GEO Knowledge Hub

Introduction and concepts

Presentation by

GEO Knowledge Hub team

Supported by

GEO Data and Knowledge Working Group

June 23, 2025

Open Earth Observation **data** and **knowledge** are **crucial** in addressing **global** socio-environmental **challenges**

Climate change

Source: Washingtonpost.com

Natural disasters

Source: bbc.com

Agriculture monitoring

Source: ESA multimedia gallery

GEO is all about **Open Data** and **Open Knowledge**

GEO is a global partnership involving 116 governments and over 162 organizations from academia, business, United Nations and civil society.

GEO brings together Earth Observation providers and users to promote **free, open and equitable access** to EO data and Earth Intelligence solutions.

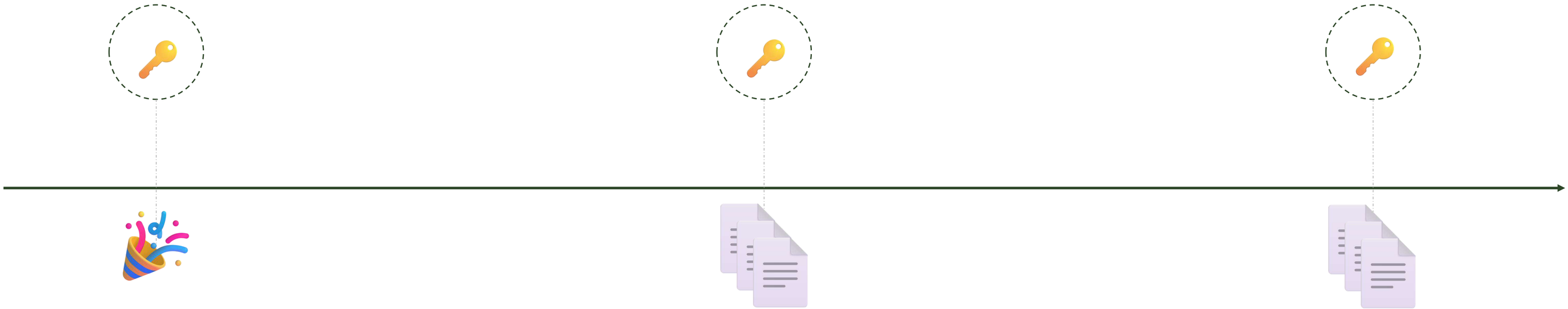
By sharing this wealth of information and research, we ensure that **decisions made for Earth's future are based on the best available knowledge.**

Openness as a Principle, **Progress** as a Goal

2005
Birth of GEO

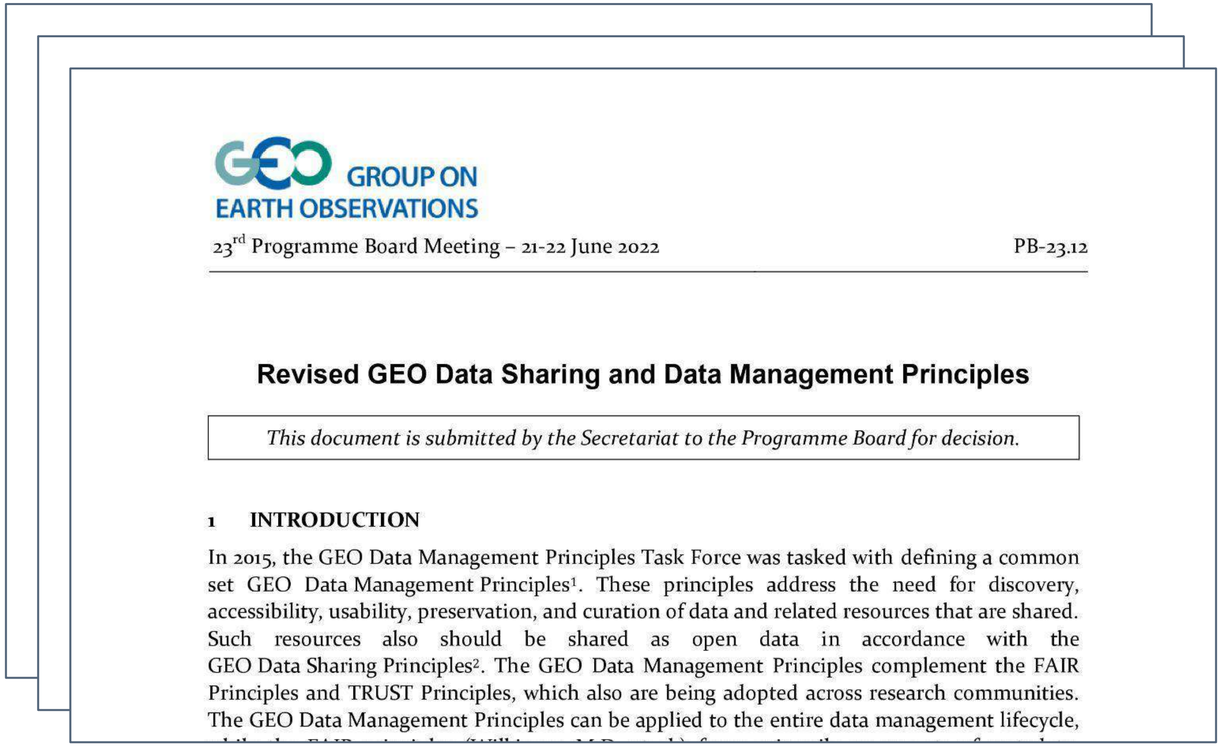
2012
Data sharing principles

2021
Open Knowledge statement



Activities grounded in **solid** principles

GEO Data Sharing principles



GROUP ON EARTH OBSERVATIONS

23rd Programme Board Meeting – 21-22 June 2022 PB-23.12

Revised GEO Data Sharing and Data Management Principles

This document is submitted by the Secretariat to the Programme Board for decision.

1 INTRODUCTION

In 2015, the GEO Data Management Principles Task Force was tasked with defining a common set GEO Data Management Principles[1]. These principles address the need for discovery, accessibility, usability, preservation, and curation of data and related resources that are shared. Such resources also should be shared as open data in accordance with the GEO Data Sharing Principles[2]. The GEO Data Management Principles complement the FAIR Principles and TRUST Principles, which also are being adopted across research communities. The GEO Data Management Principles can be applied to the entire data management lifecycle,

Open Knowledge Statement

GROUP ON EARTH OBSERVATIONS

21st Programme Board Meeting – 28-30 September 2021 PB-21.17

GEO Statement on Open Knowledge

This document is submitted by the Secretariat to the Programme Board for decision.

1 INTRODUCTION

This document presents a revision of the GEO Statement on Open Science (see Annex A) that was presented to the Programme Board at its 19th meeting in January 2021. Based on consultations with the GEO community, the Secretariat proposes that the statement be reformulated to focus on "Open Knowledge". This concept, while inclusive of Open Science, is considered to be more closely aligned with the GEO Mission and Vision, which aim to support decision making and not only or primarily science.

The **D**ata and **K**nowledge **W**orking **G**roup (DK-WG) is convened to **work** with the GEO community and with external stakeholders to address **data policy**, **data sharing** and **data governance issues** impacting the use of space-based and in-situ EO as well as open knowledge practices

Subgroup: In-situ data

Fairification tool

G-reqs

GEO In Situ Data Strategy

Subgroup: Data Sharing and Data management principles

Self-assessment tool

Dialogue Series

GEO Data Management Principles

Implementation guidelines

Subgroup: Law and Policy

Survey on Data License

Engagement with GWP

Data License Guidance

The DK-WG co-organize the Open Data and Open Knowledge (**ODOK**) workshop

ODOK 2023 (Switzerland)

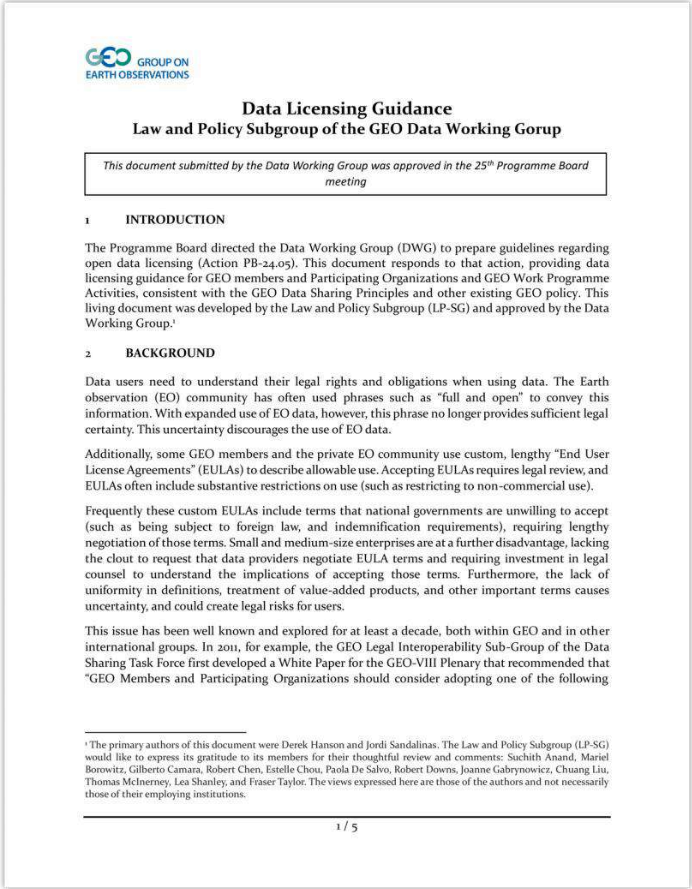
ODOK 2024 (China)

ODOK 2025 (Italy)

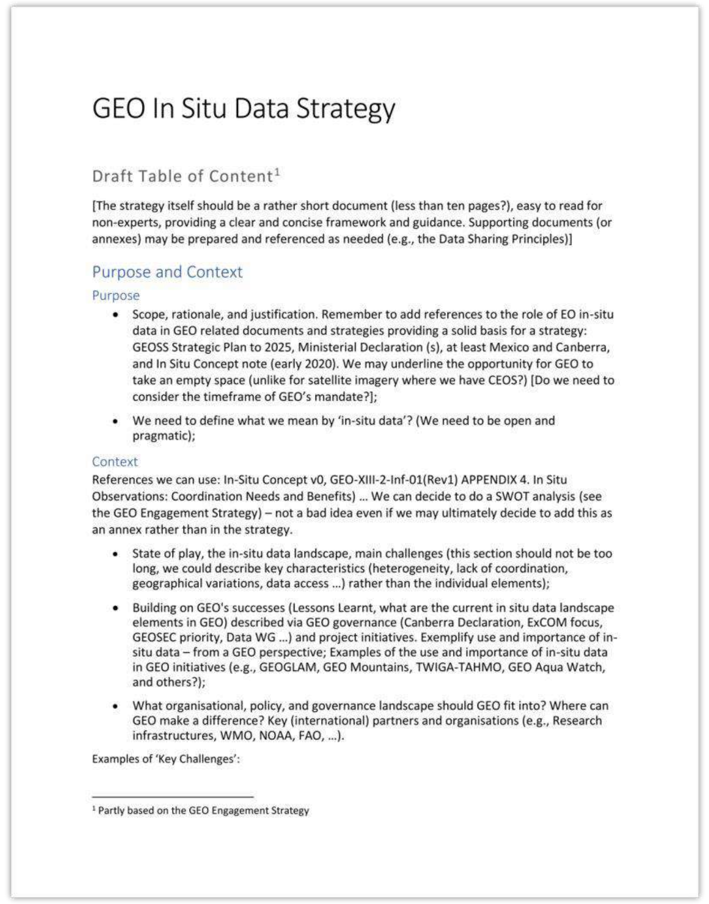
Data and Knowledge working group resources and tools

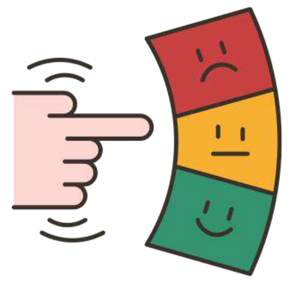
GEO Data Management Principles

Data License Guidance



GEO In Situ Data Strategy





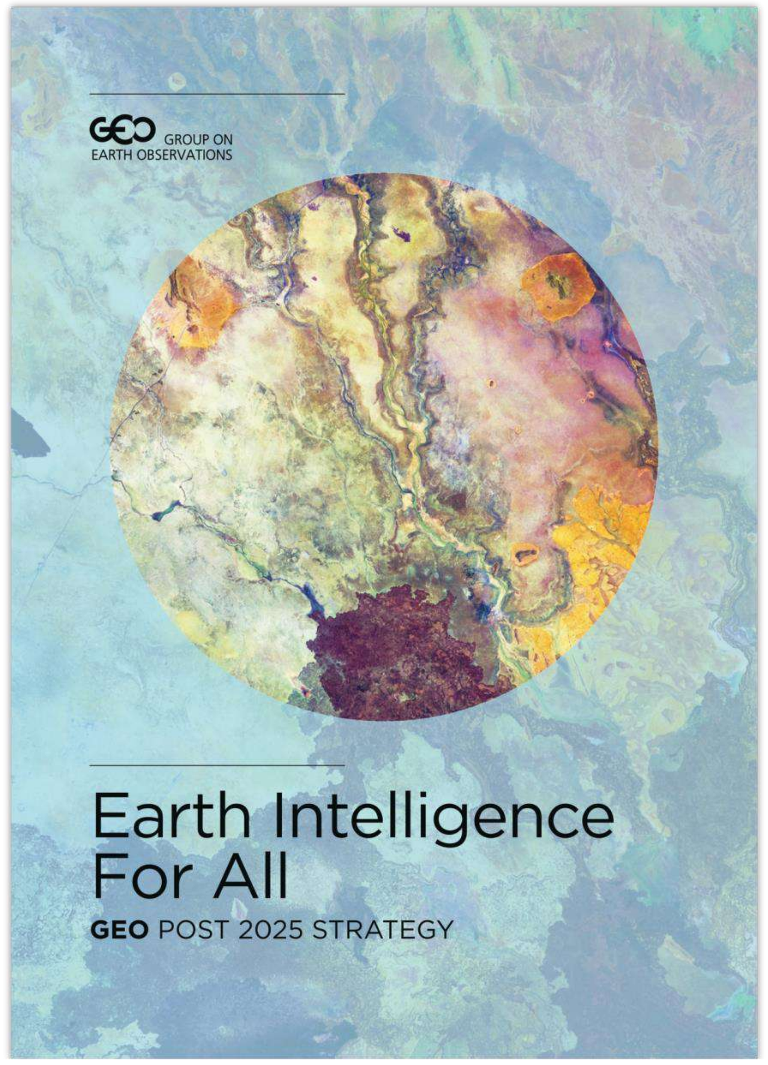
Self-assessment tool

Fairification tool

Dialogue Series

G-reqs

GEO Knowledge Hub



Towards

Supports

GEO GROUP ON EARTH OBSERVATIONS

GEO Work Programme Activities

EuroGEO

AmeriGEO Earth Observations for the Americas

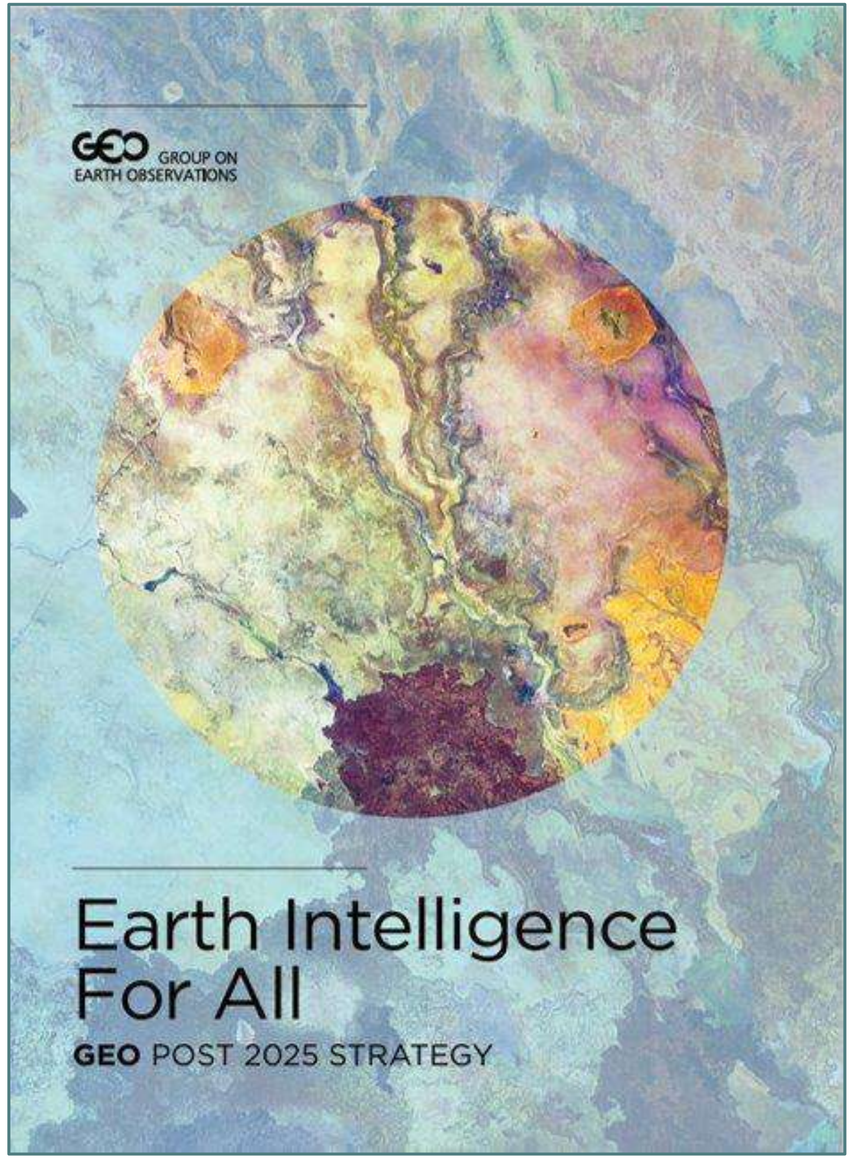
AfriGEO Earth Observations for Africa

AOGEO Earth Observations for Asia-Oceania

Earth intelligence for all

GEO GROUP ON EARTH OBSERVATIONS

Evolving: The GEO Post 2025 Strategy



"There is a clear need for a global partnership where data providers and users from all communities work together, leading to better coordination, greater inclusion, reduced duplication, and faster action"

"Building on the achievements of the past 10 years, GEO reaffirms its commitment to full and open access to Earth observation data, knowledge, products and services. GEO also reaffirms its commitment to promote data and knowledge sharing and the co-development of services that empower users to make sound environmental decisions, enable economic opportunities and promote good governance"

Knowledge

Papers

Analysis

Data

Videos

GEO

CEOS
The Committee on Earth Observation Satellites

GEOGLAM
Global Agricultural Monitoring

EuroGEO

Digital Earth
AFRICA

AmeriGEO
Earth Observations
for the Americas

AfriGEO
Earth Observations
for Africa

AOGEO
Earth Observations
for Asia-Oceania

Digital library

Climate change

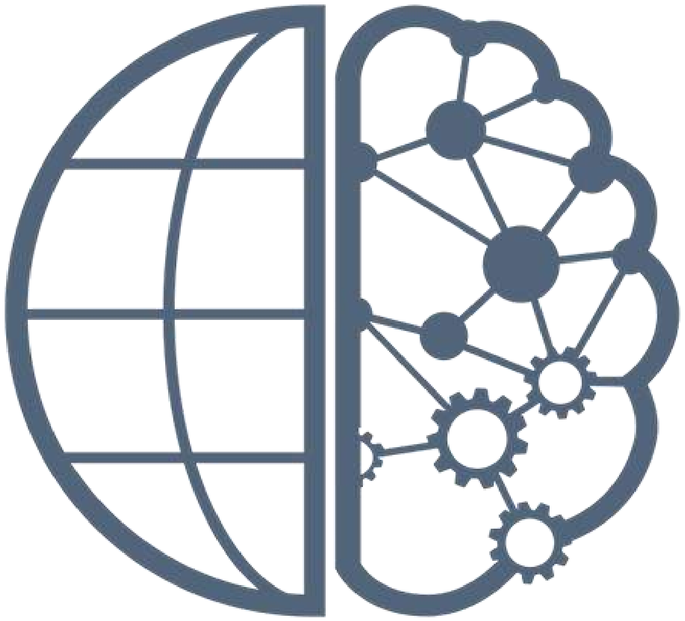
Deforestation

Drought

Wildfires

Flood

Food security

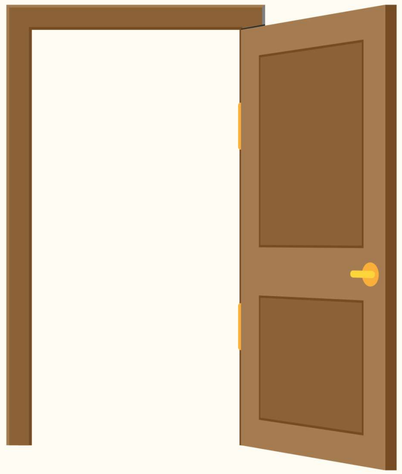


GEO Knowledge Hub

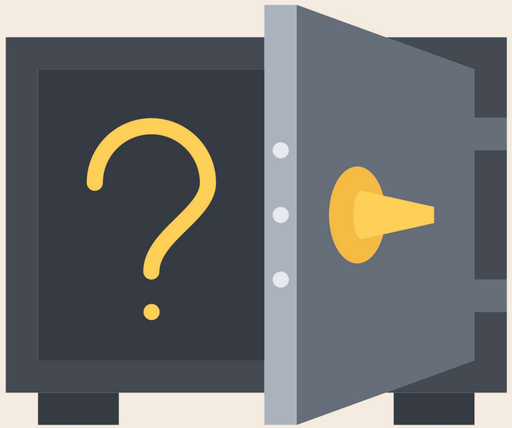
GEO Knowledge Hub

The **GEO Knowledge Hub** is a central cloud-based digital library created to **preserve**, **disseminate**, and **support** the reuse of EO Applications developed by the **GEO Community**

Open



Preserve



Use

GROUP ON EARTH OBSERVATIONS

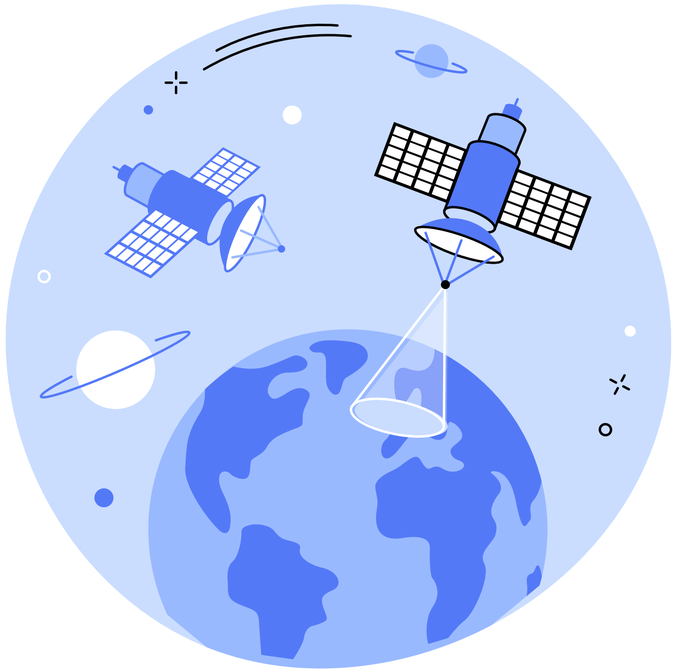
Open resources = Collaborations

Open resources = Accelerate impact

Lack of open resources leads to the creation of silos

Making EO Applications

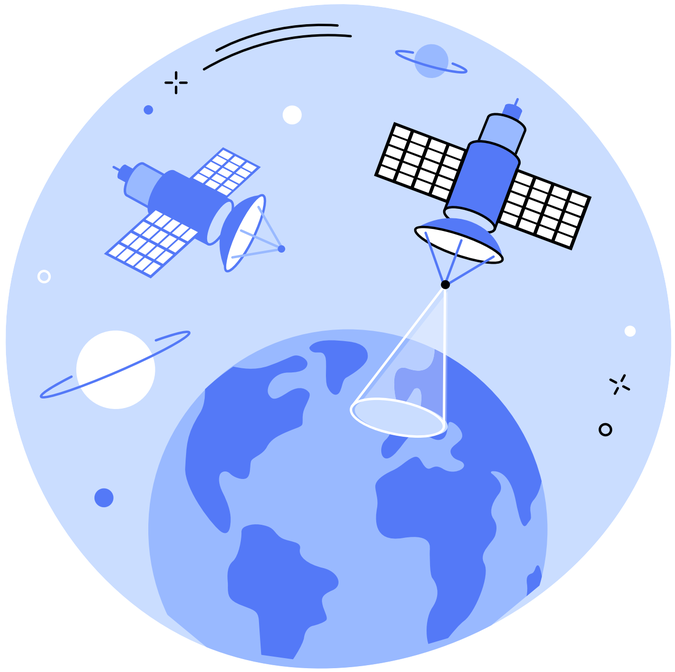
EO Application



Making EO Applications

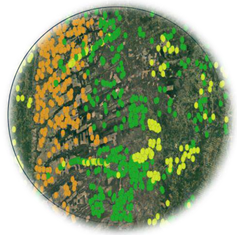
Satellite imagery

EO Application



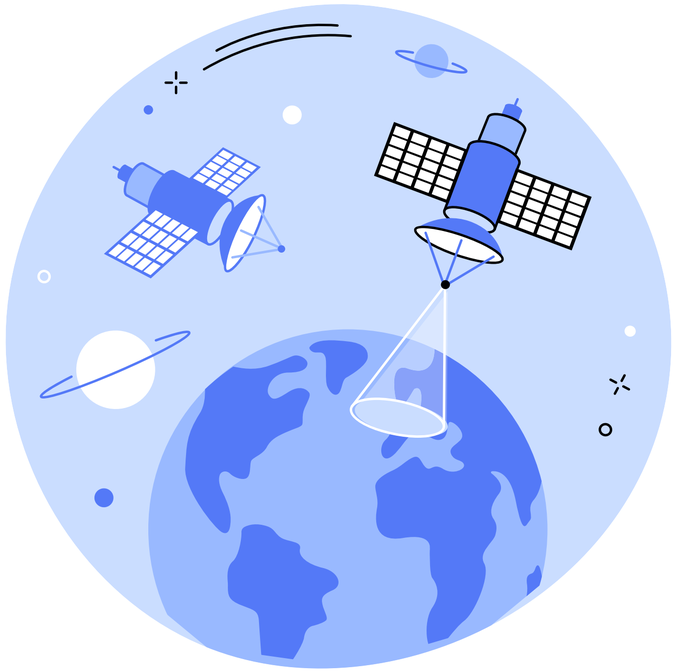
Making EO Applications

Satellite imagery



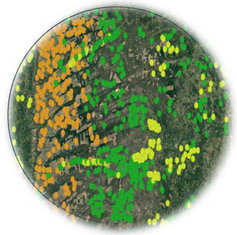
In-situ data

EO Application



Making EO Applications

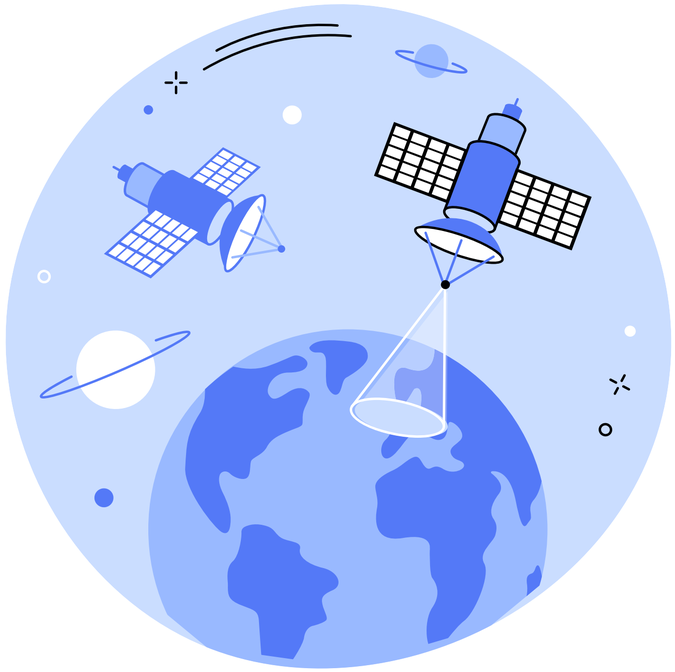
Satellite imagery



In-situ data

Processing scripts

EO Application



Making EO Applications

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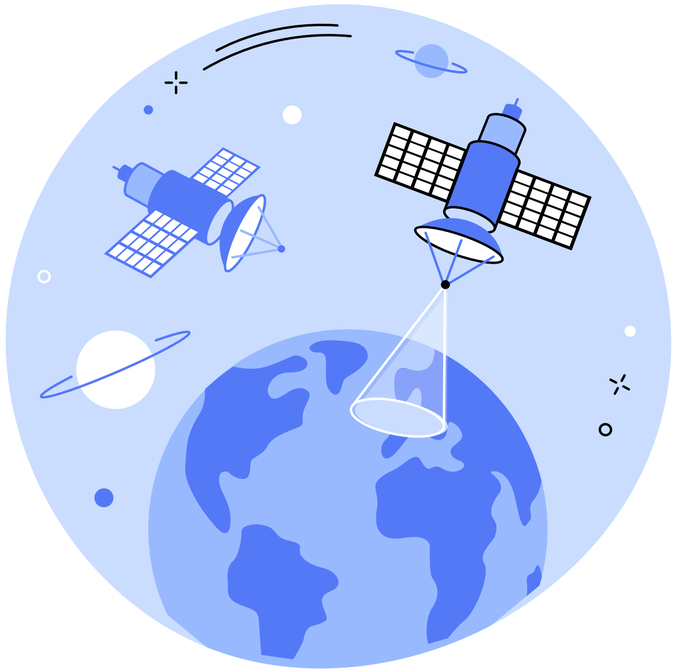
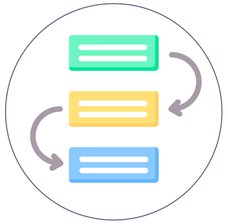
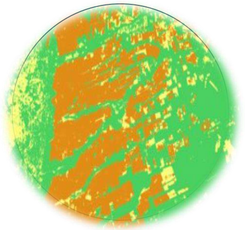




Workflow

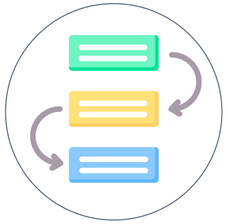


Data results

Articles & notes

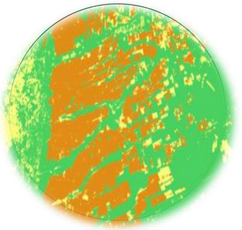
Sharing EO Applications

Satellite imagery



Workflow

In-situ data



Data results

Processing scripts

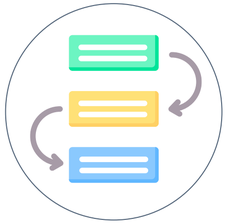
Articles & notes

Sharing EO Applications

Satellite imagery

Metadata

(title, description, license, and others)



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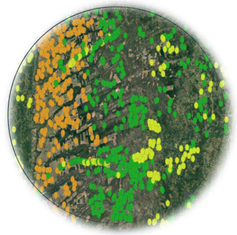

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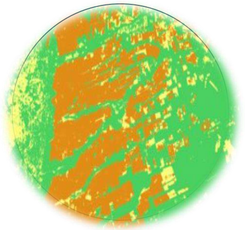

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Articles & notes

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Processing scripts

Metadata

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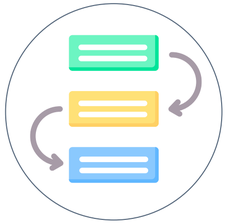
Files

(Resource file itself or auxiliary ones)



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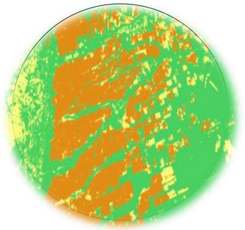

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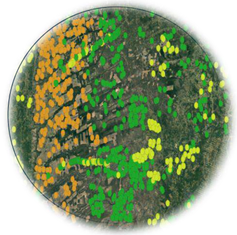
Satellite imagery



In-situ data

Processing scripts

Metadata

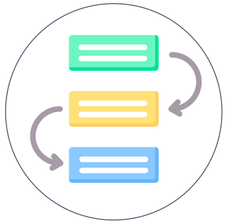
(title, description, license, and others)

Files

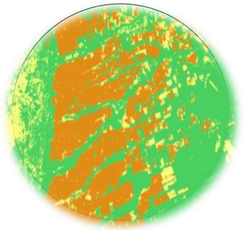
(Resource file itself or auxiliary ones)

Auxiliary resources

(Documentation, articles, and others)



Workflow



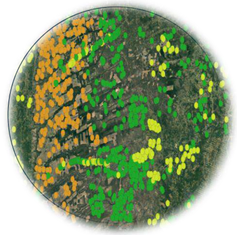
Data results

Articles & notes

Sharing EO Applications

Satellite imagery

Platform A

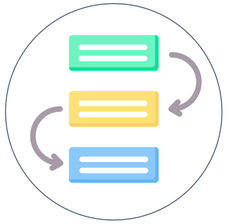


In-situ data

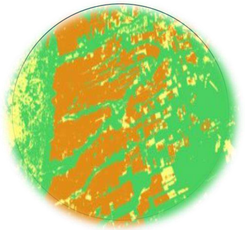
Platform B

Processing scripts

Platform C



Workflow



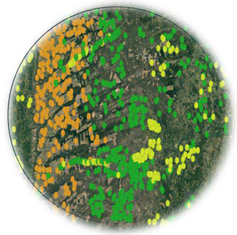
Data results

Articles & notes

Sharing EO Applications

Satellite imagery → Platform A

Platform C ← Workflow



In-situ data → Platform B

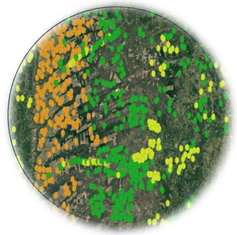
Platform B ← Data results

Processing scripts → Platform C

Platform E ← Articles & notes

Knowledge Package and resources

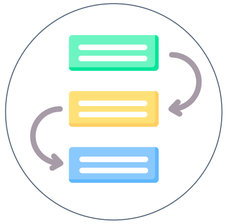
Satellite imagery



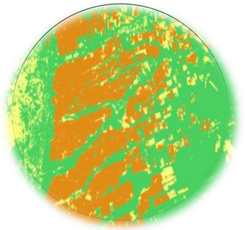
In-situ data

Processing scripts

Knowledge Package



Workflow

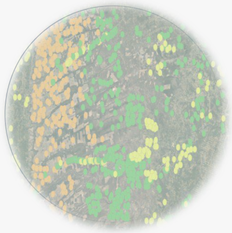


Data results

Articles & notes

Knowledge Package and resources

Satellite imagery



In-situ data

Processing scripts

Knowledge Package

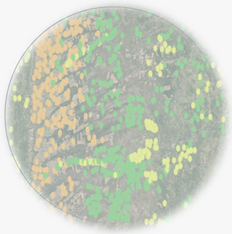
Workflow

Data results

Articles & notes

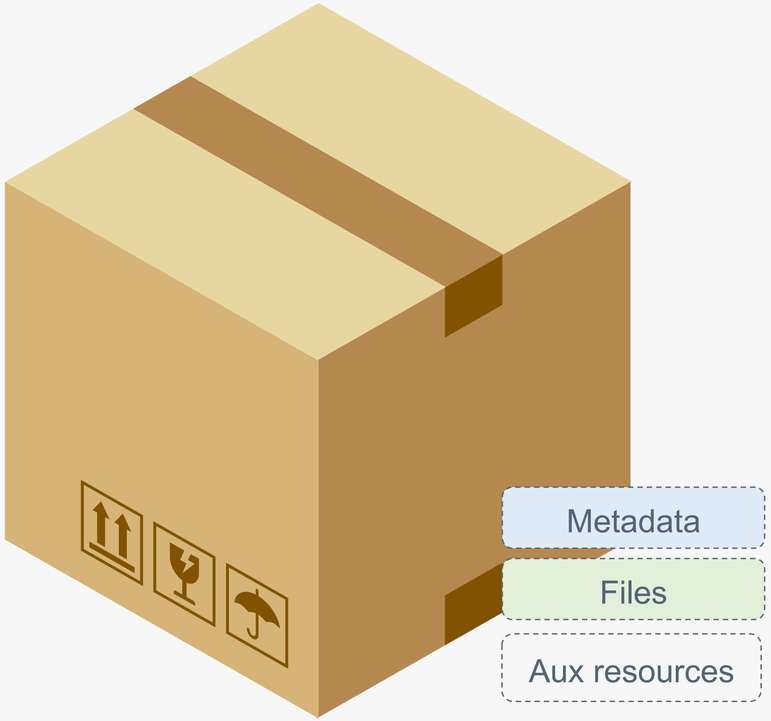
Knowledge Package and resources

Satellite imagery



In-situ data

Processing scripts



Knowledge Package

Workflow

Data results

Articles & notes

Knowledge Package and resources

Metadata
Files
Aux resources

Satellite imagery

Metadata
Files
Aux resources

In-situ data

Metadata
Files
Aux resources

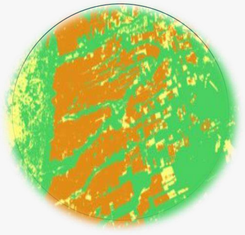
Processing scripts

Knowledge Package

Metadata
Files
Aux resources

Workflow

Metadata
Files
Aux resources



Data results

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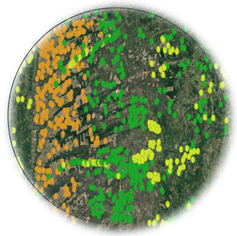
Articles & notes

Knowledge Package and resources

Satellite imagery



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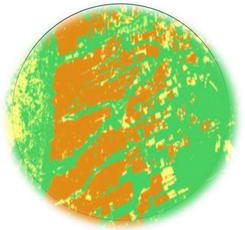
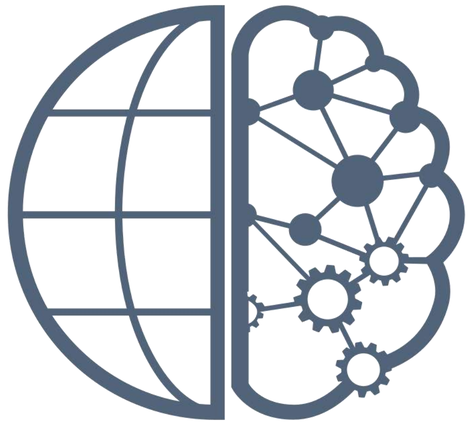


Data results

Articles & notes

GLOBAL FORUM
"The Earth Talks"

Support the GEO community towards Open Data and Open Knowledge



Meet the community!

Digital Earth AFRICA

GEO GOS4M
GLOBAL OBSERVATION SYSTEM FOR MERCURY

EO4SENDAI Monitoring

GWIS

GEO ECO

EO4SDG

GEO GLOWS
GLOBAL WATER SUSTAINABILITY

OPEN EARTH ALLIANCE

GEO
Human Planet Initiative

GEO VENER
VISION FOR ENERGY

GEOMIN

GEO Value

GEO MOUNTAINS
Observing Mountain Environments

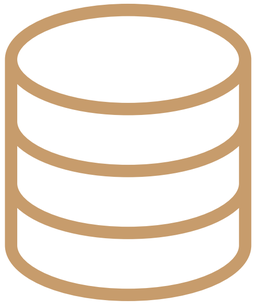
EuroGEO

GEOGLAM
GLOBAL AGRICULTURAL MONITORING

SCO
SPACE FOR CLIMATE OBSERVATORY

FAO
FIAT PANIS

GEO
Data and Knowledge
Working Group



Preserve

Visibility

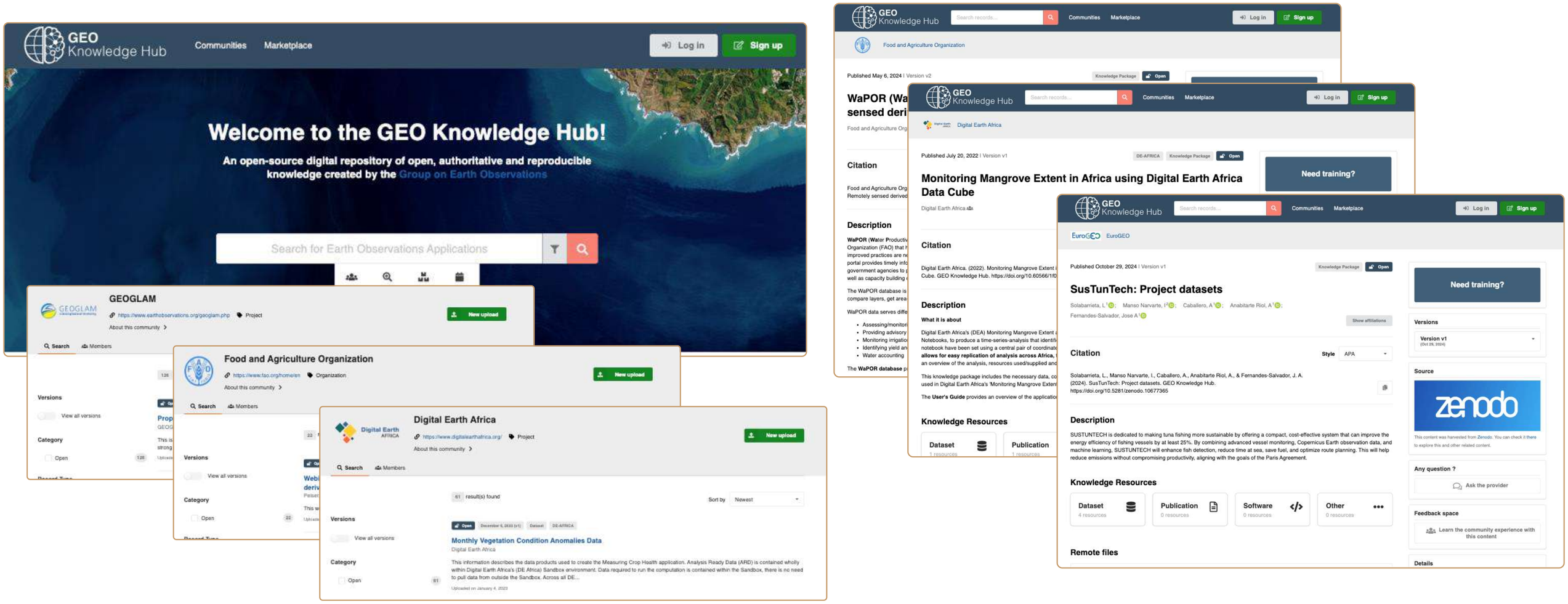
Impact

Meet users

Reuse

Global and trusted

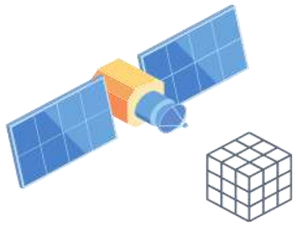
The GEO Knowledge Hub



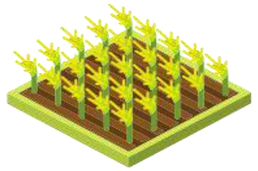
gkhub.earthobservations.org

Which EO resources are made available through the GEO Infrastructure?

Data and resources



Satellite data and datacube



In situ

Services

Tools

EO Derived

Applications

Knowledge

GEO Infrastructure

What problem are you trying to solve ?

Why

- Agriculture & Food Security
- Water & Land Sustainability
- Ecosystems-Biodiversity & Carbon Management
- Weather & Disaster Resilience
- Climate, Energy & Urbanization
- One Health

Who

Developer
GIS specialist

What's your profile ?

Non-technical

Where **When**

Location and time

What

Data and resources

Satellite data and datacube

In situ

Services

Tools

EO Derived

Applications

Knowledge

- **W**HY: What is the problem you are trying to solve
- **W**HO: What is your profile, technical or nontechnical
- **W**HERE: Where is the area of interest

- **W**HEN: Timeframe of the EO Resources required
- **W**HAT: Which resources are you looking for

What is the added **value** of the **revised GEO Infrastructure ?**

EO resources will be organized by **Focus Areas** and by curated **“Scenarios-Services”** thus guiding the end users to **discover**, **access**, **use,** and **re-use** available **EO Resources** to provide solutions **to a specific socio-environmental problem,** having access to the **full landscape of EO efforts for domain-specific aspects.**

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The **success** of the new **GEO Infrastructure** is contingent upon the **long-term**, **sustainable contributions of the global community,** with **all components governed by open licenses** and inclusive participation from all regions. (GEO Infrastructure earmarked)

Since 2021, the GEO Knowledge Hub is **serving** the GEO Community as the **central repository** to **share** and **preserve Open EO Data** and **Open EO Knowledge**

GEO Knowledge Hub

Open **Centralize** **Preserve**

Curate **Engage**

Think **global**, act **local**

Global

Local

National GEO Knowledge Hub

Contextualize

Issues

Communities

Activities

The National GEO Knowledge Hub is a **new space** within the GKH where **National GEOs** can share **local**, **specialized**, and **issue-focused** Open Data and Open Knowledge

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National GKH

National GEOs can have their own space

Based on the content available in the GKH

Content and page specialized for each case
(e.g., contact point, research projects, capacity building activities)

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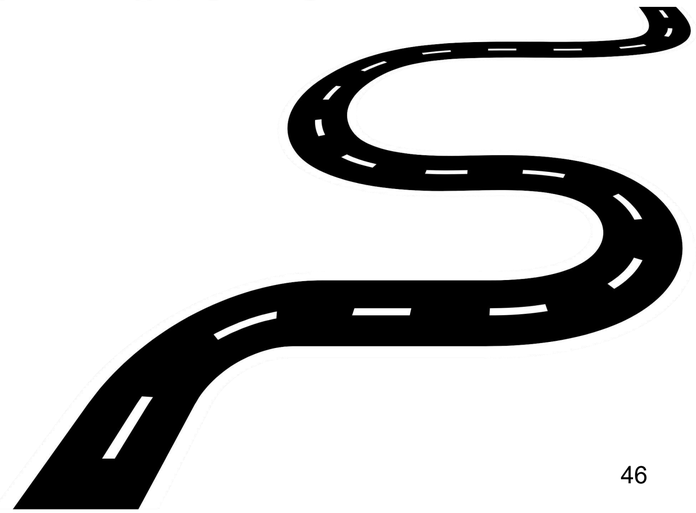
South Africa

Pioneering the way to National GKH



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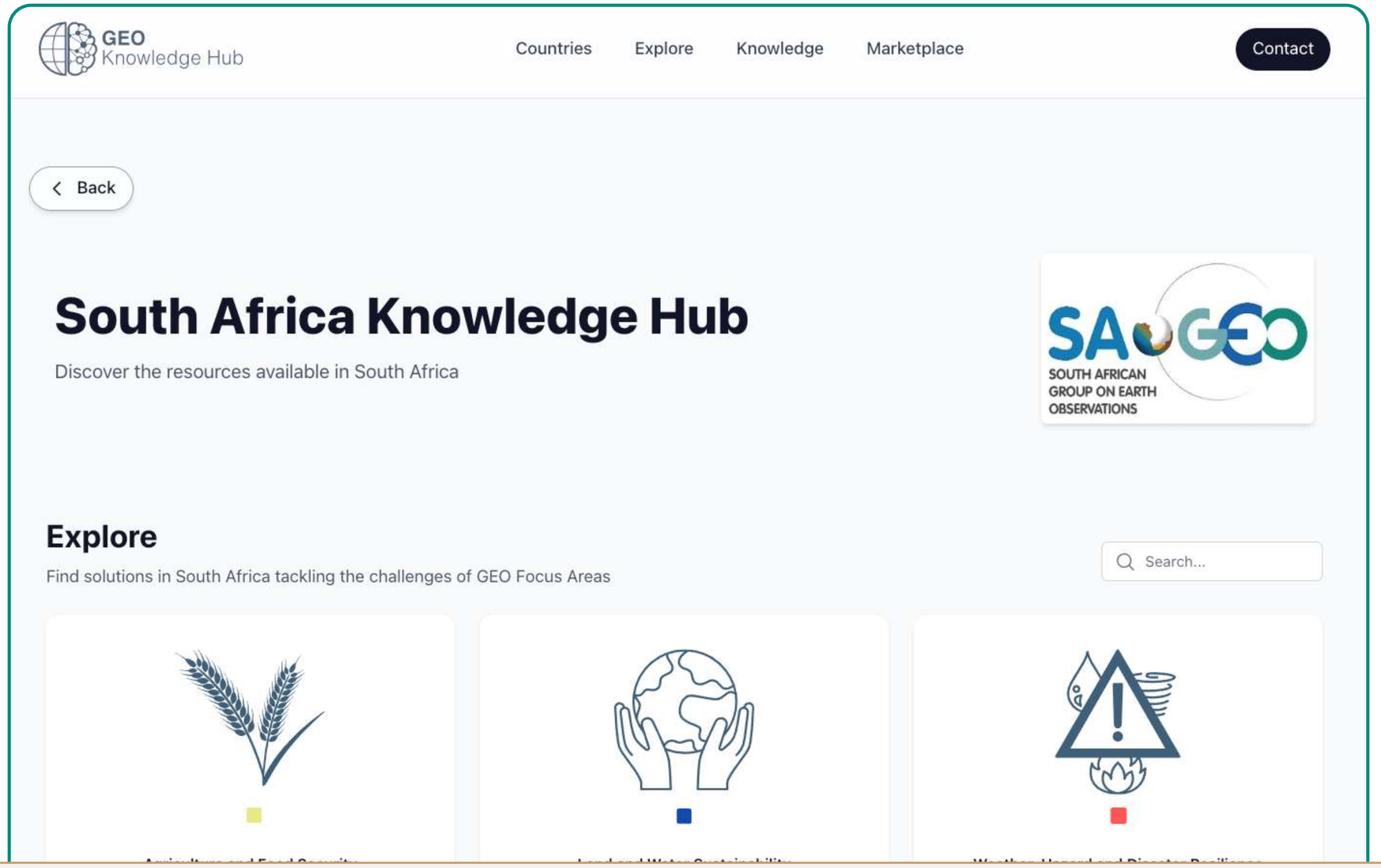

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Help us to help you!

Thank you!

Group on Earth Observations

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GEO GROUP ON EARTH OBSERVATIONS

20th anniversary