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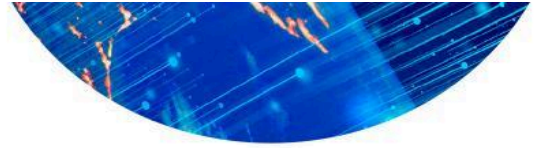
Project 101134335 — EuroGEOSec

EuroGEO Workshop 2024 report
A new vision for EuroGEO

#OneEuroGEO

Contents



ABSTRACT

GEO's post-2025 strategy envisions a world where Earth intelligence is universally accessible, driving systemic shifts needed to accelerate the achievement of all Sustainable Development Goals and fostering a sustainable future for people and the planet.

EuroGEO is the regional coordination mechanism that aims to consolidate and coordinate activities throughout Europe that contribute to GEO (Group on Earth Observations) initiatives.

Since EuroGEO's inception, the European landscape has significantly changed. Firstly, at EU level, with the implementation of the EU Space Programme, which provides the necessary infrastructure, data, and technological advancements, whilst EuroGEO coordinates and integrates these resources to address global and regional challenges through GEO work programme activities. And secondly, at GEO level, with the adoption of the 'post-2025' GEO work programme, which shifts from "Earth observation" to "Earth Intelligence" and from a focus on services to equity, in order to bridge the global information gaps.

Over the past period, Europe successfully addressed the challenge of open data, open knowledge, open science, and interoperability. The new challenge for the downstream EO community is to bridge the "grand distance" between data and intelligence, i.e., from Research and Innovation to Operations and the Market.

Embedding the notion of Earth Intelligence implies managing change in daily practices of the downstream Earth Observation sector[1]. This calls for a proactive and operational initiative capable of conducting change management on a large scale, engaging the EO downstream value chain, and in particular, the industry. Building on the ongoing efforts of Copernicus and National initiatives and bringing its direct community engagement through Action Groups, EuroGEO can act as a catalyst for change.

At this critical juncture, the 2024 edition of the EuroGEO workshop (EGW24) took place in Kraków (Poland) from 8 to 10 October. The 256 participants from 25 countries engaged in a three-day European-scale dialogue on the future of EuroGEO. The Workshop featured 9 parallel sessions, hosting 88 posters and 20 digital screens. The outcomes of the EuroGEO workshop form the foundational basis for a sustainable implementation of EuroGEO for the post-2025 period.

The outcomes of EGW24 are repositioning EuroGEO in the light of both the evolving European landscape and GEO strategy. This report serves as a workshop proceeding report, capturing the key discussions, presentations, and outcomes of the workshop.

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[1] e-shape project. European Union's Horizon 2020 research and innovation programme under grant agreement 820852. www.e-shape.eu

ACKNOWLEDGEMENTS

The organisers wish to recognise the support of the Polish Ministry of Economic Development and Technology and the Polish Space Agency for co-hosting EGW24.

A particular recognition for the European Commission's Joint Research Centre (JRC) who supported essential reports for the Action Group discussions[2].

EGW24 required the full engagement and support of the European Commission; GEO Principals and Members of the GEO High Level Working Group; Copernicus Entrusted Entities; the GEO Secretariat; the EuroGEO Action Group Leaders; GEO flagship leaders; European and Nationally funded projects and initiatives; Private Sector representatives and Academics.

Sincere thanks to side-events organisers, who strongly support EuroGEO as a vibrant and diverse exchange forum: Harmonia, GEO Cradle, SDG-EYEs, EC-JRC, GEO Secretariat, IEEE, Ukraine National GEO.

A special thanks to the student volunteers of the University of Agriculture and the Jagiellonian University in Krakow who supported the event's logistics with energy and passion

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[2] Available at: https://gkhub.earthobservations.org/packages/45nd7-c1875

FOREWORD

By Joanna Drake, Deputy Director-General for the Directorate-General for Research and Innovation

With the adoption last year of the new GEO Post-2025 Strategy on Earth Intelligence, time has come to reflect on where Europe stands and what role it could play in this new phase of GEO. On July 18th, 2024, the European Commission's President Ursula von der Leyen, introduced to the European Parliament her Political Guidelines for the next European Commission. Previously, Mario Draghi had presented his report on EU competitiveness to the European Commission.

Those two key interventions are pointing at the same overarching challenge: increased European competitiveness, while implementing the European Green Deal will require further investments and efforts in Research and Innovation and the faster deployment of R&I solutions.

Europe calls for a new plan for Europe's sustainable prosperity, by putting research and innovation at the heart of its economy. There is a need to reinforce international research and innovation cooperation, simplification and effectiveness of the research and innovation programmes, optimize the synergies with other initiatives such as the EU Missions, the Joint Undertakings, or the Horizon Europe Partnerships.

Another goal is to boost digital competitiveness. One example is the intent to build a European Data Union, setting a clear and coherent legal framework for businesses and administrations to share data seamlessly and at scales and thus unlocking the potential of data. Moreover, the future Space Data Economy Strategy would tap further into the potential of space-derived data, products and technology for a reinforced development, deployment and use of EU space assets, including Copernicus.

These new priorities of the European Commission clearly resonate with the GEO and the EuroGEO ambitions: to collaborate across borders and build international partnerships, share data and knowledge, and use Earth intelligence for an evidence-based transformation towards a sustainable, competitive, and digital economy.

The Horizon Europe Framework Programme together with the Copernicus Programme are and remain Europe's main contribution to GEO. Over the past years, those two programmes have already increased their ambitions towards international research and innovation cooperation. Europe seeks to increase cooperation and efficiency, through for example enhanced coordination among WMO, GEO and GCOS (Global Climate Observing System) and related initiatives for fostering international climate action; or via the European co-funded Partnership on Agriculture of Data that will enhance the use of data for developing data-based solutions, methodologies, for a more sustainable, competitive and climate resilient agricultural sector.

Different services from the European Commission (DG JRC, DG DEFIS, DG RTD, DG INTPA), the Copernicus Entrusted Entities and the beneficiaries of the Horizon Europe Programme, have released an EO Strategic and Research Agenda to identify key R&D priorities to secure the evolution of Copernicus and ensure it remains fit for purpose, meets evolving user needs and drives economic growth, societal well-being and security in Europe. This comprehensive framework will guide the European Commission in the next phases of the Framework Programme, for 2025-2027 and beyond.

This edition of the EuroGEO workshop report comes at the right time to create relevant and impactful contributions to GEO and harness the benefits of international cooperation for the benefit of the European EO sector. The call for proposals for the GEO Post- 2025 Work Programme was launched at the end of 2024, and the EuroGEO Community responds massively with proposals for pilots, initiatives, flagships, and stands ready to join the working groups covering multiple topics ranging from improving access to In Situ data or foster the adoption of open knowledge principles in GEO. Europe ambitions to create impact on a global scale through GEO with its unique excellence, and capabilities.

GEO will be celebrating its 20th anniversary at the GEO Global Forum. With support from the EU, the Italian Space Agency, the Ministry for Foreign Affairs and International Cooperation and the Ministry of Education, Universities and Research have already started working on this key milestone of GEO history. It will be the right time to pledge contributions to GEO, being cash or in-kind, to support the creation of global partnerships, and the development of Earth Intelligence for evidence-based decision making.

The European Commission is pooling resources towards this endeavour, strengthening the cooperation between Directorate-Generals, the EC Executive Agencies or the European Environment Agency.

It is time to seize this exciting opportunity to showcase Europe's know how, attract high-level representatives from all over Europe to Rome, inform them about the Post-2025 strategy and the activities envisaged under the new Implementation Plan. This edition of the EuroGEO workshop could not have been organised at a better moment. Translating the vision into concrete solutions, building on the know-how, the infrastructures, the principles of open knowledge and open science will be determinant to ensure the success of EuroGEO.

As a matter of fact, the hosting country of this workshop, Poland is an Emerging innovator according to the European Innovation Scoreboard 2024. Polish entities are particularly successful in the domains of Digital, Industry and Space, followed by Climate, Energy and Mobility. The country has become a front-runner in EO technologies. This workshop represented a unique opportunity to connect, expand partners' network by including partners from Poland, and explore how solutions can be developed together. Because this is what this thrilling EuroGEO community is all about.

1 INTRODUCTION

1.1 What is EuroGEO?

EuroGEO is the regional coordination mechanism that aims to consolidate and coordinate activities throughout Europe to co-produce Earth Intelligence for all that contribute to the GEO (the Group on Earth observations) initiative.

Founded in 2017, EuroGEO – the European caucus of GEO - has made significant progress in its contribution to GEO, by successfully launching and completing various initiatives. Formulated under the GEO Strategic Plan 2016-2025, the latest EuroGEO implementation plan covered the period 2020-2022. It established a relationship with GEO engagement priorities and other work programme activities; charted the way for stakeholder engagement and capacity development; implemented a governance scheme; and adequate resourcing of the initiative through EU-funded programmes.

EuroGEO has established Action Groups on strategic thematic areas relevant to GEO and taken steps to constitute a "EuroGEO Community", which convenes annually at the EuroGEO workshops. The regional contribution to GEO also includes direct contributions performed to GEO from: H2020 and Horizon Europe Programme, Copernicus programme and its Entrusted Entities; EU bodies; National GEOs; the industry; projects and experts involved through the vast arrays of engagement mechanisms available in the GEO implementation framework.

1.2 The EuroGEOSec project – emulates a EuroGEO Secretariat

EuroGEOSec is an EU-funded project supporting the EuroGEO initiative on period 2024-2025 (www.eurogeosec.eu). EuroGEOSec acts as the Secretariat to EuroGEO to provide a '3C' (Combine, Coordinate and Cooperate) engagement platform to structure the EuroGEO ecosystem. It coordinates, supports and facilitates the smooth implementation and integration of EuroGEO initiative activities and Action groups. The Secretariat delivers an evidence-based framework supporting the prioritisation of research funding in Europe, supports the planning, execution and monitoring of the EuroGEO implementation plan and contributes to the GEO strategic plan, assisting to the development of a sustainability concept towards ensuring long-term operation of the EuroGEO initiative and maximising the impact of its activities through professional communication and dissemination.

Since EuroGEO's inception, the context of the EuroGEO initiative has changed significantly. Earth Observation (EO) is turning into a global competitive market, where Europe -through Copernicus- offers the most comprehensive open data worldwide, including for environmental and climate change monitoring, disaster management and security.

In parallel to developments in the European landscape, GEO is pivoting from an initial vision of a Global EO System of Systems to Earth Intelligence[3]. Within the 'post-2025' work programme, GEO envisions a world where Earth Intelligence is universally accessible and empowers society to achieve a sustainable future.

[3] Earth Intelligence refers to integrated Earth and social science derived knowledge and insights that inform strategic decisions.

The revised Strategy reiterates previous commitments of GEO. It reaffirms its commitment to full and open access to EO data, knowledge, products and services, to promote open data and open knowledge sharing and the co-development of services that empower users to make sound environmental decisions, enable economic opportunities and promote good governance.

Considering the moving landscape in which EuroGEO evolves, there is a need to review EuroGEO's positioning and contribution to GEO; to the European policy framework; and to European Member States for the post-2025 period.

EGW24 therefore aimed to consult largely the EuroGEO Community to redefine EuroGEO in light of the advances in Earth Observation in Europe, and the transition in GEO towards Earth Intelligence. The EGW24 objectives were:

- **To ensure a broad engagement of the GEO High-Level Working Group (HLWG) ;** National GEOs, Action Groups, Copernicus Entrusted Entities, Related projects and the Private sector. This involves EuroGEOSec's stakeholder network to be consulted and mobilised to elaborate the EuroGEO Workshop's agenda and ensure adequate contribution. In addition, Action Groups should receive clear guidance on the proposed outputs for their annual meeting, and these should be reflected in discussion sessions in plenary.
- **To set a focus on National GEO activities**; in this context showcasing the EO expertise and synergies in Poland. In addition to Showcasing the EU activities in EO, time should be available to showcase relevant activities from National GEOs and National EO programmes contributing to EuroGEO and GEO.
- To foster intense peer exchanges highlighting the European contribution to GEO, and engage in discussions regarding the governance, focus and sustainability of a EuroGEO Secretariat. Similar to the session in Bolzano, the EuroGEO workshop should discuss the mandate; governance and sustainability of a EuroGEO Secretariat in different formats and under various angles.
- **To build a consensus and adoption of a revised EuroGEO implementation plan as a contribution to GEO**; aligned to the EU priorities and the GEO post-25 strategy. The EuroGEO workshop comes at an appropriate time to review the proposal for a revised EuroGEO implementation plan. The audience should have access, time to discuss, and the possibility to provide inputs to the document.
- **To foster thematic sessions on the maximization of research & innovation impact**. The outputs of EuroGEOSec across the different stages of solution development (as depicted in the "conveyor belt") should drive the discussion in dedicated sessions, inviting the EuroGEO community to (i) learn about the services offered by EuroGEOSec, how to use them and how to benefit from this, (ii) raise their own requirements on these outputs so that they are improved over the course of EuroGEOSec.

2 EuroGEO action groups and thematic sessions

2.1 Objectives

Founded in 2017, and in constant evolution, the Action Groups structure the engagement in EuroGEO through thematics of European relevance[4]. GEO recently restructured its activities around Focus Areas, relevant to the Global context, and cross-sectoral. As the regional implementation of GEO to the European context, EuroGEO will maintain its European relevance, and federate efforts to provide the necessary interface between European priorities and the GEO Focus Areas. To guarantee a solid engagement of the European EO community to the next phase of EuroGEO, it is however essential to provide Action Groups with a clear mandate, targeted outcomes and resources.

EGW24 hosted nine parallel sessions chaired by the EuroGEO Action Groups: Agriculture; Land use/land coverage; Urban; Disaster Resilience and Health; Energy; Biodiversity, ecosystems and geodiversity; Marine; Climate; Green Deal Data Spaces. The thematic day mobilised the Action Groups, the EU-funded projects, Entrusted Entities, Industry and partners to engage and exchange on the core content of EuroGEO.

The sessions dedicated time for the Action Groups to review and redefine the scope and rationale of the Action Groups to prepare for the post-25 period. Each Action group formulated recommendations for activities supported by a future EuroGEO Secretariat.

The discussions were built on reports prepared by the European Commission's Joint Research Center and facilitated by consultants. Guiding questions were provided to facilitate round tables with the audience, to start defining the European contribution to GEO.

[4] https://eurogeosec.eu/action_group.html

In addition, EGW24 hosted cross-thematic discussions between action groups to start defining the European contribution to GEO. The discussions were organised around the GEO Focus areas topics in scope of the 2024 call for contribution to GEO. This second part of the day aimed to allow a wider representation of the EuroGEO Community with engagement of actors involved in activities related to the GEO Focus areas.

2.2 Summary

With the support of EuroGEOSec, the Action Groups grew through onboarding, expanding the Action Groups' membership to better reflect the value chain of R&I in Europe. This enlarged forum has the potential to deliver major contributions to Europe in terms of coordination and combination of European assets and resources; as think-tanks and sounding board for strategic R&I prioritisation; as adopters and multipliers for the uptake of Copernicus data and services; as Agents of Change for their thematic through the onboarding and dissemination of knowledge and best practices.

The EuroGEO Action Groups seek to be inclusive, dynamic and focused. They serve as the platform for the combination or integration of activities to reach critical mass of use, and cooperation beyond individual programmes and user communities in Europe. Action Groups incubate the European contribution to GEO.

Action Groups are contributing to drafting of relevant strategies (e.g. Strategic Research and Innovation Agendas), provide advice to the elaboration of work programmes and the allocation of associated budgets based on sound monitoring of past and ongoing R&I in EO in Europe and beyond.

The onboarding of the GEO Vision on advancing Earth Intelligence implies a cultural shift in the sector. Action Groups therefore strive to be active Agents of Change for their thematic i.e. to maximise the impact of R&I in Europe.

Historically, Action Group have on boarded key notions, creating a common working culture in Europe of open data and open knowledge, with e.g. the promotion of data & knowledge management, enhancing effective data management practices to improve data accessibility, interoperability (with emerging paradigms such as Digital Twins), harmonisation of existing dataset collections, standardisation, licensing, intellectual property (IPs) through the adoption of open data, open knowledge principles to be captured into Data Management Plans.

In the next phase of EuroGEO, Action Groups also onboards a culture of an integrated 'conveyor belt' (or Research to Operation "R2O" in the GEO Work Programme) of comprehensive support services throughout all stages of the innovation process, systematically integrating e.g. co-design methods for a sustainable uptake of end-user-oriented applications, guidance related to available data and infrastructure, as well as commercialisation assistance.

EuroGEO therefore supports Action Groups to enhance the operational practices in the EO sector, where user and market-needs as well as corresponding solutions, open data sharing and open source are favoured and are addressed by suitable means to increase the market standing of R&I.

The initial call for participation to Action Groups in 2018 was focused on pilot/application development. It led to the formation of core groups of committed participants, who have evolved over time as flexible networks on which Action Group should seek to build and expand. In 2025, an onboarding process will increase the level of participation to the Action Groups.

For the next phase of EuroGEO, membership to the Action Groups should be flexible enough to accommodate a changing environment where multiple EO data sources form a basis of knowledge on which value creators can best support policies and end users. Action Groups should ensure a large participation of both demand (institutions, public entities, international conventions) and solution providers, Copernicus Hubs, the private sector and platforms/twins/infrastructures within its Action Groups. GEO instruments and Regional GEOs should be part of the discussion.

2.3 Action Group Sessions Chairs, co-chairs and facilitators

Agriculture
Chair: Stelios Kotsopoulos, Neuralio
Facilitator: Mark Noort, HCP International
Biodiversity, Ecosystems and Geodiversity
Chair: Antonello Provenzale, CNR
Facilitator: Małgorzata Jenerowicz, CBK
Climate
Chair: Mikko Strahlendorff, FMI
Disasters and Health
Chair: Haris Kontoes, National Observatory of Athens
Facilitator: Alexia Tsouni, National Observatory of Athens
Facilitator: Mariza Kaskara, National Observatory of Athens
Energy
Chair: Thierry Ranchin, Mines Paris PSL
Co-chair: Stelios Kazadzis, WRC
Facilitator: Panagiotis Raptis, WTOC
Green Deal Data Spaces
Chair: Joan Maso, IEEE

Co-chair: Alba Brobia Ansoleaga, CREAF
Land Cover / Land Intelligence
Chair: Stanisław Lewiński, CBK
Co-chair: Conrad Bielski, Eoxplore
Marine
Chair: Audrey Hasson, Mercator Ocean
Urban
Chair: Evangelos Gerasopoulos, National Observatory of Athens
Co-Chair: Iphigenia Keramitsoglou, National Observatory of Athens
Facilitator: Eleni Athanasopoulou, National Observatory of Athens

2.4 Revised EuroGEO Action Group Definitions

2.4.1 Agriculture

The Group's mission is to bridge the communication gap between stakeholders in agriculture, providing a vital mechanism to transform EO insights into practical, operational solutions. The Group exists to champion the transition from research findings to real-world applications, enabling sustainable and resilient agricultural practices. The ultimate impact sought is to support data-driven decision-making and policy alignment with initiatives like the Common Agricultural Policy (CAP) and the European Green Deal, addressing the needs of farmers, policymakers, and industry stakeholders.

The Group achieves this by building on existing resources and initiatives, actively re-assessing prior project outcomes, and synthesising lessons learned to guide future efforts. The Group prioritises a collaborative approach, utilising communication platforms like LinkedIn to extend its reach, and serves as an intermediary to elevate awareness and education on the value of EO applications. The focus is on avoiding duplication, integrating with existing frameworks such as Copernicus, and providing expert advice to maximise the impact of research funding and policy initiatives.

The Group delivers strategic guidance and collaboration on the development of requirements, expectations, and needs in the agricultural sector. Tangible outcomes include contributions to policy development, such as CAP reforms, advocacy for EO applications, and operational support for initiatives like GEOGLAM and the Agriculture of Data partnerships. The Group facilitates connections among farmers, Agtech companies, agricultural financiers, and policymakers to promote the adoption of

data-driven agricultural solutions.

The Group's membership strategy focuses on building a diverse and dynamic community of stakeholders, including experts, researchers, project leaders, policymakers, and industry practitioners. Membership is structured to foster collaboration and facilitate knowledge exchange across different levels of expertise and sectors. Regular updates ensure that the membership remains active, relevant, and aligned with the Group's objectives. The Group engages its members through targeted activities such as workshops, collaboration days, and advisory committees, encouraging active participation and fostering connections to support the adoption and integration of sustainable agricultural practices driven by EO technologies.

2.4.2 Biodiversity, Ecosystems and Geodiversity

WHY?

Our mission is to develop a comprehensive geodiversity - biodiversity Nexus in ecosystems, providing support for ecosystem management, conservation and restoration actions in face of climate and environmental change and rising anthropic pressures.

The Biodiversity, Ecosystems and Geodiversity Action Group currently includes three main lines of activity (subgroups):

- The subgroup's mission concerning "Wetlands and Peatlands" includes (a) determining the effects of droughts on wetland and peatland ecosystems and dynamics, at European and global scale; (b) assessing the best strategies and effects for wetland restoration; and (c) develop a feasibility study for a wetland digital twin, to be used in operational situations as a guide for management and restoration actions in time of rapid climate and environmental change.
- The subgroup's mission concerning "Islands" includes activities on assessing the biodiversity and geodiversity in island ecosystems, collecting existing data and providing support to specific study cases.
- The subgroup's mission concerning "Data Gaps" includes the exploration of information gaps at the edge of geodiversity and biodiversity, the need for developing common vocabularies, the development of a set/subset of Essential Variables to address the challenges posed by the joint management and conservation of geodiversity and biodiversity in protected and unprotected areas, with special focus on Geoparks.

A further subgroup is being established, devoted to **"Mountain Biodiversity, Ecosystems and Geodiversity"**, in close collaboration with GEO Mountains.

The goals of the AG are to discuss, design, coordinate and promote joint actions, such as review and policy papers, publications, workshops, webinars and information days for EO-based applications and services, and to create synergies fostering EO data collection, advanced technologies development and innovative services uptake towards addressing ecosystem, biodiversity and geodiversity conservation and active management, for a long-term impact on the GEOPost-2025 Strategy. A first common review paper on geodiversity and biodiversity in terrestrial ecosystems has already been submitted for publication.

How?

Supporting the role of the EuroGEO Secretariat or any other coordination mechanism through the EC towards the coordination of EU resources and ensure the best use of funding and existing innovations, cross action group cooperations and promotion complementary and advanced EuroGEO and Copernicus branded projects.

Cultivating trust in Earth Observation through Capacity Building in the EU and beyond with the support of e.g., GEO Mountains, Governmental Environmental Agencies, Research and Academia, and Private Sector.

Providing long-term support to the EuroGEO Secretariat for communication, assisting with outreach activities, promoting success stories, and fostering community engagement.

Supporting targeted collaboration and designing priority applications adapted to the needs of the targeted Regions (Africa, Asia Pacific and Latin America) in collaboration with the Regional GEOs.

Support the upscaling of services by the Entrusted Entities at global level and fostering partnerships with international bodies such as IUGG, and GEO Flagships/Initiatives such as GEO BON, GEO Wetlands, GEO Mountains to leverage global expertise and resources.

Using the EuroGEO website to showcase the value of EO to public and private sectors to enhance their involvement and understanding of the value proposition.

Monitoring the impact of the EuroGEO solutions for ecosystem management, conservation and restoration, ensuring that they align to priorities of policies as well as monitoring progress of policies and feeding results back into policymaking through the support of JRC/KCEO, e.g., the EU Green Deal, the EU Adaptation Strategy, the EU Biodiversity Strategy, the EU Floods Directive, the Paris Agreement on Climate Change, the UN Sustainable Development Agenda.

Bringing together actors with concrete results and creating a community where members can share experiences and expertise, by fostering collaborations through GEO (e.g. GEO Flagships: GEO BON, GEO initiatives: GEO Wetlands, GEO-Mountains); IUGG, EU Infrastructures such as LifeWatch ERIC, ICOS ERIC, eLTER RI.

Coordinating activities through aligning projects, EU initiatives and innovation actions that contribute to research and development of innovative solutions towards the Action Group's goals, ensuring efficiency and progress, such as RESTORE4Cs, FirEUrisk, and European Research Infrastructures.

Promoting the Co-design approach for ecosystem management (developed in the framework of the e-shape project) and implementing it to serve end-user needs, as well as using the EO maturity assessment (developed in the framework of the GEO-CRADLE project) to evaluate the EO capacity and potential in countries beyond Europe in collaboration with National GEO Offices and DG INTPA.

Leveraging the role of national GEO offices to influence decisions for policy and funding in complement to financial support received by the Entrusted Entities and European Commission.

What?

Sustainable business cases building upon related biodiversity, ecosystem and geodiversity EU funded projects; dissemination of **success stories**; conducting feasibility studies and planning full scale applications and services with countries in and outside Europe.

Strategies to scale up fully operational (high TRL) multidisciplinary and user tailored services building on the nexus Biodiversity, Geodiversity, Ecosystems, Health with high potential and specificity to be adapted and transferred to other territories for addressing mainly local **needs and priorities.**

Advancements of on-going actions towards effective data management, and delivery of products and services in the support of decision-making and Copernicus evolution. Build upon validated project developments and reported progress, specifically related to Data Spaces, Research Infrastructures, Living Labs, Digital Twins, ESA initiative for Global Development Assistance, Copernicus Data Access Ecosystem and DestinE.

The involvement of local stakeholders in Europe and beyond, especially protected areas, national parks, Geoparks, ensuring that they are equipped to use EO effectively in their **decision-making** processes, as at the local level the services have the most significant impact and **success stories** are advertised.

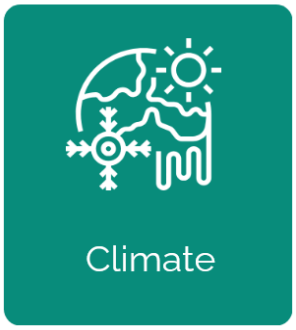
Who?

Recently, more members joined during the workshop in Krakow, and they should be contacted for follow-up actions. The **membership** in the Action Group can be expanded by encouraging the **on-boarding** of new members, allowing them to join following a request to be added to the AG's members list. Specific reference to this can be included on the EuroGEOSec website. Public Authorities, Entrusted Entities, Industry, and all types of End Users are particularly important, and we are open to willing participants.

While the **structure** is kept rather informal, most current members are backed by EU-funded projects that include dissemination activities and needed budget aimed at the delivery of collaborative actions with similar initiatives, aligning perfectly with the AG mission.

There is a need to continue coordinating the exchange and communication with each other at the level of the Action Group, as the members have ambitious aims and success stories to share. The EuroGEO **website** is a good start to include basic information and online or in-person quarterly meetings can assist in communication. The Action Group will continue fostering collaboration, including efforts to secure common funding for future activities.

2.4.3 Climate



The EU Climate Adaptation Mission faces challenges in scaling up last-mile services to meet adaptation needs. Addressing this requires additional actions and leveraging the vast research and development opportunities available, particularly for innovative and practical climate solutions.

The group emphasizes sustaining services beyond the R&D phase by fostering collaboration and exchanging experiences among stakeholders. It leverages ongoing projects and partnerships to develop impactful and user-oriented climate services.

The Action Group seeks to increase uptake of free and open climate adaptation services. These services are designed to be easily replicated in new regions and translated into different languages, ensuring accessibility and adaptability to diverse needs.

Key collaborators include the C3S National Collaboration Forum and various European projects like Arctic Passion and FPCUP. Membership spans weather services, research institutions, and SMEs across Europe, all contributing expertise and innovation to achieve shared goals.

2.4.4 Disaster Resilience and Health

The Disaster Resilience / Health Action Group is divided into two interconnected components: disaster and health.

The group's mission concerning "disasters" focuses on enhancing disaster resilience and supporting sustainable development by integrating EO into co-designed, user-oriented services that address disaster management. For "health," the mission centres on assessing the impacts of future climate change on the spread of climate-induced infectious diseases and developing EO-based responses to these threats. The group also aims to demonstrate end-user services that inform policymaking.

The goals of the Action Group are to discuss, design, coordinate and promote joint actions, such as policy papers, publications, workshops, webinars and information days for EO-based applications and services, and to create synergies fostering EO data collection, advanced technologies development and innovative services uptake towards addressing disasters, for a long-term impact on the GEO Post-2025 Strategy.

Focus should be given to define three axes for the development of highly scalable and fully operational innovative services. The axes are for **1. Disaster & Crisis Management, 2. Health, and 3. Capacity Building.** Exploit cross-discipline skills among the Action Groups and build upon the nexus Disaster-Biodiversity-Health-Environment. Make best use of funding instruments from EU and National initiatives that are essential for fostering collaborations and prioritizing feasibility and pilot studies with potential to scale-up and deliver fit-for-purpose solutions across various sectors and policies

The Action Group strives to deliver:

- **Sustainable business cases** building upon related disaster & crisis management EU funded projects; dissemination of success stories; conducting feasibility studies and planning full scale applications and services with countries in and outside.
- **Strategies to scale up fully operational** (high TRL) multidisciplinary and user tailored services building on the nexus Disaster, Health, Agriculture, Biodiversity with high potential and specificity to be adapted and transferred to other territories for addressing mainly local needs and priorities.
- **Advancements of on-going actions towards effective data management,** and delivery of products and services in the support of decision-making and Copernicus evolution. Build upon validated project developments and reported progress, specifically related to Data Spaces, Research Infrastructures, Living Labs, Digital Twins, ESA initiative for Global Development Assistance, Copernicus Data Access Ecosystem and DestinE, CEMS Risk and Recovery Mapping.
- **The enablement of public authorities** (e.g., National Public Health Organisations, Civil Protection Authorities) to run EO based services independently by providing them with the necessary tools, knowledge, and technical support. Ensure long-term sustainability by embedding the EO-services into the workflows of public authorities and institutions, supporting operationalization and by strategic planning and diverse funding sources.
- **The involvement of local stakeholders in Europe and beyond,** ensuring that they are equipped to use EO effectively in their decision-making processes, as in local level the services have the most significant impact and success stories are advertised, e.g., PML works together with Nansen Environmental Research Centre in Kochi, India to demonstrate the applications of EO data to address environmental aspects of global health as well as NOA supports the Region of Central Macedonia, Greece in aerial spraying program to combat mosquitoes in rice fields.

The membership in the Action Group can be expanded by encouraging the on-boarding of new members such as Public Authorities, Entrusted Entities, Industry, and End Users.

While the structure may seem informal, most current members are backed by EU-funded projects that include dissemination activities and needed budget aimed at the delivery of collaborative actions with similar initiatives, aligning perfectly with the Action Group's mission.

2.4.5 Energy

The Group's mission is to leverage EO data to support the energy transition in Europe. The group aims to provide actionable tools and datasets tailored to the renewable energy sector, addressing key challenges such as sustainable energy planning, grid management, and energy policy alignment. Its primary goal is to contribute to the European Green Deal, RepowerEU and Sustainable Development Goal 7 (SDG7), ensuring affordable, reliable, and sustainable energy for all.

The Group achieves this mission by User-centric co-design services developed in close cooperation with end-users to ensure alignment with their needs and usability. This endeavour involves deploying a number of activities related to: Data Interoperability; Sustainability; Capacity Building; Knowledge Exchange; Integrated Policy Alignment; Networking.

The Group aims to deliver collaborative pilots; real time products; data exchange programs; centralized platforms for data access; stakeholder long-term engagement framework; capacity building and knowledge transfer.

The Group distinguishes a three-tier membership involving core members (Scientific and Academic Institutions: Leading researchers; European Institutions; Technology Developers), contributing members (Energy Industry Players, Private Sector and SMEs, Funding Agencies and Financial Institutions), affiliated members (NGOs and Environmental Organizations, Training and Capacity Building Partners, Regional and Global GEO Representatives). The Group should collaborate with energy Market operators, and work closely with energy traders, grid operators, and policymakers to understand their requirements and adjust EO services accordingly. SMEs should be involved in product development. SMEs are key drivers of innovation and can contribute significantly to the development of new EO products.

2.4.6 Green Deal Data Spaces

The Group's mission is to act as a Community of Practice (CoP) where members share use cases and results, discuss ideas regarding future Green Deal Data Spaces (GDDS) governance, select and validate technologies and standard implementations that enable the creation of FAIR data and services. In addition, distils recommendations to the European Commission on future developments towards a common architecture for the GDDS, other data spaces, and eventually to a common EU data space, in a way that is compatible with the GEO Infrastructure.

In terms of positioning with the EuroGEO initiative, EuroGEO should help the GDDS-AG in considering it a transversal Action Group and helping in making the connections to the other thematic action groups. Most of the existing thematic action groups may benefit from the existence of a GDDS.

The Group achieves outcomes by the following means:

Coordinate activities of projects contributing research and development towards the GDDS.

- Bring together different stakeholders, such as remote sensing community and the in-situ networks or data producers, data aggregators and data consumers. Consider also different levels of the administration.
- Promote interoperability, standards and tools to integrate the European dataspaces data into GEO.
- Promote the FAIR principles and the GEO data sharing and management principles in the GDDS but also pay attention to the data protection aspect of Data Spaces that improves the usage of non-open data.
- Promote trust in Earth observations up to the level of proof in legal and judicial processes (e.g. in environmental crimes).
- Organize the knowledge useful for the GDDS design, development and exploitation.
- Upscale the concept of the data spaces at the global level.
- Ensure connection of the GDDS and by extension the other relevant European Data Spaces to the GEO infrastructure (GEOSS).
- Showcase the benefits of the GDDS infrastructure and data to support thematic domains of GEO considering the different activities of the GEO work programme.
- Produce recommendations to the European Commission on future developments to complete and exploit the GDDS and its connection to GEO.

The Group foresees delivering outcomes from the long list of needed actions.

- A list of data catalogues and services necessary for the European Green Deal strategy and topics that should be integrated in GEO.

- A list of standards and interoperability arrangements useful to implement FAIR and secure data spaces and integrate them into GEO.
- A library of documentation and other supporting resources.
- A list of formalized vocabularies conforming the Green Deal Information Model.
- The evolution of the blueprint of the GDDS.
- The results of the experimentation to connect the European Data Spaces to the GEO infrastructure (GEOSS).
- A compilation of factsheets showcasing the benefits of the GDDS infrastructure and data to support the GEO work programme.
- A policy brief to the European Commission on future developments to complete and exploit the GDDS, gain legal trust in data, converge to a single EU data space and connect the data spaces to GEOSS.

An individual or an institution can become part of the GDDS-AG by requesting being part of the email list. Most of our current members are participants in EU funded projects. While the link between members and GDDS-AG may seem informal, most of the participants have a project that backs them up and has a dissemination activity and budget that specifies the aim to coordinate and collaborate with similar initiatives. The mission of the GDDS-AG is precisely that and there is no other existing coordination for, so the AG provides the perfect environment to do so. No need for a more formal process to become part of the Action Group was detected. In the future the group will actively look for new GDDS related projects as well as incorporation National GEO offices and GEO principals' when their main organizations share interest in the EGD (most of them have that profile). National GEO offices and GEO principals' may express their aim to become members and only in case they require a more formal level of membership, the AG could reconsider the current informal approach.

2.4.7 Land use/land intelligence

The Group’s mission is to research, to develop and to (co-)produce user-driven Land Intelligence solutions to inform public and private stakeholders leveraging our expertise within the EO community.

Its mission is achieved by integrating the latest image platforms, processing algorithms, classification methods, and validation techniques, the fusion

with complementing data, and the development of new use cases. Moreover, we support inclusive discussions, open and transparent standards, and the sharing of our experiences and knowledge.

The Group seeks to deliver land cover and land intelligence solutions that enable stakeholders to take better-informed decisions, which promote sustainability and resilience for people and the planet.

Members of the Action Group are world-leading experts in EO image understanding and analysis. They work in research, public institutions and private industry. The Group is led by a smaller team of committed experts committed to drive the group and its activities further.

2.4.8 Marine

Outcomes of the EuroGEO Workshop were not reported at the time of writing. The below is an extract of the JRC-funded Action Group studies.

The group's mission is to centralize the coordination of ocean observation European-funded projects and initiatives and optimize their implementation in the EO European context to better fit the global GEO targets. Thus, the main goals of the Marine Action Group are:

To bring European-funded projects together and increase the possibility for synergies, for sharing capabilities and methodologies, and to foster the co-design/co-production of services across different thematics and the EU Member States.

Guide and support the different EU ocean observing projects in order to better align their priorities to the global GEO strategy.

Help members and initiatives to better streamline actions and outcomes to help respond to EU policy and decision making needs.

Support the development of services and help the evolution into downstream applications.

Supported on the Action Group's activity in bringing together research and innovation (in particular projects contributing to the evolution of the Copernicus Marine Service) the group will maintain a close link to the Copernicus Marine Service activities, always highlighting the Service's pivotal role in delivering free and open access data and information on the marine and coastal domain.

2.4.9 Urban

The EuroGEO Urban Action Group exists to leverage EO for the development of innovative solutions that support European urban policy implementation. The ultimate impact sought is to address environmental challenges in cities and promote sustainability and resilience in urban areas. Specifically, the group aims to contribute to healthy cities by enhancing green spaces, reducing urban air pollution, and supporting climate change mitigation and adaptation. These efforts align with broader European goals for resilient

cities and human settlements, which are a priority of GEO.

The group approaches its work by combining multiple EO platforms, integrating data from various sources, and applying advanced technologies like artificial intelligence, urban digital twins, and numerical simulations. They invest in citizen science, leverage the in-situ component, and promote co-design with city stakeholders to ensure that solutions are both user-oriented and needs-based. They aim to bridge the gap between research outputs and practical implementation by working closely with city authorities and communities.

The Urban Action Group delivers data-driven products, tools, and services that enable monitoring, mapping, and managing urban environments. They produce EO-based solutions to improve air quality, support green infrastructure, assess the vulnerability of urban systems, and help cities reach CO2 reduction goals. Tangible results include actionable insights for policy support, urban planning, and disaster risk reduction.

The Urban Action Group consists of a mixture of data/service providers, city stakeholders, and research entities. Current members include representatives from 23 research entities and 18 stakeholder organizations across 11 countries. Membership is informal and typically initiated through participation in EuroGEO workshops and involvement in joint projects. Moving forward, the group aims to expand its network, including new members from underrepresented regions and communities, and foster deeper collaboration with city networks, such as ICLEI-EU and Resilient Cities Network, to enhance stakeholder engagement and co-design of solutions.

2.5 Initial roadmaps for the deployment of EuroGEO Secretariat support to Action Groups

The thematic sessions coordinated by the EuroGEO Action Groups made a series of recommendations for future EuroGEO Secretariat Activities. Their contribution gave birth to the notion of EuroGEO Secretariat 'Services' supporting the EuroGEO Community.

The EuroGEO Secretariat would act as a gateway to service providers for thematic support. A EuroGEO Secretariat could mobilise partners, experts, projects and networks to activate 'Secretariat Support Services'. These services should be deployed on a variable geometry basis, depending on the expressed needs (National Cooperation Mechanisms; Regional GEOs; Action Groups).

A first set of potential labels for Secretariat Services was identified by the EuroGEO Workshop 2024, in extensive consultation with stakeholders.

EuroGEO Secretariat Activities supporting the EuroGEO Community and Stakeholders:

- **'3Cs' Cooperation, Coordination, Combination**
- **Innovation Support and Market Development**
- **Integration of in-situ data**
- **Building Capacities and promoting Best Practices**
- **Communication and outreach**
- **Support to Action Groups**

The below sections present the contributions of the individual thematic sessions organised at EGW24, organized under potential labels for EuroGEO Secretariat Services.

2.5.1 Agriculture

2.5.1.1 3Cs' Cooperation, Coordination, Combination

Strengthen Alignment with GEOGLAM through Targeted Funding: EuroGEO should encourage the development of projects that directly address GEOGLAM's monitoring priorities. By earmarking funding for research that aligns with GEOGLAM's objectives, EuroGEO can help ensure that EU-funded activities contribute to global agricultural monitoring efforts.

Facilitate Collaboration between EU Research Initiatives and GEO Activities: EuroGEO should act as a bridge, fostering partnerships between EU-funded research projects and broader GEO activities. Establishing collaboration frameworks that encourage joint efforts on data sharing, methodology development, and policy support will enhance the impact of both EU research funding and GEO initiatives.

Develop a centralized Repository for in-situ Data: To ensure effective synergies, EuroGEO should establish a centralized repository for in-situ data collected from EU and ESA-funded projects. This repository should include standardized metadata, quality assessments, and access protocols, enabling researchers to easily use the data for training AI/ML models.

2.5.1.2 Innovation Support and Market Development

Promote the R2O Approach in EU-Funded Projects: Encourage projects that incorporate operational pilots, validation studies, and user engagement to facilitate the transition from research to practice. This will help integrate innovative EO solutions into agricultural decision-making processes and contribute to the operationalization of GEOGLAM's monitoring systems.

2.5.1.3 Building Capacities and promoting Best Practices

Promote data standardization and interoperability: EuroGEO should advocate for common standards in in-situ data collection and sharing, ensuring that data collected under different projects can be used consistently. This includes establishing protocols for data quality, sampling frequency, and metadata standards, which will facilitate the integration of in-situ data into AI/ML model training workflows.

Facilitate workshops focused on in-situ data utilization: Organize thematic workshops that bring together data providers, AI/ML experts, and end-users to discuss the use of in-situ data for training models. These sessions can identify best practices for data collection, highlight gaps in existing datasets, and propose joint strategies for improving data quality and accessibility across projects.

2.5.2 Biodiversity, Ecosystems and Geodiversity

2.5.2.1 3Cs' Cooperation, Coordination, Combination

- The importance of mapping national capacities to avoid double-funding.
- Industry involvement: EuroGEO's role in connecting the private sector with public authorities.
- The need for funding feasibility studies in the support of policies linking authorities and EO resources.
- The importance of monitoring progress and feeding results back into policymaking.

2.5.2.2 Building Capacities and promoting Best Practices

The need for capacity-building initiatives and showcasing success stories.

The need to close gaps in data, especially at the edge between geodiversity and biodiversity, ensuring the right frequency for actionable insights.

2.5.2.3 Communication and outreach

The necessity of better advertising our developments so that end users can more effectively engage.

2.5.2.4 Support to Action Group

The need to secure funding for the Action Group from a mix of public and private sources, including government grants, international aid, and private sector investments. Implement pilot projects to test and refine innovative solutions, providing proof of concept and demonstrating their value to stakeholders.

2.5.3 Disaster Resilience and Health

2.5.3.1 3Cs' Cooperation, Coordination, Combination

Coordination of EU resources and ensure the best use of funding and existing innovations, cross action group cooperations and promote complementary and advanced EuroGEO and Copernicus branded projects. Leveraging the role of national GEO offices to influence decisions for policy and funding in complement to financial support received by the Entrusted Entities and European Commission.

Bringing together actors with concrete results and creating a community where members can share experiences and expertise, by fostering collaborations through GEO (e.g. GEO initiatives: GEO-CRADLE, GWIS, EO4Health and GEO-Mountains, GEO Pilot Initiatives: EO4MIN & SPACE-SECURITY, GEO Disaster Risk Reduction Working Group); CEOS (Working Group on Disasters); UN-SPIDER Regional Support Office in Greece (NOA); WMO, etc.

Coordinating activities through aligning projects, EU initiatives and innovation actions that contribute to research and development of innovative solutions towards the Action Group's goals, ensuring efficiency and progress, such as EYWA (Early Warning for Mosquito Borne Diseases, the E4Warning (Eco-Epidemiological Intelligence for Early Warning and response to Mosquito-borne disease risk in Endemic and Emergence Settings), OneAquaHealth (Protecting urban aquatic ecosystems for animal, plant & human health), I-CHANGE (Citizen Actions on Climate Change and Environment) and MedEWSa (MEDiterranean and pan-European forecast and Early Warning System Against natural hazards.

2.5.3.2 Innovation Support and Market Development

Support the upscaling of services by the Entrusted Entities at global level and fostering partnerships with international bodies such as WHO, and GEO Flagships/Initiatives (e.g., Destination Earth, Digital Twins, Copernicus Health Hub) to leverage global expertise and resources.

2.5.3.3 Building Capacities and promoting Best Practices

Addressing the need for capacity-building initiatives and showcasing success stories by cultivating trust in EO through Capacity Building in EU and beyond with the support of e.g., UN-SPIDER, Framework Partnership Agreements on Copernicus User Uptake / Copernicus FP CUP, Governmental Health and Disaster Agencies, Research And Academia, and Private Sector.

Promoting the Co-design approach (developed in the framework of the e-shape project) and implementing it to serve end-user needs, as well as using the EO maturity indicators (developed in the framework of the GEO-CRADLE project) to evaluate the EO capacity and potential in countries beyond Europe in collaboration with National GEO Offices and DG INTPA.

2.5.3.4 Communication and outreach

Using the EuroGEO website to showcase the value of EO to public and private sectors to enhance their involvement and understanding of the value proposition.

Perform outreach activities, promoting success stories, and fostering community engagement.

2.5.3.5 Support to Action Group

Monitoring the impact of the EuroGEO solutions for disaster resilience and health, ensuring that they align to priorities of policies as well as monitoring progress of policies and feeding results back into policymaking through the support of JRC/KCEO, e.g., the EU Green Deal, the EU Adaptation Strategy, the EU Biodiversity Strategy, the EU Floods Directive, the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change, the UN Sustainable Development Agenda, and the UN Early Warnings for All.

2.5.3.6 Regional engagement

Supporting targeted collaboration and designing priority applications adapted to the needs of the targeted Regions (Africa, Asia Pacific and Latin America) in collaboration with the Regional GEOs.

2.5.4 Energy

2.5.4.1 3Cs' Cooperation, Coordination, Combination

EuroGEO should help secure diverse funding sources. It can help explore funding opportunities from governmental grants, private sector partnerships, and international organizations to ensure financial sustainability.

Some support from the action group to national mechanisms to become champion on energy and to showcase concrete results and examples will be of strong interest (example Poland/ Austria, FIRE project)

Involve SMEs in Product Development: SMEs are key drivers of innovation and can contribute significantly to the development of new EO products. To engage SMEs, EuroGEO should support the Group in its objective to:

- Establish partnerships: Create collaboration opportunities between the Action Group and SMEs specializing in energy technologies and data analytics.
- Provide support and resources: Offer access to EO data, technical assistance, and funding opportunities to help SMEs develop and commercialize new products.
- Facilitate networking: Organize events that connect SMEs with industry leaders, researchers, and potential investors.

2.5.4.2 Innovation Support and Market Development

EuroGEO should seek to align EO Products with energy market needs: The spatial and temporal scales of nowcasting and forecasting products should meet the specific requirements of the target energy market models. To bridge this gap, the Group should seek to:

- Customize Solutions: Tailor EO products to address the unique needs of different market segments, such as day-ahead trading or real-time grid management.
- Collaborate with Market Operators: Work closely with energy traders, grid operators, and policymakers to understand their requirements and adjust EO services accordingly.

- Enhance User Accessibility: Develop user-friendly interfaces and tools that allow stakeholders to easily access and interpret EO data for decision-making.
- Stay Informed on Policy Developments: Regularly review and analyse policy changes to ensure EO services remain relevant and supportive of policy goals.
- Advocate for EO Integration: Engage with policymakers to highlight the value of EO data in energy planning and encourage its inclusion in legislative frameworks.
- Measure Impact on Policy Targets: Monitor and report on how EO services contribute to achieving specific policy objectives, such as emission reduction targets.

2.5.4.3 Building Capacities and promoting Best Practices

- EuroGEO should promote capacity building activities, including on data interoperability. EuroGEO should facilitate knowledge exchange on key technical items.
- Accuracy and reliability of EO data: improving the accuracy, reliability, and applicability of EO data is crucial for supporting the growth and integration of renewable energy systems worldwide.
- Reducing uncertainties: implement advanced algorithms and calibration techniques to minimize errors in EO data collection and analysis.
- Standardizing data fusion practices: develop and adopt standardized methodologies for combining data from various sources, such as satellites, ground stations, and models, to create more comprehensive and accurate datasets.
- Enhancing long-term variability analysis: invest in research to understand and model the long-term variability of renewable energy resources, aiding in better planning and risk management.
- Improving spatial and temporal variability resolution: increase the resolution of EO data to capture finer spatial and temporal details, which is essential for precise forecasting and planning.

2.5.4.4 Communication and outreach

EuroGEO should engage with policymakers to highlight the value of EO data in energy planning and encourage its inclusion in legislative frameworks.

2.5.4.5 Support to Action Group

EuroGEO should establish a sustainable group structure: a well-organized group structure will ensure the long-term viability of the Action Group. The current members and the EuroGEO secretariat could work together to make a more permanent and well-defined procedure.

Recommendations include:

- Define clear roles and responsibilities: establish committees or working groups focused on specific areas such as data standards, partnerships, and technology development.
- Implement monitoring and evaluation: set up mechanisms to regularly assess progress towards goals and adjust strategies as needed.

EuroGEO should regularly review and analyse policy changes to ensure EO services remain relevant and supportive of policy goals, and measure Impact on policy targets: Monitor and report on how EO services contribute to achieving specific policy objectives, such as emission reduction targets.

2.5.4.6 'Stakeholder engagement and Youth'

The group is interested in promoting a Master degree on EO and energy (generic) or EO and solar (or wind, or biomass etc). A programme also for Training the trainers (ESA programme) or the EU space ambassador programme. Some actions towards the youth should also be explored.

2.5.5 Green Deal Data Spaces

2.5.5.1 3Cs' Cooperation, Coordination, Combination

EuroGEO should help the GDDS-AG in considering it a transversal AG and support in making the connections to the other thematic action groups. Most of the existing thematic action groups may benefit from the existence of a GDDS.

The initiative should support the Group in bringing together different stakeholders, such as remote sensing community and the in-situ networks or data producers, data aggregators and data consumers. Consider also different levels of the administration. It should help ensure connection of the GDDS and by extension the other relevant European Data Spaces to the GEO infrastructure (GEOSS).

2.5.5.2 Building Capacities and promoting Best Practices

EuroGEO should support the Group to promote interoperability, standards and tools to integrate the European dataspaces data into GEO. It should support the promotion of the FAIR principles and the GEO data sharing and management principles in the GDDS but also pay attention to data protection aspect of Data Spaces that improves the usage of non-open data. The initiative should organize the knowledge useful for the GDDS design, development and exploitation.

2.5.5.3 Communication and outreach

EuroGEO should take measures to promote trust in EO up to the level of proof in legal and judicial processes (e.g. in environmental crimes). It should showcase the benefits of the GDDS infrastructure and data to support thematic domains of GEO considering the different activities of the GEO work programme. It should support producing recommendations to the European Commission on future developments to complete and exploit the GDDS and its connection to GEO.

2.5.5.4 Support to Action Group

EuroGEO should help the GDDS-AG in considering it a transversal AG and helping in making the connections to the other thematic action groups. Most of the existing thematic action groups may benefit from the existence of a GDDS.

Support the creation of a GEO activity about Digital Earth approaches in the new GWP, where data

spaces could exist as a subgroup. Other relevant EU subgroups could be digital twins and Sensor APIs for querying and alerting.

2.5.6 Land use/land intelligence

2.5.6.1 3Cs' Cooperation, Coordination, Combination

EuroGEO should facilitate networking with key statistical stakeholders and recommend close collaboration with its AGs to further implement EO in statistics following the declarations of the Warsaw Memorandum.

The use of EO data by national statistical offices and by Eurostat should be increased. It can be used to track progress towards achieving policy objectives such as SDGs. The Warsaw Memorandum calls for cooperation between Eurostat, national statistical agencies, geospatial organizations, and scientific bodies to leverage EO for more precise and timely statistics.

The EuroGEO Secretariat should facilitate collaboration and networking with the EC and Member state authorities to maximize knowledge sharing. Moreover, the secretariat should help the LC&LI AG membership through high-level contacts to push the greater integration of EO data and derived products and services into policy frameworks and promote best practices for data utilization in that domain.

The domain of EO data for agriculture, forestry, and land use (AFOLU) is cross-thematic. The Group therefore recommends for EuroGEO to stimulate synergies across relevant Action Groups, such as the EuroGEO Land Cover and Land Intelligence Action Group, but also potentially with National initiatives coordinated by National GEO Offices.

2.5.6.2 Innovation Support and Market Development

Europe is a global leader in Quantum Computing developments and this technology could have significant benefits to global LC&LI products and services. Therefore, it is recommended that EuroGEO could support the fostering of partnerships between these different communities with research institutions and technology companies to explore and develop quantum algorithms tailored for EO image analysis. Pilot projects should be set-up to demonstrate the practical applications of quantum computing in processing large EO image datasets which could be showcased at GEO.

2.5.6.3 Building Capacities and promoting Best Practices

It is recommended to develop with the help of EuroGEO and other global partners, a fully reproducible open land cover framework including a harmonised and globally applicable nomenclature that is also compatible with Copernicus Sentinels imagery.

The EC through the EuroGEO secretariat could request specialist knowledge/inputs from the LC&LI AG group members on cross-cutting topics. An expert / product or service database could be developed for greater visibility.

In Europe an organisation should be responsible for Copernicus product validation. This could be EEA which is managing the Copernicus in-situ component. However, the in-situ data collected there is not always useful for EO product validation. Therefore, other open and standardized options should be considered especially linked to sharing/access to data used by EC funded projects and services.

2.5.6.4 Communication and outreach

The EuroGEO secretariat should support networking and stakeholder engagement facilitating the group's impact and collaboration opportunities. EuroGEO members should have the opportunity to showcase their products and solutions to different EuroGEO AGs as well as other regional GEOs to promote European collaboration. Webinars, workshops, and hackathons on LC&LI topics could be hosted to attract more people outside of the current group.

To enhance industry participation in EuroGEO, it should clearly communicate the tangible benefits for businesses such as collaboration opportunities. Moreover, promoting networking events that connect industry leaders with policy makers and researchers would help cultivate relationships and encourage active involvement in EuroGEO initiatives.

2.5.6.5 Support to Action Group

The EuroGEO secretariat should facilitate and coordinate networking among the different AGs for maximum knowledge gain.

Annual work programs could be developed which would increase visibility and attract more people and organisations to participate in EuroGEO and corresponding AGs. An open but moderated forum would help to improve internal communication and collaboration.

A formalization of the Group's programmatic activities and operations is wished by the Action Group. As this develops, the process should help establish stronger links with other regional GEO initiatives.

2.5.7 Urban

2.5.7.1 3Cs' Cooperation, Coordination, Combination

The Urban Action Group plays a cross-cutting role within EuroGEO, it should compile relevant needs from other Action Groups. By fostering collaboration, the Group can ensure these needs are addressed effectively.

EuroGEO should emphasize to the European Commission the critical need for dedicated funding opportunities that enable cities to fully operationalize and implement the group's products, ensuring tangible, on-the-ground impact. Securing dedicated funds is essential for the operationalization of project products. Support from a DG with an urban focus would be particularly beneficial.

EuroGEO should act as an umbrella to bring together entities from all sectors. It should facilitate engaging with cities and countries, which requires raising awareness about the benefits of EO. Facilitating the first point of contact is crucial to bridging the gap between the EO community and local stakeholders. National entities can play a pivotal role in acting as intermediaries. It is important to meet cities where they are and focus on practical engagement rather than adopting a purely didactic approach to EO.

Supported by EuroGEO, the Group would leverage existing EO use cases in urban settings and adopt a top-down engagement strategy with city networks. Reach out to networks such as the Covenant of Mayors, Climate-KIC, and the EU Missions (Adaptation, Smart and Sustainable Cities) to reduce EO agnosticism and emphasize the practical benefits.

Through the cooperation with city networks, it would involve citizens in EO discussions to translate awareness into actionable city initiatives. Beyond awareness, the Group would continue advocating for

Citizen Observatories as an effective means for cities to adopt EO practices.

Additionally, there is an opportunity to connect with regional GEOs by sharing Europe's urban solutions with communities beyond Europe. By scaling efforts in areas such as urban resilience and environmental monitoring, the Urban Action Group can support global sustainability goals.

2.5.7.2 Innovation Support and Market Development

The Urban Action Group (UrbAg) is well-positioned to contribute to the validation of new high-resolution commercial EO products, ensuring their scientific reliability. The group should also explore opportunities to support commercial applications by acting as a multiplier and promoter of EO products, thereby strengthening their market impact.

To foster collaboration with the private sector, UrbAg could provide incentives for companies to make EO products more open and accessible. Establishing common ground with industry partners will encourage the scaling and transformation of existing tools into commercially viable solutions.

2.5.7.3 Building Capacities and promoting Best Practices

Building capacities is a core focus of the Urban Action Group (UrbAg). Increasing EO awareness among cities and stakeholders is a foundational step, alongside facilitating first contact with local authorities through intermediaries like national GEO offices or NCMs. Establishing a "living document" to capture technological advances ensures knowledge is continuously shared and built upon. Workshops, co-design activities, and citizen observatories further enable communities to engage with and adopt EO technologies effectively.

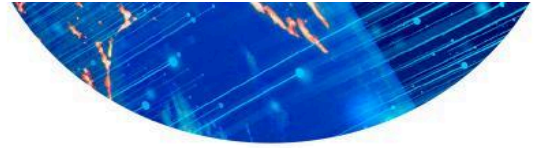
Promoting best practices is equally critical. Sharing urban solutions with global GEO initiatives and regional GEOs allows successful European use cases to scale internationally. Collaboration with city networks, such as the Covenant of Mayors and ICLEI-EU, ensures EO applications align with real-world needs and support urban resilience. Encouraging companies to commercialize EO tools while maintaining accessibility drives the adoption of refined best practices across both public and private sectors.

Policy contributions also play a significant role in establishing best practices. Integrating EO research outputs into city portals and aligning with EU directives, such as the Air Quality Directive, ensures compliance and relevance for urban stakeholders. Tailoring EO solutions through co-design with cities further enhances their practical application and long-term impact.

2.5.7.4 Communication and outreach

EuroGEO Secretariat should demonstrate (online, onsite) the strong contribution of EO in the urban policy frames, already established by the group and documented in the Urban Action Group report. The group can establish a living document that reflects ongoing advances in urban EO technology/ breakthroughs. Research outputs and group activities should be integrated into existing city portals, ensuring accessibility and relevance for urban stakeholders.

Establishing and maintaining a public profile for the Urban Action Group is essential for fostering connections and enhancing engagement. Incorporating the new Earth Intelligence paradigm—such as Artificial Intelligence (AI) and Large Language Model (LLM) technologies like chatbots—into the digital representation of EuroGEO can significantly improve stakeholder access to EO products. This approach will also enhance the visibility and discoverability of EuroGEO contributors and outputs. Furthermore, public portals, including the one planned for EuroGEO, should adopt an "urban focus," ensuring they cater to both commercial entities and public service needs effectively.



2.5.7.5 Support to Action Groups

The ongoing support is imperative for multiple reasons documented in the relevant section of the Urban Action Group report, developed for JRC-KCEO ('UrbAg report').

Facilitation of Group meetings:

- The next physical meeting of the group in the frame of the upcoming World Urban Forum
- Support (organization and technical support) of periodic (e.g. quarterly), virtual meetings of the group members with participation from other Action Groups.
- Formal invitations (for future EuroGEO workshops or other events and meetings) to key stakeholders, city networks and institutes from underrepresented regions (e.g., East and Southeast Europe) would ensure a more balanced and engaged membership.
- For multiple ways of EuroGEO Sec contributions to governance mechanisms, please see Sect. 8.2 of the UrbAg report.

Potential engagement levels (for more see Sect. 2.2 of the UrbAg report) could be:

- Core members: providers of EO-powered research and solutions.
- Contributing members: DEC activities and services.
- Stakeholders: observers, express needs, interact or offer support.

2.6 Example of potential EuroGEO Synergies along the GEO Focus Areas

2.6.1 Objectives

Parallel sessions were structured around the GEO focus areas. These sessions reorganized the audience to steer synergies around the GEO Focus areas. The sessions prepared the European contribution to the GEO Secretariat call for proposals to the Post-2025 GEO Work Programme (GWP) (deadline October 31st, 2024.

2.6.2 Chairs and co-Chairs of the Synergies Sessions

Agriculture and Food Security
Chair: Sven Gilliam, GEO Secretariat, GEOGLAM
Co-Chair: Stelios Kotsopoulos, Neuralio
Water & Land Sustainability
Chair: Audrey Hasson, Mercator, GEO Blue Planet
Co-Chair: Conrad Bielski, EOexplore
Weather, Hazard & Disaster Resilience
Chair: Alexia Tsouni, National Observatory of Athens, EuroGEO Disasters and Health Action Group
Ecosystems, Biodiversity & Carbon Management
Chair: Antonio Bombelli, WMO, GCOS
Co-Chairs: Manuela Balzarolo, CMCC | Ulf Mallast, UFZ
One Health
Chair: Mariza Kaskara, National Observatory of Athens
Co-chair: Stijn Vermoote, ECMWF
Climate, Energy & Urbanisation
Chair: Mikko Strahlendorff, FMI
Co-chairs: Evangelos Gerasopoulos, National Observatory of Athens Iphigenia Keramitsoglou, National Observatory of Athens

2.6.3 Agriculture and food security

Question 1: How can the EuroGEO community support the identification of recommendations for future Agriculture and Food Security activities (R2O pipelines – Pilots, Initiatives, Flagships, Mature Flagships, Conveners)?

Key discussion points:

- **Role of EU Research Funding in Supporting GEO Initiatives:** EU research funding plays a crucial role in advancing Earth Observation (EO) applications in agriculture and food security. It contributes to initiatives like GEOGLAM (Group on Earth Observations Global Agricultural Monitoring) by enabling the development and scaling of EO-based tools and methodologies that improve agricultural monitoring, support sustainable farming practices, and enhance food security decision-making. **Leveraging Existing Initiatives to Maximize**
- **Impact:** Aligning EU-funded projects with ongoing GEO activities ensures that research outputs can directly contribute to GEO's goals. This alignment helps avoid duplication and enhances the overall impact by building on established frameworks such as GEOGLAM's monitoring systems and Copernicus's EO data services.
- **Supporting Research-to-Operations (R2O) Transition:** EU research funding is instrumental in bridging the gap between innovative research and operational use. By focusing on the R2O transition, EU-funded projects can help integrate EO technologies into agricultural practices more effectively, thus contributing to both regional and global GEO priorities.

Key examples:

- **GEOGLAM's Crop Monitoring Initiatives:** EU research funding has supported projects that develop crop yield forecasting models, EO-based monitoring tools, and agricultural early warning systems, which are directly aligned with GEOGLAM's objectives. For instance, integrating Sentinel satellite data into GEOGLAM's frameworks has improved the accuracy of crop monitoring at national and global scales.
- **Harmonization of Data Standards in GEO:** EU projects often contribute to the development of data standards and interoperability protocols, which support the sharing and integration of EO data across different GEO initiatives. This harmonization facilitates better data access and usage in GEOGLAM and other GEO activities.

Recommendations for EuroGEO:

- **Strengthen Alignment with GEOGLAM through Targeted Funding:** EuroGEO should encourage the development of projects that directly address GEOGLAM's monitoring priorities. By earmarking funding for research that aligns with GEOGLAM's objectives, EuroGEO can help ensure that EU-funded activities contribute to global agricultural monitoring efforts.
- **Promote the R2O Approach in EU-Funded Projects:** Encourage projects that incorporate operational pilots, validation studies, and user engagement to facilitate the transition from research to practice. This will help integrate innovative EO solutions into agricultural decision-making processes and contribute to the operationalisation of GEOGLAM's monitoring systems.
- **Facilitate Collaboration between EU Research Initiatives and GEO Activities:** EuroGEO

should act as a bridge, fostering partnerships between EU-funded research projects and broader GEO activities. Establishing collaboration frameworks that encourage joint efforts on data sharing, methodology development, and policy support will enhance the impact of both EU research funding and GEO initiatives.

Question 2: How do the GEO focus areas on Agriculture and Food Security enable us to collaborate and build synergies around the use of in-situ data for training AI/ML models, particularly between EU-funded research, ESA-funded research, and GEO initiatives? What mechanisms are needed to ensure effective integration and standardization of in-situ data across these activities?

Key discussion points:

- **Importance of In-Situ Data for Training AI/ML Models:** In-situ data plays a critical role in enhancing the accuracy and reliability of AI/ML models used in agriculture and food security. By providing ground-truth information, in-situ data helps calibrate and validate EO-based models, making them more effective for applications such as crop yield prediction, soil moisture estimation, and early warning systems for food security. The GEO focus areas on Agriculture and Food Security create opportunities to coordinate the collection and use of in-situ data across different projects.
- **Building Synergies through In-Situ Data Integration:** Effective collaboration between EU-funded research, ESA-funded projects, and GEO initiatives can be achieved by leveraging in-situ data to train and improve AI/ML models. These synergies are vital for developing models that can generalize across different geographic regions and agricultural systems. Aligning the collection and sharing of in-situ data ensures that different projects contribute to a shared pool of high-quality training data, increasing the impact and operational use of research outcomes.
- **Overcoming Challenges in Data Accessibility and Standardization:** One of the main barriers to using in-situ data for training AI/ML models is the variability in data formats, collection methods, and accessibility. GEO's focus on Agriculture and Food Security offers a platform to address these challenges by promoting data standardization, interoperability, and open access policies across EU and ESA-funded projects.

Key examples:

- **Harmonization of In-Situ Data Collection Across GEO Initiatives:** Projects funded by the EU and ESA often collect in-situ data for specific applications, such as soil quality monitoring or plant health assessment. By harmonizing data collection protocols and making these datasets interoperable, initiatives like GEOGLAM can leverage a larger volume of ground-based observations to train more robust AI/ML models for agricultural monitoring.

Recommendations for EuroGEO:

- **Develop a Centralized Repository for In-Situ Data:** To ensure effective synergies, EuroGEO should establish a centralized repository for in-situ data collected from EU and ESA-funded projects. This repository should include standardized metadata, quality assessments, and access protocols, enabling researchers to easily use the data for training AI/ML models.
- **Promote Data Standardization and Interoperability:** EuroGEO should advocate for common standards in in-situ data collection and sharing, ensuring that data collected under different projects can be used consistently. This includes establishing protocols for data quality, sampling frequency, and metadata standards, which will facilitate the integration of in-situ data into AI/ML model training workflows.
- **Facilitate Workshops Focused on In-Situ Data Utilization:** Organize thematic workshops that bring together data providers, AI/ML experts, and end-users to discuss the use of in-situ data for training models. These sessions can identify best practices for data collection, highlight gaps in existing datasets, and propose joint strategies for improving data quality and accessibility across projects.

2.6.4 One Health

2.6.4.1 Copernicus Health Hub

The discussions acknowledged the need for more user stories across the entire data value chain, from EO service providers to end-users. Greater promotion is needed, including highlighting applications and services on the EuroGEO website, leveraging Disaster Resilience/Health action group members, showcasing the use of EO with socio-economic data to tell impactful stories.

The Copernicus Health Hub focuses on being a user engagement platform, primarily connecting the health community. To enhance the reach and impact of the Copernicus Health Hub, it is recommended to increase its visibility by implementing targeted strategies to attract a broader audience and collect more user stories, which will highlight its practical applications and benefits. Additionally, the Disaster Resilience/Health Action Group and the EuroGEO website can play a crucial role in promoting the hub, serving as key channels for disseminating information and engaging relevant stakeholders in the health and disaster resilience sectors. Ecosystems, biodiversity & carbon management.

2.6.4.2 Relationship between EuroGEO and GEO Focus Area

Strengthening ties with the EO4Health Community of Practice is essential for advancing health initiatives, especially in specific areas requiring targeted actions in regions like Asia and Africa. The development of validated services for epidemiological and entomological modeling, even at a village level, along with the transferability of models and tools across regions, should be prioritized. Leveraging AI and advanced modelling techniques will enhance capabilities, though challenges remain with in-situ health data access. EuroGEO must define its health-related focus, coordinate efforts through a GEO Convener, and create well-structured data spaces to support these initiatives and address GEO's health domain needs effectively.

To strengthen the integration of environmental and health data, it is recommended to promote the creation of integrated data spaces that bridge these two communities. Efforts should focus on developing validated services that can be adapted and transferred across diverse regions, particularly prioritizing under-served areas (e.g., Africa and Asia-Pacific). Additionally, fostering proactive collaboration between EuroGEO institutions and global health authorities is essential, including partnerships with the pharmaceutical industry to develop targeted health solutions.

2.6.4.3 Engagement of key European initiatives

To address health-environment challenges, it is crucial to engage with existing initiatives like the European Partnership on Health and ESFRI before creating new frameworks. The main challenge is integrating comprehensive health data across complex domains like environment, food, and genetics. EuroGEO plays a vital role by uniting diverse stakeholders to co-design EO solutions and creating integrated data spaces for health, climate, biodiversity, and other domains. This approach facilitates access to actionable information and supports the global transfer of tools and knowledge, crucial for implementing the One Health approach to tackle health-environment issues.

2.6.5 Weather, Hazard & Disaster Resilience

2.6.5.1 Relationship between EuroGEO and GEO Focus Area

The GEO focus areas provide a meaningful clustering of EO themes with interconnected causes and impacts, fostering synergies across initiatives. Key principles like Equity, Inclusion, Open Data, Knowledge, and Infrastructure are crucial and universally relevant. The Post-2025 GEO Work Programme aims to further enhance collaboration among activities. While GEO and EuroGEO focus areas differ, EuroGEO can independently align with European policies while contributing to GEO in areas of mutual interest.

It is recommended to organize EuroGEO Workshop sessions around GEO focus areas to showcase the value of EO-based applications and foster synergies, promote these focus areas in the GEO Knowledge Hub, and highlight EuroGEO's contributions to each GEO focus area on its website.

2.6.5.2 Support from EuroGEO to support the identification of recommendations for future activities

The EuroGEO Action Groups should be supported to become key contributors to the GEO Work Programme, enhancing the visibility of the EuroGEO community and aligning with European priorities. The community should demonstrate its expertise across EO fields, including infrastructure, data, services, and methodologies, while sharing these capabilities with GEO. Additionally, it should address critical global challenges by promoting cutting-edge, interoperable EO-based solutions co-designed with end-users.

EuroGEO should identify recommendations for future activities taking into consideration the EuroGEO Action Group Expert Studies, which were conducted with the support of JRC/KCEO, given that they analyse the EO capacities and potential of the EuroGEO Action Groups in terms of data products and services, their role in the support of policy implementation, Copernicus evolution and advancement of relevant research and innovation, and last but not least, they identify the gaps in the delivery of policy driven applications and propose recommendations for a sustainable implementation plan.

2.6.5.3 Improving the effectiveness of the European contribution, and increasing benefits for Europe

The EuroGEO community should develop and promote advanced EO data, products and services to address global problems which are common priorities for EuroGEO and GEO, such as disaster risk reduction, including early warning systems. Europe will benefit from international cooperation, expansion to new regions and open to new markets.

EuroGEO should support the EuroGEO Action Groups with coordination and funding to participate and even lead some key activities of the GEO Work Programme (e.g. GEO-CRADLE), and to create a win-win situation both for the EuroGEO and GEO communities, in the areas of common interest.

2.6.6 Ecosystems, Biodiversity & Carbon Management

2.6.6.1 Relationship between EuroGEO and GEO Focus Area

It is crucial to streamline GEO activities and groups, aligning them with ongoing overarching strategies in Europe or globally to maximize their effectiveness and amplify the overall impact of GEO.

In Europe, it is evident that European policies significantly influence EuroGEO's work, partly because it relies on European and national funding schemes where GEO is largely excluded. While initiatives like Horizon Europe aim to bridge the gap with programs such as GEOBON, GEOGLAM, and other flagship initiatives, these efforts remain limited. Although the focus areas of GEO are often aligned or thematically related to European policies, the lack of dedicated GEO funding continues to hinder progress. As a result, GEO's actions rely heavily on the intrinsic motivation of individual actors, making it an intentional but underfunded initiative.

2.6.6.2 Support from EuroGEO to support the identification of recommendations for future activities

The EuroGEO community can play a vital role in identifying recommendations for future activities. However, progress is often hindered by the lack of financial support. Providing adequate funding is crucial to facilitate meaningful work on these topics.

Research and results from the EuroGEO community need to be effectively integrated into policy discussions. While research and policy are often disconnected, EuroGEO has the potential to bridge this gap. Strengthening the link between the two can enhance the impact of Action Groups, Conveners, and Initiatives, enabling actionable knowledge transfer to support sound decision-making at regional, national, and European levels.

Many focus areas currently lack an agreed-upon set of Essential Variables (EVs), such as Climate-related Essential Climate Variables (ECVs). A critical first step is to establish a clearly defined set of EVs for all focus areas (e.g., Essential Biodiversity Variables (EBVs) for Ecosystem-Biodiversity and Carbon Management) to streamline efforts and sharpen the focus.

2.6.6.3 Improving the effectiveness of the European contribution, and increasing benefits for Europe

The effectiveness of the European contribution can be enhanced by:

- **Developing** a well-defined in situ data strategy supported by concrete plans and clearly articulated actions, accompanied by specific timelines to ensure effective implementation.
- **Addressing** cross-scale interactions to transition from ecosystem or local scales (e.g., within Europe) to a global scale, tackling phenomena such as migration and broader environmental dynamics.
- **Strengthening** collaboration with ongoing EU initiatives (e.g., Nature Directives, EU Soil Strategy 2030, EU Biodiversity Strategy 2030, EU Regulation on Carbon Removal and Carbon Farming Certification (CRCF)) to ensure a harmonized approach. Furthermore, involving global research infrastructures (e.g., ICOS, eLTER, ACTRIS, AnAEE in Europe; NEON in the US; TERN in Australia; CERN in China; SAEON in South Africa) will promote cross-scale interaction and standardized data observation, provision, and access, including metadata.

2.6.7 Climate, Energy & Urbanisation

Question 1: Which of our (=EuroGEO relevant action groups) goals are in alignment with the Definition and Scope of GEO focus area 'Climate-Energy-Urbanization'?

Key discussion points:

- Healthy cities, through the increase of urban green spaces and the reduction of urban air pollution
- Mitigation of climate change impacts in cities through energy transition
- Adaptation of the urban environment to climate change

Key examples:

Greening plans:

- NbS proposal in the urban landscape (Arsinoe, Carmine),
- The quantification of the maximum potential deployment of green roofs (Cure)
- The identification of key intervention areas for blue/green infrastructure improvement within the city (Lifecoolcity)

Energy transition in the building sector:

- Estimate the electrification with (or without) the support of the solar energy acquired through the rooftop potential, calculated from high-resolution satellite retrievals (Eiffel)
- Deploy PV panels in buildings and calculate feedbacks on meteorology and climate using remote sensing instrumentation (Urbisphere)
- Estimate the spatiotemporal variability of the electric consumption and of the production of a fleet of PV rooftop systems (e-shape).

The transformation of the building environment, as a climate change adaptation action:

- Identification of hotspots of high heat emissions (CURE)

- Management of blue-green infrastructure (Lifecoolcities)
- A dashboard for city authorities by extrema for city planning against heat (Extrema)
- High-resolution simulations of the feedback of building forms to the urban environment (Urbisphere)

Recommendations for EuroGEO:

- Synergies among EuroGEO action groups can be facilitated.
- Common cloud spaces could be organized.
- Webinars and workshops could help, involving GEO relevant activities.
- Create a dedicated digital space for the dissemination of the nexus activities.

Question 2: Which of our (=EuroGEO relevant action groups) actions are relevant to GEO positioning?

Key discussion points:

- Identify impacts of energy systems on climate change
- Assess renewable energy resources
- Monitor urban expansion and land use patterns

Key examples:

Urban greenhouse gas mitigation measures:

- Electrification scenarios in the vehicle and building sectors (Eiffel)
- Urban CO2 emissions (CLMS-cities),
- Anthropogenic and biogenic CO2 emissions (CURE)

Estimate the electrification with (or without) the support of the solar energy acquired through the rooftop potential, calculated from high-resolution satellite retrievals (Eiffel)

Recommendations for EuroGEO:

Similar to the above.

Question 3: Among the innovative aspects of the GEO focus area ‘Climate-Energy-Urbanization’, which are those that Europe could contribute with innovation actions?

Key discussion points:

- Green infrastructure solutions
- Deployment and management of renewable energy sources

Key examples:

- NbS proposal in the urban landscape (Arsinoe, Carmine),
- The quantification of the maximum potential deployment of green roofs (Cure)
- The identification of key intervention areas for blue/green infrastructure improvement within the city (Lifecoolcity)
- Estimate the electrification with (or without) the support of the solar energy acquired through the rooftop potential, calculated from high-resolution satellite retrievals (Eiffel)
- Deploy PV panels in buildings and calculate feedbacks on meteorology and climate using remote sensing instrumentation (Urbisphere)
- Engage citizens and stakeholders to participate in the energy transition and actively support climate adaptation and mitigation via a cross-sectoral planning decision-making platform (ReThinkAction)
- Estimate the spatiotemporal variability of the electric consumption and of the production of a fleet of PV rooftop systems (e-shape).

Recommendations for EuroGEO:

Similar to the above.

3 European contribution to GEO

3.1 Objectives

EGW24 leveraged on the concepts of cooperation, coordination, and consolidation of the European assets and initiatives that form the European contribution to GEO, which should be formulated through its revised implementation plan.

3.2 EuroGEO's revised priorities

Founded in 2017, EuroGEO – the European caucus of GEO - has made significant progress in its contribution to GEO, by successfully launching and completing various initiatives. While GEO is pivoting from an initial vision of a Global Earth Observation System of Systems to Earth Intelligence; similarly, the context of the EuroGEO initiative has significantly changed. These changes call for a revision of the EuroGEO vision and objectives, which were discussed at the EuroGEO Workshop.

The revised EuroGEO vision states the willingness to leverage and build synergies among the multiple contributions to Earth Intelligence in Europe—primarily through Copernicus, EU-funded projects and initiatives, national contributions, and a stronger involvement of the private sector— to deliver a coordinated contribution to GEO.

Over the past period, Europe successfully addressed the challenge of open data, open knowledge, open science, and interoperability. The new challenge for the downstream EO community is to bridge the "grand distance" between data and intelligence, i.e., from Research and Innovation to Operations and the Market.

Embedding the notion of Earth Intelligence implies managing change in daily practices of the downstream Earth Observation sector[5]. This calls for a proactive and operational initiative capable of conducting change management on a large scale, engaging the EO downstream value chain, and in particular, the industry. Building on the ongoing efforts of Copernicus and other initiatives and bringing its direct community engagement through Action Groups, EuroGEO can act as a catalyst for change.

Reflecting these elements, the proposed revised vision of the EuroGEO initiative is:

"EuroGEO promotes, showcases and stimulates Combination, Coordination and Cooperation to serve European and international policies and users through Earth Intelligence leveraging European excellence"

[5] e-shape project. European Union's Horizon 2020 research and innovation programme under grant agreement 820852. www.e-shape.eu

Supported by EuroGEO objectives:

- Actively stimulate and monitor the European contribution to GEO and increase GEO benefits for Europe, including through enhanced communication and engagement with regional GEOs and through national and European cooperation programmes.
- Act as a Coordination forum for European and national initiatives relevant to both the GEO work programme and European priorities. Building on an integrated and collaborative community to reduce the fragmentation of actions and of the European EO ecosystem; both supporting the implementation of the Green Deal and GEO engagement priorities as #OneEuroGEO.
- Address the significant gap between policy needs, end-user requirements, and technology providers through (i) the Combination or integration of activities to reach critical mass of use , and (ii) Cooperation beyond individual programmes and user communities in Europe.
- In this endeavor, ensure a broad participation of both demand (institutions, public entities, international conventions) and solution providers, leveraging the entire Copernicus value chain and user community, the private sector, and platforms/twins/infrastructures within its Action Groups. GEO instruments and Regional GEOs should be engaged.
- Support Action Groups mobilised as agents of change, embedding the notion of Earth Intelligence to produce and scale up sustainable and operational solutions in support of policies and end users.

Session: EuroGEO's revised priorities

Chairs: Franz Immler, Jean Dusart, European Commission

Introduction by EuroGEO Secretariat

Panellists:

- Emmanuel Pajot, Secretary-General, EARSC: "Copernicus & DestinE contributions to EuroGEO"
- Lefteris Mamais, Evenflow: "EuroGEO towards Earth Intelligence for All"
- Marie-Françoise Voidrot, OGC: "Engagement of National Data and Platforms to EuroGEO"
- Jean-Philippe Aurambout, European Environment Agency: "Exploring prospects towards "in situ data space"
- Thibaud Valentin, DG INTPA: "EuroGEO and Regional GEOs"
- Haris Kontoes, NOA / BEYOND - GEO CRADLE: "EuroGEO and Regional GEOs"
- Annalisa Donati, Secretary General, EURISY: "Stakeholder Engagement; Capacity Development and Youth"

3.3 EuroGEO as a catalyst: Copernicus, DestinE and European EO synergies

EuroGEO should maintain a strong engagement and alignment with Copernicus, DestinE and National Data Platforms, National Coordination mechanisms, Regional GEOs.

3.3.1 Copernicus and EuroGEO

The EU Space regulation established Copernicus as the main contribution to GEO (i.e. former GEOSS in the regulation). EuroGEO should leverage the entire Copernicus value chain. EuroGEO could benefit Copernicus in increasing user engagement, improving data access, and supporting project development into operational services. By leveraging Action Groups, involving EUSPA's User Consultation Platform, and integrating EuroGEO representatives in National Collaboration Programs (NCP), EuroGEO can enhance user uptake and share best practices across thematic sectors like health, energy, and climate. Expanding partnerships with in-situ data providers will help meet data requirements and strengthen Copernicus integration. Additionally, aligning Action Groups with Copernicus Thematic Hubs and supporting research-to-operation pathways (as demonstrated by projects advancing from e-shape to GEO Blue Planet and Copernicus) can facilitate broader data use and collaboration, both regionally and internationally.

- EuroGEO would play a crucial role in encouraging the adoption and usage of Copernicus data products by supporting engagement with the downstream community, including academia and industry, and making data more accessible.
- EuroGEO would act as a bridge across sectors, breaking down silos and fostering partnerships that transcend regional boundaries. This cross-sector collaboration could enable a more integrated approach to addressing EO challenges.
- EuroGEO's Action Groups are strategically aligned with Copernicus themes such as health, energy, climate, marine, and coastal, supporting targeted applications of EO data to address specific challenges, which calls for joint participation and action plans between EuroGEO and Copernicus' Entrusted Entities.
- EuroGEO would play an essential role in coordinating strategies and aligning policies, acting as an ambassador for Copernicus within the global GEO framework and supporting the transition from research to operational services.

Session: Copernicus and EuroGEO

Chair: Emmanuel Pajot, Secretary-General, EARSC

Panellists:

- José Miguel Rubio Iglesias, Expert - Copernicus In Situ, EEA
- Stijn Vermoote, Head User Outreach and Engagement Section, ECMWF
- Michele Melchiorri, co-leader of the GEO Human Planet initiative & CEMS Exposure Mapping Component, DG JRC
- Audrey Hasson, Mercator Ocean International

3.3.2 Engagement with DestinE

EuroGEO would encourage its community's involvement in DestinE's digital twins for climate adaptation and extreme events forecasting, as well as promote commercial opportunities in Phase 2 for developing advanced applications. By gathering user needs and bridging collaboration with DG CNECT and the three Implementing Bodies, EuroGEO can help shape DestinE's evolution and ensure its sustainability. The future EuroGEO Secretariat would support this by advocating for continued funding, fostering co-design, and strengthening DestinE's international reach, ultimately making it a globally accessible resource for EO.

Session: Engagement with DestinE

Chair: Vincent Saleh, Data Platform Product Manager, Serco France

Panellists:

- Vincent Gabaglio, International Relations Officer, EUMETSAT
- Stijn Vermoote, Head User Outreach and Engagement Section, ECMWF
- Franka Kunz, DestinE Earth Science Model Engineer, ESA

3.4 EuroGEO towards "Earth Intelligence For All"

To achieve the goal of "Earth Intelligence for All", it is essential that developed Earth Observation (EO) solutions meet user needs and support policy implementation. EuroGEO is dedicated to this objective by offering a range of services to community practitioners. These services must consider the current barriers and opportunities for the adoption of fit-for-purpose EO solutions.

EuroGEO should be mobilised to address challenges in bringing EO solutions to market. Many EO solutions are "unfit-for-purpose," often relying on unsuitable business models or facing restrictive regulations that hinder their adoption.

A significant barrier to commercialisation is the complexity of IP transfer, with an evident need for EO-specific guidance to navigate this process. NGOs, which play a crucial role in user engagement and outreach—especially in culturally diverse settings—could be more effective in partnership with local SMEs but require greater support to maximise their impact. Furthermore, while communication, outreach, and support are vital to reaching broader markets, many potential users remain unaware of the benefits EO solutions can offer beyond individual project scopes.

Lastly, sustainability and commercialisation of EO solutions are often underfunded in R&I projects, lacking the necessary budget, specialised personnel, and time to ensure their long-term impact and integration into the market. All of these challenges are being explored under EuroGEOSec's case studies with industry players and other project leads that struggle in capitalising on their products or services.

Attracting major investors and successful entrepreneurs to share their experiences would further strengthen the EO community, fostering innovation. EuroGEO develops a support activity to guide stakeholders through IP transfer, a significant barrier to commercialisation. Encouraging collaboration between local and global organisations, especially in cases with cross-border implications like the European Union Deforestation Regulation (EUDR), would also broaden EO's impact.

To ensure sustainability and commercialisation, EuroGEO should advocate for sufficient resource allocation, including expertise, time, and funding. Additionally, creating peer-to-peer platforms where experienced EO users advocate for adoption among their networks could accelerate the spread and acceptance of EO solutions.

Session: EuroGEO towards "Earth Intelligence For All" **Panel: Challenges EO solutions face in complying with EU regulations and meeting user needs** **Chair: Emmanuel Pajot, Secretary-General, EARSC**
Panellists: ● Mark Dowell, DG RTD ● Stijn Vermoote, ECMWF ● Hannah Keen, UK Department for Science, Innovation and Technology ● Coco Antonissen, Netherlands Space Office
Panel: Difficulties of bringing EO solutions to market **Chair: Lefteris Mamais, Evenflow**
Panellists: ● Luis Filipe Lages, Nova School of Business and Economics ● Stefka Domuzova (Climate-KIC), PROTECT/PCP WISE representative ● Jakub Dziwisz, Orbify ● Evangelos Gerasopoulos, NOA

3.5 Engagement of other European & National data and platforms to EuroGEO

Europe sees the emergence of numerous National Research Infrastructures. There is a role for EuroGEO to foster collaboration among these and integrating Copernicus to build a more operational and sustainable ecosystem. Countries are actively developing interoperability frameworks to better leverage their national research assets, with an appetite for collaboration, advancing FAIR data principles, and prioritizing data management skills and knowledge-sharing initiatives[6].

National infrastructures can support the EuroGEO community by connecting their data infrastructures to EuroGEO wherever feasible, fostering seamless integration and collaboration. They can further contribute by sharing resources such as best practices, models, and source code, ensuring that solutions are reusable and portable across the community. Additionally, ensuring fair and broad accessibility of data for users and stakeholders is crucial to enhancing collaboration and maximizing the usability of shared resources.

[6] Outcome of the EuroGEO Workshop. Engagement of National Data and Platforms to EuroGEO (Panel).

National infrastructures can support a broader Copernicus ecosystem by serving as collaborative ground segments for the project, facilitating integration and data sharing. They can contribute by providing upscaled, high-resolution data and tailoring their efforts to address local public decision-making needs. Additionally, scaling up through federated thematic approaches and customization for regional requirements can enhance their impact. To further boost data accessibility and competitiveness, they should enable access to unused capacities via APIs such as openEO, fostering innovation and broader utilization of resources.

EuroGEO can act as a facilitator, particularly in the areas of standards, strategic planning, networking, and managing the increasing volume of EO data. There is a - need to bridge the gap between data availability and its commercial applications, alongside balancing public and private sector involvement in the EO ecosystem. EuroGEO could play a coordinating role across regional and global initiatives to create a more accessible platform for researchers and users.

EuroGEO Action Groups could benefit from EuroGEO's engagement with National Data and Platforms, such as:

- Facilitating the exchange of models, open-source projects, and best practices.
- Promoting data sharing through harmonized protocols and the use of APIs.
- Supporting the exchange of expertise and priorities to enhance complementarity.
- Organizing events to foster the exchange of experiences.

Session: Engagement of other European & National data and platforms to EuroGEO **Chairs: Marie-Francoise Voidrot, OGC** **Albana Kona, JRC**
Panellists: ● Mikko Strahlendorff, Finnish Meteorological Institute ● Wolfgang zu Castell, NFSDI4Earth ● Radoslaw Gurdak, POLSA ● Pr John Remedios, UK NCEO

3.6 Exploring prospects "towards in situ data spaces"

The integration of diverse and heterogeneous in-situ measurement data into the GEO framework is a key and difficult challenge, due to data heterogeneity, quality, continuity, and accessibility. Currently few datasets are being shared openly. Data that is shared often lacks well documented metadata and tools to promote standardization across operators are lacking.

Budget constraints, complex policy and governance aspects, and a lack of FAIRness (Findable, Accessible, Interoperable, and Reusable) and interoperability also hinder integration. A structured feedback mechanism and clear incentives for data providers, including the private sector, are needed to encourage data sharing. Finally, a comprehensive inventory of existing in-situ networks and clear guidance on standards and interoperability would be essential for smoother integration.

To address these challenges, EuroGEO could be mobilised:

- To enhance data quality and usability by providing standardized and real-time access to in-situ measurements. EuroGEO can help ensure data is relevant, accessible, and applicable for various user needs, supporting decision-making processes.
- To provide value to the providers, such as increased visibility, clear licensing (for both open and licensed data)
- To conduct a thorough analysis of GEO and Research Infrastructure agendas to identify overlapping areas, streamlining efforts to maximize resource efficiency and reduce duplication of work.
- To provide support and guidance for in-situ data users. EuroGEO could seek to create an EuroGEO helpdesk specifically for in-situ data, offering support and guidance to users, facilitating access to resources, and troubleshooting data-related issues.

Further, the in-situ component could contribute to EuroGEO:

- To help develop a strategic framework to incorporate private sector contributions visibly within Research Infrastructures, emphasizing incentives and benefits for private entities to participate in open data ecosystems.
- To strengthen connections between EuroGEO and initiatives like Data Spaces, Destination Earth (DestinE), Research Infrastructures, and the broader marine data world to foster integrated data sharing.
- To establish a formal user panel or “user union” to ensure that end-users are well-represented in decision-making processes, providing feedback directly on data needs and usability.
- To leverage frameworks like the EU Deforestation-Free Regulation (EU-DR) to incentivize companies to share in-situ data and engage in sustainable practices aligned with regulatory goals.
- To document in-situ needs and requirements, by using tools like G-reqs to document specific in-situ data requirements and compile a “wish list” from users, which can guide data providers in prioritizing data development.
- To address cultural Barriers in Data Sharing, for example through outreach and training programs to bridge cultural differences and build trust among diverse stakeholders. EuroGEO could help foster a collaborative environment that encourages open data sharing across sectors.
- To promote standardized data formats, GEO and FAIR principles, interoperable technology solutions, and available infrastructures, that make data accessible, usable and actionable for a wide range of stakeholders, facilitating easier data integration such as showcased by the open source “libinsitu” library.
- To advocate for the use of specific tags, such as the GEMET keyword “in-situ,” in metadata records across databases to enhance discoverability and categorization of in-situ data within the GEO framework.

Session: Exploring prospects "towards in situ data spaces"
Chairs: Jean-Philippe Aurambout, European Environment Agency, European Commission
Lionel Menard, MINES Paris PSL / ARMINES

Panellists:

- Maude Perier-Camby, Vortex-io
- Laurent Mortier, ENSTAAMRIT Project
- Eija Juurola, ACTRIS ERIC
- Mattia Santoro, CNR
- Alba Brobia, CREAF
- Lionel Menard, MINES Paris PSL
- Helen Glaves, BGS

3.7 EuroGEO and Regional GEOs

Engagement with regional GEOs, including EuroGEO, AfriGEO, AmeriGEO, and AOGEO, is primarily project-based, driven by initiatives like Horizon Europe, H2020 and FP7. EuroGEO stands out for its structured action groups in domains such as agriculture, biodiversity, urban development, and climate, leveraging strong ties with Copernicus and European Commission-funded projects. However, other regional GEOs lack similar structural frameworks, which limits seamless cooperation and the ability to sustain long-term collaborations beyond specific project timelines.

AfriGEO has been a focal point for development cooperation and capacity-building efforts, particularly through initiatives like GEO-CRADLE and partnerships with African networks like ERFAN. The recently launched Africa-EU Space Partnership is a major milestone for European collaboration with Africa in terms of green transition; climate adaptation; institutional collaboration and industry engagement - a contribution EuroGEO should promote within GEO.

Engagement with AmeriGEO and AOGEO is less formalized, often taking place indirectly, through bilateral projects or information-sharing events. For example, the ESA-led DRAGON programme with China and other joint research efforts with Asian countries focus on themes like water management and disaster risk reduction. Similarly, collaboration with AmeriGEO is primarily through event attendance or Horizon Europe-funded projects, rather than ongoing, integrated programs. This fragmented approach contrasts with EuroGEO's structured engagement.

Despite these challenges, thematic collaboration exists across GEOs in areas like biodiversity, agriculture, disaster risk reduction, and climate. Flagship initiatives like GEOGLAM (agriculture), GEO BON (biodiversity), GEO Blue Planet (Ocean), provide global frameworks for monitoring and decision-making, but direct, structured engagement across regions remains limited.

To strengthen engagement, Regional GEOs, supported by the GEO Secretariat, could establish more consistent cross-regional interactions, and secure long-term funding to move beyond project-based initiatives.

Regional cooperation within EuroGEO should deliver increased collaboration and co-development of solutions across regions, focusing on capacity building, joint initiatives, and shared practices. This could be realised through launching joint projects, establishing cross-regional platforms for data sharing, and continuing strengthening governance through active participation in GEO's strategic initiatives.

Private sector involvement, especially in agriculture and climate action, could provide additional resources and expertise. Enhanced use of the GEO Knowledge Hub and systematic data-sharing platforms could also promote better integration and knowledge exchange, fostering a more cohesive global GEO network.

DG INTPA (Directorate-General for International Partnerships) should be a strategic partner for EuroGEO due to its alignment with EuroGEO's mission to address global challenges through EO. DG INTPA facilitates the use of EO data in policymaking and capacity building in developing regions, especially in Africa, Asia, and Latin America. This complements EuroGEO's efforts to integrate Europe's EO expertise into global frameworks like GEO and to contribute to the Sustainable Development Goals (SDGs).

With the engagement of DG INTPA, EuroGEO could engage further with Regional GEOs to support the uptake of EO solutions globally, particularly by promoting Copernicus services and fostering international collaboration. In partnership with the Regional GEOs, EuroGEO could be mandated to help bridge the gap between technical EO capabilities and their application in developing regions. Together, they can advance sustainable development by scaling EO applications, supporting capacity building, and further integrating EO into international and national policies.

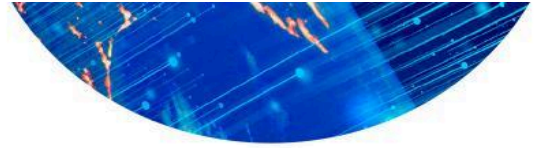
EuroGEO and Regional GEOs
Chairs: Thibaud Valentin, DG INTPA | Haris Kontoes, NOA/BEYOND, GEO-CRADLE | Wenbo Chu, GEO Secretariat

Panellists:

- Wenbo Chu, GEO Secretariat, TBC
- Thibault Valentin, EC DG INTPA
- Mark Dowell, EC DG JRC
- Haris Kontoes, NOA/BEYOND
- Francesca Piatto, EARSC

3.8 Strengthening stakeholders' engagement for success: Empowering the EuroGEO Initiative

There is a need for EuroGEO to strategize stakeholder engagement through a monitored Stakeholder Engagement Plan, aligned on the EuroGEO objectives. The Plan should seek to engage a diversity of stakeholders for the success of the EuroGEO initiative, looking beyond technical engagement. Engagement would seek to foster participation at the local, regional, and national levels to create a global impact. In this endeavour, National GEO networks are essential, bringing together stakeholders within each country to support regional and, ultimately, global efforts. Capacity building, especially in Africa, can be crucial, as regions need both the resources and knowledge to contribute meaningfully to global Earth EO efforts.



One key issue lies in the role of the private sector in EO. While some countries are cautious due to profit-driven motives, examples showed that private companies could significantly enhance data accessibility and crisis management, as demonstrated by Poland's recent use of EO in real-time flood response. However, the private sector's involvement remains challenging, with many small and medium enterprises (SMEs) struggling to scale and commercialize EO solutions due to market fragmentation and limited public awareness of EO's benefits. A unified marketplace and enhanced collaboration could help these companies reach broader audiences.

Youth engagement and education is also a major area of concern. The EO sector faces a skills gap, with 81% of companies reporting challenges in hiring skilled young professionals. Increased awareness, curriculum integration, and early education on EO topics are needed to build a sustainable talent pipeline. Initiatives aimed at engaging young people, including vocational and higher education programs, are crucial to maintain their interest in EO careers.

Recommendations from the EuroGEO Workshop involve to include in the future EuroGEO Stakeholder Engagement Plan, the following dimensions:

- EuroGEO should establish and maintain inclusive platforms that enable diverse stakeholders—such as young people, indigenous communities, and underrepresented groups—to actively participate in discussions and decision-making. These platforms should empower these groups to contribute to the development and direction of EO initiatives, mobilise funds, access to conferences, training programmes.
- Recognizing the varying needs of different regions, EuroGEO should co-develop and deliver capacity-building programs, especially tailored for developing areas like Africa and Latin America. These programs should focus on equipping local governments, research institutions, and businesses with the knowledge and skills needed to effectively use EO data and tools.
- EuroGEO should create economic opportunities for the private sector to collaborate in EO initiatives. This can include providing a framework for companies to contribute data, financial support, or technical expertise. Partnerships should be encouraged in a way that aligns with public interests, ensuring the private sector's contributions benefit the broader EO community.
- To help coordinate Regional and National initiatives, EuroGEO should act as a coordinating body that aligns local, national, and regional efforts within the EO ecosystem. This could include organizing regular workshops, forums, and knowledge-sharing events that bring together stakeholders from different regions to share best practices and leverage local expertise.
- To address the skills gap in the EO sector, EuroGEO should deliver educational initiatives that go beyond one-off training. These should include career pathways for young professionals, ongoing support, and skill-building opportunities to retain talent within the EO industry. Programs should span all education levels—from vocational to higher education—and promote EO-related careers.

EuroGEO should support or host workshops and conferences at the national level to strengthen in-country coordination on EO initiatives. This would create a collective voice on EO and inform national strategies, ultimately helping countries integrate EO data into their policy and decision-making processes.

Strengthening stakeholders' engagement for success: Empowering the EuroGEO Initiative

Chairs: Annalisa Donati, Secretary General, EURISY | Ernest Acheampong, Capacity Development Coordinator, GEO Secretariat

Panellists:

- Stanislaw Lewinski, Head of EO, POLSA
- Dr. rer. nat. Martyna A. Stelmaszczuk-Górska, EOTecDevnet
- Michel Rixen, Copernicus Programme Officers and EuroGEO representative, DG DEFIS
- Emmanuel Pajot, Secretary General, EARSC

4 National contributions to GEO

4.1 Objectives

The National GEOs have the potential to act as a national coordinating organization for ensuring an efficient and continuous link between national activities aiming to support policy needs and regional and global efforts in supporting the EuroGEO/ GEO Implementation Plan. The objectives of the GEO post-2025 Strategy approved in the GEO Ministerial Summit in Cape Town in 2023 and its launch in the framework of the GEO Global Forum that will be held in Rome in 2025 (5-9 May 2025) represent a change of paradigm in engaging a collective effort on how to use EO data, technologies and knowledge (Earth Intelligence) for drawing a new picture of our future.

Therefore, this session was aimed to showcase success stories in EU Member States that linked Research & Development in various EO domains with the need to provide trusted, interoperable and scalable EO multi-media modelling and forecasting tools (Earth Intelligence) for assessing cost-effective strategies that nations may wish to adopt for achieving the objectives of environmental policies (i.e., Climate Change, Biodiversity loss, SDGs, conventions on chemicals contaminations).

The session also showcased EO capabilities in Poland, interactions with the EuroGEO community, and discussed the way forward for a stronger engagement of Poland in EuroGEO. This session marked a start and a continuation of the relations of Poland and overall, the Eastern region with EuroGEO.

4.2 National coordination mechanisms in GEO and EuroGEO

GEO has established National GEOs as National coordination mechanisms. However, multiple models exist in Europe for coordination between Copernicus, GEO and EuroGEO, Horizon Europe, European policies and National policies requiring EO for monitoring and evaluation. EuroGEO should reflect the diversity of National coordination mechanisms, seeking to enhance the adoption of EO and reducing fragmentation of initiatives across Europe.

The Copernicus National Collaboration Programme (NCP) is an initiative designed to help EU Member States and Copernicus participating countries maximize the benefits of Copernicus services for national policies. NCPs play a key role in Copernicus User Uptake, supported by EUSPA's downstream sector and the Knowledge Centre for Earth Observation (JRC-KCEO). Endorsed by the European Commission, NCPs facilitate collaboration between Copernicus services and national administrations, promoting the integration of Copernicus data into decision-making processes.

Currently, the alignment of Copernicus with EuroGEO is not systematic, pointing to a need for better coordination between initiatives, which should be performed both at the level of governance (see Coordination Board) and implementation through active participation and engagement with the EuroGEO Action Groups (see Action groups). The engagement of the Copernicus National Collaboration Programme focal points to the EuroGEO Action groups is essential.

From the EuroGEO perspective, national coordination mechanisms are essential in gathering national contributions (e.g., datasets, expertise, resources) and conveying them clearly to the European and global GEO framework, ensuring they are adequately represented and used. However, there are challenges in understanding and communicating GEO's work to the National level. EuroGEO could play a role of facilitation between the Global and National level. Each contributing National Coordination Mechanisms should be the beneficiary of a work programme for Support Services, tailored to the specific needs, and established with the EuroGEO Secretariat through a Joint Action Plan.

Engagement can be multifaceted, e.g. coordination mechanisms can help align different ministries and agencies to work in concert. For example, ministries of environment, agriculture, and transportation might all have their data needs and contributions. A national coordination body ensures inter-agency collaboration, ensuring that the different datasets contribute to the larger EuroGEO initiative.

The foreseen benefits of National engagement with EuroGEO were discussed at the EGW24. A main benefit should be to increase national representation in GEO's programmes and activities:

- In cooperation with EuroGEO, National coordination mechanisms can ensure that the **data value chain** is effectively mobilized across different sectors. By mapping and identifying the key actors in data collection, processing, and usage, they can coordinate efforts to optimize data flow and sharing, making the European contribution more robust and comprehensive.
- In conjunction with EuroGEO, National coordination is crucial for contributing effectively to international GEO initiatives, such as **GEOGLAM** (for agricultural monitoring). Through coordination mechanisms, countries can pool their resources and expertise to contribute to these international projects, thereby enhancing the European presence in global GEO efforts.
- National coordination efforts can help identify the right people and organizations to participate in GEO's working groups and action groups. This structured identification process ensures that national expertise is well-represented in global decision-making processes, enhancing the overall European contribution to GEO.

EuroGEO should be able to deploy the support it would operate to engage support the Action Groups in National contexts, in particular promoting capacity building and best practices, such as:

- Increasing the **national adoption** of common standards and objectives. National coordination bodies can work to ensure that local or national datasets align with global standards, ensuring comparability, compatibility and interoperability of data across borders.
- With the support of EuroGEO, National coordination bodies can **promote the use of advanced tools** (like AI for data spaces) and bring in data from various national and local sources to contribute to pan-European and global GEO initiatives. They act as a bridge between local innovations and global standards.

National coordination mechanisms in GEO and EuroGEO
Chair: Nicola Pirrone, CNR, GEO Principal Italy

Panellists:

- Mikko Strahlendorff, FMI, GEO Principal, Finland
- Giovanni Rum, Italian Space Agency, Italy
- Jens Danzeglocke, DLR, National GEO, Germany
- Gerasopoulos Evangelos, NOA, National GEO, Greece
- Ruud Grim, Netherlands Space Office, Netherlands
- Tobias Edman, Research Institute, Sweden
- UK, Hannah Keen, UK Head of Earth Observation at the Department of Science, Innovation and Technology, UK
- Bogdan Zagajewski / Agata Hościło, University of Warsaw, The Institute of Environmental Protection – National Research Institute, Poland

4.3 Poland and EuroGEO

The Session was organized by the Polish Space Agency. It featured the latest Earth Observation activities in Poland in the upstream and downstream sectors. The participants engaged with the Earth Observation sector in Poland and attended the Polish exhibition.

Poland and EuroGEO
"Upstream", power speeches

- Finland, Mikko Strahlendorff, FMI, GEO Principal
- Italy, Giovanni Rum, Italian Space Agency
- Germany, Jens Danzeglocke, DLR, National GEO Germany
- Greece, Gerasopoulos Evangelos, NOA, National GEO Greece
- Netherlands, Ruud Grim, Netherlands Space Office
- Sweden, Tobias Edman, Research Institutes of Sweden
- UK, Hannah Keen, UK Head of Earth Observation at the Department of Science, Innovation and Technology
- Poland, Bogdan Zagajewski / Agata Hościło, University of Warsaw, The Institute of Environmental Protection – National Research Institute

Poland and EuroGEO
"Downstream", power speeches

- Piotr Zabadała, Ministry of Development and Technology
- Katarzyna Dąbrowska-Zielińska, Institute of Geodesy and Cartography
- Marek Pieniążek, Statistics Poland
- Monika Krzyżanowska, CloudFerro
- Bożena Łapeta, Institute of Meteorology and Water Management
- Stanisław Lewiński, CBK PAN

EuroGEO Workshop 2024 group photo