



GEO updates for WCRP

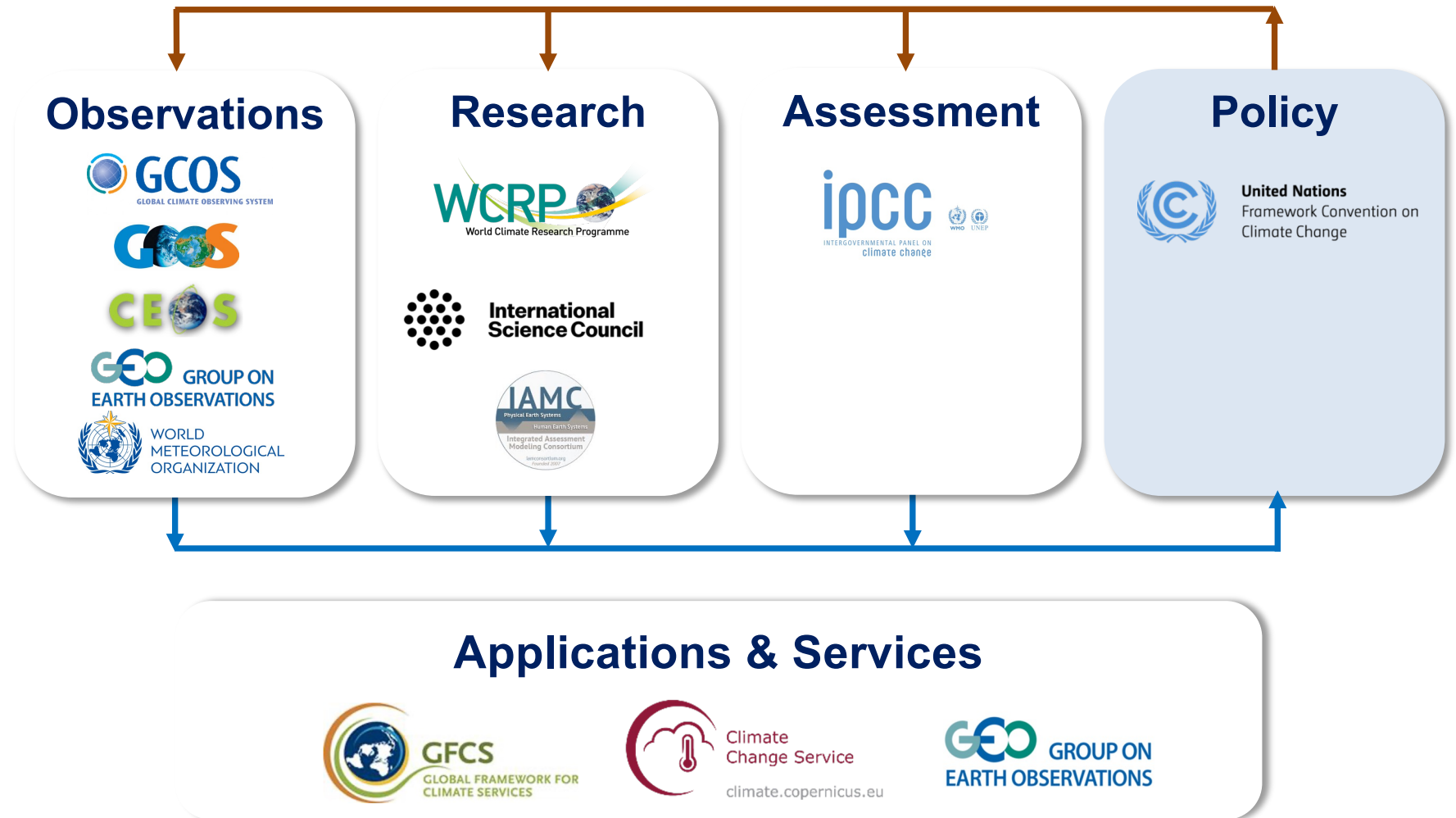
Sara Venturini, GEO Secretariat

May 2023



Research and systematic observation

At the foundation of the UNFCCC and climate policy



GOO in numbers



7

CONTINENTS



114

COUNTRIES



144

PARTICIPATING
ORGANIZATIONS



19

ASSOCIATES



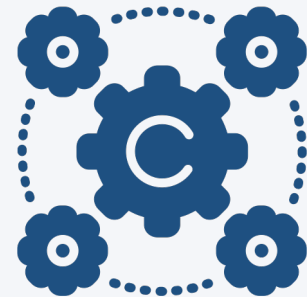
Bridging the digital divide with open knowledge



Open Data



Open Software



Open Standards



Open Science



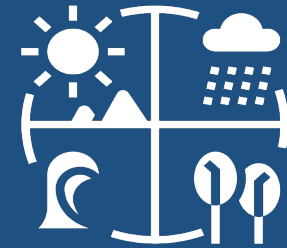
Focus Areas

GEO works to improve the availability, access, understanding and use of Earth observations for the benefit of society across policy areas

Sustainable Development



Climate Action



Disaster Risk Reduction



Urban Resilience





Evidence-based reporting and implementation



GLOBAL POLICY

Accurate and timely reporting with Earth observation data. Climate action under UNFCCC. DRR under Sendai Framework. Land degradation neutrality under UNCCD. Ecosystems extent indicators and NbS under CBD. And other MEAs.



NATIONAL IMPLEMENTATION

Project implementation with augmented capabilities from Earth observation solutions.

Crop monitoring for adaptation, flood early warning systems, assessing impact of wildfires, monitoring coastal areas and ocean health, etc.



CAPACITY DEVELOPMENT

Capacity development embedded in projects.
Technical guidance to integrate Earth observation data and solutions into National Adaptation Plans (NAPs) across sectors.

GEO WORK PROGRAMME

2023-2025



40

WORK
PROGRAMME
ACTIVITIES

Consists of:

- GEO Flagships
- GEO Initiatives
- GEO Pilot Initiatives
- Regional GEOs

Carried out by:

- GEO Member Countries
- Participating Organizations
- Research institutions
- Commercial sector contributors

Coordinated by the GEO Secretariat and guided by the Programme Board



Flagships



The Global Forest Observation Initiative supports countries to develop national forest monitoring systems and green house gas measurement, reporting and accounting.



The GEO Global Agricultural Monitoring Initiative improves food security through timely and accurate predictions of crop yields and agricultural production at regional, national and global levels.



The GEO Biodiversity Observation Network coordinates the management and delivery of biodiversity and ecosystem observations to decision makers and the scientific community.



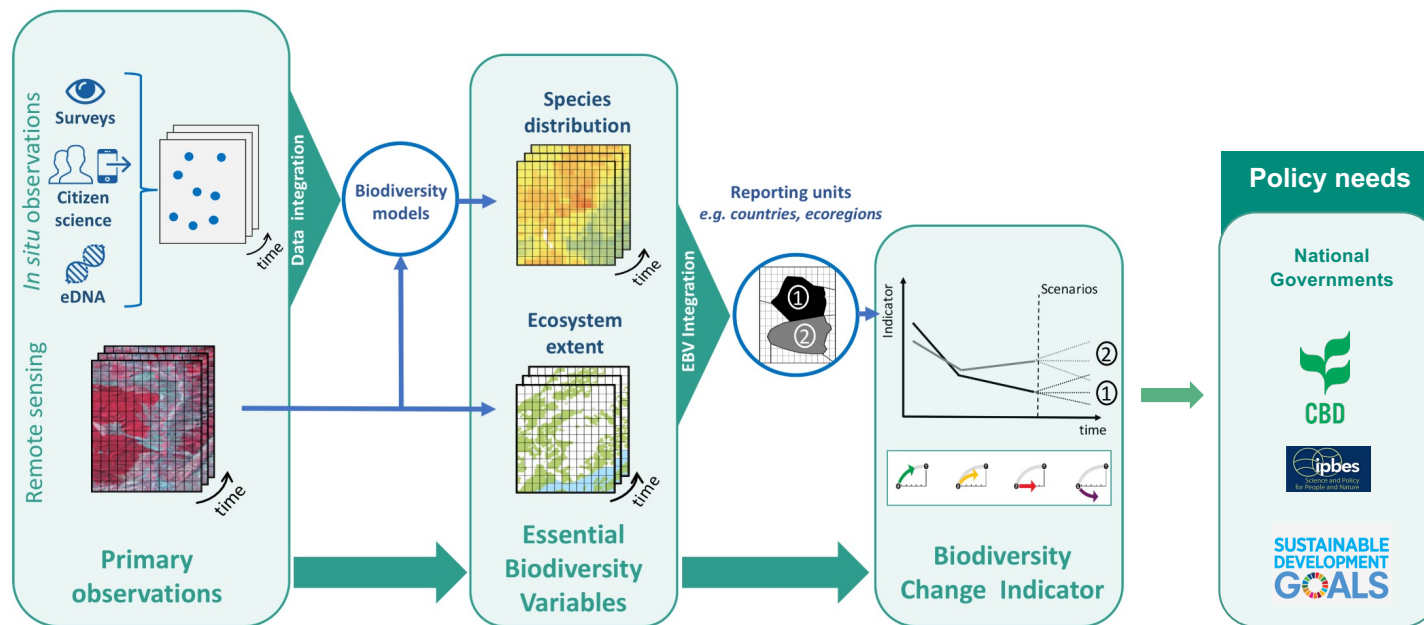
The Global Observation System for Mercury contributes to the monitoring of mercury and its compounds using Earth observations to support the Minamata Convention on Mercury.



The GEO Land Degradation Neutrality Initiative develops data quality standards, analytical tools and capacity building to strengthen land degradation monitoring and reporting

Biodiversity monitoring

Global network of experts using **Earth observations** and **cutting-edge technologies** (remote sensing, DNA technologies, artificial intelligence) to understand biodiversity change and its drivers, including climate change.



>1,900 members, >120 countries, >1,200 institutions
<https://geobon.org>

Figure from Navarro et al. 2017

Ocean & coastal monitoring



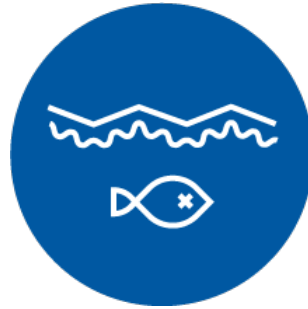
Marine litter



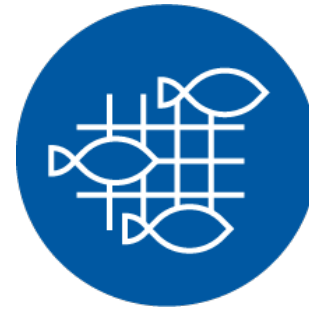
Sargassum



Coastal changes



Eutrophication



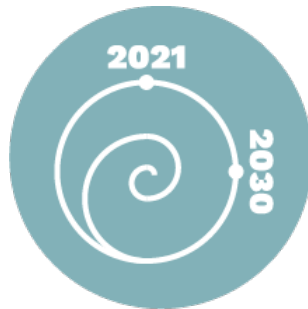
Fisheries



Oil spill



Climate adaptation



All activities support and contribute to the UN Decade of Ocean Science for Sustainable Development



Networks

GEO Mountains Inventory of In Situ Observational Infrastructure

- Interactive web map
- Datasets
- Metadata

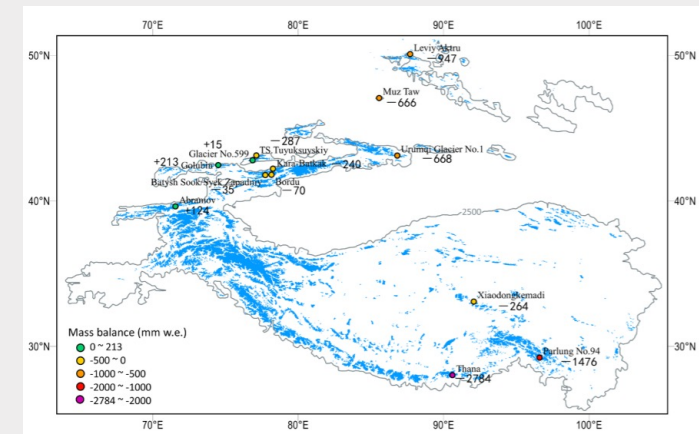
www.geomountains.org

Third Pole Regional Climate Centre (TPRCC) - Network

- Three sub-regional nodes – China (CMA), India (IMD), and Pakistan (PMD)
- Facilitated by WMO

Opportunities

- **Harmonization of climate data and information**, standardization of risk assessment methodologies
- **Advances in techniques of earth system prediction** on extreme events, to reduce impacts caused by extremes
- **Increasing demand for climate services** and greater interest of partners for capacity building on EO to improve **adaptive capacity to climate change**



Source: WMO (2020) State of the Climate in Asia (Figure 8)

Regional focus

Powered by partnerships, Digital Earth Africa provides **open, free, accessible and decision-ready** Earth observation data.

The platform is operational and offers cost effective solutions for countries interested in setting up **independent, country-led and owned national GHG inventory systems for biennial reporting, mitigation action.**

It allows access to historic satellite data for the entire continent, providing a record of the landscape over the last three decades. **This provides governments, industry and researchers with information that is essential to detect changes, make assessments and predictions of future conditions to inform planning and decision making for adaptation.**



Improving food security



RESULTS

The World Bank Disaster Risk Financing Program funded public works projects to offset the loss of food production, improving the outcome for approximately 300k people (150k+households) in Uganda thanks to GEOGLAM.



VALUE

Government of Uganda realized a saving of US \$2.6 M in a single financial year, also tackled social challenges ahead of time. Money and livelihoods.

Saving lives and reducing costs



RESULTS

During Hurricanes Eta and Iota the Honduran state power company ENEE used the GEOGloWS ECMWF Streamflow Forecast Services to direct discharge of 200 million m³ of water in the El Cajón reservoir before Iota's arrival, creating flood storage while avoiding loss of power generation or worse.



VALUE

The Sula Valley generates about 65% of gross domestic product (GDP), representing over 50% of Honduras exports. The economic losses from Eta and Iota in 2020, when compared to those from Hurricane Mitch in 1998 were about 30% less because of the flood control provided by El Cajón

collaborations



2019

17 COUNTRIES

**\$1.5m
+ \$1m cap dev**



2020

32 COUNTRIES

**\$3m
+ \$1.5m cap dev**



2021

18 COUNTRIES

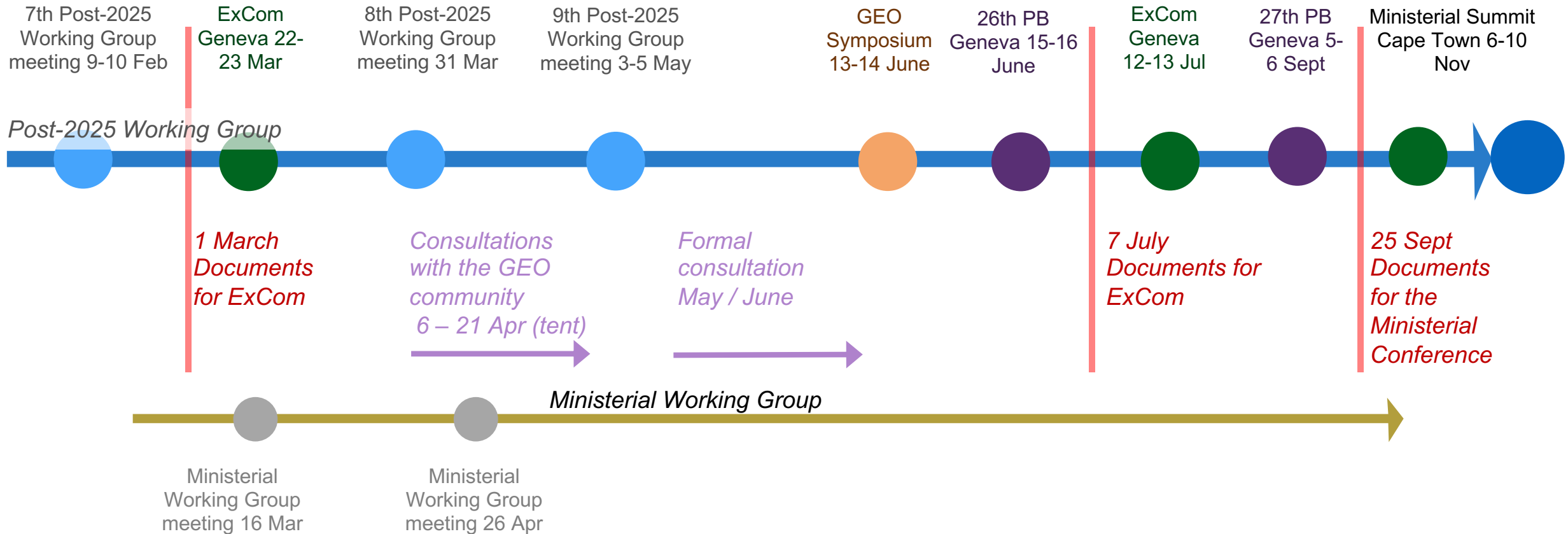
**\$3m (50% cash)
+\$1m cap dev**





GEO post-2025

Process leading to the GEO Ministerial Summit



What will be new or reinforced in a post-2025 GEO?



A renewed mission, a bold ambitious vision and value proposition



Focus on transformative programs to effectuate transformational systemic change



Strengthening of Global Partnerships



Development of Earth Intelligence



Amplification of Advocacy, Communications and Resource Mobilization



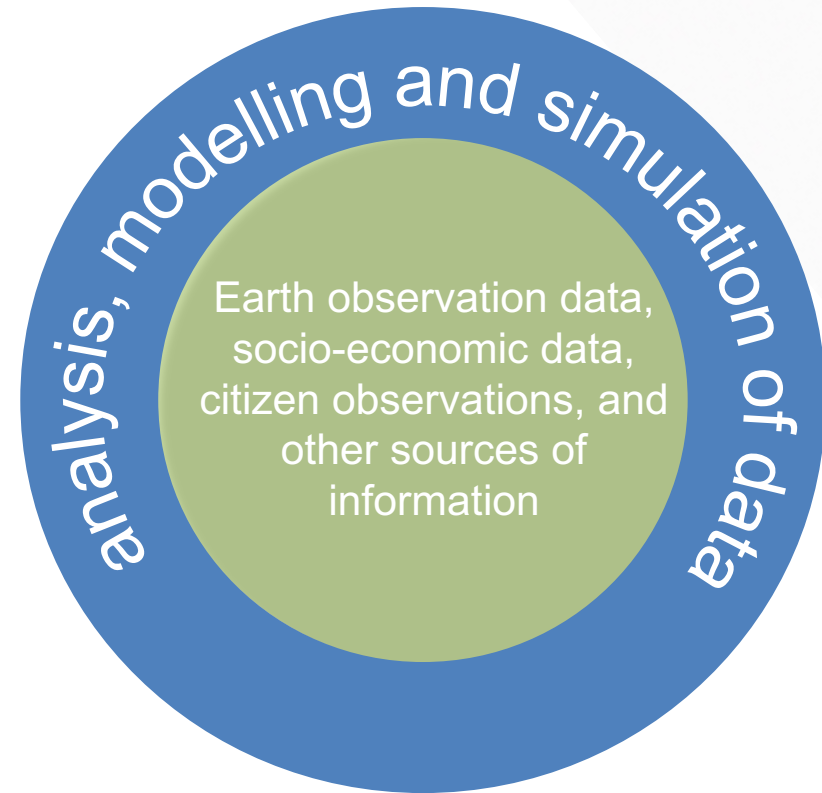
Focus on Equity

Earth intelligence

It integrates analysis, modelling and simulation of data to create a predictive narrative that enables sound decision-making about our planet.

GEO will leverage Earth intelligence to:

1. derive new knowledge,
2. provide valuable insights
3. inform strategic decisions
4. and empower society to protect/ pursue a sustainable planet





Prospective incubators

**Nature-based
Solutions**

Global Ecosystems Atlas

Land-Ocean-Pollution

**Global Land and Marine Debris
Monitoring System**

**Multi-hazard
Risk/EW4ALL**

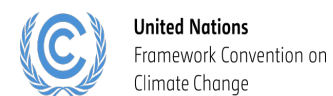
**Integrated Floods Forecasting
Global Wildfire Information System
Global Monitoring of Drought**

One Health

**Global Integrated Heat and Health
Information Service**

Global Ecosystems Atlas

Co-developing an open online resource with explorable interface to monitor and report on the condition and change of ecosystems extent, with the goal of prompting urgent action to protect biodiversity and inform nature-based solutions.



Global Integrated Heat and Health Service

Building a global service to map heat across time scales and provide tools for local communities to understand and act on evolving health risks.



GLOBAL HEAT HEALTH
INFORMATION NETWORK



GEO Ministerial Summit

Where & When

- Cape Town, South Africa. 6-10 November 2023

Objectives

- Increase **visibility** of the critical role of Earth observations, and the GEO partnership.
- Secure ministerial **validation** of GEO's post-2025 strategy through a Declaration, and a mandate to develop an implementation plan based on this direction.
- Secure and showcase **commitments**, financial or political, for the implementation of GEO's post 2025 direction, from ministers and GEO partners.
- Provide the GEO community with opportunities to **showcase** their work & contributions and **network** with each other.



GEO Week 2023 at a glance

6-10 November

Day 1

**High-level
speakers and
“flash talks”**

Day 2

**Showcase
sessions**

Day 3

**GEO Plenary
sessions**

Day 4

**GEO Plenary
sessions**

Day 5

**Ministerial Summit and
adoption of Ministerial
Declaration on GEO Post-
2025**

Exhibition