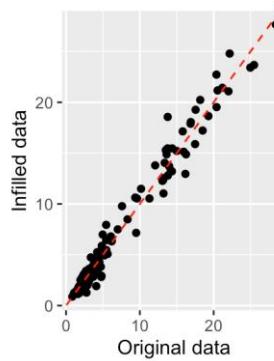
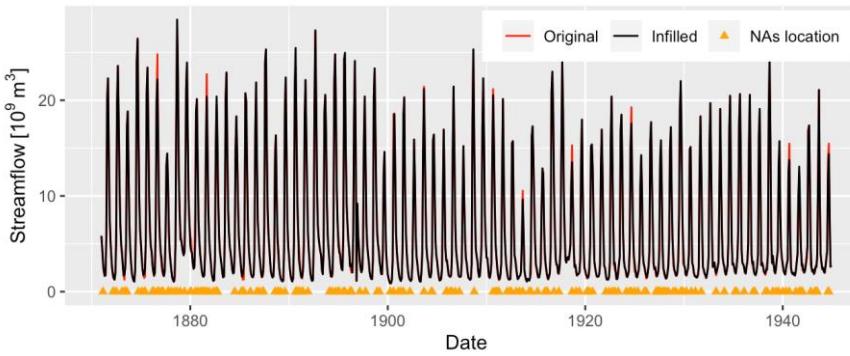
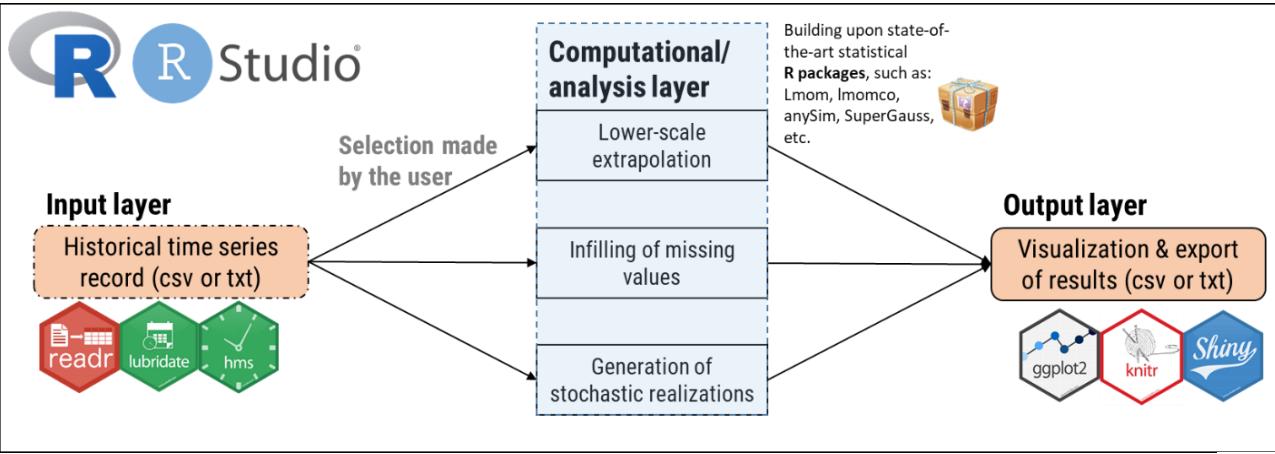


European  
Commission



## EIFFEL Tool Suite - Data Augmentation

**Alpha versions: Temporal augmentation methods, Spatial augmentation and fusion COPERNICUS tools**



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## The EIFFEL Consortium



**Thank  
you!**



Provincie Noord-Brabant



Ports de Balears

Autoritat Portuària de Balears



Universitat Autònoma  
de Barcelona



HELLENIC REPUBLIC  
REGION OF ATTICA



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