



Diversity Efforts within Geo-INQUIRE

Fabrice Cotton (GFZ, project coordinator)

Iris Christadler (LMU, WP5 and WP9)

Stefanie Weege (GFZ, project communication officer)



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Outline: Geo-INQUIRE diversity framework

- Equality, Diversity and Inclusion Panel (EDIP) planed in the proposal
- Recommendations from the EDIP
- Validation of EDIP recommendations by the first general assembly
- Implementation and monitoring
- Sharing our experience and practices with others
- Struggles and challenges



EDIP - Equality, Diversity and Inclusion Panel

Formed at project start to “assesses equality, diversity, and inclusiveness in the project. It identifies best practices and meets at least twice a year to enhance project inclusivity.”

EDIP suggestions formulated at project start:

- Participation target (40% women, 35% widening countries)
- Website communication (inclusive verbal and visual communication)
- Question and Answer sessions before application deadline of Transnational Access (TA) Call and Personalized Training Call
- Family friendly meetings & training (on-site childcare, short on-site meetings)
- Meetings between 9 am – 15 pm, during child care hours
- Rotating EDIP member join Transnational Activity Review Panel (TARP)
- Controls and support the evaluation of TA and Personalized Training



Laura Sandri (Researcher, INGV), Fatemeh Jalayer (Professor, UCL), Annett Hüttges (HR, University of Lübeck), Elisabeth Köhler (senior science policy officer, CNRS), Fabrice Cotton (Geo-INQUIRE coordinator, GFZ)

Validation of participation targets by the first general assembly

40% women

35% widening countries

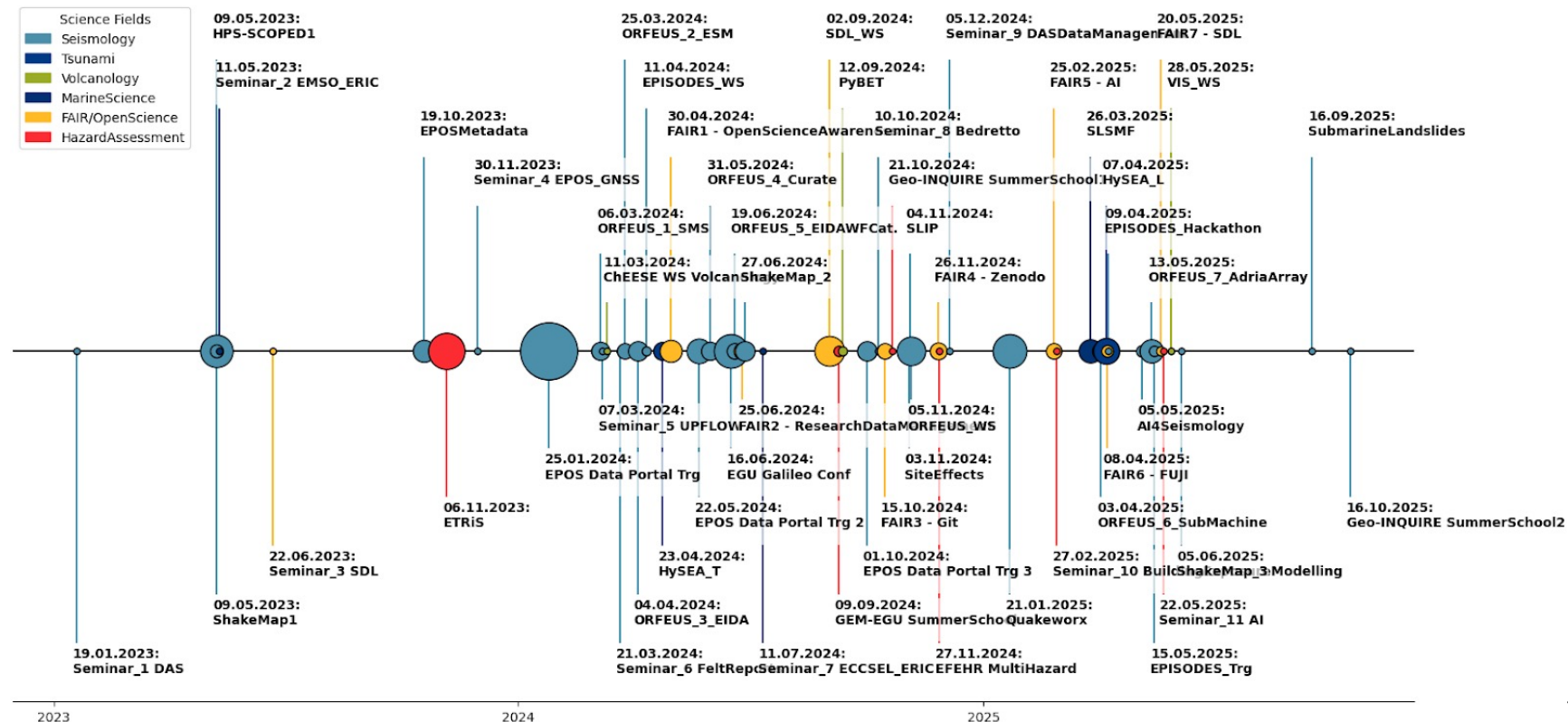
Widening Countries are Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. Associated countries (eligible to coordinate widening projects) include Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Kosovo, Moldova, Montenegro, Morocco, North Macedonia, Serbia, Tunisia, Türkiye and Ukraine. Outermost regions include La Réunion, Mayotte, Canarias, Azores, Madeira, Saint-Martin, Guadeloupe, Martinique and Guyana.



Networking and training

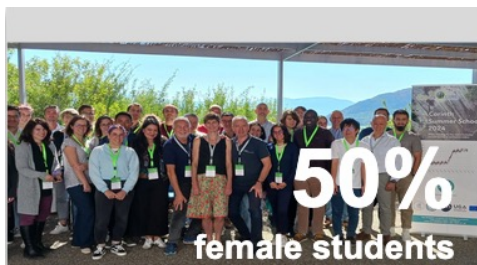
50+ events, 2500+ participants, from 85+ countries

Geo-INQUIRE Dissemination Events

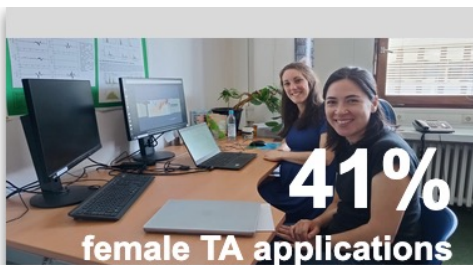


Implementation and monitoring

- Hybrid meetings for colleagues with care-taking duties (childcare, eldercare); disadvantage: less young parents and female colleagues on-site (missing networking)
- Application templates included a request field for additional needs (child care, mobility, Visa).
- All annual meetings were fully accessible for people with mobility issues.



Geo-INQUIRE summer school
held in Oct 2024 in Greece.
(Photo: IGF PAS)



First Transnational Access visit:
In June 2024, Zoe Yin visited Dr.
Mathilde Marchandon to work with
SeisSol on SuperMUC-NG
(Photo: LMU)



**Geo-INQUIRE-Workshop on
Simulation Data Lakes and
Earthquake Ground Motions**
Recordings and material available
on the Geo-INQUIRE website
(Photo: GFZ)

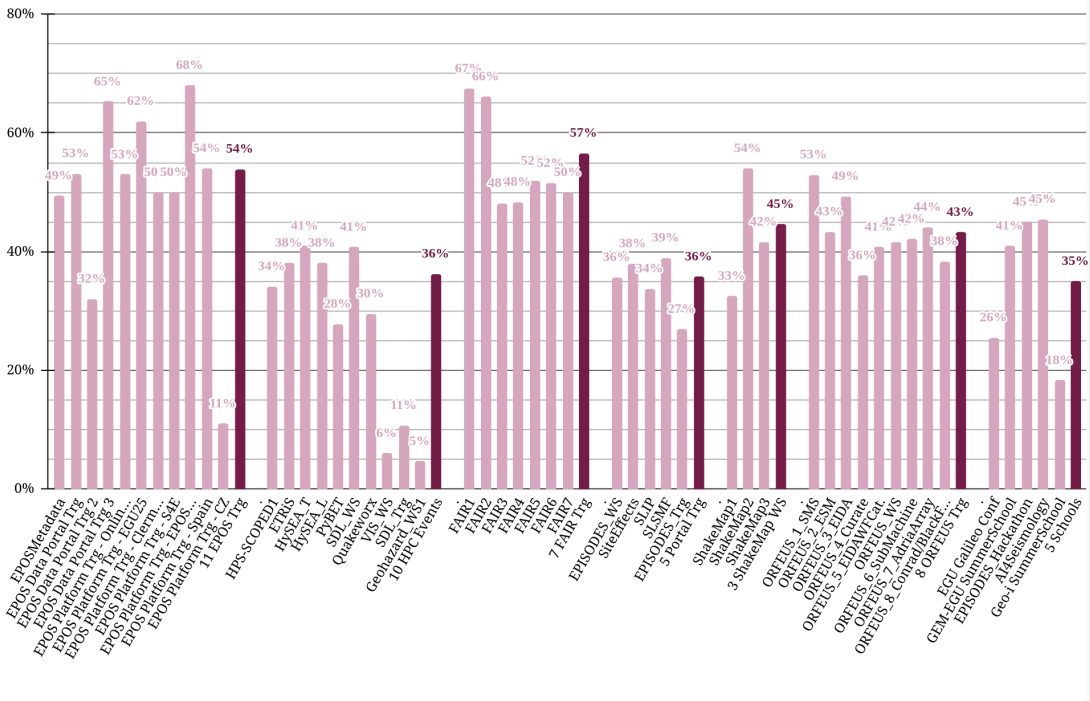
Implementation and monitoring

Geo-INQUIRE Gender Balance Achieved

Geo-INQUIRE Gender Balance

including events up to October 2025

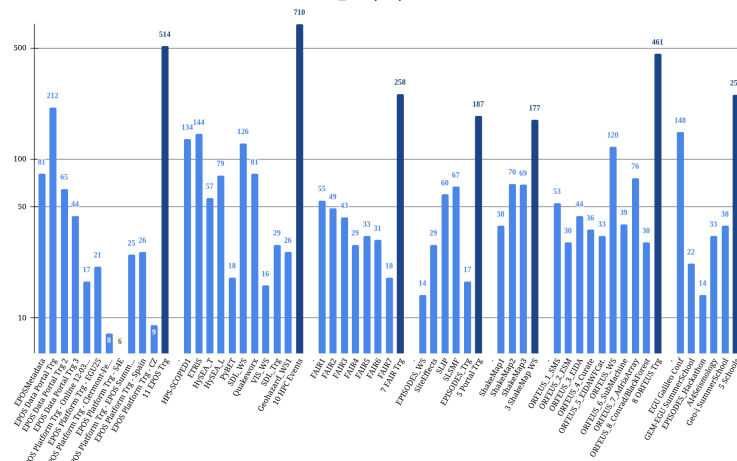
■ Percentage of female registrations



Geo-INQUIRE Training Events

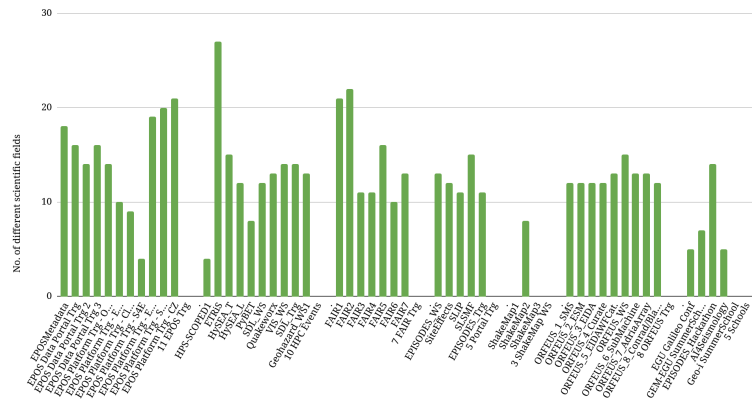
including data up to October 2025

No. of participants:



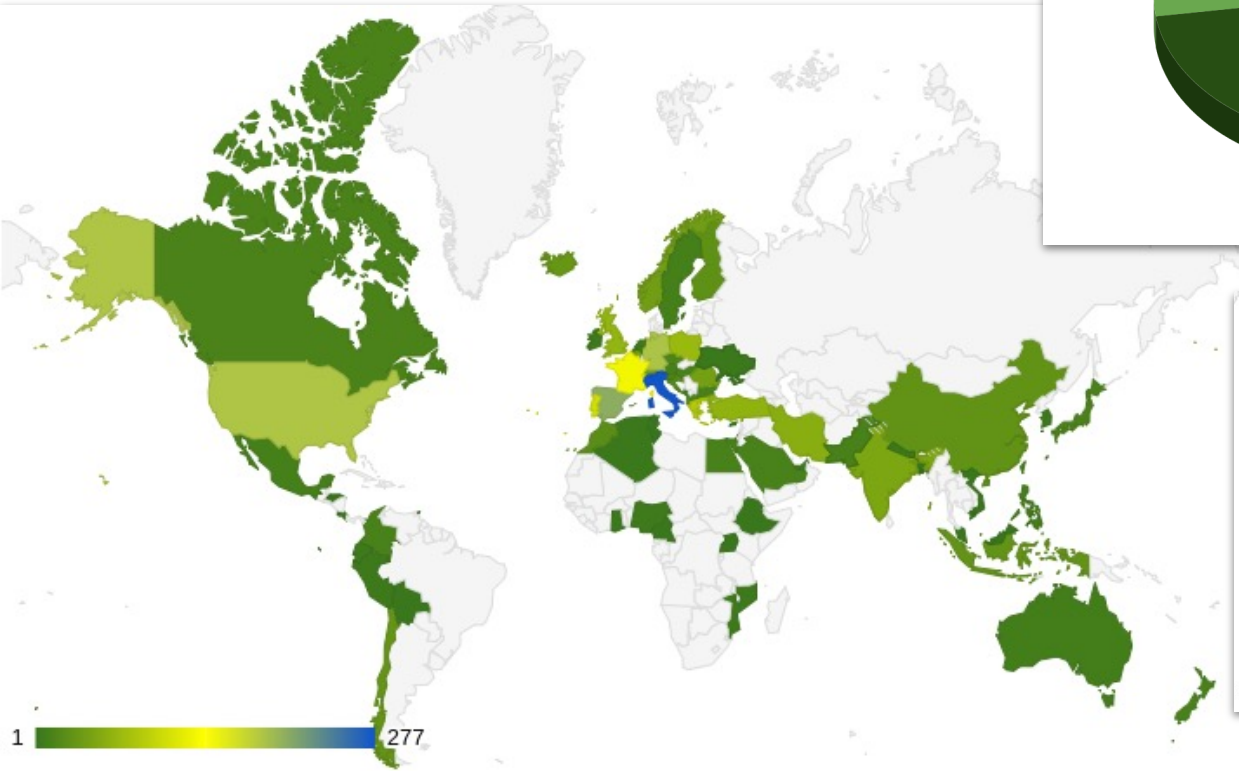
Cross-Disciplinarity of Geo-INQUIRE Events

including events up to October 2025



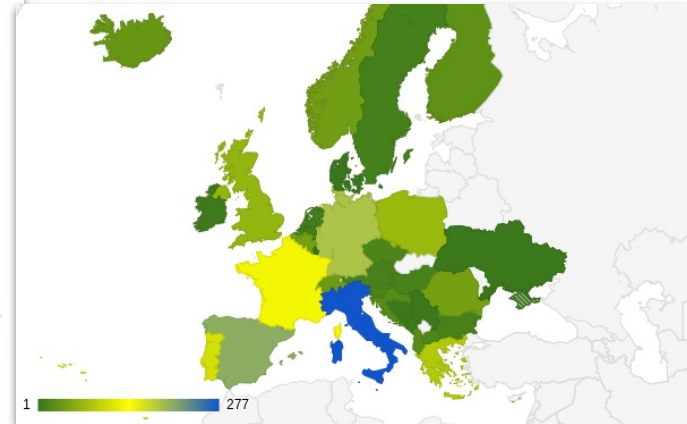
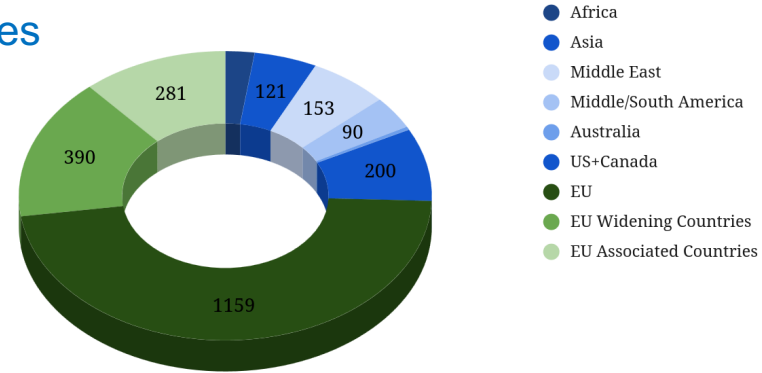
Implementation and monitoring

World-wide coverage and Widening/Associated Countries



Registrations for Geo-INQUIRE Events

Until October 2025, for the 34 events for which detailed information is available



The importance of role models

Leading scientists presenting their work in Geo-INQUIRE seminars



Anne Socquet

Laura Ermert



Diane Rivet



Alice Gabriel



Carine Bruyninx



Helle Pedersen



Mathilde Cannat

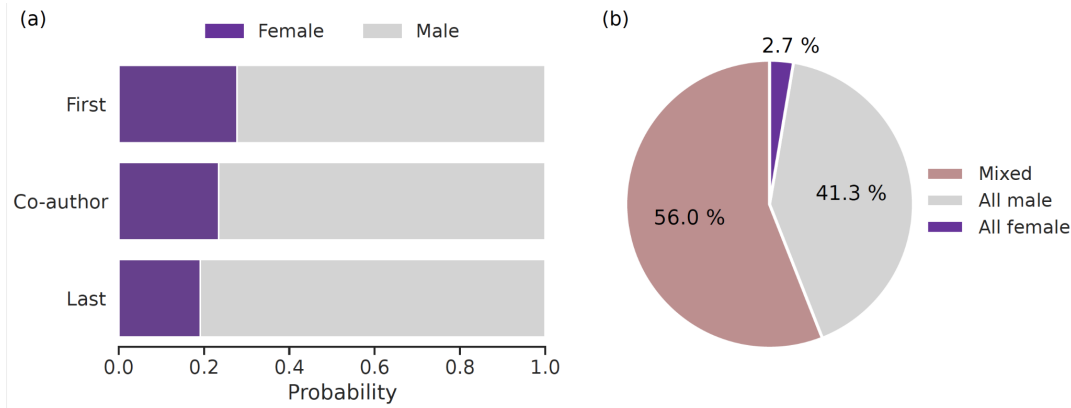


Ana Ferreira



Increasing awareness and identifying challenges

Keynote: Laura Ermerter “Gender differences in authorship in seismology”
on 19 November 2024



Gender distribution in the authorship list of peer-reviewed publications in seismology. **(a)** The probability of having a female- or male-gendered first-author, co-author, and last-author name in a publication. **(b)** Percentage of publications with an authorship list with all-female, all-male, or mixed-gender author names.

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<https://doi.org/10.5194/se-14-485-2023>
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Quantifying gender gaps in seismology authorship

Laura Anna Ermerter¹★, Maria Koroni¹★, and Naiara Korta Martiartu²★

¹Swiss Seismological Service, ETH Zürich, Zürich, Switzerland

²Institute for Applied Physics, University of Bern, Bern, Switzerland

★These authors contributed equally to this work.

Correspondence: Laura Anna Ermerter (laura.ermert@sed.ethz.ch), Maria Koroni (maria.koroni@sed.ethz.ch), and Naiara Korta Martiartu (naiara.korta@unibe.ch)

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Abstract. According to 2018 demographic data of the American Geophysical Union Fall Meeting, seismology is among the geoscience fields with the lowest representation of women. To understand whether this reflects seismology more generally, we investigate women’s authorship of peer-reviewed publications, a key factor in career advancement. Building upon open-source tools for web-scraping, we create a database of bibliographic information for seismological articles published in 14 international journals from 2010 to

1 Introduction

In seismology, as in many fields of research, peer-reviewed articles are one of the most important ways to disseminate new scientific findings. They are also increasingly used as a metric of the performance and productivity of individual researchers and constitute a critical factor of career advancement, along with citation scores and the impact factor of journals.



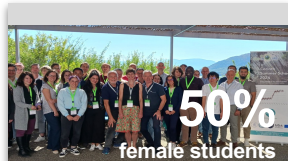
Sharing our experience with others

Geo-INQUIRE Poster at ISC'25

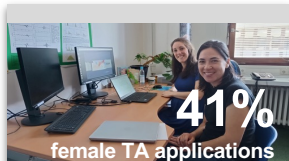
International Supercomputing Conference

We could show that the percentage of females attending HPC training events within Geo-INQUIRE doubles the numbers for female International Supercomputing Conference visitors.

There was specific interest in the measures taken by Geo-INQUIRE to increase the percentage of female attendees.



Geo-INQUIRE summer school
held in Oct 2024 in Greece.
(Photo: IGF PAS)



First Transnational Access visit:
In June 2024, Zoe Yin visited Dr. Mathilde Marchand to work with SeisSol on SuperMUC-NG
(Photo: LMU)



Geo-INQUIRE-Workshop on Simulation Data Lakes and Earthquake Ground Motions
Recordings and material available on the Geo-INQUIRE website
(Photo: GFZ)

Increasing female attendance and the Geo-INQUIRE training program

Iris Christadler¹, Alice-Agnes Gabriel^{1,2}, Mariusz Majdański³, Stefanie Weege⁴

¹Dept. of Earth and Environmental Sciences, Ludwig-Maximilians-Universität, Munich, Germany
²Scripta Institution of Oceanography, IGPP UC San Diego, United States of America
³Institute of Geophysics, Polish Academy of Sciences, Warsaw, Poland
⁴GFZ Helmholtz Centre for Geosciences, Potsdam, Germany



What is Geo-INQUIRE?

Fabrice Gervais (GFZ, project coordinator)

"Since 2022, researchers from 51 European institutions have been collaborating on Geo-INQUIRE, a multidisciplinary Horizon Europe project. This initiative aims to enhance, provide access to, and integrate key datasets, big data streams, and High-Performance Computing (HPC) tools critical for studying temporal variations in the Solid Earth, forecasting multi-hazards and analyzing interactions between the solid Earth and its surrounding environments, including the ocean and atmosphere. Geo-INQUIRE seeks to overcome cross-domain barriers, by leveraging cutting-edge data management techniques, advanced modeling and simulation methods, developments in AI and big data, and the extension of existing data infrastructures."

Gender-balance is important for every project!
Set clear and ambitious goals right from the start

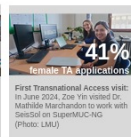
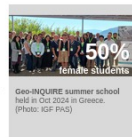
Measures taken:

- Find good role models
- Increase female visibility
- Monitor goals, implement countermeasures if necessary
- Clearly state that female participation is desired
- Vacancies are advertised inclusively
- Provide asynchronous options (recordings, slides, ...)
- Provide diagrams if necessary
- "Female Friendly" Environment
(open discussions, encourage questions, meet regularly)
- "Family Friendly" Environment (expert meetings, holidays, schedule meetings and realistic deadlines early)

Geo-INQUIRE offers

Geo-INQUIRE strives for gender-balance in all its offers:

- **Summer Schools** (50% female attendees), next in Catania (Oct. 2025)
- **Virtual Access** (VA) open to everyone (data products, catalogues, software, workflows, etc.)
- **Transnational Access** (TA) (41%) regular calls to visit hosting sites, receive training through research and HPC computing budget (e.g., working on HPC workflows from CINECA). Targeted at advanced PhD students or Postdocs
- **Training and Workshops** (43%) program to promote and facilitate access to many VAs and TAs. Trainings are usually online and free to attend for everybody. Workshops are on-site with travel as a selection process.
- **Personalized training** (57%) travel funds to work on your own project and receive training from the hosting site (targeted at early career researchers).
- **Recordings and material** from trainings and workshops asynchronously available at www.geo-inquire.eu

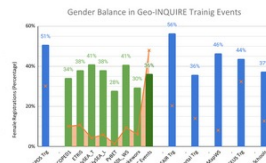


The link between HPC and Geo-INQUIRE

On the "HPC software" side Geo-INQUIRE offers many free codes from Seismology, Volcanology and Tsunami computation as VAs and several CHIEFE workflows through TAs. If a software TA is granted, applicants will also receive a computing budget on European Tier-0 or Tier-1 machines (Leonardo@CINECA, SuperMUC@LRZ or MareNostrum@BSC).

"Big Data" Geo-INQUIRE offers data from mobile phones, GNSS data from satellites and distributed acoustic sensing (DAS) data from fibre optic cables.

Simulation Data Lake (SDL) Stores data from HPC simulation runs but also from TAs. The SDL is part of CINECA infrastructure for Leonardo and allows a tight connection between this Tier-0 machine and simulation data e.g., for analysis and visualization.



Conclusions

Geo-INQUIRE, an interdisciplinary Geosciences project on the boundaries of Earth Science, HPC and Big Data incorporated several measures to increase female participation in all their offers. Data from their training program, which attracted in total more than 2,000 participants (from 65+ countries) for the 20+ training events from October 2022 to May 2025. Shows that, contrary to many expectations, their gender balance goal of striving for 40% female engagement could be reached. Albeit women being underrepresented in both Earth Science and HPC, the participation rate of participants in all Geo-INQUIRE training events is 43%. Two thirds of the successful applicants to personalized training and half of those for the first summer school were women. About 40% of the TA applications and admitted projects are from female PIs. We have shown that the measures taken have been very successful and would like to encourage other HPC projects to follow similar paths and put focus on gender balance and diversity from the start on.

Acknowledgements
I would like to thank my partners in HPC (HPC@CINECA) for their technical support & guidance and Aynsley Alford for running the Women in HPC mentorship program. I gratefully acknowledge support from HPC-EU for providing a travel grant to attend ISC 2025.



Sharing our experience with others

Presentation at EGU 2025 by Elif Türker-Bakır

Lessons learned from Geo-INQUIRE

- 👍 Need a clear, structured plan
- 👍 EDIP input was valuable — provided clear guidance
- 👍 Ensure flexibility (recordings, hybrid events)
- 👍 Promote family-friendly practices (short meetings on site, childcare..)
- 👍 Include Q&A sessions for clarifying questions



Geo-INQUIRE is funded by the European Commission under project number 101058518 within the HORIZON-INFRA-2021-SERV-01 call.



WOMEN IN SCIENCE

GLOBAL PARTICIPATION OF WOMEN IN RESEARCH AND STEM FIELDS

According to the UNESCO Science Report (2021), women represent around 33% of researchers globally. While the overall participation of women in research has increased since the late 1990s (from about 28%), their representation in specific STEM fields, such as engineering and computer sciences, remains significantly lower. For example, women constitute 28% of graduates in engineering and technology. This disparity highlights a slow but steady rise in female participation, with certain regions like Latin America achieving near-parity in some fields, while others lag behind.

GLOBAL PARTICIPATION OF WOMEN IN RESEARCH

Source: UNESCO Science Report 2021
<https://unesco.org/en/digital-library/unESCO-science-report-2021>

PHD GRADUATES IN STEM FIELDS

Over the past decades, the number of women obtaining PhDs in STEM has increased. As of 2020, women represent about 45% of PhD graduates globally across all scientific fields, with some fields like natural sciences approaching 50% gender parity. However, women remain underrepresented in areas like engineering (28%) and computer science (40%).

PH.D. DEGREE ACROSS ALL SCIENTIFIC FIELDS

Source: UNESCO Women in Science Fact Sheet 2020

PH.D. GRADUATES IN TECHNICAL PROFESSIONS

Source: <https://www.bbc.com/news/science-environment-56202004>

- Mary Anning**
A self-taught fossil hunter, discovered the first complete Ichthyosaurus skeleton in 1830 or just prior to year end.
<https://www.britannica.com/biography/Mary-Anning>
- Ada Lovelace**
Is considered the first computer programmer for her work on the Analytical Engine in the 1840s.
<https://www.britannica.com/biography/Ada-Lovelace>
- María Skłodowska-Curie**
Was the first woman to win a Nobel Prize in 1903, and the only person to win it in two sciences (Physics in 1903, Chemistry in 1911).
<https://www.britannica.com/biography/maria-skodowska-curie>
- Lise Meitner**
Co-discovered nuclear fission in 1938, but only her male colleague won the Nobel Prize in 1944.
https://www.wikipedia.org/wiki/Lise_Meitner

REPRESENTATION IN SENIOR ACADEMIC POSITIONS

Despite progress at the PhD level, women's representation in senior academic roles remains low. According to the SHE Figures 2021 report, women hold only 26% of Grade A academic positions (equivalent to full professorships) in STEM disciplines. This figure has improved slowly since the 1990s, but gender disparity persists, particularly in leadership roles. The report highlights that women are more likely to be in junior academic roles than senior ones, with a slow progression towards equality in higher academic ranks.

FULL PROFESSORSHIPS IN STEM DISCIPLINES

Source: European Commission the Figure 2021

- S. Barbara McClintock**
Discovered "Jumping Genes" in maize and won a Nobel Prize in Physiology or Medicine in 1981.
<https://www.britannica.com/biography/Sarah-McClintock>
- E. Maria Goepfert Mayer**
Won the Nobel Prize in Physics in 1947 for proposing the nuclear shell model in 1949.
<https://www.britannica.com/biography/emg-mayer>

LEADERSHIP ROLES IN RESEARCH PROJECTS

Women are significantly underrepresented in leadership roles in research, particularly in STEM-related fields. According to the UNDP 2023 report on Women in STEM, women represent only about 12% of principal investigators in major international research projects. Furthermore, their participation in leadership roles in tech-driven fields like artificial intelligence is even lower, with women constituting only 22% of AI professionals.

PRINCIPAL INVESTIGATORS IN INTERNATIONAL RESEARCH PROJECTS

Source: UNDP Report on Women in STEM 2023

HEADS OF HIGHER EDUCATIONAL INSTITUTIONS

Source: <https://www.unesco.org/en/digital-library/unESCO-science-report-2021>

WOMEN IN SCIENCE ARCHIVE
www.wisarchiv.com

SELF-REFLECTION QUESTIONS TO ASK YOURSELF

- What challenges have you faced as a woman starting out in STEM?
- Do you feel supported by your peers and mentors in your current role?
- Have you had any mentors or role models who helped shape your path?

II FEBRUARY
THE INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE

This initiative by the United Nations promotes gender equality in science through global collaborations, events, and educational activities to inspire young women in STEM fields.

The poster was created as part of the G-INQUIRE project, which is funded by the European Commission under project number 10105656 with the MCGRON INFRA-2021-0019-V-01.

G-INQUIRE



Developing good practices

Leaflet “Good Practices to Support Women in Science”

As a result of the survey, IGF PAS (Dagmara Bożek and Sylwia Klaudia Dytłow) prepared a leaflet

GOOD PRACTICES TO SUPPORT WOMEN IN SCIENCE

01 PROMOTE WORK-LIFE BALANCE

- Introduce flexible working hours and remote work options.
- Ensure availability of parental leave for all genders.
- Provide institutional support for caregivers (e.g. on-site childcare, family-friendly policies).

02 ADDRESS GENDER BIAS AND DISCRIMINATION

- Conduct regular training on unconscious bias and gender awareness.
- Establish clear, confidential mechanisms for reporting discrimination and harassment.
- Monitor gender equity in recruitment, promotion, and leadership decisions.

03 ENSURE EQUAL ACCESS TO OPPORTUNITIES

- Guarantee fair access to funding, scholarships, and research grants.
- Promote transparency in hiring and promotion criteria.
- Support gender-neutral evaluation procedures for applications.



04 SUPPORT CAREER DEVELOPMENT

- Provide mentorship programs, especially for early-career female scientists.
- Organize networking events targeted at underrepresented groups.
- Create and promote leadership training tailored to women in science.

05 INCREASE VISIBILITY AND REPRESENTATION

- Highlight female role models in science through talks, media campaigns, and publications.
- Ensure gender-balanced speaker line-ups at conferences and workshops.
- Involve women in decision-making bodies and scientific committees.

06 ENGAGE POLICYMAKERS AND INSTITUTIONS

- Advocate for national and institutional policies promoting gender equality in STEM.
- Encourage funding agencies to consider gender diversity in grant evaluations.
- Support institutional audits and gender action plans.

07 FOSTER INCLUSIVE SCIENTIFIC CULTURE

- Promote open dialogue about challenges women face in STEM.
- Recognize and value diverse career paths and personal experiences.
- Ensure inclusive language and respectful communication in scientific environments.

08 MONITOR PROGRESS

- Collect and analyze gender-disaggregated data in academic institutions.
- Regularly assess the effectiveness of gender equality initiatives.
- Adapt and refine strategies based on feedback from the community.



The leaflet was created as part of the Geo-INQUIRE project, which is funded by the European Commission under project number 101056538 within the HORIZON-INFRA-2021-SERV-01 call.

Geo-INQUIRE



LISTEN TO THE #SHORTS STORIES OF PHD STUDENTS!



Helena Ciechowska
Department of
Seismology, IG PAS



Nicole Handermann
Department of
Hydrology and
Hydrodynamics, IG PAS



Struggles and Challenges

General struggles:

- Maternity leave and “Eltern-Kind-Kur” (parent child cure) not covered by EU projects
- No regular framework to extend contracts after parental leaves after the end of projects
- When existing, high complexity of travel refund for children and child care person (e.g. GFZ)

Struggles within the project:

- deadlines were often moved requiring attention, input and meetings on short notice (very difficult to align with child care duties)
- wherever “big money” (Workshops, TARP) or “important decisions” (PMB) were involved we see less females in charge



Conclusions

Key efforts

- Female role models for seminars, training, etc.
- Offering child care for selected on-site events
- Admit 50% female for summer schools & workshops (if possible)
- Advertising Transnational Access, Personalized Training, Summer Schools through online Q&A events
- Monitoring !

Key results

- 40+% participants in Training and Workshops are females
- 50% females approved for summer school
- Over 50% female applications for personalized training
- Results recognized by the mid-term evaluation (June 2025)

More Information: <https://www.geo-inquire.eu/about/equality-diversity-and-inclusion>



Looking to the future

- White paper on the lessons learned from Geo-INQUIRE ?
- Monitor/discuss other components of diversity (e.g. cross-disciplinarity, international mobility)
- Funding agencies and evaluators are actually asking us to increase/demonstrate the impact of our work (scientific impact and impact on society and industry)
- Diversity is important because diverse teams perform better and have a greater impact



Thank you for your attention!

Geo-INQUIRE is a joint effort of 51 institutions



Geo-INQUIRE is funded by the European Commission under project number 101058518 within the HORIZON-INFRA-2021-SERV-01 call.

