

EuroGEO Implementation Plan (2020-2022)

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1. Executive Summary

Full title of the Regional GEO: EuroGEO (Former EuroGEOSS), the European component of the Group on Earth Observations

Short title or acronym: EuroGEO

Proposed or existing category: Regional GEO

Overview

The EuroGEO Initiative was launched in 2017 and provides a regional framework to promote coordination and cooperation among the members of the European GEO Caucus. EuroGEO will achieve a critical mass in Europe by leveraging existing European Earth observation assets and initiatives and delivering pilot applications supporting governments in their decisions, boosting innovation and improving lives in Europe. EuroGEO builds on two major EU programmes: Copernicus and Horizon 2020. It builds also on programmes of its Member States and of Participating Organisations such as ESA and EUMETSAT.

EuroGEO intends to make a major contribution to the implementation of GEOSS and to foster GEOSS uptake by users in Europe. This implementation plan is a high-level document; it does not provide the details of the implementation that are folded in the relevant European initiatives (references about those initiatives are provided throughout the document). In this context, it is important to note that EUROGEO is positioned as an integrator in Europe enabling different public EO downstream activities in Europe to be folded under the same umbrella.

Emphasis is and will be further put on the following strategic objectives:

- Identifying existing EO applications under development in Europe with the highest potential to respond to consolidated European user needs, but requiring further demonstration, incubation, up-scaling, deployment or replication;
- Up-scaling selected pilot applications by streamlining innovation instruments available in the EU, and internationally to actively promote synergies;
- Connecting EuroGEO pilot applications and related GEO actions to allow for appropriate scaling-up (from national, through European up to global scale) and scaling-down (from global to regional scale);
- Showcasing GEOSS benefits to European citizens, public authorities, science and businesses and promoting in Europe the GEO vision to realise a future wherein decisions and activities are informed by coordinated, comprehensive and sustained Earth observations and information.
- Supporting the consolidation of national GEO management structures across Europe.

EuroGEO builds upon, networks and promotes further incubation and scaling-up of the most promising user-driven applications conducted at national or EU levels by the members of the European GEO Caucus. Particular emphasis is put on tackling as far as possible the 'last mile' of the innovation process, thus enabling pre-operational services that could extend/reinforce other GEO initiatives and flagships. This will accelerate the transformation of GEO from a data-centric to a user-driven partnership.

European funded project such as e-shape (*EuroGEOSS Showcases: Applications powered by Europe*), PARSEC (*Promoting the international competitiveness of European Remote Sensing companies through Cross-cluster collaboration*), OCRE (*Access to Commercial Services Through the EOSC-hub*) and the upcoming new Coordination and Support Action on commercial actors in the field of Earth observation are contributing to this endeavour.

EuroGEO pilot applications will take full advantage of the data and information products delivered by Copernicus and the core Copernicus Services, the EU operational programme for Earth observation. The selected pilots are or will be of direct relevance to the GEO Engagement Priorities whilst leveraging global and European EO initiatives to improve/facilitate the implementation of European environmental policy. EuroGEO applications will be mostly focused and address specific user defined scenarios e.g. Identification and use of appropriate climate information required for defining building regulations with respect to flood resilience. These very specific applications are not part of the contractual Copernicus Core Services and this is where EuroGEO is able to provide additional support.

After the initial start in 2017, and a number of preparatory steps in 2018 such as the setting-up of 9 Action Groups, EuroGEO has entered the next stage with the launch of major European funded projects contributing to the above objectives. The first outcomes of those projects will consolidate the specific demand for GEOSS solutions in Europe, facilitate interaction with and contribute to relevant GEO actions and stimulate the innovation process tackling unaddressed regional needs.

EuroGEO has a light governance structure to support greater engagement by the European GEO Members of the European GEO Caucus. The structure includes a Coordination Group to oversee strategic implementation, and Action Groups reflecting shared thematic interest at local, national and European levels. The High Level Working group (HLWG) shapes a consolidated European view in a GEO context and acts as the EuroGEO decision-making body.

Planned activities

EuroGEO already has an impact on the EO landscape in Europe since its inception in 2017. In the coming years, new activities are planned to secure the initiative in Europe, and thus together with the Copernicus Programme, develop the European contribution to GEO. This will be done in close cooperation with the EuroGEO Coordination Group and the Action Groups. Close interactions with the GEO Flagships and GEO Initiatives and the Foundational Tasks have been and will be pursued.

The main spheres of activities to be conducted by the EuroGEO Initiative relate to *Coordination, Combination and Cooperation* (EuroGEO 3Cs):

- Coordination of GEO-relevant activities undertaken in Europe, including in European GEO Caucus member states and with the other regional GEOs to ensure a coherent European contribution to GEOSS;
- Combination or integration of activity outputs to provide added value and to reach maximise user uptake and engagement;
- Cooperation beyond individual programmes and user communities.

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2. Purpose

When renewing the GEO mandate for the decade 2016-2025, Ministers have resolved to reinforce the regional component of GEOSS. As illustrated by the AfriGEO, AmeriGEO and AOGEO regional initiatives, there is a continued perception that GEO and GEOSS activities will benefit from stronger regional nodes in each of the GEO Caucuses.

The European GEO Caucus is amongst the early adopters of a GEO approach at regional level. Inspired by pre-existing multilateral cooperation at EU level, the European GEO Members and Participating Organisations have established a regional coordination structure across Europe since GEO's inception in 2005. The members of the so-called "*GEO High Level Working Group*" (GEO HLWG) meet several times a year to develop European convergence towards GEO and oversee GEOSS' implementation from a European perspective.

The **EuroGEO Regional Initiative provides a framework** to promote coordination and cooperation among the members of the European GEO Caucus. It aims to reduce fragmentation and enhance synergies of the European contribution to GEOSS and to increase GEOSS' benefits to European citizens, public authorities, science and businesses. The Initiative also helps implementing environmental legislation and international commitments of the EU including the agenda 2030 for Sustainable Development.

EuroGEO will focus on the following strategic objectives:

- Identifying existing EO applications under development in Europe with the highest potential to respond to consolidated European user needs, but requiring further demonstration, incubation, upscaling, deployment or replication;
- Up-scaling selected pilot applications by streamlining innovation instruments available at EU, national or sub-national levels and actively promote synergies;
- Connecting EuroGEO pilot applications and related GEO actions to allow for appropriate scaling-up (from national, through European up to global scale) and scaling-down (from global to regional scale);
- Showcasing GEOSS' benefits to European citizens, scientists/researchers and businesses and promoting in Europe the GEO vision to realise a future wherein decisions and actions are informed by coordinated, comprehensive and sustained Earth and environmental observations and information;
- Supporting the consolidation of national GEO management structures across Europe.

At the heart of the EuroGEO Initiative is the ambition to foster the ***European user dimension*** in the process of scaling-up existing multi-disciplinary pilot applications. Particular emphasis is put on tackling as far as possible the 'last mile' of the innovation process, thus enabling pre-operational services and promoting operational deployment. Similar to the other GEO regional initiatives, EuroGEO applications should be of direct relevance to the GEO Engagement Priorities Strategy, whilst leveraging global and European EO assets to improve/facilitate the implementation of European environmental policy.

3. Previous achievements

EuroGEO has already built upon, networked and promoted further incubation of the most promising user-oriented services conducted at national or EU levels over the last ten years by the members of the European GEO Caucus. Investments under the EU Framework Programmes for Research & Innovation have allowed funding for about 70 cooperative projects that directly supported the implementation of GEOSS through multiple GEO tasks. This investment has enabled the promotion of

the GEO vision within the European research community and has attracted participation within the GEO of several hundreds of organisations within Europe.

The European research community, the public authorities and the business sector meet annually at the EuroGEO workshop (formerly named the European GEO project workshops) having taken place this year in Portugal. This investment has been presented as an example of good practice to other funding parties of the GEO community.

There is a range of European support through the Framework Programme for research and innovation – currently Horizon 2020 - and the Copernicus Programme, which has already been delivered to various GEO tasks and societal challenges. Domain examples include: food security, sustainable agriculture, biodiversity, integrated ocean observation, health risk mitigation, disaster resilience, security, energy management, climate change, carbon observation, coordinating and integrating earth observations and interoperability of various measurement regimes across multiple Earth science domains.

4. Relationship to GEO Engagement Priorities and to other Work Programme Activities

The Commission, together with the European GEO Members, is committed to implementing GEOSS in line with the GEO Strategic Plan 2016-2025 and to develop an approach towards GEOSS for the European region that facilitates and steers national contributions while accelerating the use of GEOSS resources. At the same time, the capacity to observe the planet is evolving rapidly, leading to higher volumes of and more diverse data flows produced at European and national level by private and public operators (including citizens).

EuroGEO activities aim to capitalise on these trends, in cooperation with the Copernicus programme, to develop new mass-market applications for businesses, citizens and public authorities. Overall, they are expected in the medium term to stimulate growth and jobs in Europe in the context of the digital economy (through open innovation) and to lead to better-informed decision-making in environmental policy and management and in disaster management. The EuroGEO activities will also contribute to implementing EU space policy and to international agreements such as:

- The 2030 Agenda for Sustainable Development, particularly Sustainable Development Goals (SDGs) 2 'Zero hunger', 3 'Good health and well-being', 6 'Clean water and sanitation', 7 'Affordable and clean energy', 9 'Industry, innovation and infrastructure', 11 'Sustainable cities and communities', 13 'Climate action', 14 'Life below water' and 15 'Life on land';
- The Paris Agreement on Climate Change;
- The Sendai Framework for Disaster Risk Reduction.

The members of the European GEO Caucus have agreed on the five strategic objectives detailed below. To achieve those objectives, there will be a number of contributions during the period 2020-2022, starting with the Horizon 2020 programme. In addition, the initial work on the strategic planning of Horizon Europe, the next Research & Innovation Programme of the European Union, covering the period 2021-2027, has already identified an area of intervention on environmental observation that includes space-based, in-situ-based (air, sea, land) observation, and citizen observations and refers explicitly to the EuroGEO initiative (formerly known as EuroGEOSS). In 2020, the call topics under that area of intervention will be published and should open the door to signed project grants in 2021 on topics of relevance to the EuroGEO initiative.

a) GEO relevant inventory of user driven applications under development

GEO members of the European GEO Caucus shall survey and prioritise applications under development which respond to consolidated European needs but require further demonstration, incubation, upscaling, larger deployment or more extended replication. Following a call for expression of interest, 9 Action Groups were formed around the following themes:

Agriculture/Food, Land use/land coverage, Urban, Disaster Resilience, Biodiversity & Ecosystems, Marine, Climate, Atmosphere and Energy. This voluntary and bottom-up scheme for open innovations has a lifespan of maximum 3 years and will scale up existing EO applications.

On-going and planned activities

Activity	Type of contribution	Starting Year	Year of planned completion
JRC EuroGEOSS demonstrators https://ec.europa.eu/jrc/communities/en/community/eovalue	Financial (RTD-JRC)	2019	2020
EuroGEOSS Showcases on-boarding process http://www.e-shape.eu/	Financial (e-shape)	2019	2023
User Needs reports http://earsc.org/news/parsec-press-release-parsec-sets-out-to-accelerate-start-ups-and-smes-to-successfully-turn-ideas-into-commercial-solutions	Financial (PARSEC)	2019	2021
EuroGEOSS Action Groups https://ec.europa.eu/info/research-and-innovation/knowledge-publications-tools-and-data/knowledge-centres-and-data-portals/eurogeoss_en	In-kind	2018	2021

b) Up-scaling of selected EuroGEO pilot applications

Cooperation is foreseen at Caucus level to streamline innovation instruments available at EU, national or sub-national levels to integrate and scale-up existing application components at Pan-European, EU or national levels. Special attention will be given to the use of the Copernicus Data and Information Access Services (Copernicus DIAS) and to the development of GEO-relevant downstream services exploiting operational products from the thematic Copernicus Core Services.

On-going and planned activities

Activity	Type of contribution	Starting Year	Year of planned completion
EuroGEOSS eoMALL Gallery to host products and services associated with EuroGEOSS and support their greater market penetration and user uptake http://www.e-shape.eu/	Financial (e-shape)	2019	2023
NextGEOSS pilot applications https://nextgeoss.eu/pilots/	Financial (NextGEOSS)	2016	2020

c) Showcasing of European know-how with GEO relevance

Geo-spatial and socio-economic reference data sets which could be further exploited at European or global levels should be further promoted (including those from national geological surveys, mapping or statistical agencies). EuroGEO online demonstrators shall be demonstrated to showcase European capabilities to integrate space-based and non-space-based data.

On-going and planned activities

Activity	Type of contribution	Starting Year	Year of planned completion
Mainstreaming GEOSS' data sharing and management principles in support of Europe's environment (H2020 Work Programme 2020)	Financial (RTD-EEA)	2020	2022
Delivery precipitable water vapour to GEOSS; Delivery of all geodata to GEOSS; https://www.futurewater.eu/projects/twiga/	Financial (TWIGA)	2018	2022
Greenhouse gases Final High Resolution emission data 2005-2017; Final version of VERIFY Database and data-management infrastructure; Final Progress report on the VERIFY cooperation with GEO Initiative on C and GHG http://verify.lsce.ipsl.fr/	Financial (VERIFY)	2018	2022
Stakeholder report on the requirements for future space-based instruments to deliver products suitable for CO ₂ emission monitoring https://che-project.eu	Financial (CHE)	2017	2020
Citizen Observatories and GEO community activities https://www.weobserve.eu/	Financial (WeObserve)	2017	2020
Report on project's participation in the GEO activities; Report on ERA-PLANET Contributions to GEO Work Plan http://www.era-planet.eu/index.php	Financial (ERA-PLANET)	2016	2022
Early Warning for Epidemics Prize. This prize aims to develop an early-warning system to help prevent disease outbreaks and reduce the impact should they occur. https://ec.europa.eu/research/eic/index.cfm?pg=prizes_epidemics	Financial (RTD)	2018	2021

d) Linkage between EuroGEO applications and GEO actions

EuroGEO pilot applications shall be linked to relevant GEO Engagement priorities and GEO actions for possible upscaling from regional to global scale or tailoring from global to European scale.

On-going and planned activities

Activity	Type of contribution	Starting Year	Year of planned completion
Coordination and sustainability between R&D projects, Copernicus, INSPIRE, ESA, EOSC https://ec.europa.eu/jrc/communities/en/community/eovalue	Financial (RTD-JRC)	2018	2020

e) Consolidation of national GEO management structures within Europe and market opportunities

Dynamic national GEO structures constitute the necessary relays to link global and European levels with national and local levels. EuroGEO shall promote national GEO management structures to raise GEO awareness at national level, stimulate capacity development and engagement in GEO activities and to help consolidating user needs and user uptake across Europe and foster a dynamic commercial EO market.

On-going and planned activities

Activity	Type of contribution	Starting Year	Year of planned completion
Development of sustainability scenarios for the GEOSS Infrastructure; European EO market characteristics https://ec.europa.eu/jrc/communities/en/community/eovalue	Financial (RTD-JRC)	2018	2020
Business Pilots Showcase; Advisory Board Recommendations Report; Benefits Assessment Report; Sustainability Report https://nextgeoss.eu/	Financial (NextGEOSS)	2016	2020
Parsec Technology Watch Wiki; Market Trends Observatory http://earsc.org/news/parsec-press-release-parsec-sets-out-to-accelerate-start-ups-and-smes-to-successfully-turn-ideas-into-commercial-solutions	Financial (Parsec)	2019	2021
Capacity Building Best practices Guide; EOWiki (https://earsc-portal.eu/display/EOSTAN/EO+Wiki); Market Trends Observatory (http://www.eopages.eu/); Socio-economic value of EO in selected sectors http://www.e-shape.eu/	Financial (e-shape)	2019	2023

5. Stakeholder Engagement and Capacity Development

GEOSS' benefits to European society and economy shall be proportional to the degree in which demand can be stimulated for GEOSS-based knowledge among public and private users in Europe, to reach out to new users and to connect Earth observation with other sectors.

For decades, the EU has pursued constant efforts to involve users in the design of new EO-based services and to address user domains across all relevant disciplines. Experience has shown that early involvement of users in the development of an application shows an overall positive impact on the success of this application. It has also, however, been shown that the relationship between user involvement and application success is neither directly proportional nor simple. In fact, it seems to depend upon many different complex factors and conditions surrounding the activity development.

With the advent of stable, long-term EO programmes like Copernicus, the rapid evolution of Information and Communication Technologies (ICT) and the deployment of data access platforms like the GEOSS Infrastructure, NextGEOSS, DIAS and the European Open Science Cloud, innovators of today are much better equipped to cope with varied and dynamic user requirements. A significant number of development activities are being conducted by the members of the European GEO Caucus to meet the needs of a wide range of user communities.

These efforts are however often disconnected and too fragmented and can benefit from synergies to provide a coherent picture at European level. A European Coordination Activity to create a Hub in which GEO activities linked to the European thematic priorities are gathered would: 1) serve as an access and cooperation framework for current stakeholders; 2) benefit the promotion of GEO resources within new users and engage new stakeholders; 3) support the EuroGEO contribution to GEO and vice-versa.

The EuroGEO initiative should further conduct periodic reviews of European user needs. These reviews take European user communities already involved in existing GEO tasks into account as well as other communities in Europe identified via members of the Initiative. EuroGEO takes full advantage of the many user platforms and consultation processes already conducted at European,

national and local levels by the members of the European GEO Caucus. It aggregates user demands at regional level including those of GEO-aware and GEO-unaware European users. This process should ensure that future EuroGEO pilot applications are driven by structured, consolidated user needs of regional significance in a multi-lingual context. In order to reach potential European users not yet aware of GEO, the EuroGEO Initiative develops synergies with existing user-oriented activities within Europe such as:

- User uptake initiatives conducted by the European Commission to increase awareness about Copernicus and support the use of Copernicus data and services, engage with public authorities, the private sector and civil society. These initiatives among others the Copernicus Academy, the Copernicus Relays and the Copernicus Skills Programme.
- Actions under the current EU Horizon 2020 and the future Horizon Europe programmes aimed at closing the gap between data providers and European users, and between research and commercial markets. These actions may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.
- Current ESA activities related to EO market development, business incubation and the consolidation of requirements by (public and private) user sectors with greatest potential to expand and grow demand for EO-based information and knowledge.
- ESA's FutureEO programmes pioneering new EO applications, stimulating downstream industry growth and supporting international responses to global societal challenge.
- Other programmes that champion the use of EO data in new sectors of the European economy and promote business development, including incubation measures, support to innovative start-ups and scale-ups, capacity development measures targeting non-space users by means of training sessions.
- Market studies and user sector surveys (including by the European Commission, the European Parliament, EARSC, Eurisy, and national agencies).
- Inducement prizes to solve societal challenges, such as the European Innovation Council (EIC) Horizon Prize on Early Warning for Epidemics.

The development of Artificial Intelligence requires a well-functioning data ecosystem built on trust, data availability and infrastructure. EuroGEO will engage with member country institutions that contribute to the creation of common European data spaces, as identified in the EU Coordinated Plan on AI adopted in 2018¹. These common European data spaces will aggregate data, both for public sector and for business-to-business, across Europe and make them available to train AI on a scale that will enable the development of new products and services.

The EuroGEO Initiative also engages with relevant GEO tasks with the aim to extend their user communities from Europe and link GEO activities with capabilities and initiatives undertaken in Europe. This includes raising awareness on what GEO on a global scale has to offer the European users. A matrix of European contributors to the various GEO Tasks should be established in view of increasing communication on specific European needs. Interaction will be eased by the fact the GEO Members and Participating Organisations of the European GEO Caucus are already involved in many GEO tasks.

European GEO Members are leading two of the four flagships, supporting two of their secretariats and contributing to all GEO flagships. European GEO Members are leading or contributing to almost all of them. European GEO Members or Participating Organisations are also co-leading in or major contributors to all Foundational Tasks, including the development of the knowledge base tool in the task on user needs and gap analysis. Interfacing with other regional GEO initiatives e.g. AmeriGEO, AfriGEO and AOGEO, is in its first stages and will be progressively put in place.

¹ <https://ec.europa.eu/digital-single-market/en/news/coordinated-plan-artificial-intelligence>

6. Governance

The EuroGEO governance aims to be as simple and flexible as possible while allowing for increased inclusion, greater engagement and leadership. It is structured around working groups on two levels addressing the EuroGEO 3Cs: *Coordinate Combine and Cooperate*.

Secretarial operations bringing synergies and coherence between the various activities of the EuroGEO initiative are currently led by EC DG Research & Innovation, with the medium-term objective to hand-over its operations to an external entity still to be defined.

6.1. The Coordination Group (Coordinate)

The Coordination Group (co-chaired by the Commission) shall oversee the implementation of the EuroGEO strategic objectives, their related activities, assess progress against identified objectives and regularly report to the GEO High Level Working Group, which governs the European GEO Caucus. Particular focus shall be on:

- Monitoring the implementation of the EuroGEO roadmap;
- Reviewing and selecting EuroGEO pilot applications/services to be developed and scaled up;
- Ensuring synergies between selected EuroGEO pilot applications, relevant GEO actions, other Regional GEOs, Copernicus and Horizon 2020/upcoming Horizon Europe activities;
- Monitoring and documenting user uptake and engagement by the Caucus members;
- Establishing ad-hoc implementation working groups as appropriate and facilitating cross-communication between these groups;
- Monitoring the impact of EuroGEO against Key Performance Indicators (KPIs), as part of a continuous monitoring and progress evaluation process including a quantification of committed and used resources and an assessment of the risks inherent to this kind of initiative;
- Providing recommendations for the evolution of the EuroGEO framework, including its operations by an external entity.

6.2. Action Groups (Combine and Cooperate)

The Action Groups are voluntary bottom-up groups that are overseen by the EuroGEO Coordination Group, to either develop the selected EuroGEO application pilots or conduct other activities foreseen in the EuroGEO roadmap. It is anticipated that each EuroGEO pilot application will be developed by a different *ad hoc* Action Group with an expected life span up to three years. These groups shall comprise representatives identified by the supporting Caucus' members depending on the relevance of their activities. The Action Groups will report to the Coordination Group and, when appropriate, directly to the GEO HLWG.

Nine Action Groups were set up in 2018 and are currently on-going with further developing applications in the topical areas of agriculture/food, land use/land coverage, urban, disaster resilience, biodiversity and ecosystems, marine, climate, atmosphere and energy. This governance structure has been established in 2017 and could, on the base of current experiences, be revised in the coming years if appropriate.

The key communication channel is the EuroGEO Website², which presents the initiative, its aims and activities, the members and links to both the pilot applications and the resources and data. Communication between participants and stakeholders takes place via dedicated meetings and workshops, in particular the annual EuroGEO Workshop.

² https://ec.europa.eu/info/research-and-innovation/knowledge-publications-tools-and-data/knowledge-centres-and-data-portals/eurogeoss_en

7. Resources

GEOSS implementation relies significantly, though not exclusively, on in-kind contributions such as observing capacities, networks, expertise, staff time, interoperability arrangements and standards, datasets, information systems, services, projects and programmes. EuroGEO follows the same approach with a focus on leveraging existing European capacities and streamlining existing programmes and funding schemes.

The European Commission, together with the European GEO nations, is committed to implementing GEOSS in line with the new GEO Strategic Plan 2016-2025 and to developing an approach towards GEOSS for the European region (supporting the EuroGEO initiative of the European GEO caucus) that facilitates and steers national contributions while accelerating the use of GEOSS resources.

Those European capacities are made available currently through the Horizon 2020 and Copernicus programme until 2020 as well as through programmes at the JRC, EUMETSAT, ECMWF, EuroGeoSurveys, ESA, SATCEN, and in national programmes. The next Financial Framework of the European Union will span the years 2021-2027 and both the future of the European Commission Research and Innovation programme (Horizon Europe) and of the space programme including Copernicus are still in the making. However, both the GEO and EUROGEO initiatives are referred to in the Commission proposal for the Copernicus and Horizon Europe programmes.

For the period 2020 – 2022, EuroGEO shall notably be supported through the Horizon 2020 (Societal Challenge 5 Calls 2018-2020 (with topics related to commercial applications, climate, mountain regions and the Arctic), the dedicated calls under Space 2018-2020, certain topics in the call 'Blue Growth' (H2020-BG-2018-2020) and the EIC Horizon Prize '*Early Warning for Epidemics*') and via the upcoming Horizon Europe Programme. The objective shall be to demonstrate the effective use of European Earth observation resources (including space borne, airborne, in-situ measurements, outputs of models and citizen observations) to scale up and to prepare for operational environmental management, and for mitigation and adaptation actions through building operational and research based activities e.g. Copernicus services, and GEO initiatives and flagships.

EuroGEO will rely on a joint European Platform Ecosystem to upscale European/global research and operational services powered by Copernicus data, will be implemented by a “coalition of doers” such as GROW, CNECT, JRC, ESA, GEANT/Network of Resources/EGI and EARSC. EuroGEO will take advantage of multiple existing or upcoming capacities in Europe including:

- The Copernicus space segment including the Sentinel series of satellites which delivers already more than 12 terabytes of data each day;
- The Copernicus third party missions;
- Other space borne resources from national space agencies (in Europe and beyond) cooperating through the Committee on Earth Observation Satellites (CEOS);
- In-situ data and modelling resources including from the European Environment Information and Observation Network (EIONET), the European Geological Data Infrastructure (EGDI), the European Marine Observation and Data Network (EMODnet), the European Meteorological Services Network (EUMETNET), the European research infrastructures and projects contributing to the European Strategy Forum on Research Infrastructures (ESFRI);
- The Commission and Member States will work on the development of platforms and large-scale pilots integrating AI elements in areas such as energy, healthcare, manufacturing, geo-information and agriculture.
- Information products from the Copernicus core services for monitoring land, oceans, atmosphere, climate, for civil security services, emergency response and humanitarian aid;
- Additional products from agencies and organisations such as the European Space Agency (ESA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT),

the European Centre for Medium-Range Weather Forecasts (ECMWF) and other European or national providers;

- The Infrastructure for Spatial Information in the European Community (INSPIRE);
- The Copernicus DIAS that provide easier access to Copernicus data and products alongside processing resources, tools and other relevant data;
- The GEOSS Infrastructure including, at the present time, the GEOSS Platform, GEOSS web services, and emerging new components such as the GEO regional infrastructures and the GEOSS Knowledge Hub (pending approval by GEO Plenary).
- The ESA Thematic Exploitation Platforms (TEPs)
- The Copernicus relays, academy networks and upcoming incubators;
- Research & innovation resources and projects related to geo-spatial information and Earth sciences, in particular the EC-ESA Earth-system Science Initiative;
- The European Open Science Cloud (EOSC)
- GEO-relevant projects co-funded by the EU Framework Programmes for Research and Innovation such as the ongoing or recently ended ERA-PLANET³, NextGEOSS⁴, GEO-CRADLE⁵, ECOPOTENTIAL⁶, ATLANTOS⁷, EDGE⁸ and the recently launched e-shape⁹;
- Other resources, such as data processing capacities, specific data sources and information technologies made available through the involvement of the commercial sector in EuroGEO.

The European Union Coordinated Plan on Artificial Intelligence¹⁰ provides a framework with the aim to maximise the impact of investments at EU and national levels, encourage synergies and cooperation across the EU, exchange best practices and collectively define the way forward to ensure that the EU as a whole can compete globally. Actions starting already in 2019 will contribute to the development of platforms and large-scale pilots integrating AI elements. Geo-information being one of the areas targeted, it represents a unique opportunity for EuroGEO to pull together the data made available via the GEO infrastructure.

The EuroGEO initiative provides an opportunity to reinforce GEO engagement and commitment by the European Caucus' Members. The extent of the EuroGEO undertaking will evolve in function of the staff resourcing contribution by the GEO Member countries, the European Commission and the Participating organisations of the European GEO Caucus. The GEO engagement reinforcement could address challenges such as the transition from the current GEOSS to a results oriented GEOSS, a better alignment of GEO objectives and priorities with the ones of the European Union, or the paradigm shift from data to information and knowledge.

8. Data policy

Several members of the European GEO Caucus have made key contributions to the drafting of the GEO principles for data sharing and data management. Other members are co-leading foundational tasks related to their implementation, including through the operation and evolution of the GEOSS Infrastructure (H2020 Projects EDGE & NextGEOSS). Since the GEO inception, several governments and organisations in Europe have adapted their EO data policies to make them more open.

The vast majority of data and information delivered by the Copernicus Space infrastructure and the Copernicus services are made available and accessible to any citizen and any organisation around

³ www.era-planet.eu/

⁴ <http://nextgeoss.eu/>

⁵ <http://geocradle.eu/en/>

⁶ <http://www.ecopotential-project.eu/>

⁷ <https://www.atlantos-h2020.eu/>

⁸ <https://cordis.europa.eu/project/rcn/212138/factsheet/en>

⁹ <http://www.e-shape.eu>

¹⁰ <https://ec.europa.eu/digital-single-market/en/news/coordinated-plan-artificial-intelligence>

the world on a free, full and open access basis. One can access Copernicus Data and Information Services through the DIAS or the Conventional Data Hubs.

Collectively, the European GEO Caucus shall strive to advocate the best adherence to the GEOSS data sharing and data management principles. EuroGEO shall encourage contributions to the GEOSS Data-CORE and ensure discovery and access to EuroGEO pilot applications via the GEOSS Infrastructure. The Initiative shall further promote GEO principles and implementation guidelines in Europe and collect benefits from GEOSS open data sharing in Europe.

ANNEX A: Acronyms and abbreviations

AfriGEO: The African Group on Earth Observations
AI: Artificial Intelligence
AmeriGEO: The Americas Group on Earth Observations
AOGEO: The Asia-Oceania Group on Earth Observation
CEOS: Committee on Earth Observation Satellites
Copernicus DIAS: Copernicus Data and Information Access Services
EARSC: European Association of Remote Sensing Companies
ECMWF: European Centre for Medium-Range Weather Forecasts
EDGE: European Directed GCI Enhancements
EEA: European Environmental Agency
EGDI: European Geological Data Infrastructure
EIC: European Innovation Council
EIONET: European Environment Information and Observation Network
EMODnet: European Marine Observation and Data Network
EO: Earth Observation
EOEP: Earth Observation Envelope Programme (European Space Agency)
eoMALL: on-line Marketplace for the EO Service sector
EOSC: European Open Science Cloud
ESA: European Space Agency
ESFRI: European Strategy Forum on Research Infrastructures
EU: European Union
EUMETNET: European Meteorological Services Network
EUMETSAT: European Organisation for the Exploitation of Meteorological Satellites
EuroGEOSS: Europe's part of the Global Earth Observation System of Systems (GEOSS)
EuroGeoSurveys: The Geological Surveys of Europe
EUROGOOS: European Global Ocean Observing System
EXCOM: GEO Executive Committee
GCI: GEOSS Common Infrastructure
GEO: Group on Earth Observations
GEO HLWG: GEO High Level Working Group
GEOSS: Global Earth Observation System of Systems
GEOSS Data-CORE: GEOSS Data Collections of Open Resources for Everyone
GHG: Greenhouse Gas
ICT: Information and Communication Technologies
INSPIRE: Infrastructure for Spatial Information in the European Community
OCRE: Access to Commercial Services Through the EOSC-hub
PARSEC: Promoting the international competitiveness of European Remote Sensing companies through Cross-cluster collaboration
SATCEN: European Union Satellite Centre
SBAs: Societal Benefit Areas
SDGs: Sustainable Development Goals
TEPs: Thematic Exploitation Platforms
TWIGA: Transforming Weather Water data into value-added Information services for sustainable Growth in Africa
VERIFY: Verifying Greenhouse Gas Emissions
WeObserve: An Ecosystem of Citizen Observatories for Environmental Monitoring