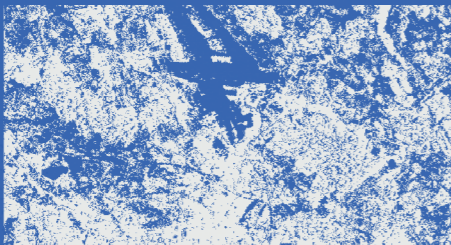


# Project Objectives

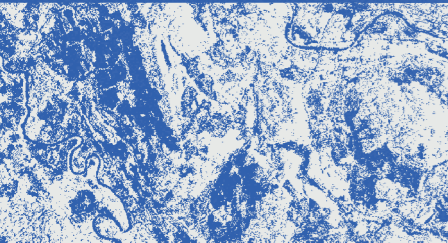
## Enhance Data Efficiency:

Use AI-driven data compression to reduce storage and processing demands.



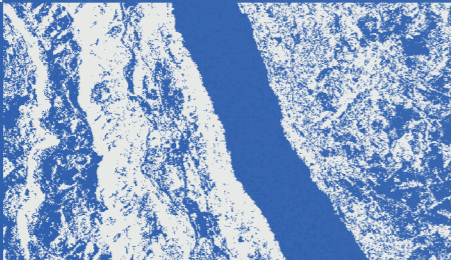
## Increase Accessibility:

Make EO data more accessible for diverse applications, ensuring real-time usability.



## Support Scalability:

Develop scalable solutions that can handle the growing influx of global EO data.



# About Embed2Scale

Embed2Scale, funded under the European Commission's Horizon Europe programme and supported by the European Union Agency for the Space Programme (EUSPA), is at the forefront of transforming Earth Observation (EO) data accessibility and utilisation.

By integrating advanced AI compression techniques with high-performance computing, Embed2Scale aims to drastically reduce data volume while preserving critical information, enabling more efficient and scalable geospatial analysis. This innovative approach empowers a wide range of applications—from environmental monitoring and climate prediction to agriculture and maritime surveillance—supporting more informed decision-making and promoting sustainable practices across Europe and beyond.



## Want to know more?

Scan this QR code and check our project channels



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State Secretariat for Education,  
Research and Innovation SER

Earth Observation & Weather  
Data Federation with AI Embeddings

# Transforming Geospatial Data Employment with AI

At the heart of Embed2Scale is the deployment of AI compressors—revolutionary technology designed to bring management of geospatial data to the next level. These AI compressors, trained using self-supervision on High-Performance Computing (HPC) systems, can distil valuable embeddings from raw data with up to 1000x compression for efficient storage, sharing, indexing and search. This approach drastically reduces data volume, latency, and energy consumption, enabling real-time, cost-effective EO services across multiple platforms.

## Use Cases

### Maritime Awareness:

Enhancing maritime surveillance and security through advanced detection and identification of vessels and features using AI-compressed geospatial data.

### Aboveground Biomass Estimation:

Improving the accuracy of biomass assessments for carbon monitoring and sustainable forest management with AI and geospatial data.

### Climate and Air Pollution Prediction:

Advancing climate and air quality forecasting by integrating AI models with extensive geospatial datasets for better environmental decision-making.

### Crop Stress and Early Yield Detection:

Detecting early signs of crop stress and predicting yields to optimise agricultural practices using AI-enhanced Earth observation data.

## The Consortium

Embed2Scale represents a groundbreaking collaboration, uniting ten prestigious institutions and organisations across six European countries.

