D6.4 GEO-Academy International Conference Proceedings

GEO-Academy is a Teachers' Academy project funded by the Erasmus+ Programme of the European Union. REF: ERASMUS-EDU-2022-PEX-TEACH-ACA under GA No. 101104693.

Co-funded by the European Union

Deliverable Information

Work Package	**Work Package 6: "Impact assessment, dissemination and sustainability"**
Deliverable Leader	Eurisy
Authors	Shana Sonntag
Abstract	WP6 Impact assessment, dissemination and sustainability
Deliverable type	Other
Dissemination level	PU - Public
Version number	Final version

Revision History

Revision	**Date**	**Contributor(s)**	**Description**
0.1	09/04/26	Shana Sonntag	Table of Contents (ToC)
0.2	06/05/26	NTUA	Draft version
0.3	24/05/25	Eurisy	Final Version

Quality Control

Role	Date	Contributor(s)	Approved/Comment
Internal review		Zaklin Butinar	
Final Quality review	28/05/2026	Dr. Loukas Katikas (NTUA) Maria Bezerianou (NTUA) Dr. Athanasia Darra (NTUA) Assoc. Prof. Margarita Kokla (NTUA)	

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I- International Teachers Conference Paris

1. Context and Background

As the project approached its conclusion, the conference, that was held from the 27 to 29 April 2026 in Paris at the European Space Agency HQ Daumesnil, 52 rue Jacques Hillairet, 75012 Paris, France and was designed as a key milestone bringing together the full consortium, associated partners, educators, and institutional stakeholders. Its primary purpose extended beyond the presentation of results, as it aimed to consolidate the learning outcomes generated over three years of implementation, evaluate the impact of GEO Academy training activities across Europe, and ensure the long-term sustainability of key project outputs, including training modules, teacher networks, and the GEOBSERVE platform. There were 44 participants to the International Teachers Conference. Participants came from a wide range of countries, including Austria, Portugal, Cyprus, Greece, Sweden, and Bulgaria, while partner organizations included EA, NTUA, SPOTIN, PHT, LU, CPI, NUCLIO, and UC. The event also welcomed keynote speakers and panelists from IEEC in Spain, ESA in Paris and Brussels, COSPAR in Brussels, as well as experts in sustainability and geospatial education. An additional important dimension of the conference was the involvement of external experts and organizations, whose participation contributed to broadening perspectives on geospatial education and sustainability practices across Europe and beyond. The conference aimed not only to showcase GEO-Academy results, but also to facilitate knowledge exchange with institutions and organizations such as ESA and ESRI, highlighting best practices, innovative educational approaches, and experiences developed in other countries and contexts. Most importantly, however, the conference remained strongly focused on

teachers and their voices, providing a dedicated space for educators to share their training experiences, classroom implementations, pilot activities, and lessons learned throughout the two years of GEO-Academy experimentation and collaboration.

2. Purpose and structure of the conference

In this perspective, the conference functioned as a transition point between the implementation phase and the post-project phase, supporting the evolution of GEO-Academy from a funded initiative into a self-sustaining community of practice dedicated to geospatial education in Europe. Participants came from Austria, Portugal, Cyprus, Greece, Sweden, and Bulgaria, alongside partner organizations including EA, NTUA, SPOTIN, PHT, LU, CPI, NUCLIO, and UC.

At the core of GEO-Academy lies the ambition to equip educators with innovative geospatial tools such as GIS, Remote Sensing, Earth Observation, and geospatial storytelling, enabling them to integrate sustainability topics into teaching practices in a meaningful, interdisciplinary, and practice-oriented way. The conference therefore responded to a broader educational and societal need, namely the growing importance of spatial literacy as a key competence for understanding climate change, environmental transformations, and sustainable development challenges.

The structure of the conference was deliberately designed to reflect the multi-layered approach of the GEO-Academy project, which combines policy development, teacher training, co-creation, and classroom implementation. Each component of the programme served a specific function and contributed to the overall coherence of the event.

The keynote sessions, *From Policy to Practice: Keynotes on the Future of GEO Education*, positioned GEO-Academy within the wider European context of

education policy, space strategy, and sustainability frameworks. They featured Kai-Uwe Schrogl, ESA Special Adviser for Political Affairs and past President of the International Institute of Space Law; Jean-Claude Worms, Executive Director of COSPAR; Zaklin Butinar, Interim Secretary General of Eurisy; and Dr. Loukas Katikas from the National Technical University of Athens (NTUA). These keynote contributions provided high-level reflections on the future of Education for Sustainable Development (ESD), the role of geospatial technologies in education systems, and institutional perspectives on scaling GEO competences across Europe.

The panel discussions constituted the core intellectual space of the conference by enabling structured dialogue between researchers, educators, industry representatives, and policy stakeholders. They brought together diverse perspectives across education, industry, research, and policy domains, assessed the real-world impact of GEO-Academy methodologies, and identified emerging competence needs as well as key challenges related to implementation and scalability. This approach reflects the fundamental philosophy of GEO-Academy, according to which meaningful educational transformation emerges through collaboration across disciplines and sectors.

Panel 1, *Building Tomorrow's Educators*: *Emerging Competence Needs in GEO-Education*, moderated by Dr. Loukas Katikas, explored the future competencies required to teach using geospatial technologies within the broader framework of education for sustainable development. The discussion included contributions from Dr. Evans, Head of Geography and Co-Creator of the Bloxham Sustainability Challenge; Katie Hall, Head of Education for Esri UK; Olympia Befa from Ellinogermaniki Agogi; and Clara Cruz Niggebrugge from ESA.

Panel 2, *Transforming Teaching Practices*: *From GEO-Academy Training to Classroom Impact*, moderated by Shana Sonntag, focused on the practical application of GEO-Academy training in teaching practices, the development of educational materials, and the integration of Earth Observation and geospatial technologies into school curricula. The panel featured Alexandros Pantazis, Project Manager and Researcher at Ellinogermaniki Agogi; Paula Lomascolo from the Institute for Space Studies; and Evgenia Agapi Vavouraki from Ellinogermaniki Agogi

Figure 1 & 2: Paris International Teachers Conference Program

Teacher-led sessions ensured that the conference remained firmly grounded in classroom realities. They demonstrated how GEO Academy training had been translated into concrete teaching practices, how geospatial tools had been effectively integrated into lessons, and how students engaged with real-world environmental challenges through spatial thinking and digital technologies. These sessions played a crucial role in validating both the practical impact and the scalability potential of GEO Academy outputs.

II- Day One

Figure 3: Conference Room

The first day of the GEO-Academy International Conference, entitled *"From Policy to Practice: Keynotes on the Future of GEO Education"*, was designed to establish the strategic and institutional foundations of the conference by connecting geospatial education with broader European priorities related to sustainability, digital transformation, and space-based innovation.

The conference began with a registration and welcome coffee session that provided participants with an informal space for networking and exchange. This opening moment played an important role in setting the tone of the event as a collaborative and community-driven gathering, bringing together actors from education, research and institutional environments in a shared space of dialogue.

1. Opening Keynotes

The opening keynote session introduced the broader policy and societal framework within which GEO-Academy is situated. Kai-Uwe Schrogl from the European Space Agency emphasized the strategic importance of geospatial education and spatial literacy within Europe's evolving space and education policies, highlighting the role of education in fostering critical thinking and responsible citizenship. Jean-Claude Worms, Executive Director of COSPAR, focused on the importance of international scientific cooperation and the need to translate space-based knowledge into societal value through education and outreach. Zaklin Butinar, representing Eurisy, addressed the societal uptake of Earth Observation data and stressed the importance of user-oriented approaches, and teacher empowerment to bridge the gap between technological innovation and practical educational use. Finally, Dr. Loukas Katikas from the National Technical University of Athens highlighted the importance of integrating geospatial technologies into teacher training and education systems, while presenting GEO-Academy as a collaborative initiative aimed at strengthening spatial literacy and sustainability education across Europe. He also emphasized the importance of GEO-concepts as powerful enablers for strengthening Education for Sustainable Development (ESD) programmes. He highlighted that geospatial thinking, Earth Observation, spatial analysis, and data-driven inquiry can act as "superpowers" for helping learners better understand complex environmental and societal challenges, while supporting systems thinking, critical reflection, and informed decision-making. Together, these keynote interventions established a strong foundation for the conference by framing GEO-Academy within broader European priorities related to sustainability, digital transformation, and skills development, while also emphasizing the critical

importance of connecting technological innovation with societal understanding and educational practices.

Figure 4: Key-Note speakers

2. Geo-Academy in practice

The following session was dedicated to the practical implementation of GEO-Academy activities and represented a key moment in demonstrating the concrete outcomes of the project at operational level. This session, led by project partners, focused on presenting how the different GEO-Academy work packages had been translated into concrete actions and outputs throughout the project lifecycle. It provided a structured overview of implementation processes across the consortium and highlighted the coherence between the project's methodological design and its practical delivery.

Jean-Nicolas Poussart, from Lund University first presented WP2, which focused on the development of GEO-Academy e-learning training modules, educational tools, and pedagogical resources aimed at transforming schools through geospatial thinking. His presentation outlined the pedagogical approach underpinning the online learning modules, emphasizing accessibility, interdisciplinary learning, and the integration of

Earth Observation and GIS tools into educational practices. He also highlighted the importance of providing educators with flexible and practice-oriented resources that can be adapted to different classroom environments and learner needs.

Niklaus Albrecht from PHT then presented WP3 and introduced the Unified Competence Framework (UCF), developed to integrate spatial, digital, and green competences within sustainability education. His intervention emphasized the need to overcome fragmented approaches to competence development by combining geospatial thinking, digital literacy, sustainability awareness, systems thinking, and critical thinking into a single educational framework. The presentation highlighted how GEO-Academy promotes interdisciplinary learning approaches that enable students to address real-world sustainability challenges through the use of geospatial technologies and data-driven analysis.

Rosa Doran from NUCLIO presented WP4, dedicated to the establishment of the GEO-Observatory Community of Practice and GEOBSERVE platform as well as national and local GEO-Hubs. Her presentation focused on the development of collaborative structures designed to support knowledge exchange, networking, and long-term cooperation among educators and stakeholders involved in geospatial education. She also introduced the e-modules and GEO-Kits developed within the project to facilitate access to educational resources and strengthen the implementation of geospatial learning activities across different educational contexts.

Alexandros Pantazis from Ellinogermaniki Agogi subsequently presented WP5, which focused on bridging geospatial training and classroom practice through multi-level teacher training activities implemented at local, national, and international scales. His presentation showcased the organisation of in-school demonstrations, workshops at teacher training

centres, national seminars, blended learning activities, and international Summer and Winter Schools bringing together educators from different European countries. He also highlighted the impact of the training programme, which engaged more than 1,000 teachers, including both pre-service and in-service educators. Particular attention was given to the positive feedback received regarding the balance between theory and practice, the clarity of learning objectives, and the classroom applicability of hands-on activities using tools such as micro:bit and the Copernicus Browser.

Finally, Shana Sonntag from EURISY presented WP6, focusing on GEO-Academy's communication and dissemination strategy. Her presentation highlighted the different channels and tools used to increase the visibility of the project and engage educational communities, including social media campaigns, online communication activities, dissemination materials, and stakeholder outreach initiatives. She emphasized the importance of building an active European community around geospatial education and ensuring the long-term visibility and sustainability of the project outcomes.

Figure 5: WP4 Presentation by Alexandros Pantazis

In addition, the presentations highlighted the progressive consolidation of the GEO-Academy ecosystem through the development of supporting resources, platforms, and networks. Partners detailed how the GEOBSERVE platform and associated training materials had been designed to ensure accessibility, reusability, and long-term applicability beyond the project duration. The role of cross-partner collaboration in ensuring quality assurance, coherence, and scalability of outputs was also underlined as a key success factor.

Overall, this session demonstrated the effective operationalization of GEO-Academy work packages and confirmed the capacity of the consortium to translate a complex methodological framework into structured, usable, and scalable educational outputs. It illustrated the internal consistency of the project design and its successful implementation through coordinated contributions from all partners.

3. Storymap competition winner presentation

A central highlight of the first day was the presentation of the GEO-Academy Map Storytelling Competition also named GeoVoices competition, one of the flagship activities of the project. The competition was first introduced by Afroditi Riga, a representative from SPOTIN, who provided an overview of the initiative and its educational framework. More information about the competition is available on the official GEO-Academy website: https://geoacademy.eu/mapstorytelling-competition/. The presentation emphasized how the competition connects geospatial technologies with education for sustainability by enabling students to develop interactive digital StoryMaps addressing real-world environmental challenges.

This introduction was followed by the presentation of the winning project by the competition winner, together with her two students from Cyprus. Their project, titled *"Sustainable Community Living in our School and Beyond"* from Agios Spyridonas Lyceum, Limassol, Cyprus, demonstrated a strong integration of geospatial analysis, storytelling, and sustainability thinking. The team showcased how local school-based actions can be linked to broader global environmental challenges through the use of digital mapping tools.

Subsequently, additional student projects were presented that had not been physically present at the event, highlighting the broader scope and diversity of participation in the competition. These included (Annex 1):

1. *"The Rivers of Our Areas"* - Eleni Korakaki
2. *"Changing the End: A Map Storytelling Project"* – 3rd Junior High School of Argyroupoli
3. *Map Storytelling Project* – Evgenia Tsioupli & Lemonia Laskari, 1st Model High School "Manolis Andronikos"

4. *Award Ceremony Project*, Victoria Marques, Agrupamento Terras do Ave European School (Portugal)

Figure 6: The competition winner and her two students presenting their work

The Map Storytelling Competition holds a central place within the GEO-Academy framework because it embodies the project's pedagogical philosophy in a concrete and impactful way. It enables the translation of teacher training into student-led learning experiences and promotes inquiry-based and project-based approaches to education. It also strengthens digital literacy and spatial reasoning skills while fostering a deeper understanding of sustainability challenges.

Beyond its educational dimension, the competition demonstrates how geospatial technologies can empower students to become active interpreters of their environment. Through storytelling and mapping, learners develop not only technical competences but also critical thinking skills and a stronger sense of environmental responsibility. In this way, the competition illustrates the broader ambition of GEO-Academy, which is to transform geospatial education into a tool for both learning and societal awareness.

II- Day two: From Practice to Impact: GEO-Academy Teaching, Reflection and Innovation

The second day of the GEO-Academy International Conference, entitled "From Practice to Impact: GEO-Academy Teaching, Reflection and Innovation", was dedicated to the practical dimension of the project, focusing on the translation of teacher training into classroom implementation, pedagogical innovation and educational impact. While the first day concentrated on policy orientations and strategic visions for the future of geospatial education, the second day shifted the focus towards concrete practices, lived experiences and the lessons learned from teachers and educators who have actively engaged with the GEO-Academy training program.

The overall objective of the day was to move beyond conceptual discussion and to highlight tangible evidence of transformation in educational practice. In this sense, the sessions were designed to showcase real classroom experiences, teacher-led innovations and collaborative approaches that emerged through the GEO-Academy ecosystem.

1. PANEL 1: Building Tomorrow's Educators: Emerging Competence Needs in GEO-Education

Moderator: Dr. Loukas Katikas

Panellists:

Dr. Evans, Head of Geography, Co-Creator, Bloxham Sustainability Challenge, Claire E. Evans is Head of Geography at Bloxham School and a passionate advocate for empowering young people to engage meaningfully with the challenges of our changing planet.

Katie Hall, Head of Education for Esri UK; Katie Hall is Head of Education at Esri UK, building strong partnerships between schools, subject associations, and the wider education community through their use of GIS.

Clara Cruz Niggebrugge has been working at the European Space Agency (ESA) since 2013 within the Education Office, where she currently serves as STEM Learning Coordinator.

Olympia Befa, holds a Bachelor of Science in English Literature and has over 31 years of experience as an English teacher. She has been working at Ellinogermaniki Agogi as a middle and high school English teacher for the past 17 years. For the last six years, she has also served as Deputy Head of the Middle School.

The first panel of the day addressed the evolving role of educators in a rapidly changing educational landscape shaped by digital transformation, climate challenges, and the growing importance of spatial literacy. The discussion focused on the competencies required to effectively integrate geospatial technologies into education systems, including digital skills, spatial thinking, data literacy, and sustainability-oriented pedagogies.

The panel was moderated by Dr. Loukas Katikas from the National Technical University of Athens, who framed the discussion within the broader objectives of GEO-Academy and its teacher training framework, emphasizing the need for education systems to evolve in response to global environmental and technological transformations.

Dr. Claire Evans, Katie Hall, Olympia Befa, and Clara Cruz Niggebrugge each contributed complementary perspectives from education, industry, and institutional practice. Dr. Evans emphasized project-based learning rooted in real-world sustainability challenges, Katie Hall focused on GIS pedagogy, accessibility of tools, and curriculum integration, Olympia Befa highlighted sustainability education through geospatial learning in secondary education, and Clara Cruz Niggebrugge provided the perspective of the European Space

Agency on Earth Observation, STEM education, and long-term capacity building.

Olympia Befa presented an approach to integrating sustainability education into lower secondary schooling through project-based learning supported by geospatial tools such as ArcGIS. She showcased student-centered projects addressing climate change, cultural heritage, and the United Nations Sustainable Development Goals, demonstrating how global challenges can be meaningfully connected to local contexts.

She emphasized that students working with real-world data develop critical thinking skills and a deeper understanding of the relationships between environment, society, and place. A key message of her intervention was the shift from asking “What are students learning?” to “So what?”, highlighting the importance of educational impact and relevance.

Her presentation also stressed how geospatial learning fosters active citizenship and meaningful engagement. At the same time, she identified structural challenges such as curriculum constraints and limited teacher training, and called for more flexible curricula, improved access to geospatial tools and data, and stronger institutional collaboration.

When discussing GIS tools in education, Katie Hall and Claire Evans emphasized that there is no lack of existing tools, but rather a challenge in awareness, confidence, and integration into teaching practice. Platforms such as QGIS, ArcGIS, and MapMaker were cited as already well-suited to educational use.

They highlighted that a key conceptual issue is the distinction—and progression—between learning about GIS and learning with GIS. Rather than being separate pathways, these were presented as part of a continuum that supports gradual skill development.

Both speakers noted that current geography curricula often allow engagement with geospatial data but rarely require it. As a result, students frequently work with simplified or static representations rather than authentic, multi-layered datasets. This limits the development of deeper competencies such as evaluating data quality, managing uncertainty, and making spatial decisions.

They further identified structural barriers including time constraints, assessment-driven teaching, and limited teacher confidence. In particular, they emphasized that when geospatial approaches are not clearly linked to assessment outcomes, they are often deprioritized despite their pedagogical value.

Despite these challenges, both speakers observed that students respond extremely positively to real-world geospatial learning, demonstrating higher engagement, stronger motivation, and improved understanding of real-world relevance. Katie Hall also presented the Geography Visualiser Tool developed by Esri UK Education, as an example of best practice for supporting geospatial learning in schools. The tool enables teachers and students to explore and visualise geographical patterns and datasets in an accessible and interactive way, helping to strengthen spatial reasoning and data interpretation skills. More information about the tool is available here: Geography Visualiser Tool. During her presentation, she also shared several insightful graphs and visual representations illustrating the growing importance of geospatial data in education and the positive impact of GIS-based learning approaches on student engagement and understanding. Claire Evans also presented the Bloxham Sustainability Challenge as an inspiring example of how schools can develop meaningful, interdisciplinary sustainability projects through collaboration with external societal actors. The initiative demonstrates how partnerships between schools, local stakeholders, and organizations such as Esri UK can support the integration of geospatial technologies and real-world

environmental challenges into educational practice. Through these collaborations, students are encouraged to engage with authentic sustainability issues, apply spatial thinking to concrete local contexts, and develop project-based solutions connected to their communities. The initiative highlighted the importance of building bridges between education and external actors in order to create more impactful, relevant, and future-oriented learning experiences.

Clara Cruz Niggebrugge emphasized the strategic importance of Earth Observation (EO) education within both ESA and the European Union. She noted that EO is becoming increasingly central to addressing global challenges, but requires a workforce capable of using geospatial data operationally and effectively.

Beyond technical skills, she stressed the need for learners to understand the societal relevance of EO across multiple sectors, including environmental monitoring, climate action, and policy-making.

She underlined that this capacity building must begin early, within primary and secondary education, and that teachers play a crucial role as multipliers of space-based knowledge.

She introduced the concept of "GEO-competent teachers", defined as enablers of future EO users, decision-makers, and innovators. These educators are essential to building long-term geospatial literacy across society.

Finally, she referred to ESA's long-term vision Space for Education 2030, aligned with ESA's strategic priorities and Agenda 2025. This initiative aims to position ESA at the forefront of innovation in education, supporting both the future space workforce and broader societal sustainability goals. It reflects a forward-looking ambition to prepare learners "for jobs that have not been created, for

technologies that have not yet been invented, to solve problems that have not yet been anticipated."

The panel collectively highlighted a strong convergence of perspectives around the need to transform geospatial education from an optional enhancement into a core component of modern curricula. Across all interventions, a shared message emerged: the main barriers are not technological, but structural and pedagogical.

While geospatial tools and data are already widely available, their educational potential is not fully realized due to constraints in curriculum design, assessment systems, teacher training, and institutional support. However, the panel also emphasized that when these barriers are addressed, geospatial learning significantly enhances student engagement, critical thinking, and real-world relevance.

A second key conclusion was the importance of early and sustained exposure to geospatial thinking, supported by confident and well-trained teachers. Whether framed as GEO-competent educators, GIS practitioners in classrooms, or facilitators of inquiry-based learning, teachers were consistently identified as the central enablers of change.

Finally, the discussion underscored the broader societal relevance of geospatial education. From sustainability challenges to Earth Observation systems, the panel made clear that geospatial literacy is not only a technical skill set, but a foundational competence for citizenship in a data-driven and environmentally constrained world.

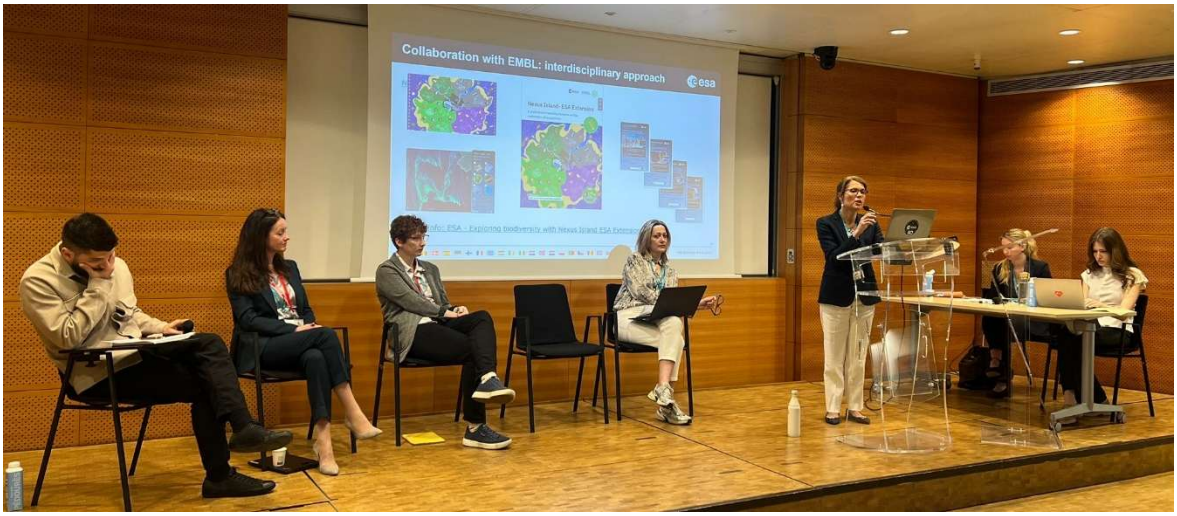


Figure 7: Panelists of Panel 1

2. PANEL 2: Transforming Teaching Practices: From GEO-Academy Training to Classroom Impact

The second panel of the morning focused on the concrete transformation of teaching practices resulting from GEO-Academy training activities. It explored how teachers have integrated Earth Observation data, GIS tools and geospatial methodologies into their classrooms, and how these tools have contributed to innovative pedagogical approaches across different educational contexts.

Moderated by Shana Sonntag, the panel highlighted the transition from teacher training to classroom implementation, showcasing how GEO-Academy has supported educators in designing new learning experiences based on real-world environmental and societal challenges.

Moderator: Shana Sonntag

Panelists:

Alexandros Pantazis, Project Manager and Researcher at Ellinogermaniki Agogi, whose work focuses on geospatial education, Earth Observation, Geo-AI, and environmental sustainability in learning contexts

Paula Lomascolo, from the Institute for Space Studies, a physicist and coordinator of talent and society initiatives within the Catalonia Space 2030 Strategy, working to connect space science with education and skills development

Afroditi Riga, Communications Manager at SPOTIN, brings two decades of experience in EU-funded projects, strategic communication, and outreach for innovation in education and geotechnologies

Dr. Evgenia Agapi Vavouraki, Principal of Ellinogermaniki Agogi Primary School, whose work bridges educational research and practice, with a strong focus on integrating innovation, technology, and inquiry-based learning into everyday school life.

Alexandros Pantazis from Ellinogermaniki Agogi presented experiences related to curriculum development and teacher training coordination within EU-funded projects, with a particular focus on urban environmental challenges and geospatial analysis. He stressed that the “implementation gap” in GEO-education is not primarily a teacher problem but a system design challenge. He argued that training only becomes effective when it is iterative rather than one-off, embedded in teachers’ real classroom contexts, and visibly supported by school leadership. He also emphasized the need to move beyond participation metrics and instead evaluate long-term impact through teacher practice, classroom implementation, and student learning outcomes. From a pedagogical perspective, he underlined that inquiry-based and place-based approaches, where students investigate their local environment using geospatial tools, are among the most effective. He also highlighted the importance of modular, curriculum-tagged resources rather than static or monolithic training materials. Paula Lomascolo from the Institute for Space Studies and the Catalonia Space 2030 Strategy addressed the challenge of the “implementation gap” in GEO-education, focusing on how teacher training can

translate into sustained classroom practice. Drawing on the Edusat Challenge experience and its connection to the GEO-Academy platform, she explained that integration of training with real classroom implementation, combined with continuous mentoring and peer support, is essential to bridge the gap between learning and practice. She highlighted key enabling factors such as iterative and scaffolded professional development, access to adaptable and curriculum-aligned resources, and the importance of inquiry-based, real-world learning approaches in increasing both feasibility and student engagement. She also emphasized the institutional conditions that influence uptake, including time, curriculum flexibility, and school leadership support. Finally, she reflected on the importance of moving from isolated training initiatives to broader education ecosystems in order to scale impact, strengthen teacher engagement, and ensure long-term sustainability of GEO-education practices.

Evgenia Agapi Vavouraki from Ellinogermaniki Agogi contributed a perspective on school leadership and the integration of geospatial technologies into whole-school educational strategies. She presented the school as a learning organization, where innovation emerges through networked teams rather than individuals. She highlighted how GEO-based projects contribute to nurturing environmentally conscious students by promoting sustainability, fairness, and collective action, while also supporting the development of high-order learning skills such as critical thinking, creativity, collaboration, and self-directed learning. She further emphasized the importance of scientific literacy, experimentation, fieldwork, digital skills, and spatial competencies as core educational outcomes. She also stressed that successful implementation depends on school culture, leadership support, alignment with school objectives, teacher ownership, collaboration, and continuous support mechanisms. Alkyoni Baglatzi and Afroditi Riga from SPOTIN shared insights into innovative learning initiatives and educational competitions promoting

geospatial thinking and interdisciplinary collaboration. Afroditi Riga in particular highlighted the impact of map storytelling on student engagement, noting how such approaches increase students' awareness of their environment and encourage them to critically interpret spatial and environmental change over time. The session concluded with a Q&A discussion focusing on the practical challenges of implementing GEO-Academy methodologies in classrooms, as well as the enabling conditions required for scaling up these practices across education systems. Paula Lomascolo reiterated that the key to scaling GEO-education lies in transforming isolated training into continuous professional ecosystems, while Alexandros Pantazis emphasized that sustainable implementation requires systemic alignment between training design, curriculum structures, and school leadership support. The panel collectively demonstrated that the transition from GEO-Academy training to classroom implementation is both feasible and highly impactful, but strongly dependent on systemic conditions rather than individual teacher effort alone. Across all interventions, a clear consensus emerged: effective GEO-education requires sustained, iterative teacher training embedded in real classroom contexts, supported by flexible curricula, accessible resources, and strong institutional leadership. One-off training sessions were consistently identified as insufficient to generate long-term change. A second key conclusion was the importance of school-level transformation. Schools were presented not only as sites of implementation but as learning organizations where collaboration, shared ownership, and leadership support are essential for embedding innovation. Finally, the panel highlighted the pedagogical power of geospatial approaches, particularly when linked to inquiry-based, place-based, and real-world learning. These approaches were shown to enhance student engagement, foster higher-order thinking skills, and strengthen environmental awareness and civic responsibility. Overall, the discussion reinforced the idea that GEO-education is most effective when it

moves beyond isolated projects or tools and becomes part of a coherent educational ecosystem connecting teacher training, curriculum design, school leadership, and authentic learning experiences.

Figure 8: Panelist of Panel 2

3. TEACHERS' BEST PRACTICE SESSION: Best Practices and Lessons Learned from GEO-Academy Teachers

The afternoon session was dedicated entirely to teacher-led presentations, showcasing a wide range of practical experiences and classroom implementations resulting from GEO-Academy training. This session represented one of the most important dimensions of the conference, as it provided direct evidence of how geospatial education has been adapted, interpreted, and applied in real educational settings across Europe.

All presentations can be found in the Annexes in Annex 3. In addition, a contribution from Isabelle, a French teacher who was unable to attend in

person, was shared with participants. Her presentation is available in video format and can be found in Annex 3.

In total, fourteen teachers contributed to this session, each illustrating a different aspect of GEO-Academy implementation across diverse national and educational contexts.

Philippe Longchamps presented a Grade 9 inquiry-based field study conducted in Sweden, focusing on mapping noise pollution using GEO-Academy tools and the GEOBSERVE platform. In collaboration with Lund University and Vattenhallen Science Center, students collected geolocated noise data and used GIS tools, including ArcGIS Online, to create interpolated maps. The activity combined fieldwork, spatial analysis, and Earth Observation principles, enabling students to formulate hypotheses and propose mitigation strategies while aligning with the Swedish geography curriculum.

Hélio Domingues presented a series of interdisciplinary, student-centred projects implemented in Portugal, focusing on environmental awareness, fire prevention, and sustainable development. His work emphasized the integration of GEO-Academy within broader citizenship education, engaging students in real-world challenges such as wildfire risk, reforestation, and environmental stewardship through collaboration with local authorities and community actors.

Suzanka Murteva shared her experience of hosting a GEO-Academy teacher training event in rural Bulgaria. The session introduced GEOBSERVE and geospatial technologies to over 70 in-service teachers through demonstrations, a guest lecture, and follow-up online modules. She highlighted key lessons learned, including the importance of hands-on activities, ongoing support, and the relevance of local sustainability issues in motivating teacher engagement.

Zhiva Gospodinova presented an initiative combining robotics and basic programming for students, designed to foster interest in STEM through hands-on activities. The workshop engaged students from different age groups in building and programming simple robotic systems, supporting the development of problem-solving skills, creativity, and logical thinking, while introducing them to technological and engineering concepts.

Ana Rola presented work on urban heat island mitigation through a co-creation learning approach based on Nature-Based Solutions. Building on GEO-Academy training, her project adapted geospatial data from the Copernicus ecosystem to the Portuguese context and involved the development of pedagogical materials and workshops. She also highlighted the use of digital storytelling through StoryMaps as a way to connect scientific concepts with local realities and enhance student engagement.

Julia Haidacher introduced a teaching sequence on bark beetle infestation and forest health in Austria. Using web-based maps and interactive tools, students analysed spatial patterns, climate impacts, and economic consequences, linking scientific content with digital and geographical skills while exploring sustainable forest management strategies.

Thomas Flatscher from MS Kematen in Austria presented the “Geodesign” project, in which students created physical and digital representations of landscapes using 3D modelling and fabrication technologies. Through collaboration with a local fabrication lab, students combined laser scanning, 3D printing, and map engraving techniques to explore spatial representation in an innovative and interdisciplinary way.

Charalambos Charalambous from Primary School “Agios Dometios C” in Cyprus showcased an interdisciplinary STEM lesson focused on forest fire prevention. The project combined storytelling, geospatial tools such as Google

Earth, mathematical modelling, and programming through Scratch. Students engaged in problem-solving activities, including drone simulation and spatial analysis, enhancing both environmental awareness and computational thinking.

Eva Axheden from the Nature and Environmental Education Centre in Halmstad, Sweden, presented approaches to outdoor education using the GEOBSERVE platform, highlighting how experiential learning in natural environments can complement classroom teaching. Her work demonstrated how outdoor pedagogy supports the understanding of scientific concepts through direct observation, practical activities, and reflection, while integrating geospatial tools into field-based learning.

Olympia Befa from Ellinogermaniki Agogi in Greece presented projects focused on sustainability, digital tools, and spatial thinking in secondary education, demonstrating how inquiry-based and project-based approaches can connect global challenges with local contexts and foster active citizenship.

Kyriaki Evripidou from Pancyprian Gymnasium in Cyprus contributed additional examples of geospatial learning activities, highlighting the adaptability of GEO-Academy methodologies across different educational settings and student age groups.

Evgenia Agapi Vavouraki from Ellinogermaniki Agogi in Greece presented projects implemented in primary education, focusing on the development of students' green, digital, and spatial skills. Through activities such as biodiversity exploration, migration mapping, and school-based environmental investigations, students engaged with real-world data, developed scientific literacy, and strengthened their environmental awareness and sense of responsibility.

Isabelle Lovrelio from the Académie de Nice in France presented, through a video contribution, a project exploring the journey of words through time and space, illustrating interdisciplinary connections between language, geography, culture, and spatial thinking.

Yana Tancheva from Bulgaria presented a STEM lesson demonstrating the integration of innovative teaching approaches and practical activities aimed at strengthening students' scientific and digital competences.

Julia Rosmarie Haidacher from Praxismittelschule in Austria introduced a teaching sequence on bark beetle infestation and forest health. Using web-based maps and interactive tools, students analysed spatial patterns, climate impacts, and economic consequences, linking scientific content with digital and geographical skills while exploring sustainable forest management strategies.

Ana Rola from Escola Dr. Joaquim Carvalho in Portugal presented work on urban heat island mitigation through a co-creation learning approach based on Nature-Based Solutions. Building on GEO-Academy training, her project adapted geospatial data from the Copernicus ecosystem to the Portuguese context and involved the development of pedagogical materials and workshops. She also highlighted the use of digital storytelling through StoryMaps as a way to connect scientific concepts with local realities and enhance student engagement.

Philippe Longchamps from BMSL Bilingual Montessori School of Lund in Sweden presented a Grade 9 inquiry-based field study focusing on mapping noise pollution using GEO-Academy tools and the GEOBSERVE platform. In collaboration with Lund University and Vattenhallen Science Center, students collected geolocated noise data and used GIS tools, including ArcGIS Online, to create interpolated maps.

Zhiva Gospodinova from 54 SU “St. Ivan Rilski” in Bulgaria presented an initiative combining robotics and basic programming for students, designed to foster interest in STEM through hands-on activities and collaborative learning.

Suzanka Murteva from SU “Methodius Draginov” in Bulgaria shared her experience of hosting a GEO-Academy teacher training event in a rural context, introducing over 70 in-service teachers to GEOBSERVE and geospatial technologies through practical demonstrations and follow-up online modules.

Hélio Domingues from Agrupamento de Escolas de Canas de Senhorim in Portugal presented a series of interdisciplinary and student-centered projects focused on environmental awareness, wildfire prevention, and sustainable development, implemented through collaboration with local authorities and community actors.

Overall, this session demonstrated the strong impact of GEO-Academy at classroom level, confirming that geospatial education is not only a theoretical innovation but a practical and scalable approach to enhancing teaching and learning. It also reinforced the importance of teacher networks, peer learning, and knowledge exchange as key drivers for the sustainability of educational innovation.

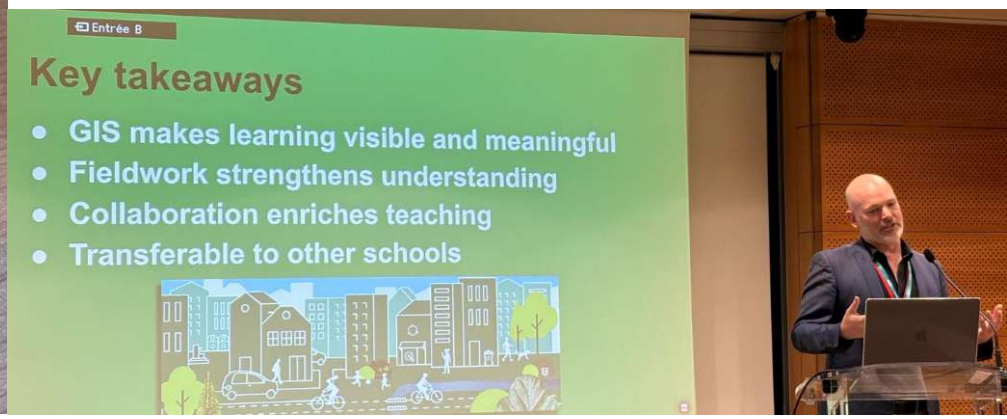


Figure 9: Teachers presenting their work

4. CONCLUDING REMARKS ON DAY TWO

The second day of the GEO-Academy conference confirmed the essential role of teachers as central actors in the transformation of education through geospatial technologies. It demonstrated that the impact of GEO-Academy extends far beyond training sessions, reaching classrooms, students and local communities across Europe.

By bringing together panels on competencies, sessions on pedagogical transformation and extensive teacher-led best practice exchanges, the day illustrated a complete ecosystem of educational innovation. It highlighted how GEO-Academy has successfully bridged the gap between policy ambitions and classroom realities, ensuring that geospatial education becomes an active and sustainable component of modern teaching practices.

III- Day three roundtables

The third day of the GEO-Academy conference was dedicated to an internal working session involving project partners and participating teachers. Unlike the previous days, this session was not open to the public and focused on reflection, evaluation, and future perspectives of the project.

The day began with a series of roundtable discussions designed to facilitate in-depth exchanges between participants. The discussions were structured around the following themes: teacher training and professional development; curriculum integration and institutional support; sustainability and post-project collaboration; challenges and success factors in integrating geospatial approaches into curricula; and overall feedback on the GEO-Academy experience.

These discussions provided valuable insights into the practical realities of implementing GEO-Academy methodologies and highlighted several key lessons learned.

A central issue raised across all groups was the lack of time available for teachers, both for training and for integrating new approaches into their teaching practice. This constraint was closely linked to the broader issue of limited resources, particularly in public education systems where flexibility and access to tools are often more restricted compared to private institutions.

Participants also noted that while the GEOBSERVE platform is rich and comprehensive, it can appear dense and difficult to navigate, especially for beginners. In this context, more targeted and simplified entry points were recommended, such as short introductory videos (3–5 key modules) covering essential concepts like cartography, GIS, and geospatial thinking, designed for teachers with little or no prior experience.

There was strong agreement that practical, ready-to-use activities were among the most valuable components of the training. These concrete examples helped teachers better understand how to apply geospatial tools in their classrooms. The Map Storytelling activity was highlighted as particularly effective, especially because it can be easily linked to existing curricula.

Participants emphasized the importance of aligning content more closely with national curricula, while also suggesting the potential use of AI to further tailor materials to different country-specific educational contexts. At the same time, several participants stressed that the focus should not only be on producing more materials, but rather on developing teachers' skills and confidence in using existing tools.

The discussions also highlighted the need for continuous support mechanisms, rather than one-off training sessions. Suggestions included regular online meetings (e.g. monthly sessions), the creation of mentoring systems at local level, and stronger use of collaborative platforms such as LinkedIn to build an active teacher community.

The importance of peer exchange and networking was repeatedly underlined. Participants noted that face-to-face interaction plays a key role in building trust and collaboration, and suggested organizing dedicated events where teachers can meet, share experiences, and learn from each other. In this regard, the GEO-Hubs concept was seen as particularly valuable, although underutilized, and should be further developed.

In terms of incentives, participants pointed out that in some countries, such as Portugal, teachers receive professional recognition or career benefits for participating in such activities. Expanding similar incentive systems across other countries could significantly increase teacher engagement.

Finally, the discussions highlighted the need to strengthen links with policy-makers and institutional actors, ensuring that GEO-education is better embedded within national education systems. This includes developing more case studies, offering differentiated training pathways for teachers at different levels, and encouraging experienced educators to become trainers and multipliers within their own networks.

The third day provided a critical space for reflection on the implementation and future of GEO-Academy. It confirmed that while the project has successfully developed high-quality tools and training resources, its long-term impact depends on addressing structural challenges such as time constraints, curriculum alignment, and sustained teacher support. Additional reflections from the roundtable discussions highlighted both the strengths and challenges of GEO-Academy teacher training activities across different national contexts. Participants agreed that the trainings were highly valuable and engaging, although often very intensive. Several teachers noted that after full-day sessions, it could be difficult to transfer knowledge effectively to colleagues within their schools.

Differences between countries were also discussed. In Portugal, accredited professional development systems support teacher participation in training activities, whereas in Cyprus participants noted that teachers are often reluctant to attend training during their personal free time. This reinforced the importance of institutional recognition and dedicated time for continuous professional development.

Participants emphasized the importance of e-learning modules as a sustainable future approach, while also noting that teachers often lack sufficient time to complete full training pathways. In practice, many educators tend to implement selected GEO-Academy activities rather than entire courses.

The discussions also highlighted the need for stronger curriculum alignment and country-specific adaptation of materials. Portuguese participants identified strong links with Mathematics, Physics, Biology, and Geology, while Cypriot participants emphasized Geography, Sustainability Education, and VET contexts. Successful interdisciplinary examples were also shared, including the integration of storytelling activities into environmental sciences and linguistics.

Finally, participants stressed the importance of modular and flexible approaches, suggesting that GEO-Academy should increasingly function as a "menu of activities" that teachers can adapt to their curricular needs, institutional contexts, and available time.

The discussions clearly showed that the future of GEO-education lies not only in developing new content, but in building strong teacher communities, providing continuous support, and creating enabling institutional conditions. Strengthening collaboration between educators, partners, and policy-makers will be essential to ensure that GEO-Academy continues to grow as a scalable and sustainable educational ecosystem across Europe.

IV- Conclusion

The GEO-Academy conference demonstrated the strong coherence and maturity of a European educational ecosystem that is progressively integrating geospatial technologies into teaching and learning practices. Across the three days, the discussions moved from strategic reflections on competencies, to concrete classroom implementation, and finally to system-level evaluation and future sustainability.

Day 1 established the conceptual foundations of GEO-education, highlighting the evolving role of educators in a context shaped by digital transformation, climate urgency, and the need for spatial literacy. The panel discussions emphasized that geospatial education is not simply about tools, but about developing critical, responsible, and spatially aware citizens. A recurring message was that teachers are central actors in this transformation and require sustained support, training, and institutional recognition.

Day 2 translated these ideas into practice, showcasing a wide range of teacher-led experiences from across Europe. The best practice sessions confirmed that GEO-Academy methodologies are not only feasible but highly

impactful when implemented in classrooms. Teachers demonstrated how geospatial tools, Earth Observation data, and inquiry-based learning can significantly enhance student engagement, environmental awareness, and interdisciplinary learning. The session also reinforced the importance of teacher networks, peer learning, and collaborative exchange as key drivers of innovation.

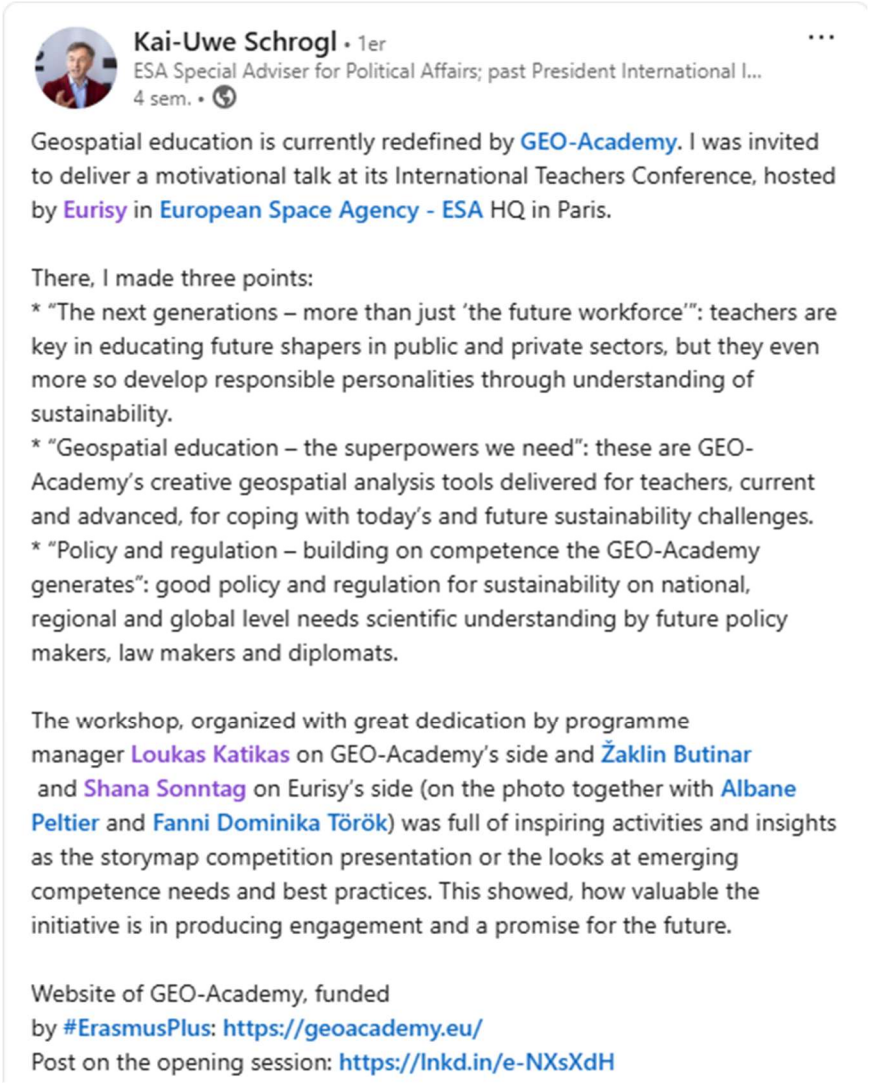
Day 3 provided a critical space for reflection among partners and educators, focusing on implementation challenges and long-term sustainability. Key issues identified included time constraints, limited resources, the complexity of some digital platforms, and the need for more accessible, structured, and curriculum-aligned materials. Participants highlighted the importance of continuous support mechanisms, mentoring systems, and stronger community-building efforts, including GEO-Hubs, monthly exchanges, and peer networks. The discussions also emphasized the need to better align GEO-education with national education systems and policy frameworks, while creating pathways for teachers to become trainers and multipliers.

Across all three days, a strong consensus emerged: the success of GEO-education depends less on the availability of tools and more on systemic conditions, teacher empowerment, and sustained collaboration across institutions**.**

V- Outreach and Impact Beyond the Conference

Beyond the formal program, the conference also demonstrated significant outreach impact. The event generated increased visibility for GEO-Academy across professional and educational networks, resulting in a notable rise in online engagement and new followers on project-related channels. On Linkedin, GEO-Academy gained 52 subscribers during the Conference. The reaction for these posts was between 191 and 900 for the conference and ranged from 20 likes to 45 likes.

On Linkedin the Conference was reposted 13 times by keynote speakers, participants and panelists, who wrote posts about their participation and the quality of the Conference.



Kai-Uwe Schrogl • 1er
ESA Special Adviser for Political Affairs; past President International I...
4 sem. •

Geospatial education is currently redefined by GEO-Academy. I was invited to deliver a motivational talk at its International Teachers Conference, hosted by Eurisy in European Space Agency - ESA HQ in Paris.

There, I made three points:
* "The next generations – more than just 'the future workforce'": teachers are key in educating future shapers in public and private sectors, but they even more so develop responsible personalities through understanding of sustainability.
* "Geospatial education – the superpowers we need": these are GEO-Academy's creative geospatial analysis tools delivered for teachers, current and advanced, for coping with today's and future sustainability challenges.
* "Policy and regulation – building on competence the GEO-Academy generates": good policy and regulation for sustainability on national, regional and global level needs scientific understanding by future policy makers, law makers and diplomats.

The workshop, organized with great dedication by programme manager Loukas Katikas on GEO-Academy's side and Žaklin Butinar and Shana Sonntag on Eurisy's side (on the photo together with Albane Peltier and Fanni Dominika Török) was full of inspiring activities and insights as the storymap competition presentation or the looks at emerging competence needs and best practices. This showed, how valuable the initiative is in producing engagement and a promise for the future.

Website of GEO-Academy, funded by #ErasmusPlus: https://geoacademy.eu/
Post on the opening session: https://lnkd.in/e-NXsXdH

Figure 10: Dr. Kai-Uwe Schrogl posting about the conference

Communication activities played an important role throughout the conference. All panelists actively contributed to dissemination efforts by sharing posts on LinkedIn, amplifying key messages and extending the reach of the discussions well beyond the physical event. This collective visibility

helped strengthen the project's presence within the broader geospatial, educational, and space education communities.

The conference also reinforced GEO-Academy's position as a growing European reference point for geospatial education innovation, fostering new connections between teachers, researchers, institutions, and policy stakeholders. This increased visibility and engagement underline the importance of combining pedagogical innovation with strong communication strategies to ensure long-term impact and sustainability.

Overall, the GEO-Academy conference confirmed that geospatial education is evolving into a dynamic, collaborative, and scalable European ecosystem. Its future success will depend on continuing to strengthen teacher communities, improving accessibility of tools and resources, and maintaining strong connections between education, research, industry, and policy at both national and European levels.

VI- Annexes:

Annex 1: Map Storytelling Competition videos

Annex 2: Teachers Posters

Annex 3: Teachers Presentations