



## Flash feedback Thematic sessions from Tuesday

Session chairs

BOLZANO 2-4 OCTOBER 2023

**eurac**  
research



Institute of  
Atmospheric Pollution  
Research  
National Research Council of Italy



European  
Commission



Green Deal Data Spaces

Land Cover / Land Use

Mountains

Digital Twin

*Renewable energies and climate*

Agriculture

*Disasters and health*

*Biodiversity, ecosystems and geodiversity*

*From innovation to market*

*Coastal Services*

Urban

*In-situ data*



## #1 - Agriculture

**Data Availability and Quality:** Reliable access to accurate EO data is essential for monitoring crop health, predicting yields, and making informed agricultural decisions.

**High Costs:** Deploying EO technologies tailored for agriculture can be expensive, potentially limiting their adoption by small-scale farmers or developing regions.

**Technical Expertise:** Interpreting EO data for agricultural applications demands specialized skills, which usually are scarce.

**Integration with Ground Data:** Merging EO data with in-situ observations is crucial for accurate crop assessments and predictions.

**Data Storage and Processing:** Managing the vast amounts of EO data requires significant storage and computational resources.

**Policy and Regulatory Issues:** Navigating regulations around the use of EO data in agriculture can be complex, especially when considering cross-border data sharing.

**Lack of Appropriate Business Models:** Developing sustainable business models for EO in agriculture is essential for its widespread adoption and long-term viability.

**Awareness and Acceptance:** Many in the agricultural sector might be unfamiliar with the benefits of EO, necessitating awareness campaigns and training.

**User Engagement:** Actively engaging farmers and agricultural stakeholders ensures that EO solutions are tailored to their specific needs and challenges.



## #3 - Urban

- **Communication** – surveys, engagement plans, activation of city-level partners & users, synergies with projects, online portal, citizen science
- Translate vast amount of data into information to be delivered to stakeholders contributing to **Earth Intelligence**
- Facilitating the built of **synergies** in the domains of climate action plan and investment strategy/ Innovative city governance and citizen engagement/ Involvement of European, national and regional level structures (i.e. **national coordination mechanisms**)
- Linking with the **Resilient Cities and Human Settlements RCHS WG**
- Supporting **EU Cities Mission and Climate Mission**; opportunities from European funding but also private investment
- Supporting of **JRC reporting** and **Ministerial Brief for GeoWeek**



## #4 Digital Twin development in Europe

- Challenges
  - Break Information Silos
  - Scaling
    - from local – global
    - & global – local
  - Harmonization of Data and Processing Infrastructure
- Opportunities
  - Pool resources
  - Open Source for supporting sustainability
  - Common specifications and standards
- What role could EuroGEO take:
  - Platform for Exchange
  - Identification of Gaps
  - Link between Nations
  - Prioritization of Things to Harmonize



## #5 European Land Cover/Land Intelligence

- Standardized access to reference data ('Fiducial Reference 4 Land Cover') – develop service where LC class reference data can be collected from existing networks such as e\_LTER and N2K. Also link LC class of specific points where other measures were collected.
- Development of a framework to standardize the measures, methods and sampling strategies for computing LC uncertainty and errors. 'Overall Accuracy' measure is not sufficient – must report full confusion matrix, sampling design, response design, etc. Standards are available. Should be applied to AI and new technologies as QC.
- Develop service to help translate between LC taxonomies based on ontologies. Focus should be on OWL ontologies and SKOS thesauri because these allow machine readability and can be shared through web-based catalogues and viewers.
- Making EU reference data for training ML/DL/AI. Big gap in developing countries for training and validation.
- Clarify relation between EO and different LC schemes: Are the classes 'observable', if so, does it require (spatial or temporal) context and in which range (spatially and temporally) are they applicable?



## #6 Addressing climate-induced disasters and health challenges

- ✓ RIA, IA and Awards reinforce the TRL and allow operational use, scalability and transferability.
- ✓ But together with the implementation actions we should recognize the positive impact of coordination and capacity building across the stakeholders and sectors and link with the ongoing CSA e.g. Copernicus FP CUP, and GEO-CRADLE, etc.
- ✓ FPCUP supports CB, the same GEO-CRADLE although the latter is fully voluntary, however, sustainable funding is critical to secure well-designed and systematic CB actions instead of ad hoc efforts.
- ✓ EuroGEO and its Action Groups are recognized as the forum to enhance the exchange across the value added communities and reduce the existing ecosystem fragmentation and overlapping of efforts. There is a promising prospect and all the contributors in the Action Group consider that an even better liaison with EuroGEO should/could be achieved with the support through CSA and the EuroGEO Secretariat.
- ✓ Coordination and continuation of communication through similar workshop events as the EuroGEO workshop should be further supported e.g. organizing one to two similar events per year and even more support the information exchange through newsletters, blogs for showcasing the ongoing progress and success stories in its Action Group.
- ✓ The role of the private sector has been highlighted and is of outmost importance so as to address the daily practice needs of users. There is an impetus to move to the demand side and satisfy the stakeholders' demands.
- ✓ Products and services should be the outcome of systematic and essential longstanding co-design/co-development process (following the e-shape example). User engagement and continuous co-creation is time consuming but the only way to ensure sustainability thus scientists should adopt it.
- ✓ The domain knowledge and stakeholder expertise is fundamental in co-designing. It is necessary to establish cooperation and integrate synergies with the Copernicus Thematic Hubs.
- ✓ We need to combine different data sources and improve the data accuracy so that we increase the reliability of our services and the impact of our work.



## #7 Building the Green Deal data space in a way that contributes to GEO

- Green Deal Data Space (GDDS) is the most interdisciplinary of all (examples: hydrology, mercury, biodiversity, air quality, soil, ocean, forest, pests, etc, etc)
- Data integration (e.g. using catalogues or datacubes) is essential for data processing and we are continuously doing so.
- For external people it is difficult to know about the European community the services and data they provide.
- EuroGEO can support the defragmentation of EU/national projects.
- **GDDS vs. GEO/GEOSS**
  - Focus on data sharing and trust, vs. focus on knowledge generation (Earth Intelligence)
  - GDDS focus on governance
  - Focus on European Green Deal vs. focus on engagement priorities
- GEOSS is a federation of services and datasets. Data spaces share some common interoperability standards and the open part should be included in GEOSS.
- In contrast Trusted, high quality traceable and well documented datasets should be the only part of the data spaces as they are the only applicable for policy
- Re-inventing the European SDIs after the experience of 20 years of implementation, more actors creating data and more regulations applicable to data.





## #8 Elevating mountains in the GEO post-2025 strategy: lessons from EU-funded projects in mountain areas



### CO-CHAIRS

Carolina Adler (MRI / GEO Mountains)  
Elisa Palazzi (ISAC-CNR / University of Torino)

### SPEAKERS

**Monitoring, data and information in mountain environments**

James Thornton (MRI / GEO Mountains)

**The Alpine Drought Observatory, how to organize and share data in a cross-national mountain region following the fair data principles**

Alexander Jacob (EURAC Research)

**Climate Impetus: Long-term availability of data and engagement of stakeholders through the development of Resilience Knowledge Booster for a mountain case study**

Valentina D'Alonzo (EURAC Research)

**Experiences and lessons from the EU-funded project "PastorAlp"**

Marta Galvagno (ARPA VdA)

### HIGHLIGHTS AND RECOMMENDATIONS

- **CONTEXT** - Mountains as “natural integrators” (multiple global change processes in place; multiple and diverse disciplines, perspectives, world views; globally distributed).
- **ENGAGEMENT** - Meaningful stakeholder engagement; iterative two-way dialogue, inclusive process integral to projects’ long-term legacy and impact (e.g, uptake of insights into policy).
- **SUSTAINABILITY** - Data, data products, and information produced are key project legacies. Important to integrate adequate metadata, interoperable formats, follow established protocols/standards, documentation / DOIs, repositories, outreach.
- **COORDINATION** – adequately resourced networked approach to connect, exchange, and outscale legacies of projects (e.g. EU Coordination and Support Actions, CSAs).





## #9 Renewable energies and Climate session

**Scope and Objectives:** showcasing the use of EO data for renewable energies and climate applications.

Support to EuroGEO 3C strategy (Coordinate, combine, cooperate): better and continuous communication (newsletter, blogs, etc... and meetings) , better coordination between the different actors (Copernicus and Copernicus Hub, Action Group, GEO VENER initiative), interlinks with various thematic areas

Complementarity of all the tools and resources: EuroGEO contributing to the Cop Hub and vice-versa. GEO VENER outside Europe. Spreading information @large. Organise Joint actions

What are you waiting from EuroGEO: support towards funding, Wear our EuroGEO colors proudly (Branding). Intermediary with the global GEO. Help from DG international partnership to support European data/services outside Europe. EuroGEO as a network / community. Links with non-European institutions. Intermediate body



## #10 From Innovation to Market: boosting the commercialisation aspects of R&D Results

**Objective :** to shed light on common issues faced by EO solution developers participating in EU-funded projects in their efforts to commercialize their results and the tools that can help them in this effort.

**3 pillars :** 1) Barriers identifications ; 2) Best Practices ; 3) Awareness

- **Market Knowledge:** realistic understanding of the targeted market (TAM/SAM/Targeted market), willingness to pay for the service, competitors, Small changes in the business models can make a difference and might help and open more doors in the market
- **Operational by design:** Move from a Project to a operational product vision. Identify and design the solution (technology as a tool not a goal). “Think Global, act Global”. Showcase the benefits with a clear Unique Selling Proposition strengthening the benefits
- **Access to user communities :** increase the interaction with targeted users, detail users’ needs/requirement and their evolution, understand users challenges.
- **Bridge with the private sector:** stimulate exploitation of (sleeping) IPs,

Contributors	
Service provisers	Latitudo40, Planetek Italia, e-geoss
Institutional	EIC, ESA
Investor	Star Tech Ventures
Consulting	Evenflow
Projects	Protect, e-shape



## #11 Biodiversity, ecosystems and geodiversity

### What happened:

- Presentation of European and international initiatives: EUROPABON/GEOBON, GEO Global Ecosystems Atlas, towards a European biodiversity monitoring centre, Biodiversa+
- The role of EU RIs: eLTER RI, ANAEE ERIC, LifeWatch ERIC
- Challenges at the interface: interplay of biodiversity and geodiversity (data, scales, approaches); water cycle changes and ecosystems (wetlands, mountains)

### Outcomes:

- Need to integrate, connect and federate the different actions and initiatives; more contact between different RIs
- Need to combine societal/policy needs with research challenges (knowledge gap identification and filling)
- Need for a fully integrated, multidisciplinary and systemic approach, including both biotic and abiotic aspects and dynamics.



## #12 Discussing the role of EuroGEO in enhancing the availability, accessibility and integration of in-situ Earth Observation data

- There are still **many cultural and technical barriers** when sharing in-situ data
  - Cultural: lack of awareness, reluctance due to lack of recognition, institutional and/or national policies
  - Technical: formats, technological solutions, requirements for interoperability
- **What role for EuroGEO** in the context of in situ?
  - Act as an intermediary (facilitating interoperability, providing data repository)
  - Raise awareness about in situ data, inc. acknowledging of data providers
  - Gather in situ requirements for selected use cases (G-reqs, CIS<sup>2</sup>)
  - Provide best practices, standards, guidelines and templates (licensing, DMPs)
  - Facilitate cross-disciplinary discussion and identification e.g. of Essential Variables
  - Support integration of sources of (in situ) data from research activities, citizen science...



Green Deal Data Spaces

Land Cover / Land Use

Mountains

Digital Twin

*Renewable energies and climate*

Agriculture

*Disasters and health*

*Biodiversity, ecosystems and geodiversity*

*From innovation to market*

*Coastal Services*

Urban

*In-situ data*