journal of Geoethics and social Geosciences

Journal of Geoethics and Social Geosciences, 03, Special Issue, 2025; doi:10.13127/jgsg-88

Women in Quaternary sciences in Italy

*Ilaria Mazzini**

Consiglio Nazionale delle Ricerche, Istituto di Geologia Ambientale e Geoingegneria, Montelibretti, Italy

Article history: received July 23, 2025; accepted September 19, 2025; published September 29, 2025

Abstract

The Quaternary period, covering the most recent 2.6 million years of Earth's history, provides crucial insights into climatic variability, landscape evolution, and the development of human societies. In Italy, with its diverse geological and archaeological heritage, Quaternary research has long thrived at the intersection of geology, paleontology, archaeology, and environmental sciences. Traditionally male-oriented, Quaternary research in Italy has undergone a significant transformation in recent decades, with women researchers playing an increasingly prominent and influential role.

This article examines the evolving role of women within the Italian Association for Quaternary Research (AIQUA), exploring their contributions to scientific advancement and leadership. Drawing on historical data and a dedicated survey among AIQUA members, it analyzes gender dynamics, professional trajectories, and institutional representation. The results reveal both progress and persistent disparities, particularly in positions of visibility and authority, highlighting the ongoing need for structural reform and cultural change. The profiles of pioneering scientists such as Maria Bianca Cita and Maria Follieri illustrate the foundational role of women in shaping the discipline and serve as enduring sources of inspiration. Ultimately, the article advocates for sustained efforts in mentorship, inclusive governance, and increased visibility to promote a more equitable future for Quaternary research in Italy.

Keywords: Gender equity, Quaternary Sciences, Women in science, AIQUA.

1. Introduction

Quaternary Sciences in Italy boast a rich and dynamic tradition, characterized by extensive interdisciplinary collaboration. The term "Quaternary" was first introduced by Italian naturalist Giovanni Arduino in 1760, when he proposed a geological time classification that identified the "*Quaternario*" as the most recent era (Orombelli et al., 2023). By nature, the field is multidisciplinary, as it investigates a temporal interval rather than a specific thematic area, encompassing research on climate variability, tectonic processes, sea-level fluctuations, and interactions between humans and their environment. A key institutional development occurred with the establishment of the Associazione Italiana per lo Studio del Quaternario (AIQUA), founded in Bologna on June 2, 1978, to bring together scholars from various disciplines with a common interest in the Quaternary period. The founding members were Augusto Azzaroli, Mario Ciabatti, Giuseppe Orombelli, Franco Petrucci, Raimondo Selli, and Danilo Torre. Selli served as pro tempore president until the first general assembly on February 13, 1979, when Pierluigi Ambrosetti was elected president (Table 1). Over the decades, Italian researchers have made substantial contributions to both national and international knowledge of Quaternary dynamics, with AIQUA playing a central role through conferences, field activities, and educational initiatives, aimed at fostering scientific exchange and training future generations of Quaternary researchers. Core disciplines include geochronology, paleoclimatology, geomorphology, paleoecology, paleontology, soil science, glaciology, oceanography, archaeology, and anthropology, each contributing to the study of Earth's shifting climate, landscapes, and ecosystems, as well as the emergence and evolution of modern humans. Within this context, the present article explores the evolving role of women in AIQUA and the broader Quaternary research community in Italy, highlighting both their scientific contributions and the gendered challenges that persist in shaping institutional participation and leadership.

2. The role of women in Quaternary sciences in Italy

In recent decades, Italy has witnessed an increasing and impactful presence of women in the field of Quaternary Sciences. Female researchers in this field have made significant contributions, particularly in the analysis of glacial deposits, pollen sequences, fluvial and marine sediments, and the interpretation of climatic changes that have shaped landscapes and human societies throughout the Quaternary period. Within the AIQUA, women's participation has evolved markedly over the past several decades. Although the number of female students in STEM disciplines, did

not increase between 2013 and 2022 (37%), the percentage of female associate and full professors has definitively increased (31% and 17% in 2013 and 38% and 23% in 2022 respectively) (Morana and Sagramora, 2024). In 1979, women in AIQUA made up just 6% of the members. By 2025, this proportion had increased to 39%, reflecting broader societal shifts and a growing commitment to inclusion within the association (Figure 1). The growth in women's involvement is particularly notable in certain organizational roles. For example, the position of secretary, which is typically filled by appointment rather than election, has achieved near parity, with women holding 41% of these roles. This could suggest that appointed positions may offer more opportunities for promoting intentional diversity within the organization (Figure 1, Table 1). Nevertheless, gender disparities persist, especially in elected leadership roles, as it happens in the academic environment in Italy (Cannito et al., 2023). Of the 18 individuals who have served as AIQUA chairpersons, only four have been women.

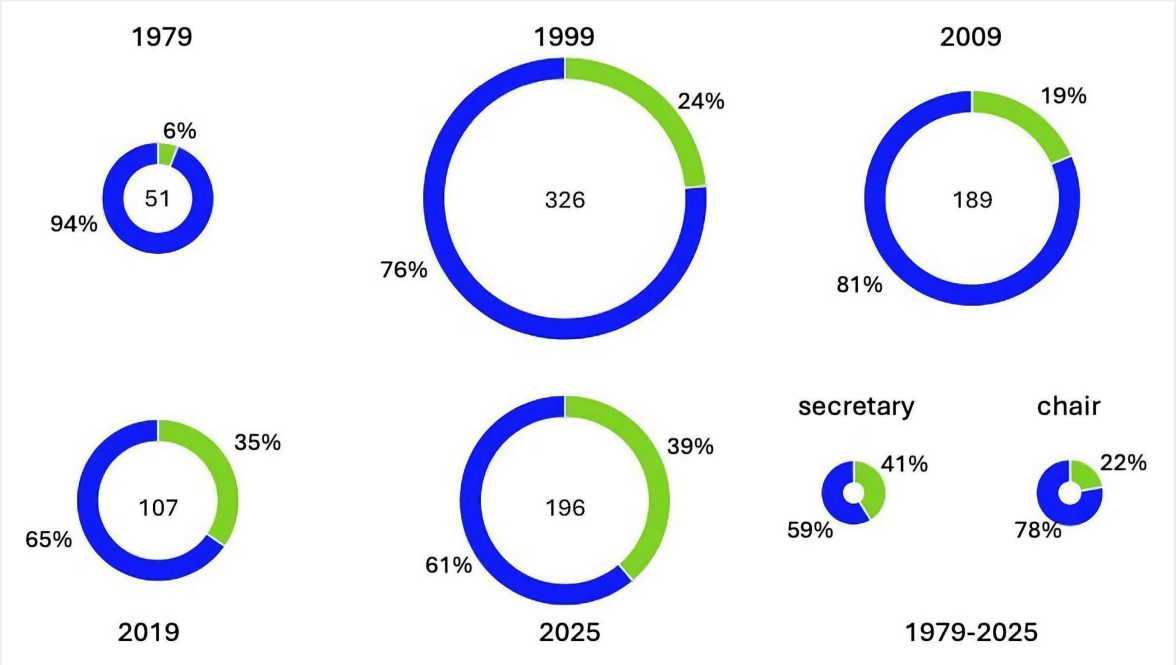

Figure 1. *Gender (blue = men, green = women) distribution trends in AIQUA across selected years (1979-2025). The dimension of the donut plots is proportional to the total number of members reported inside each donut. The last two donut plots break down gender representation in leadership role, secretary and chair, from 1979 to 2025 (Table 1). The secretary is appointed by the chair; the chair is elected by the AIQUA members every 3 years. The chair, elected every three years by AIQUA members, appoints the secretary who serves until the end of the chair's term.*

AIQUA chair	AIQUA secretary
Raimondo Selli – pro-tempore (2-6-1978/13-2-1979)	—
Pierluigi Ambrosetti 1979-1982	Giuseppe Orombelli
Giuseppe Orombelli 1982-1983	Ugo Sauro
Augusto Azzaroli 1983-1985	Elisabetta Cioppi
Franco Petrucci 1985-1987	Alberto Carton
Franco Petrucci 1988-1991	Claudio Tellini
Carlo Bosi 1991-1994	Paolo Messina
Maria Bianca Cita 1994-1997	Cesare Ravazzi
Francesco Carraro 1997-2000	Giovanni Monegato
Ugo Sauro 2000-2003	Paolo Mozzi
Carlo Bosi 2003-2006	Biagio Giaccio
Carlo Bartolini 2006-2009	Adele Bertini
Paolo Mozzi 2009-2012	Alessandro Fontana
Adele Bertini 2012-2015	Nicoletta Buratti
Maria Rita Palombo 2015-2018	Ilaria Mazzini
Giovanni Monegato 2018-2021	Patrizia Ferretti
Giovanni Monegato 2021-2024	Patrizia Ferretti
Ilaria Mazzini 2024-2027	Alessandra Smedile

Table 1. *Chronological list of AIQUA chairpersons and secretaries from 1978 to the present.*

This imbalance underscores the ongoing challenges faced by women in attaining the highest leadership positions within scientific organizations (Falco et al., 2023). Despite this, there have been promising signs of change: over the last 12 years, three women have been elected as presidents of AIQUA. This shift represents a meaningful step toward more equitable representation and reflects broader efforts within the scientific community to align with international standards of gender inclusivity and equity as outlined in the European Commission's Gender Equality Strategy 2020-2025 and the United Nations Sustainable Development Goal 5 (Gender Equality). To investigate the perception and representation of women in Quaternary research in Italy, AIQUA conducted a survey among its membership (approximately 200 members as of May 2025).

2.1. Listening to the community: surveying representation and challenges in Italy

The questionnaire was promoted by AIQUA to explore the presence, visibility, and experiences of women in Quaternary research in Italy.

The primary objective of the anonymous survey was to collect data to enhance understanding of gender dynamics within the scientific community, to identify potential structural or cultural barriers, and to document the professional experiences and career trajectories of women in the field. The questionnaire was organized in 14 questions, 12 closed ended and 2 open ended (Table 2), and was administered to AIQUA members, both males and females, enabling comparative analysis of gender-based perceptions and experiences. The questionnaire was anonymous, and the data were processed in aggregate. The questionnaire remained open for 30 days and gathered the answers of the 37% of the AIQUA members (43 female members, 30 male members and 1 member that preferred not to answer). Thus, the questionnaire responses provide a limited but valuable snapshot of the experiences and perspectives about women working in Quaternary science in Italy and confirms the fact that women are generally more likely to respond to surveys (Becker, 2022).

N.	Question
1	What is your main disciplinary area?
2	What is your gender identity?
3	What is your age?
4	Current (main) job position
5	In which time context do you mainly work?
6	Do you think women are adequately represented in the Quaternary scientific community in Italy?
7	In which areas do you think there is the greatest gender imbalance?
8	Have you noticed positive changes in the last 10 years regarding gender issues in Italian Quaternary research?
9	Have you ever experienced gender-related obstacles in your academic or professional career?
10	Have you had female role models in your academic or professional journey?
11	If you answered "yes" or "partly" to the previous question, you can write the name of the role model here:
12	Do you think AIQUA could contribute to better valuing the role of women in the scientific community?
13	What initiatives do you think would be useful?
14	Feel free to leave a comment, suggestion

Table 2. *List of 14 survey questions exploring perceptions, experiences, and attitudes regarding gender equity within the Italian Quaternary scientific community.*

2.2. Intersecting paths: gender, age, discipline, and professional status

The four plots (Figure 2) reveal several interesting gender-based patterns among respondents, highlighting both similarities and disparities in age, disciplinary focus, time period studied, and current professional position.

Starting with age (Figure 2A), men are more represented in the 30-39 and 50-59 age groups, while women are more present in the 40-49 and 50-59 age groups, as well as in the oldest category (60+), and the youngest (<30). This suggests a somewhat bimodal distribution for women, with a strong presence both among early-career and senior scholars. In contrast, male respondents cluster more around the middle-aged categories (30-60+), perhaps reflecting a cohort that entered the field during its expansion in past decades. The relative scarcity of men in the youngest age bracket could suggest fewer male entrants into the field in recent years, or possibly a shift in career trajectories among younger men.

Looking at disciplinary areas (Figure 2B), geology is the most common field for both men and women. Interestingly, paleontology is more frequently reported by women, while men show stronger representation in geoarchaeology and prehistoric archaeology. These patterns may point to different academic or methodological

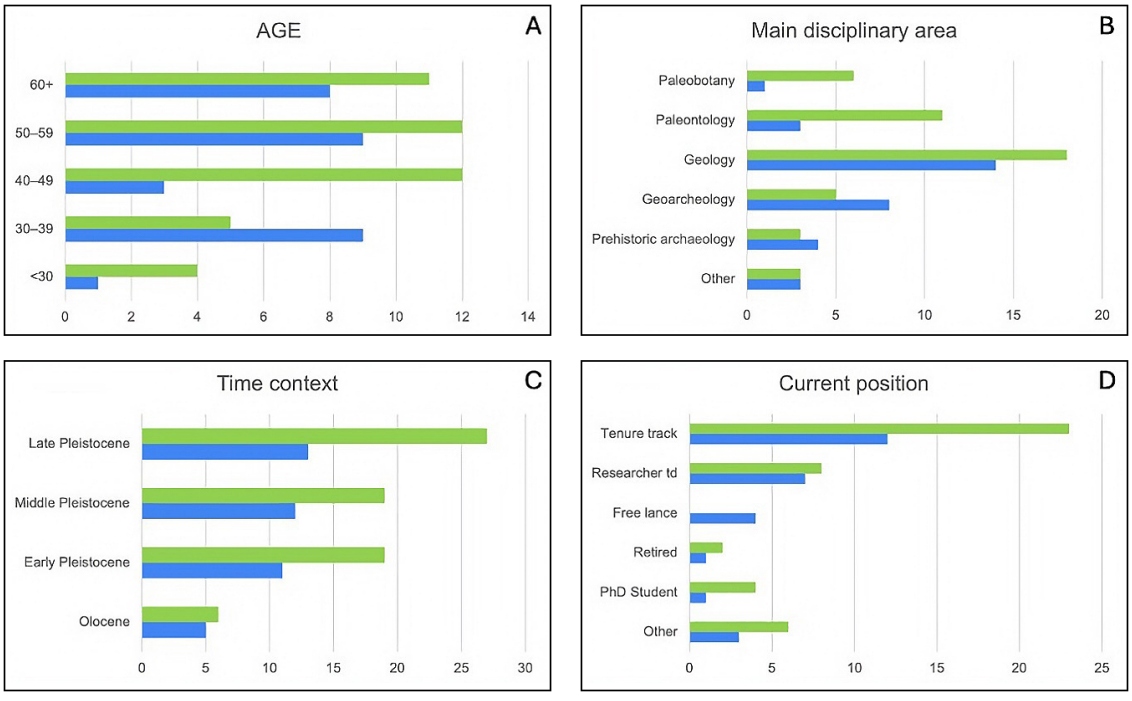

Figure 2. *The bar plots present demographic and professional characteristics of survey respondents. Gender (blue= men, green = women) distribution trends across four different questions: A) What is your age; B) What is your main disciplinary area; C) In which time context do you mainly work; D) What is your current (main) job position.*

orientations by gender, or perhaps to historical trends in how men and women have entered and contributed to different research domains. The near absence of paleobotany for men is also noteworthy, suggesting a strong female niche in that area.

When considering the time context of respondents' work (Figure 2C), both genders are most focused on the Late Pleistocene. However, this period is particularly prominent among women, suggesting a possible clustering of female researchers around topics related to the later stages of the Pleistocene. The other periods, Middle and Early Pleistocene, show relatively balanced gender representation, while the Holocene, is less popular overall. These temporal preferences could reflect broader disciplinary affiliations, since certain time periods align more closely with different types of archaeological or paleoenvironmental work, such as paleobotany.

When considering current positions (Figure 2D), the plot shows some of the clearest gender contrasts. Women dominate tenure-track roles, suggesting a strong presence of women in stable academic positions, although it is not obvious at which hierarchical level. They are also more likely to be PhD students or researchers with temporary contracts, reinforcing the impression of an active, institutionally embedded cohort. Men, by contrast, appear more often in freelance roles. This somehow contradicts the outcome of a recent study on the gender gap in the early progression of academic careers in Italy (Alfano et al., 2025) and in Europe (European Commission, 2024) where women's representation in STEM diminishes at higher hierarchical levels, constituting approximately 37.9% of grade C staff, 33.8% of grade B, and a mere 26.2% of grade A (Full professor) staff. In Italy, women make up just the 1.63% of self-employed professionals in science and technologies occupations (European Commission, 2024). It is important to note, however, that these results may be influenced by sample bias: tenure track women may be more active in association life compared to those holding short term contracts.

2.3. The visibility gap: perceived progress and persistent gender imbalances

Most of respondents agree that women are only partially represented in the field, although women are slightly more likely to select this response (Figure 3A). Interestingly, very few respondents, especially women, believe that women are fully represented (age category 30-39: 1 man, 2 women; age category 40-49: 1 man, 1 woman; age category 50-59: 2 men; age category +60: 4 women). A small but visible number of women also explicitly answered "No", indicating a clear sense of underrepresentation (age category 30-39: 1 man, 3 women; age category 40-49:

1 man, 1 woman; age category 50-59: 3 women; age category +60: 1 man). a small percentage of men and women selected "I do not know", suggesting less direct awareness or engagement with the issue (age category <30: 1 woman; age category 50-59: 2 women; age category +60: 1 man).

The contrast becomes sharper in Figure 3B. A significant number of women reports having encountered gender-related obstacles, while very few men report the same. In fact, more than twice as many women as men selected "Yes". This indicates that gender-based challenges are not only more common among women but also often go unnoticed or unacknowledged by their male colleagues. A small number of women (3 against 5 respondents) chose "Prefer not to answer", which could

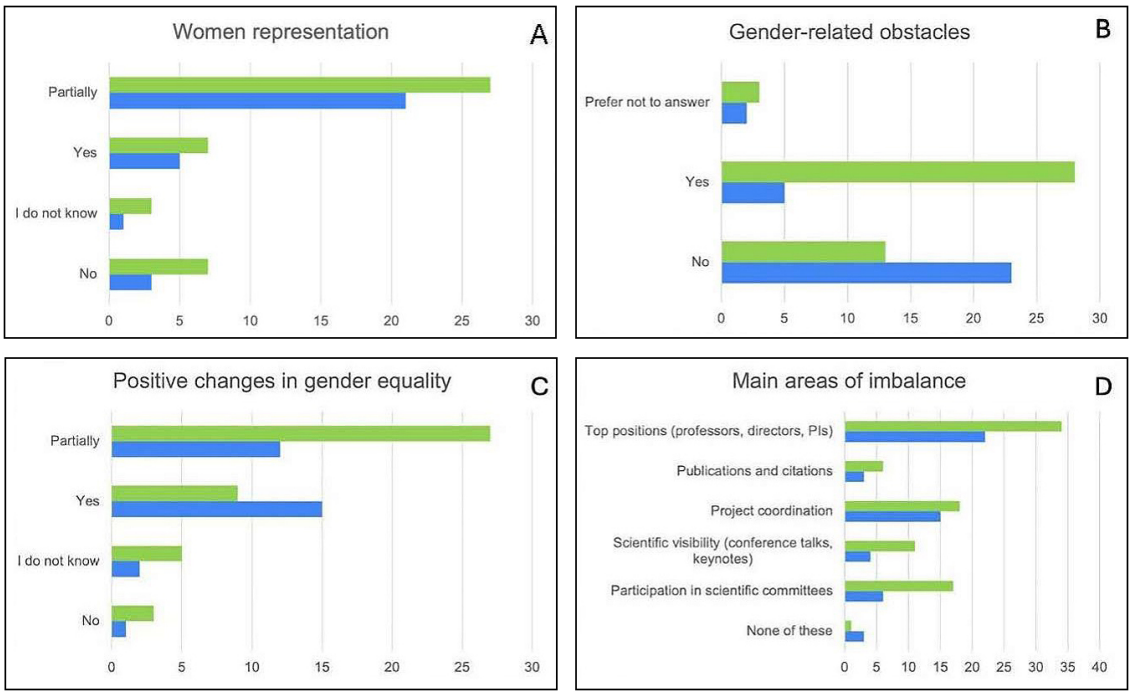

Figure 3. *These four plots provide a window into how male and female respondents perceive and experience gender dynamics in their field, including representation, obstacles, progress, and areas of persistent imbalance. Gender (blue = men, green = women) distribution trends across four different questions: A) Do you think women are adequately represented in the Quaternary scientific community in Italy; B) Have you ever experienced gender-related obstacles in your academic or professional career; C) Have you noticed positive changes in the last 10 years regarding gender issues in Italian Quaternary research; D) In which areas do you think there is the greatest gender imbalance?*

reflect the sensitivity or potential consequences of acknowledging such obstacles. Of the five <30 respondents, only 1 woman responded yes.

Figure 3C offers a more encouraging view but again reveals differing perspectives. Most women recognize partial positive changes, suggesting they see progress, but perhaps not at a systemic or transformative level. A higher proportion of men believe clear progress ("Yes") has been made, while women remain more cautious. This discrepancy might indicate that men perceive gender equality efforts as more effective than women do, possibly because they are not directly affected by remaining imbalances.

Finally, Figure 3D highlights where respondents see the most persistent gender disparities. Both men and women overwhelmingly identify top positions (professors, directors, PIs) as the most imbalanced area, with women flagging this even more strongly. Women also report significant imbalance in areas tied to visibility and influence, such as scientific visibility, participation in committees, and project coordination, whereas men identify these less frequently. Notably, very few women chose "None of these", while a small but visible number of men did, reinforcing the impression that some men may not fully perceive the extent of gender disparities still present in the field or that there are other areas of gender imbalance not included in the question.

2.4. Perceptions on gender support and role models

There is broad agreement across genders that AIQUA is perceived as supportive of women, with a high number of both male and female respondents answering "Yes" (Figure 4A).

When asked what types of initiatives would be most helpful in promoting gender equity, women and men show some aligned priorities but also meaningful divergences (Figure 4B). The most strongly supported initiative across both groups was a series of talks/testimonials, pointing to the value placed on shared experiences and visible role models. Observatories on equality and representation as well as mentorship between senior and junior young female researchers also received notable support. This highlights a clear recognition, especially among women, of the importance of building intergenerational support networks to help navigate gendered challenges in the field. Interestingly, a slightly higher proportion of men selected "None", suggesting that some male respondents may not perceive a strong need for additional gender-targeted actions. Surprisingly, however, men showed relatively greater support for dedicated conference sessions, indicating a nuanced perspective on how best to address gender equity.

Figure 4C highlights gendered differences in perceptions of role models. Most women affirm the presence of female role models ("Yes"), while men are more likely to say "Partially". This likely reflects differing reference points: women may more actively seek out and recognize female role models, especially those who have influenced their own careers. In contrast, men may be less attuned to the visibility or impact of female figures in the field. This divergence underscores how recognition of role

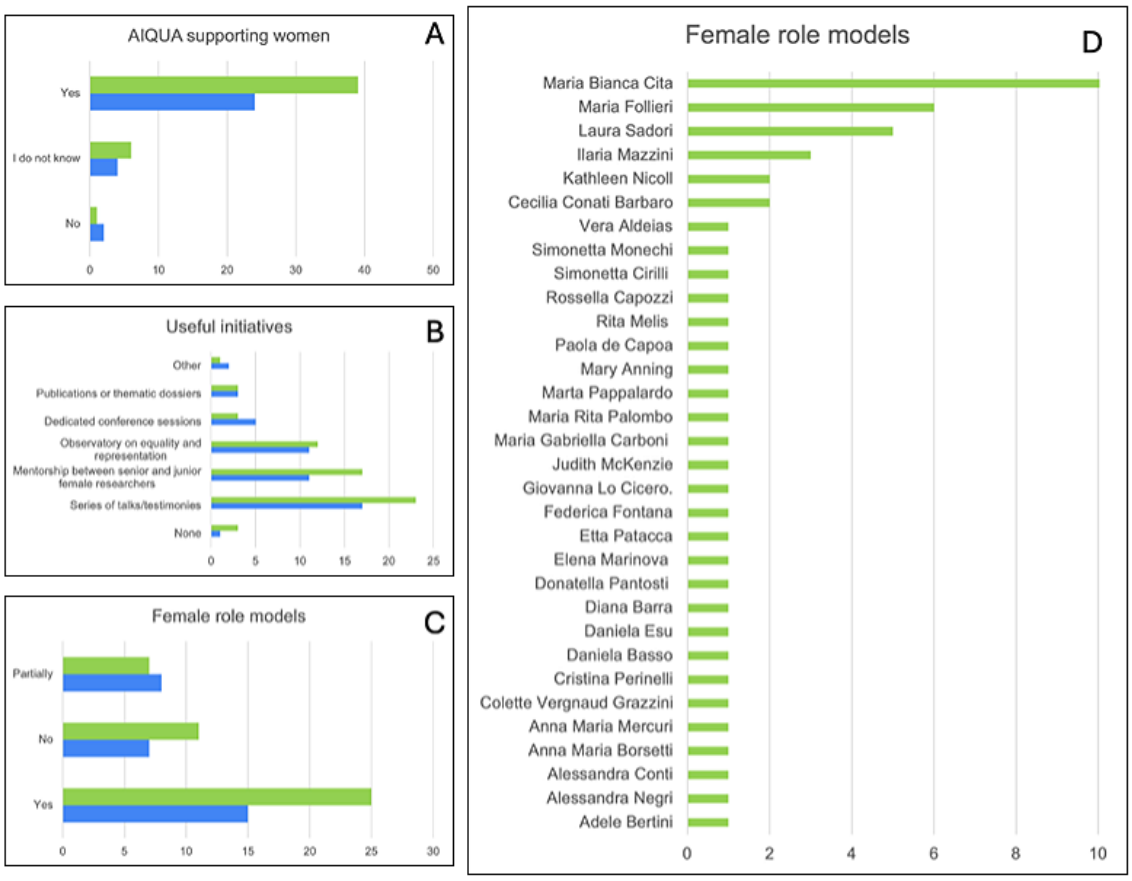

Figure 4. *These plots provide insight into how the respondents perceive the role of the AIQUA community in supporting women, their views on gender equality initiatives, and the presence of female role models in the field. Gender (blue = men, green = women) distribution trends across four different questions: A) Do you think AIQUA could contribute to better valuing the role of women in the scientific community; B) What initiatives do you think would be useful; C) Have you had female role models in your academic or professional journey; D) If you answered "yes" or "partly" to the previous question, you can write the name of the role model here.*

models is shaped by personal experience and awareness and may also hint at broader issues of visibility or credit within professional communities.
The female role models identified by respondents sees Maria Bianca Cita and Maria Follieri as the most frequently cited figures (Figure 4D). These women are likely viewed as pioneers or leaders in their fields, serving as tangible examples of female excellence and leadership in a discipline where gender disparities have traditionally existed.

2.5. The first woman chair of AIQUA: Maria Bianca Cita

Among the most influential figures in the advancement of women in Quaternary Sciences in Italy is Maria Bianca Cita Sironi (1924-2022) (Figure 5). A distinguished geologist and paleontologist, Cita broke new ground as the first woman elected

Figure 5. *Portrait of Maria Bianca Cita in 2013 (Photo by Angelo Camerlenghi).*

president of AIQUA, serving from 1994 to 1997. Her pioneering research in deep-sea sedimentology significantly enhanced the understanding of the Mediterranean's geological evolution and global oceanic anoxic events. Deeply committed to issues of stratigraphy, particularly concerning the Quaternary period, Cita played a crucial role in validating the Italian Global Stratotype Section and Point (GSSPs), a global reference point for geological time (Orombelli et al., 2005; Cita et al., 2006, 2008; Cita, 2008). Her career continues to inspire geoscientists across generations, particularly young females, and remains a symbol of excellence and perseverance in a historically male-dominated field.

2.6. A pioneer paleobotanist

Another emblematic figure in Italian Quaternary research is Maria Follieri (1932-2012), a renowned paleobotanist and long-time AIQUA member (1997-2011) (Figure 6). Her extensive and interdisciplinary work expanded the horizons of paleobotany by linking it to Italy's rich cultural heritage. Follieri's research encompassed periods ranging from

Figure 6. *Portrait of Maria Follieri (Photo by Palinology Lab, Sapienza University, Rome, Italy).*

the Paleolithic to the Roman era, shedding light on the early development of agriculture in peninsular Italy and the plant-based elements of ancient societies. Notably, she was among the first in Italy to study fossil aquatic ferns in a chronostratigraphic context, thereby bridging paleobotanical data with evolutionary and geological frameworks. Her investigations into paleoflora and paleovegetation, particularly in central Italy, provided critical insights into climate fluctuations and vegetation dynamics during the Quaternary period (Follieri and Castelletti, 1988).

3. Conclusions

Research shows that gender discrimination persists in academic recruitment and promotion, particularly when evaluation committees are all male (De Paola et al., 2017). To address such inequalities, the European Commission now requires universities and research institutions to implement Gender Equality Plans (GEPs) to participate in Horizon Europe. These plans aim to improve gender equality in academic careers, with a special focus on career progression. A key recommendation is that GEPs should also monitor and address inequalities faced by non-tenured researchers during their early career stages (Alfano et al., 2025).

The data here presented illustrate a research community characterized by gendered differences in roles and experiences. While universities and research institutions have increasingly taken formal steps to promote equality, scientific associations have not always prioritized these issues. In fact, dedicated committees or observatories on diversity, equity, and inclusion are relatively recent creations, often emerging only in the last decade in response to growing awareness and pressure from members. This delayed institutionalization highlights both the historical neglect of structural inequalities and the evolving recognition that professional associations play a critical role in shaping cultural norms, career opportunities, and representation in science. Within AIQUA, such broader dynamics are mirrored in the composition of its membership: women tend to occupy formal academic positions and are more concentrated in specific disciplinary and temporal areas, such as paleontology and the Late Pleistocene, whereas men are more widely distributed across freelance, retired, and geoarchaeology-related roles. These distinctions point to gender-specific career paths and academic experiences, as already highlighted in academic environment (Anzivino et al., 2023).

Women consistently report encountering more obstacles and perceive persistent gender imbalances, particularly in leadership, visibility, and coordination roles confirming the outcomes of general European research about gender gap (European Commission, 2024). Although both genders acknowledge progress

toward gender equality, men generally exhibit greater optimism, likely due to their lesser direct exposure to inequality, while women remain more cautious, informed by ongoing challenges. This divergence highlights the necessity not only of structural reforms but also of fostering awareness and dialogue to ensure equitable recognition and sustained commitment across the academic community (Alfano et al., 2025).
The wide array of names indicated as role models, from researchers and professors to historical figures like Mary Anning, highlights the extensive impact of women in the field. The contributions of these pioneering figures, along with those who followed in their footsteps, have significantly shaped the development of Quaternary research in Italy. Their scientific work, leadership, and advocacy continue to influence the discipline, inspiring future generations of women scientists dedicated to exploring the complex relationships among climate, landscapes, and human history.
The patterns emerging from these insights reveal more than just a divergence in opinion, they reflect differences in visibility, lived experience, and personal investment. Women not only acknowledge the efforts of organizations like AIQUA but also actively seek ways to promote gender equity, particularly through mentorship, visibility, and storytelling. While men may support these goals in theory, they often appear less engaged with the practical aspects of change or the day-to-day realities of inequality.
For true progress in gender equality, it will be essential to go beyond supporting women, to foster widespread awareness and a shared sense of responsibility across the entire professional community.

Acknowledgements. I am deeply grateful to the entire AIQUA board, Federica Badino, Giulia Margaritelli, Eleonora Regattieri, Patrizia Ferretti, Daniele Sechi, Fabio Scarciglia, Raffaele Sardella, Davide Delpiano, Sandro Rossato, and Guido Mariani, for their valuable suggestions during the development of the survey. Special thanks go to AIQUA secretary Alessandra Smedile for her unwavering support and patience in sending follow-up emails. I also sincerely thank all AIQUA members who responded to the survey and shared their personal experiences, whether within the questionnaire or directly with me. In addition, I extend my appreciation to Andrea Sposato, Mauro Coltorti, Giuseppe Orombelli, Paolo Mozzi, Paolo Messina, and Silvano Agostini for their assistance in reconstructing the history of AIQUA because the history of an association is the foundation upon which a community is built. I thank Chiara D'Ambrogi and Pierfrancesco Burrato for their detailed review that greatly improved the manuscript.

Notes. The questionnaire and dataset generated during the present study are openly available from the author without restriction.

References

Alfano V., Cicatiello L., Gaeta G.L., and Pinto M., (2025). The gender gap in the early progression of academic careers: evidence from Italy. International Journal of Manpower, 46(10), 1-20. https://doi.org/10.1108/IJM-01-2024-0030

Anzivino M., Cannito M., and Piga M.L., (2023). Pratiche di genere nella costruzione del merito e dell'eccellenza nell'accademia italiana. In Naldini M. and Poggio B. (Eds.), Genere e accademia. Carriere, culture e politiche, Bologna, Il Mulino, pp. 201-224.

Becker R., (2022). Gender and Survey Participation: an event history analysis of the gender effects of survey participation in a probability-based multi-wave panel study with a sequential mixed-mode design. Methods, data, analyses, 16(1), 3-32. https://doi.org/10.12758/mda.2021.08

Cannito M., Naldini M., and Santero A., (2023). Investigating the Glass Ceiling in Italian Academia. Women's Strategies and Barriers to Career Advancement. Sociologica, 17(2), 93-114. https://doi.org/10.6092/issn.1971-8853/17592

Cita M.B., Capraro L., Ciaranfi N., Di Stefano E., Marino M., et al., (2006). Calabrian and Ionian: A proposal for the definition of Mediterranean stages for the Lower and Middle Pleistocene. Episodes, 29(2), 107-114. https://doi.org/10.18814/epiiugs/2006/v29i2/004

Cita M.B., (2008). La stratigrafia in Italia. inquadramento storico, stato dell'arte, dibattito sui problemi emergenti (breve resoconto sul workshop). Alpine and Mediterranean Quaternary, 21(1A), 5-6. https://amq.aiqua.it/index.php/amq/article/view/382 (accessed 18 September 2025).

Cita M.B., Capraro L., Ciaranfi N., Di Stefano E., Lirer F., et al., (2008). The Calabrian Stage redefined. Episodes, 31(4), 408-419. https://doi.org/10.18814/epiiugs/2008/v31i4/006

De Paola M., Ponzo M., and Scoppa V., (2017). Gender differences in the propensity to apply for promotion: evidence from the Italian Scientific Qualification. Oxford Economic Papers, 69(4), 986-1009. https://doi.org/10.1093/oep/gpx023

European Commission, (2024). "She figures 2024", Gender in Research and Innovation: Statistics and Indicators. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/c246671a-78b6-11f0-9af8-01aa75ed71a1 (accessed 18 September 2025).

Falco V., Cuntrera D., and Attanasio M. (2023). Gender differences in career advancements in Italian universities over the last 20 years. Genus, 79. https://doi.org/10.1186/s41118-023-00189-7

Follieri M., and Castelletti L., (1988). Palaeobotanical research in Italy. Alpine and Mediterranean Quaternary, 1(1), 37-41. https://amq.aiqua.it/index.php/amq/article/view/1184/1053 (accessed 18 September 2025).

Morana M.T., and Sagramora S., (2024). Focus "Le carriere femminili in ambito accademico". Ministero dell'Università e della Ricerca (MUR), Roma. Retrieved from https://ustat.mur.gov.it/media/1276/focus_carrierefemminili_università_marzo2024.pdf (accessed 18 September 2025).

Orombelli G., Ravazzi C., and Cita M.B. (2005). Osservazioni sul significato dei termini LGM (UMG), Tardoglaciale e postglaciale in ambito globale, italiano ed alpino. Alpine and Mediterranean Quaternary, 18(2), 147-155. https://amq.aiqua.it/index.php/amq/article/view/463/406 (accessed 18 September 2025).

Orombelli, G., Palombo M.R., and Ravazzi C., (2023). Introduction to Quaternary studies in Italy: from Arduino to the first half of the past century. Alpine and Mediterranean Quaternary, 36(1), 5-37. https://doi.org/10.26382/AMQ.2023.04.

*Corresponding author: **Ilaria Mazzini**

e-mail: ilaria.mazzini@igag.cnr.it