The Role of R & D Community

Nicola Pirrone

Institute of Atmospheric Pollution Research
National Research Council of Italy
GEO past 20 year-legacy

2005 – 2015  Data for society (9 SBAs: disaster, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity)

2016 – 2025  Services for society (3+1 GEPs)

- Global Engagement Priorities:
  - SDGs
  - Climate Action
  - Disaster Risk Reduction
  - Urban Agenda
EU projects: ended
Urgency

- The planet faces environmental challenges, not only in their quantity, but also in their increasing complexity in a rapidly changing world. Of particular significance is the triple planetary crisis of climate change, biodiversity loss and pollution.

- Public and private organizations that are challenged with finding solutions to the multi-crisis are further confronted with fragmentation and proliferation among themselves and of data sources and information.

- Global partnerships and multilateralism need to be open and become more inclusive of all actors.

- Young people are catalysts for sustainable development. Yet, more than 1 in 5 youths are not acquiring livelihood skills through education or work. Young people should play a central role in data-driven economies.
GEO’s vision, mission, value proposition
(report: GEO post-25 Strategy, JRC)

• Vision:
  - Be the leading intergovernmental body with a broad partnership of contributing organizations for trusted, integrated, and sustained Earth intelligence;
  - Allow everyone to have access to trusted, timely, integrated, and sustained Earth intelligence about our planet for all will be made possible through our broad intergovernmental membership and variety of contributing organizations.
Earth intelligence
(report: GEO post-25 Strategy, JRC)

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

GEO will leverage Earth intelligence to:
1. derive new knowledge,
2. provide valuable insights
3. inform strategic decisions
4. and empower society to protect/pursue a sustainable planet.
GEO and the Earth observation value chain approach

Earth observation infrastructure

Data availability and access, research and assessments

EO products and services

Policy and decision-making

Societal, environmental and economic benefits as well as equity

Users / Stakeholder needs

Stakeholder contributions

Co-design
EU projects: on-going
Opportunities in the GEO post-2025 decade

The nine initial Common European data spaces will be the following:

- An Industrial data space, to support the competitiveness and performance of the EU industry
- A Green Deal data space, to use the major potential of data in support of the Green Deal priority actions on issues such as climate change, circular economy, pollution, biodiversity, and deforestation
- A Mobility data space, to position Europe at the forefront of the development of an intelligent transport system
- A Health data space, essential for advances in preventing, detecting and treating diseases as well as for informed, evidence-based decisions to improve the healthcare systems
- A Financial data space, to stimulate innovation, market transparency, sustainable finance, as well as access to finance for European businesses and a more integrated market
- An Energy data space, to promote a stronger availability and cross-sector sharing of data, in a customer-centric, secure and trustworthy manner
- An Agriculture data space, to enhance the sustainability performance and competitiveness of the agricultural sector through the processing and analysis of data
- Data spaces for Public Administrations, to improve transparency and accountability of public spending and spending quality, fighting corruption, both at EU and national level
- A Skills data space, to reduce the skills mismatch between the education and training systems and the labour market needs

Figure 2: Building blocks pertaining to interoperability, trust, data value and governance
Agriculture of Data – general objectives and domains

What?
Support to sustainable agriculture in Europe as well as policy monitoring and implementation by using the possibilities that digital and data technologies in combination with environmental observation and other data offer.

How?
• Development of innovative data-based solutions and services for the private and public domain through the capitalization of data.

Domains covered:
EUROGEO WORKSHOP 2023

Stocktaking and initiatives expected to run in parallel, “umbrella effect”

European Research Landscape
- ERA-Nets: ICT-AGRI-FOOD
- ERA-PLANET
- HE Pillar-2: Cluster 6, 4 & 5
- Ongoing H2020 projects
- Future relevant HE projects

Policy Makers:
- Member States and ministries
- Local governments
- National funding agencies and responsible bodies

Scientists and Research Institutions

Horizon Europe Partnership
AgofData SRIA

Stakeholders:
- Farmers
- Agricultural producers
- Policy makers
- Public administrations

European Initiatives (Digital Europe Programme):
- Common European Agriculture Data Space
- Destination Earth
- Testing and Experimentation Facilities for AI in agri-food

EU Framing Legislation:
- Data Act, Data Governance Act,
- Digital Markets Act,
- Implementing Act on High Value Data Sets

Related HE Partnerships:
- Water4all
- BlueEconomy
- Safeguarding Biodiversity
Which data?

Data of Agriculture

Environmental data
- both sub-domains include all types of geospatial and modelled
  - public/private/strategic/technical data
- mainly data from earth observation (EO), remote/proximal/sensor data
- land use / landscape
- climate / meteorology
- soil
- biodiversity
- phenology
- genetics and physiology
- ...

Agricultural data
- mainly data from farmers, consultants, agencies, public authorities
- operating & business
- cultivation & yield
- agri-environmental measures / eco-schemes
- fertilizer & plant protection
- agricultural economics & sociology
- agricultural (field) experiments
- livestock / animal health
- breeding
- ...

Data + Data Technology

Data-based solutions
Enhanced sustainability and productivity of agriculture

GENERAL OBJECTIVES

Strengthen policy monitoring and evaluation capacities

Specific Objectives

1. Improve agri-environmental monitoring capacities
2. Boost the uptake of digital & data technologies
3. Enhance the (re)use of data
4. Achieve synergies between business and public interests
5. Develop data-based solutions
6. Accelerating market/end user readiness
7. Support European governance and infrastructure

EXPECTED IMPACTS

1. Increased synergies in data-based solutions
2. Increased performance of the sector
3. Enhanced contribution to sustainability ambitions
4. Enhanced capacity to adapt to climate change
5. Effective European structures
6. Strengthened policy monitoring capacities
Conclusions

- **A win-win approach** between research organizations and private sectors may certainly lead to increase our capacity to reinforcing the data value chain.

- **Strengthening** NCMs in the context of the GEO post-25 strategy would allow to better link end users needs and cross-cutting edge research.

- **Increase the engagement of the private sector** in national and European context would enhance the development of more competitive EO products & services on the international market (estimated to reach 25 Trillion $ by 2030).

- **A back-to-back cooperation** of the Research Organizations and Private Sectors would lead to EO products and services fit-for-purposes capable to improve the policy- and decision-making processes having as outcome increased social benefits and equity.
Thank you