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Thirty Years of Geography at Kazimierz Wielki University in Bydgoszcz 1995–2025

Abstract: The article documents the history and achievements of the geographical community at Kazimierz Wielki University in Bydgoszcz from 1995 to 2025. The study presents the evolution of the organizational structure – from the establishment of the Department of Geography to the creation and functioning of the Faculty of Geographical Sciences – as well as the development of academic staff, research infrastructure, and teaching facilities. Particular attention is devoted to the evolution of the educational offer over the past 30 years, highlighting the importance of study programmes that are unique within Poland, such as inland waterway revitalization. An important part of the study comprehensively characterizes the scientific and applied activities of the staff of the Institute of Geography, and later of the Faculty, including monographs and numerous articles in the fields of physical geography and socio-economic geography. Attention is also given to activity and cooperation with external institutions, indicating its significance within the national system of science and its growing role in international research collaboration. The findings of the study clearly state that, over 30 years of operation, the Bydgoszcz geographical centre has held an important place on Poland's scientific map.

Keywords: Institute of Geography; Faculty of Geographical Sciences; Earth and environmental sciences; physical geography; socio-economic geography and spatial management; tourism and recreation; landscape geography; environmental remote sensing; hydrological and hydraulic modelling; climate change in polar regions; inland waterway revitalization; periglacial processes and permafrost; environmental geochemistry; sediment monitoring and modelling; renewable energy sources

1. Introduction

The Faculty of Geographical Sciences at Kazimierz Wielki University is one of the youngest geographical entities in Poland. Its history is directly related to the initiative of Aleksandra Kowalczyk, who, in 1995, with the full approval of university authorities, established the Department of Geography at the Pedagogical University in Bydgoszcz (Babiński, 2009, 2010). Initially, the department operated within the Faculty of

Mathematics and Technology, and subsequently, in the years 1996–2001, as part of the Faculty of Mathematics, Technology, and Natural Sciences (Ilieva, 2016; Ilieva et al., 2017). In 2001, the Department of Geography was transformed into the Institute of Geography. In the period 2001–19, the institute formed part of the Faculty of Physical Culture and Tourism of the Kazimierz Wielki Academy in Bydgoszcz, which in 2005 was

transformed into Kazimierz Wielki University (Babiński, 2009, 2010). At that time, the institute was among the smallest geographical entities in Poland. In 2011, among 15 geographical centres, it ranked 13th for the number of senior academic staff (Kostrzewski and Roo-Zielińska, 2011; Śleszyński, 2013). During the academic years 2019–22, the Institute of Geography served as an independent research and teaching unit at Kazimierz Wielki University. In subsequent

years, the team evolved and expanded, and staff enhanced their qualifications and research competencies. Following the B+ scientific category, the Institute was, as of 1 October 2022, transformed into the Faculty of Geographical Sciences.¹ The position of Dean of the Faculty of Geographical Sciences has been held by dr hab. Zbigniew Podgórski and dr hab. Michał Habel (Fig. 1). Since 2026, the faculty has held an A academic rating.



Figure 1. Heads of the Department of Geography (1995–2001), the Institute of Geography (2001–22), and the Faculty of Geographical Sciences of Kazimierz Wielki University (2022–present)

This study aims to comprehensively document the thirty-year development of the Bydgoszcz geographical centre in the years 1995–2025 and to provide a synthetic summary of the most important scientific, educational and

organizational achievements of its staff. The publication constitutes a summary of the unit's long-term contribution to addressing contemporary geographical problems at local, national and global scales.

2. Sources and methods

The study draws on a wide range of source materials to provide a comprehensive account of the history and activities of the Bydgoszcz

geographical centre. The first group consisted of commemorative publications (e.g., Babiński, 2009; Babiński, 2010; Ilieva et al.,

¹ Ordinance No. 77/2021/2022 of the Rector of Kazimierz Wielki University of 30 September 2022 amending Ordinance No. 70/2018/2019 of the Rector of Kazimierz Wielki

University of 30 September 2019 on the introduction of the Organizational Regulations of Kazimierz Wielki University in Bydgoszcz.

2017), in particular 20 Years of Geography at Kazimierz Wielki University 1995–2015, Reference Book (Ilieva, ed., 2016) and The Thirty Most Significant Scientific Achievements of the Bydgoszcz Geographical Centre (Podgórski, Habel, eds., 2025). The first provides a detailed study based largely on annual reports on the activities of the Institute of Geography, data from the Human Resources and Training Department of Kazimierz Wielki University, commemorative publications, and information from University website, as well as data from the Scientific Database of Kazimierz Wielki University (<https://bibliografia.ukw.edu.pl/>), supplemented by verified publication lists and descriptions of research interests prepared by individual staff members. However, the recent anniversary monograph (Podgórski, Habel, eds., 2025), in turn, provided insight into the centre's scientific output, viewed through the prism of its outstanding importance for the development of the unit, from its stages as a department and institute to its establishment as a faculty. The scientific development of staff is reflected in the attainment of academic degrees and titles, as well as in publications in highly ranked journals. The monograph, published in 2025, constitutes a comprehensive overview of the scientific achievements of faculty staff, with a particular focus on interdisciplinary environmental research and socio-economic analyses. It also includes information on international cooperation and research projects funded by, among others, the Canadian Space Agency, the European Commission (Horizon 2020), and national programmes (National Science Centre, National Centre for Research and Development). The anniversary article Development and Activity of the Institute of Geography, Kazimierz Wielki University in 1995–2016 (Ilieva et al., 2017) presents the evolution of research directions in the years 1995–2015 and emphasizes their increasingly applied character, including its research results being implemented by local government units

of various levels, by landscape parks and by private business.

The present article applies diverse research, documentary and analytical methods to reliably reconstruct the history and achievements of the Bydgoszcz geographical centre. One key method was analysis of archival and reporting documentation, legal acts, a bibliographic review, and the unit's staff scientific database. Statistical and analytical methods, including quantitative analysis, were also applied to identify changes in the numbers of students and graduates over time. Another major method was historical-comparative analysis, which enabled the assessment of transformations in the organizational structure (departments) and the evolution of the educational offer in relation to changing labour market needs and the requirements of the Ministry of Science and Higher Education.

The manuscript was prepared making extensive use of archival organizational charts illustrating the unit's internal structure, including its divisions into departments, laboratories and specialized facilities. The content of official correspondence submitted by the institute (and later the faculty) to the university authorities was also analysed, particularly proposals concerning structural changes and appointments to head positions. The article also refers to the Rector's ordinances and official legal acts concerning the unit's structural transformations. Also useful were statistical data on the number of graduates in various fields of study (geography, tourism and recreation, and inland waterway revitalization). Although these data were ultimately used to only a limited extent, the analyses improved the overall reliability of the study. The combination of the above-mentioned sources made it possible to precisely reconstruct structural changes, characterize scientific output and analyse the evolution of the educational offer of the Bydgoszcz geographical centre over the past 30 years. A separate category of source

materials consisted of documentation of student activity, including descriptions of student scientific associations such as

“Geosfera24”, “Europejski Wędrowiec”, and “Extremus”.

3. Structural transformations and development directions

The internal structure of the Bydgoszcz geographical centre evolved alongside its organizational development – from department, through institute, to the currently functioning faculty. In the initial period, covering the years 1995–99, the Department of Geography comprised two research units: the Department of Physical Geography and Landscape Protection and the Department of Socio-Economic Geography and Spatial Management (Table 1). This two-unit structure primarily resulted from the unit's research profile at the time and the small size of the academic staff, which initially numbered only three. From the very beginning, the centre's

scientific activity focused on two main areas: research on landscape perception (developed by A. Kowalczyk) and contemporary river channel processes (developed by Z. Babiński). As a consequence, the department's organizational structure directly reflected these research specializations and was an important factor in the opening, in 1998, of geography degree programmes with two specializations: physical geography and tourism geography. The established research units thus provided the necessary substantive foundation for education in these fields, which at that time enjoyed very high interest among applicants, mainly from the Kuyavian-Pomeranian region.

Table 1. Changes in structure and head staff, 1995–2025. Source: M. Ilieva (2016); Z. Podgórski, M. Habel (2025); and unpublished archival materials of the Faculty of Geographical Sciences; <https://geografia.ukw.edu.pl/jednostka/wydzial-nauk-geograficznych/>

Name of department	Years	Head (period)
Department of Geography (1995–2001)		
Heads: dr hab. Aleksandra Kowalczyk (1995–2000), prof. dr hab. Zygmunt Babiński (2000–01)		
Department of Physical Geography and Landscape Protection	1995–	dr hab. Andrzej Rachocki (1995–99), dr hab. Krzysztof Błażejczyk (1999–)
Department of Socio-Economic Geography and Spatial Management	1995–	prof. dr hab. Wiesław Maik (1995–99), dr hab. Zbigniew Rykiel (1999–)
Department of Hydrology and Water Protection	1999–	dr hab. Zygmunt Babiński (1999–)
Institute of Geography (2001–22)		
Directors: prof. dr hab. Zygmunt Babiński (2001–06, 2008–12), dr hab. Aleksandra Kowalczyk (2006–07), dr Mirosław Więclaw (2007–08, 2012–13), dr hab. Anna Dłużewska (2013), p.o. dr Alicja Gonja (2013–14), dr hab. Zbigniew Podgórski (2014–22)		
Department of Socio-Economic Geography and Spatial Management	–2003	dr hab. Zbigniew Rykiel (–2003)
Department of Physical Geography and Landscape Protection	–2016	dr hab. Krzysztof Błażejczyk (–2007), prof. dr hab. Jan M. Matuszkiewicz (2007–14), dr Mirosław Więclaw (2014–16)

Department of Hydrology and Water Protection	–2012	dr hab. Zygmunt Babiński (–2012)
Department of Tourism Geography	2001–19	dr hab. Aleksandra Kowalczyk (2001–07), dr Maria Dombrowicz (2007–12); dr hab. Anna Dłużewska (2012–19)
Department of Landscape Development and Spatial Planning	2003–04	dr hab. inż. Barbara Sierecka-Nowakowska (2003–04)
Department of Sustainable Development Geography	2003–08	dr Roman Dysarz (2003–08)
Department of Quaternary Research	2004–15	dr hab. Zbigniew Śnieszko (2004–07), dr hab. Stanisław Lisicki (2007–12), dr hab. Mirosław Błaszczewicz, dr Adam Krupa (2012–14)
Department of Socio-Economic Geography	2004–06 2008–19	dr hab. Zbigniew Taylor (2004–06), dr hab. Roman Rudnicki (2006), dr hab. Margarita Ilieva (2008–19)
Department of Numerical Spatial Analysis	2008–14	dr inż. Kazimierz Harłodzińskiego (2008–14)
Department of Inland Waterway Revitalization	2012–	prof. dr hab. Zygmunt Babiński (2012–13), dr Michał Habel (2013–16), dr Hubert Rabant (2016), prof. dr hab. Zygmunt Babiński, (2016–17), dr Michał Habel (2017–)
Department of Landscape Development	2014–16	dr hab. Zbigniew Podgórski (2014–16)
Department of Physical Geography and Landscape Development	2016–19	dr hab. Zbigniew Podgórski (2016–18)
Department of Landscape History Studies	2016–19	dr hab. Zbigniew Śnieszko (2016–19)
Department of Landscape Geography	2019–	dr hab. Zbigniew Podgórski (2019–), dr hab. Halina Kaczmarek (2022–)
Department of Socio-Economic Geography and Tourism	2019–	dr hab. Anna Dłużewska (2019–)
Department of Didactics	2019–	dr Dawid Szatten (2019–)

Faculty of Geographical Sciences (2022–)

Deans: dr hab. Zbigniew Podgórski (2022–24), dr hab. Michał Habel (2024–)

Department of Inland Waterway Revitalization	2012–	dr hab. Michał Habel (2017–)
Department of Landscape Geography	2019–	dr hab. Zbigniew Podgórski (–2022), dr hab. Halina Kaczmarek (2022–)
Department of Socio-Economic Geography and Tourism	2019–	dr hab. Anna Dłużewska (–2023), dr hab. Aleksandra Jezierska-Thöle (2023–)
Department of Didactics	2019–	dr Dawid Szatten (–2024), dr hab. Aleksandra Jezierska-Thöle (2024–)
Department of Environmental Change and Geochemistry	2022–	dr hab. Danuta Szumińska (2022–)

In 1999, the Department of Hydrology and Water Protection was additionally established. This department was the product of broader structural changes aimed at consolidating research directions and improving the efficiency of scientific work within the then Department of Geography. The gradual increase in number of academic staff was also important, as it stimulated the formation of specialized research teams. The most significant factor was the research profile, which included analyses of contemporary river channel processes, with particular emphasis on the impact of the Włocławek dam on bed erosion. The establishment of the department allowed for the formalization and intensification of this research. Growing teaching needs were another important factor. The head of the unit consistently sought not only to adapt the organizational structure to current teaching requirements but also to make decisions aimed at the long-term development of the unit, including expansion of the educational offer. An analysis of the context of the establishment and functioning of the Department of Hydrology and Water Protection (operating until 25 July 2001 within the Department of Geography and subsequently within the Institute of Geography,² and in the years 1999–2012 under the leadership of Professor Zygmunt Babiński) indicates that this decision proved highly effective. This is confirmed by the long-term development of the department and the initiation of pioneering, specialized research on river systems and inland waterways. From a formal perspective, this decision paved the way for the later establishment of the Department of Inland Waterway Revitalization, which in turn led, among other outcomes, to the launch – on the initiative of Professor Zygmunt Babiński – of an engineering degree programme unique at the European scale (Babiński et al., 2021).

The establishment of the Institute of Geography in 2001 made it possible to increase the efficiency of scientific work, stimulated the expansion of the academic staff, and enabled the creation of the Department of Tourism Geography. This was particularly important because, although a teaching specialization in tourism geography had already been introduced three years earlier within the geography programme, the establishment in 2001 of a separate research unit with this profile constituted a key step towards the professionalization of research, extending far beyond purely teaching functions. Formally, this involved the division of the Department of Socio-Economic Geography and Spatial Management. In the original department (2001–03), and subsequently in the re-established Department of Socio-Economic Geography, a wide range of research directions were developed in the periods 2004–06 and 2008–19, focusing on transformation processes, urban structures and social behaviour. In parallel, the Department of Tourism Geography intensified research on the types and structure of tourist attractions, tourism traffic and the tourism economy at local and regional levels. Innovative and unique research topics were also developed, such as multisensory landscape perception and the development of thematic villages, which became a new tourism product of the Kuyavian-Pomeranian region (e.g., Dombrowicz et al., 2008). Research activity also had an applied dimension, as staff prepared expert reports for local governments, including assessments of tourism development in Bory Tucholskie National Park and development strategies for local action groups. From a teaching perspective, it should be emphasized that the efforts of the staff of the Department of Tourism Geography – particularly Aleksandra Kowalczyk – resulted in the 2008 launch of the undergraduate

² Ordinance No. 41/2000/2001 of the Rector of Kazimierz Wielki University of 25 July 2001.

programme in tourism and recreation. It quickly became the most popular programme at the Institute, attracting as many as 166 students in its first year, reflecting strong labour-market demand for specialists in this field. As a result of these structural changes, tourism geography in Bydgoszcz evolved from a supplementary teaching specialization into a fully developed scientific and applied field, exerting a real influence on the development of tourism at both regional and national levels. The establishment of the Department of Tourism Geography also significantly influenced the educational offer of other units of Kazimierz Wielki University; for several years, the staff of the Institute of Geography co-developed, together with the Institute of History, a second-cycle degree programme in cultural and heritage tourism. This cooperation weakened following the 2016 launch of a second-cycle (Master's) programme in tourism and recreation at the Institute of Geography, initiated by dr hab. Zbigniew Podgórski and dr Alicja Gonia. This provided students with the opportunity to specialize in areas such as tourism services, recreation, and fitness (in cooperation with the Institute of Physical Culture). The Department of Tourism Geography operated until 2019, when it was merged with the Department of Socio-Economic Geography.

In the years 2016–19, two departments focusing on research in physical geography were in operation: the newly established Department of Landscape History Research and the Department of Physical Geography and Landscape Development, which replaced the Department of Physical Geography and Landscape Protection that had functioned in the years 1995–2016 and that had been one of the two original departments established when the Department of Geography was created). When reviewing changes in the internal structure of the Department and, later, Institute of Geography, it is also important to note the existence of short-lived research units. These were typically associated with relatively short

periods of employment of senior academic staff serving as heads of units. This was the case, for example, with the Department of Landscape Development and Spatial Planning (2003–04), headed by dr hab. inż. Barbara Sierecka-Nowakowska. Other units operated for longer periods, including the Department of Sustainable Development Geography (headed by dr Roman Dysarz in 2003–08), the Department of Quaternary Research (2004–15, headed by dr hab. Zbigniew Śnieszko, dr hab. Stanisław Lisicki, dr hab. Mirosław Błaszczewicz and dr Adam Krupa) and the Department of Numerical Spatial Analysis (2008–14, headed by dr inż. Kazimierz Harłóziński) (Ilieva, 2016).

The main reasons for the above-mentioned structural changes included the development and consolidation of research directions, increased efficiency of scientific work, qualitative and quantitative changes in academic staff, expansion and diversification of the educational offer, adaptation of the structure to the policies and visions of unit heads or research teams, and compliance with current statutory requirements of the university (Ilieva, 2016; Ilieva et al., 2017; Podgórski, Habel, eds., 2025). A detailed analysis of structural changes in the Institute shows that the number of departments typically fluctuated around six (e.g., in the 2002/03 academic year), while seven departments operated only in the 2008/09 academic year. In 2014, the Institute of Geography consisted of six organizational units. Specialized laboratories also operated in various periods. Within the Department of Inland Waterway Revitalization (as of 2019), these included: (1) the Laboratory of Tourism and Cultural Resources of Waterways; (2) the Laboratory of Riverfront Revitalization; (3) the Laboratory of Transport and Logistics; and (4) the Laboratory of Inland and Coastal Navigation. In the Department of Physical Geography and Landscape Development, a Climatology Laboratory operated from 2016 to 2019.

The centre underwent a major restructuring in 2019 (see Table 1), in connection with the upcoming national evaluation of the unit. This involved consolidating several departments and establishing two new units as a direct result of the academic staff's declarations of scientific disciplines. The primary aim of these changes was to adapt the internal structure of the Institute of Geography to its independent functioning, in accordance with the provisions of the new Statute of Kazimierz Wielki University adopted on 25 April 2019.³ As part of these changes, the Department of Tourism Geography was merged with the Department of Socio-Economic Geography, and the resulting organizational unit was named the Department of Socio-Economic Geography and Tourism. Similarly, the Department of Physical Geography and Landscape Development was merged with the Department of Landscape History Studies to form the Department of Landscape Geography. The new structure of the unit comprised the following departments (Fig. 2):

- Department of Landscape Geography (Head: dr hab. Zbigniew Podgórski),
- Department of Inland Waterway Revitalization (Head: dr hab. Michał Habel),
- Department of Socio-Economic Geography and Tourism (Head: prof. dr hab. Anna Dłużewska),
- Department of Didactics (Head: dr Dawid Szatten).

In accordance with the resolution of the Scientific Council of the Institute of

Since 2018, the Centre for Information and Promotion of Inland Waterways in Bydgoszcz—established as part of the EMMA project and in cooperation with the City of Bydgoszcz—has been operating within the faculty. The unit, coordinated by dr Dawid Szatten, focuses on raising public awareness of

Geography (9 April, 2019) and the decisions of the University authorities, the staff of the Department of Inland Waterway Revitalization and the Department of Landscape Geography consisted of researchers who declared their discipline to be Earth and Environmental Sciences. The staff of the Department of Socio-Economic Geography and Tourism, in turn, included those who declared their discipline to be, in whole or in part, socio-economic geography and spatial management. The Department of Didactics comprised staff employed in teaching positions at the Institute of Geography.

Following the transformation of the Institute into the Faculty of Geographical Sciences on 1 October, 2022 (as a formal consequence of obtaining the B+ scientific category), the structure was expanded to include the Department of Environmental Change and Geochemistry (Head: dr hab. Danuta Szumińska). At the same time, dr hab. Halina Kaczmarek became the Head of the Department of Landscape Geography, while dr hab. Aleksandra Jezierska-Thöle assumed the head of the Department of Socio-Economic Geography and Tourism. Currently, the faculty also includes several specialized research units supporting scientific and teaching activities, including the Laboratory of Surface Water Quality Analysis, the Sediment Analysis Laboratory, the Geochemical Analysis Laboratory, the Hydrological Modelling Laboratory, the Laser Diffraction Laboratory, and the Centre for Information and Promotion of Inland Waterways in Bydgoszcz (Fig. 2).

the benefits of maritime and inland transport. It aims to demonstrate the competitive position of water transport by promoting cost reduction in transport, environmentally friendly infrastructure solutions, and the use of vessels adapted to the conditions of the lower Vistula River (Podgórski, Habel, eds., 2025).

³ Resolution No. 87/2018/2019 of the Senate of Kazimierz Wielki University of 25 April 2019 on the adoption of the Statute of Kazimierz Wielki University.

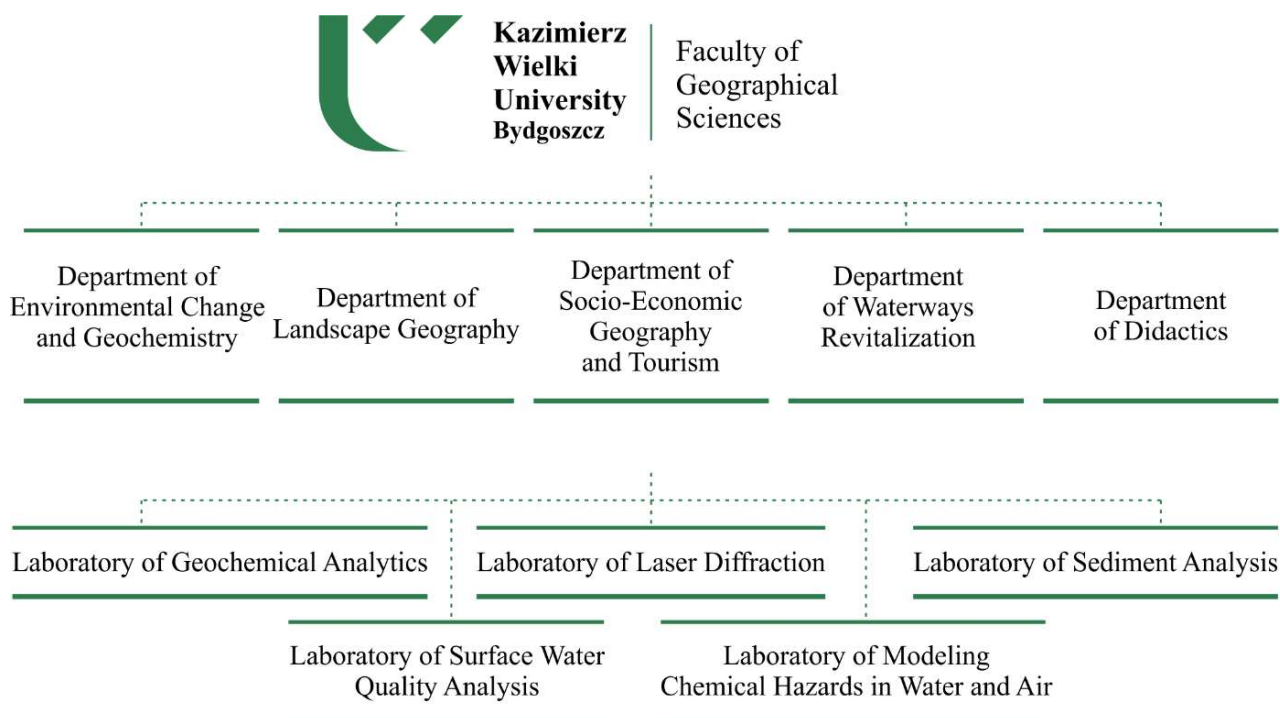


Figure 2. Structure of the Faculty of Geographical Sciences (as of 1 October 2025)

4. Student education at the Bydgoszcz geographical centre

The development of the educational offer of the centre over three decades (1995–2025) has been characterized by a transition from traditional university programmes to modern, interdisciplinary, practice-oriented fields of study. The initial stage of geographical education (beginning in 1998) included two specializations: physical geography with landscape protection and tourism geography; subsequently, in 2001, socio-economic geography was added. Initially, education was conducted within a unified five-year Master's programme, and the first defence of the master's theses of 42 graduates was completed in 2003 (Fig. 3).

In subsequent years, the educational offer was systematically expanded to include programmes responding to regional needs and labour-market demands. In 2007, in line with the requirements of the Bologna Process, a two-cycle system was introduced, consisting of three-year Bachelor's programmes followed by second-cycle (Master's) programmes three years later. In 2008, the highly popular tourism and recreation programme was launched,

offering specializations in tourism economy and physical recreation. In 2012, a pioneering study programme was introduced, the only one of its kind in Europe – Inland Waterway Revitalization. This engineering programme combines knowledge of the river environment with innovative engineering solutions and was supported by the acquisition of the research and training ship *Kazimierz*. In 2015, studies in environmental crisis management (with specializations in water and atmospheric environments) were launched, along with second-cycle (Master's) studies in tourism and recreation. A key element of the educational strategy was the transition of all programmes to a practical profile in the 2015/16 academic year, to better respond to labour-market needs and enhance graduate employability. In 2016, the offer was further expanded to include engineering studies in environmental crisis management and second-cycle studies in tourism and recreation.

Currently, the educational offer has entered a phase of advanced specialization.

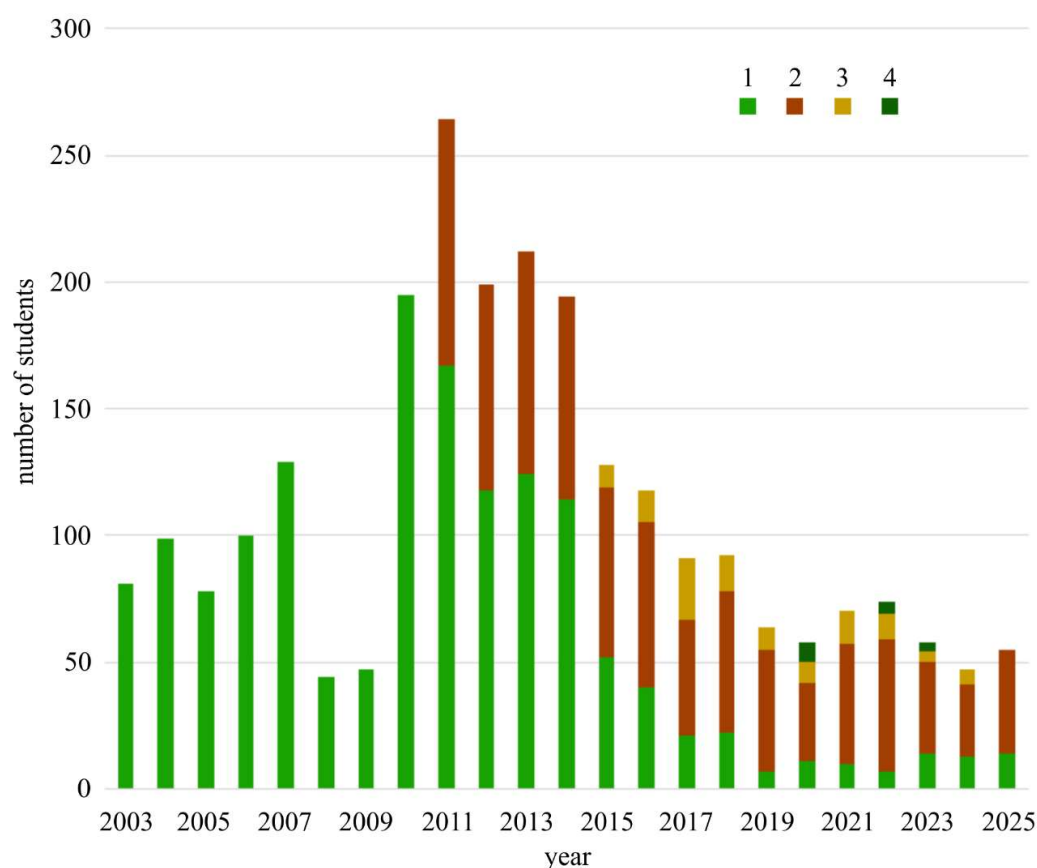


Figure 3. Graduates of the Department of Geography, the Institute of Geography, and the Faculty of Geographical Sciences (as of 1 October 2025). Notes: 1 – geography (long-cycle Master’s studies, first-cycle Bachelor’s studies, second-cycle Master’s studies); 2 – tourism and recreation (first-cycle Bachelor’s studies, second-cycle Master’s studies); 3 – inland waterway revitalization (first-cycle engineering studies); 4 – environmental crisis management (first-cycle engineering studies). Source: own elaboration

Since 2022, the faculty has been providing doctoral education within the Doctoral School of Kazimierz Wielki University in the discipline of Earth and Environmental Sciences, as well as postgraduate studies, including Geography 2.0. The most recent development has been the 2025 opening of a programme in renewable energy sources, which constitutes a direct response to contemporary climate challenges and the energy transition.

The educational offer of the Bydgoszcz geographical centre follows modern labour-market trends, which is reflected in the active acquisition of additional funding from the Operational Programme Knowledge Education Development, coordinated by the National Centre for Research and

Development, among others, for the modernization of study programmes, their enrichment with competencies required by the labour market, as well as courses and training. In the history of the unit, funding has been obtained for two major projects: for the inland waterway revitalization programme in the years 2017–19, “Swim on Wide Water with New Competencies” (project leader: dr Michał Habel), and for geography (first-cycle) and tourism and recreation (first-cycle) programmes in the years 2014–28, “Key Directions for the Economy” (project leader: dr Dawid Szatten). As part of the first project, students had the opportunity to complete specialized certified training courses, including hydraulic modelling (MIKE

URBAN) and computer-aided design (AutoCAD), and to obtain professional qualifications such as junior seaman, motorboat operator, and seaman (both theoretical and practical components). This enabled them to acquire specialized competencies in inland navigation. In addition, students participated in study visits and project teams, gaining practical and social skills that are highly valued in the labour market. The second project enabled the GIS laboratory at the Faculty of Geographical Sciences to be equipped with specialized hardware and software and provided students access to specialized training and internships. All these activities are aimed at equipping graduates with the broadest possible range of knowledge, skills and competencies required in a dynamically changing labour market.

Study programmes offered at the Bydgoszcz geographical centre, like all programmes within the Polish higher education system, are subject to systematic and comprehensive evaluation by the Polish Accreditation Committee. All programmes have received positive evaluations, which clearly indicates that the level of teaching, scientific content, staffing, organization and infrastructure are of the highest standard. Particular attention should be paid to the learning outcomes implemented within the programmes, which emphasize specialization and a high number of practical classes, including field-based activities.

The beginning of March 2020 was an exceptional time for many people in Poland. The outbreak of the COVID-19 pandemic also affected the teaching process at the Bydgoszcz geographical unit. On 11 March 2020, the

traditional teaching process was suspended. No one knew how, where, or what next. However, the Bydgoszcz unit adapted quickly to the global crisis, thanks to efficient management by both the university authorities and the Institute of Geography. Just two days later, a procedure for transitioning to remote teaching was developed, and over the following week, all staff, lecturers and students adapted to the new virtual reality, continuing their education activities until the end of the pandemic under varying levels of restrictions.

Cooperation with the socio-economic environment has always been a strong asset of the Bydgoszcz geographical centre, particularly with regard to implementing student internships within study programmes, numerous study visits, and field classes conducted with the support of external partners. In many cases, internships have led to subsequent employment, such as in the Ministry of Infrastructure, the State Water Holding – Polish Waters (including regional units), the Marshal's Office of the Kuyavian-Pomeranian Voivodeship, and numerous private-sector entities. Modern teaching at the Faculty of Geographical Sciences is based on experiential learning. Students participate in numerous field activities (e.g., tourism and recreation camps, study visits to Landscape Parks) as well as international mobility programmes under Erasmus+, including trips to Italy, Turkey, Bulgaria and Germany. Teaching is supported by specialized infrastructure, including laboratories and advanced software for spatial analysis and modelling, such as ArcGIS, MIKE 21C, SCALGO and Envi SARscape.

5. Main research directions

Any description of the scientific activity of the Bydgoszcz geographical centre must necessarily emphasize the wide spectrum of both natural and social research. The research topics undertaken by the staff of Kazimierz

Wielki University include analyses of geomorphological and hydrological processes, as well as the impact of climate change on polar regions and lakes, alongside issues related to human–atmosphere interactions,

biothermal conditions and adaptation to lighting conditions in different parts of the world (Podgórski, Habel, eds., 2025). An important component of research is the study of cultural landscapes and tourism, including analyses of historical settlement structures and contemporary conservation practices in nature reserves. Research in the field of socio-economic geography has focused on diagnosing socio-economic and spatial processes and structures, with particular emphasis on the Kuyavian-Pomeranian Voivodeship (Ilieva, 2016; Ilieva et al., 2017). One significant research direction has been the analysis of transformations in urban and rural areas, including spatial management using GIS tools and the implementation of the principles of green economy and sustainable development. Researchers have also addressed unique topics, such as the political transformation of Bulgaria, territorial cohesion within the European Union, and the geography of disability with a focus on intra-urban mobility. Extensive studies have also been conducted on the development of tourism space, the use of cultural and natural heritage in tourism, and the activity of local communities in regional development. A detailed analysis research topics currently being implemented was performed by the faculty's staff in the monograph *The Thirty Most Significant Scientific Achievements of the Bydgoszcz Geographical Centre* (Podgórski, Habel, eds., 2025), in which thirty key scientific achievements were identified and grouped into eight thematic blocks. Research in the field of inland waterway revitalization has been recognized as particularly important for the evaluation of the faculty's scientific achievements. These studies are greatly important for water transport safety and the sustainable development of the national economy. The research focuses on a comprehensive assessment of navigation safety, analysing hydrotechnical parameters of routes of strategic importance, such as the Nowy Świat Canal and the Polish section of the

International Waterway E70 (Habel et al., 2017; Schoeneich et al., 2020; Schoeneich et al., 2024). A key achievement has been the precise identification of so-called "bottlenecks", i.e., infrastructural obstacles (e.g., bridges in Fordon and Grudziądz) and critically low navigational depths, which, under irregular water level conditions, prevent navigation for much of the year (Schoeneich et al., 2023). The application of innovative Monte Carlo probabilistic models has enabled researchers to objectively assess the risk of hull-bed contact, which is of critical importance for planning oversized cargo transport (Schoeneich et al., 2020; Rabant et al., 2016). The significance of these studies is also reflected in identifying development trends through the analysis of planned construction projects (such as the Siarzewo dam) aimed at restoring the transport function of rivers while maintaining environmental protection requirements (Szatten et al., 2019). Researchers at Kazimierz Wielki University also investigate innovative solutions, including the construction of side navigation channels (e.g., on the Noteć River), which offer a real opportunity to bypass environmental and infrastructural barriers (Brzezińska et al., 2024). The staff's applied activities include numerous expert reports for public administration and the promotion of environmentally friendly water transport within the EMMA project, demonstrating that inland navigation can become a modern and competitive sector of the Polish economy.

Research on water infrastructure conducted at Kazimierz Wielki University is of fundamental importance to environmental security and modern water resource management. Its significance is underscored by the fact that the centre carries out unique, nationwide analyses of channel processes and sediment transport in river sections heavily transformed by human activity, such as the Lower Vistula and the Brda River cascade. Studies on the development of channel processes in sections downstream of dams

have focused on three areas: the Lower Vistula (initiated by Z. Babiński and continued by M. Habel), the Lower Brda cascade (conducted by D. Szatten with the support of Z. Babiński and M. Habel), and Ukraine – within the Dnieper cascade downstream of the Kaniv Reservoir (initiated by O. Obodovskyi and continued in cooperation with the above-mentioned researchers). Thanks to over 40 years of monitoring, researchers have identified the phenomenon of “hungry water” downstream of dams (Babiński, 2002; Babiński and Habel, 2017) and developed precise forecasts of erosion processes up to the year 2100 (Babiński and Habel, 2017). This has crucial importance for infrastructure protection and navigation planning. An exceptional achievement of international significance is the development of a pioneering research field in Poland—dam removal geography (e.g., Habel et al., 2020). Faculty staff are the only researchers in Poland systematically studying this process, documenting, among others, the first dam removal in Poland (Wilkowice), and analysing social responses to changes in ecosystem services following reservoir removal (Habel et al., 2024). The international standing of the centre is also confirmed by research on human pressure on geomorphological processes in the Apennines, where, using the innovative MorphDB database and advanced GIS tools, new methods for landform mapping have been developed (Bosino et al., 2022; Bosino et al., 2024). All these studies provide an essential scientific foundation for sustainable water management in the context of climate change.

The centre’s research investigating polar and periglacial environments is of fundamental importance for global climate change science. It addresses issues related to global environmental security and the re-emission of pollutants from permafrost (e.g., Muir et al., 2025; Potapowicz et al., 2019; Szumińska et al., 2023a – a key study on the role of thawing permafrost as a source of toxins). Its

significance stems from its broad geographical scope (Antarctica, the Arctic, Siberia, Mongolia). The research addresses issues critical to the future of the planet, including climate change and its impacts on river systems in Siberia and the Arctic (Chalov et al., 2023), as well as permafrost degradation (Chalov et al., 2025). A key achievement of the centre is the pioneering (at national scale) investigation of the role of permafrost as a secondary source of persistent organic pollutants (POPs) and heavy metals (Muir et al., 2025; Potapowicz et al., 2019; Szopińska et al., 2018). In the context of global warming, the release of toxins from permafrost is becoming a serious threat to aquatic ecosystems, and research conducted at Kazimierz Wielki University (e.g., the PER2Water project) provides unique data for modelling these processes. The importance of this research is further highlighted by its strong international dimension, reflected in the implementation of prestigious European Commission INTERACT network projects under the Horizon 2020 programme (e.g., MackSed, KolymaSed), as well as the active participation of researchers in AMAP expert groups, which shape international environmental policy. Researchers monitor sediment dynamics and geochemical processes in major delta systems, such as the Tana River in Norway (Brzezińska et al., 2025; Porto et al., 2025; Acharyya et al., 2025) and the Mackenzie River in Canada (Habel et al., 2025; Cieplowski et al., 2025; Acharyya et al., 2026), using advanced remote sensing techniques (LiDAR, Sentinel) and isotope analyses. The faculty’s accession to the Polish Polar Consortium in 2024 (on the initiative of D. Szumińska and K. Koziół), as well as research stays of early-career staff at the Subarctic Research Station in Kevo (University of Turku), confirm the scientific maturity of the centre and its role in educating

future polar researchers. The entire body of research, rooted in earlier expeditions to Mongolia (see Babiński and Szumińska, 2025), enables a comprehensive understanding of the mechanisms governing cryosphere responses to contemporary anthropogenic pressure.

Climate research conducted at Kazimierz Wielki University enables a deeper understanding of the interactions among atmospheric processes, human health and economic activity. The significance of this type of research is highlighted by a comprehensive 25-year analysis of air masses over Poland, which allowed for the precise linkage of advection processes (e.g., Arctic air masses) with specific weather types (Więclaw, 2004), as well as with extreme phenomena such as the dust storms that cause large-scale soil erosion in agricultural areas (Hojan et al., 2019). Particularly important are studies on the bioclimate of Poland, which employ advanced indices (UTCI, PST) to assess physiological responses of the human body (Okoniewska, 2016). These studies make it possible to identify regions and periods of critical thermal stress, which is of key importance for health prevention and the planning of human activity. Research of a globally unique character includes comparative studies (Poland, Japan, Vietnam) on the impact of light conditions on melatonin secretion, demonstrating how geographical location and modern lifestyle modify the human biological clock (Błażejczyk et al., 2005; Błażejczyk et al., 2008; Morita and Błażejczyk, 2023). The global significance of the centre is further confirmed by research on the atmospheric transport of pollutants to the Arctic and Antarctic. These studies have demonstrated that polar regions accumulate toxic substances originating from distant industrial centres, while thawing permafrost is a growing secondary source. The results provide essential data for forecasting the impacts of climate change and for shaping international environmental policy (Szumińska et al., 2018; Szumińska et al., 2021).

Landscape research (both natural and cultural) constitutes an excellent example of the effective integration of advanced theoretical approaches with unique practical applications. Its importance is highlighted by the pioneering, nationally scaled concept of multisensory landscape perception, which has become a scientific basis for designing comfortable recreational spaces that engage all human senses (Kowalczyk, 1992). An important research problem – the transformation of natural landscapes under tourism pressure – was addressed in the 1990s by R. Dysarz (1990, 1993). Researchers from Bydgoszcz have implemented innovative stochastic modelling using the MaxEnt approach, which they have applied to the precise prediction of erosion risk, the determination of heliotherapeutic potential, and identification of environmental factors influencing the original selection of location for historical sites (Brzezińska et al., 2021; Podgórski et al., 2021; Szatten and Więclaw, 2021; Szatten et al., 2023). A key achievement of international significance is participation in the development of a seven-stage model of milldam landscape evolution, documenting 800 years of anthropogenic river transformation driven by water mills (Brykała and Podgórski, 2020). Research conducted by Z. Śnieszko and M. Rurek, including the discovery of the first fossil beaver dam in Poland, contributed to the development of a new research field – zoogeomorphology – demonstrating the crucial role of beavers in shaping small-scale water retention (Rurek, 2013; Rurek et al., 2016; Śnieszko et al., 2020; Śnieszko et al., 2021; Rurek et al., 2023). The significance of this body of work is also reflected in its direct impact on nature conservation strategies, including the preparation of management plans for national and landscape parks (primarily by R. Dysarz), as well as the monitoring of peatlands and forests using advanced remote sensing techniques (LiDAR and optical satellite data) (e.g., Czapiewski, 2022; Szumińska et al., 2023b; Czapiewski et al., 2025).

Research conducted in the field of socio-economic geography is of fundamental importance for diagnosing contemporary socio-economic processes and structures (e.g., Kowalczyk, 2007; Józefowicz et al., 2018). It constitutes a bridge between geographical theory and management practice. Its significance is confirmed by a thirty-year body of research conducted in the Kuyavian-Pomeranian region, which has provided a scientific basis for numerous development strategies and planning documents commissioned by local governments (e.g., Mroczka and Koronowo). The international prestige of the centre is strengthened by studies – unique at the national scale – on the political transformation of Bulgaria, representing the only such comprehensive geographical approach employing an innovative synthetic index method (Ilieva, 2013). A key element of high applied value is the use of advanced geospatial tools (GIS) and remote sensing to support the intelligent management of water resources and forest ecosystems. These studies, complemented by analyses of the green economy and the potential of renewable energy sources, constitute an essential response to contemporary climate and energy challenges in Poland (e.g., Józefowicz and Michniewicz-Ankiersztajn, 2023; Kozłowska-Adamczak et al., 2025). As a result, the scientific output of Bydgoszcz geographers provides objective data essential for building sustainable and competitive territorial communities.

The strong links between Bydgoszcz geographers and the socio-economic environment are reflected in research on local community activities. These studies are of key importance for the development of civil society and the planning of inclusive, modern cities. Their significance is further highlighted by the pioneering nature of research on the geography of disability, which has provided unique empirical data on architectural barriers and the specific characteristics of intra-urban mobility among people with disabilities

(Taylor and Józefowicz, 2012a; 2012b; 2012c). These studies constitute an essential scientific foundation for the design of public space and transport policies that take into account the real needs of all social groups. Equally important are analyses of territorial cohesion and demographic potential, which enable an objective assessment of the impact of EU funds and INTERREG programmes on quality of life in regions along the Poland–Germany border (Gwiaździńska-Goraj et al., 2020; Gwiaździńska-Goraj et al., 2022). These studies define directions for the social innovation needed to reduce development disparities within the European Union. The significance of this body of work is further complemented by innovative research on citizen participation within participatory budgeting processes (Józefowicz and Michniewicz-Ankiersztajn, 2020; 2021). This approach enables the strengthening of local identity and the rational management of blue-green infrastructure in urban areas (Gonia et al., 2018). Taken together, these studies form a bridge between academic theory and management practice (Falkowski, 2018). They provide local governments with practical tools to support sustainable development, strengthen territorial identity, and ensure responsible management of blue-green infrastructure (Michniewicz-Ankiersztajn and Józefowicz, 2019).

Research in the field of tourism and recreation has been conducted consistently for many years, as indicated earlier in this study. These studies are of considerable importance to the region's sustainable development and to modern tourism education, as they combine geographical theory with practical social needs. Particular emphasis should be placed on the innovative approach to analysing natural and cultural resources as a foundation for environmentally friendly forms of recreation. A key achievement in this area includes studies on the Lower Vistula Valley, where unique natural and cultural heritage forms the basis for

ecological tourism (e.g., Gonia and Michniewicz-Ankiersztajn, 2016). These studies have demonstrated that the protection of unique heritage is inseparably linked with the activation of local communities (e.g., through the preservation of culinary traditions), which constitutes a pillar of sustainable tourism. Innovative research has also shown that nature reserves within large urban agglomerations (e.g., Kabaty Forest in Warsaw) are underestimated as spaces for nature-based tourism and environmental education (e.g., Gonia and Jezierska-Thöle, 2022). Advanced mathematical and statistical methods are applied to precisely assess the tourism attractiveness of riverside municipalities, which is of key importance for development strategy planning (e.g., Gonia, 2018). A highly valuable direction in fundamental research has been school tourism (Gonia, 2010a; Gonia, 2010b). These studies have shown that educational institutions shape how younger generations explore the world, extending the spatial scope of travel across successive stages of education – from the microregional scale to international travel. At the same time, a dynamic evolution of travel preferences has been identified, reflecting the socio-political transformations in Poland. The overall body of research confirms that Bydgoszcz tourism geography provides objective data essential for developing modern tourism products while preserving territorial identity. Researchers have demonstrated that

the activation of local communities through tradition is crucial for the development of tourism products that protect the natural resources of river valleys and inland waterways (e.g., Michniewicz-Ankiersztajn and Józefowicz, 2019).

Research in the field of tourism geography conducted by scholars from the Bydgoszcz centre also extends beyond Poland and covers numerous regions worldwide.

Staff of the centre conduct extensive research on tourism in various regions of the world, often in cooperation with international scientific institutions. The most extensive research in this area is being carried out by Professor Anna Dłużewska, who studies tourism marketing, well-being, and community-based tourism in culturally and socially diverse regions (including Tunisia, Turkey, Morocco, Thailand, Egypt, Indonesia, Iceland and South Africa). Researchers have also addressed sustainable tourism and environmental practices in the hospitality sector in Turkey, with particular emphasis on pro-environmental measures in response to strong tourism pressure and their impact on local communities and institutions (e.g., Patrycja Essing-Jelonkiewicz). In turn, A. Jezierska-Thöle, as part of the “Silk Road” project (2025), conducted research in the Chinese provinces of Shanxi, Sichuan and Hebei, analysing issues related to tourism and cultural heritage protection in the context of sustainable development.

6. Conclusions

The thirty-year development of the Bydgoszcz geographical centre exemplifies a consistently implemented strategy that combines basic research, applied activities and academic teaching. The analysis has shown that the evolution of the organizational structure – from the Department, through the Institute, to the Faculty of Geographical Sciences – was closely linked to the development of academic staff, the expansion of the research scope, and

the adaptation of the educational offer to changing socio-economic and environmental conditions.

The research profile of the unit has been shaped around key areas, including geomorphological and hydrological processes, sediment transport, the functioning of river systems transformed by human activity, and issues related to climate change, including in

polar regions. A distinctive feature of the centre is the development of highly applied research, particularly in the fields of river and inland waterway revitalization, hydrotechnical infrastructure safety, and sustainable water resource management. At the same time, research in socio-economic geography focuses on spatial processes, transformations of socio-economic structures and the development of tourism and regional economies.

The innovative character of the centre is reflected in its educational offerings, which include, among others, the inland waterway revitalization programme – unique at the European level – as well as modern studies in renewable energy sources. Since 2015, all programmes have followed a practical profile, offering students certified training (e.g., in MIKE URBAN modelling, SCALGO, and GIS tools) and access to modern infrastructure.

Cooperation with the socio-economic environment constitutes a cornerstone of the unit's activity. It is reflected in the development of strategic documents for local governments and in the Bydgoszcz-based activities of the Centre for Information and Promotion of Inland Waterways. The strong position of the centre and its practice-oriented education result in high employability of graduates in institutions of the Kuyavian-Pomeranian region and in central administration bodies. In light of the analyses conducted, it can be concluded that the Bydgoszcz geographical centre has achieved scientific and organizational maturity, becoming a nationally recognized and increasingly internationalized centre of geographical research.

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