Summary of Professional Accomplishments

1. Name

Grzegorz Uścinowicz

2. Diplomas, degrees conferred in specific areas of science or arts, including the name of the institution which conferred the degree, year of degree conferment, title of the PhD dissertation

2010 PhD degree in the specialization field of Earth Science conferred by the Faculty of Geographic and Geological Sciences, Adam Mickiewicz University in Poznań

Title of dissertation: Metaliczne sferule w kenozoicznych osadach lądowych i morskich. [Magnetic spherules in the terrestrial and marine sediments of Cenozoic age].

Supervisor: prof. dr hab. Wojciech Stankowski

2006 MSc degree in Geology (specialization field: Quaternary geology)

Adam Mickiewicz University in Poznań, Faculty of Geographic and Geological Sciences, Institute of Geology

Master thiesis title: Materia pozaziemska w otoczeniu kraterów meteorytowych Kaali. [Extraterrestrial material from the surroundings of the Kaali meteorite craters].

Supervisor: prof. dr hab. Wojciech Stankowski

3. Information on employment in research institutes or faculties/departments or school of arts

2022 – rec Chief specialist in geology, Polish Geological Institute – National Research Institute

2013 – 2022 Senior specialist in marine geology, Polish Geological Institute – National Research Institute

2011 – 2013	specialist, Polish Geological Institute – National Research Institute
2006 – 2010	PhD student, Adam Mickiewicz University in Poznań, Faculty of Geographic and Geological Sciences, Institute of Geology

4. Description of the achievements, set out in art. 219 para 1 point 2 of the Act

As an achievement, I submit a series of five thematically related scientific publications published in journals on the MEiN list. I was a corresponding author on all of the papers in the series. These papers constitute the research topic entitled:

„Short-term development of selected sections of the Polish coast"

A1. Uścinowicz G., Kramarska R., Kaulbarsz D., Jurys L., Frydel J., Przezdziecki P., Jegliński W., 2014. Baltic Sea coastal erosion; a case study from the Jastrzębia Góra region. Geologos, 20(4): 259-268.
DOI: 10.2478/logos-2014-0018

Citation count*:	Impact factor**:	MEiN points:
Scopus: 13 (9)	1,0 (-)	40
WoS: -		
Google Scholar: 20 (16)		

** - excluded autocitations in brackets*
*** - current IF, IF from the year of publication in brackets (according to WoS)*

My contribution to the publication included:

(1) conception of the problem presented in the article,

(2) literature studies, (3) outline of the manuscript and drafting of the text, (4) discussion of the results, (5) preparation of responses to reviews and final editing of the manuscript.

A2. Uścinowicz G., Jurys L., Szarafin T., 2017. The development of unconsolidated sedimentary coastal cliffs (Pobrzeże Kaszubskie, Northern Poland). Geological Quarterly, 61 (2): 491-501.
DOI: 10.7306/gq.1351

Citation count *:	Impact factor**:	MEiN points:
Scopus: 7 (4)	1,0 (1,1)	100
WoS: 6 (3)		
Google Scholar: 10 (7)		

* - *excluded autocitations in brackets*
** - *current IF, IF from the year of publication in brackets (according to WoS)*

My contribution to the publication included:

(1) developing a concept of the problem presented in the article and participating in discussions on this concept, (2) Literature studies, (3) Preparation of a manuscript outline (4) participation in the preparation of the iconographic layer, (5) participation in the analysis and discussion of the results, (6) preparation of the response to the reviews and final editing of the manuscript.

A3. Uścinowicz G., Szarafin T. 2018. Short-term prognosis of development of barrier-type coasts (Southern Baltic Sea). Ocean & Coastal Management, 165: 258-267.
DOI: 10.1016/j.ocecoaman.2018.08.033

Citation count *:	Impact factor**:	MEiN points:
Scopus: 9 (7)	4,6 (2,5)	70
WoS: 7 (5)		
Google Scholar: 10 (7)		

* - *excluded autocitations in brackets*
** - *current IF, IF from the year of publication in brackets (according to WoS)*

My contribution to the publication included:

(1) developing a concept of the problem presented in the article and participating in the discussion of this concept,

(2) literature research, (3) preparation of the methodological sketch

(5) participation in the preparation of the iconographic layer, (6) participation in the analysis and discussion of the results, (7) preparation of the response to the reviews and final editing of the manuscript.

A4. Uścinowicz G., Szarafin T., Jurys L., 2019. Tracking cliff activity based on multi-temporal digital terrain models - an example from the southern Baltic Sea coast. Baltica, 32 (1): 10-21.

DOI: https://doi.org/10.5200/baltica.2019.1.2

Citation count *:	Impact factor**:	MEiN points:
Scopus: 4 (3)	0,7 (1,0)	40
WoS: 3 (2)		
Google Scholar: 5 (4)		

** - excluded autocitations in brackets*
*** - current IF, IF from the year of publication in brackets (according to WoS)*

My contribution to the publication included:

(1) participation in the development of the research concept and methodology, (2) literature research, (3) preparation of the methodological outline, (4) preparation of the manuscript outline, (5) Participation in the preparation of the iconographic layer - presentation of the results, (6) participation in the analysis and discussion of the results, (7) preparation of the response to the reviews and final editing of the manuscript.

A5. Uścinowicz G., Szarafin T., Pączek U., Lidzbarski M., Tarnawska E. 2021. Geohazard assessment of the coastal zone – the case of the southern Baltic Sea. Geological Quarterly, 65 (1), 5.
DOI: 10.7306/gq.1576

Citation count *:	Impact factor**:	MEiN pints:
Scopus: 2 (1)	1,0 (1,5)	100
WoS: 1 (1)		
Google Scholar: 2 (1)		

** - excluded autocitations in brackets*
*** - current IF, IF from the year of publication in brackets (according to WoS)*

My contribution to the publication included:

(1) participation in the development of the research concept and methodology, (2) literature research, (3) preparation of the methodological outline with the proposed categorisation and method of geohazard assessment, (4) preparation of the manuscript outline, (5) participation in the preparation of the iconographic layer - presentation of the results, (6) participation in the analysis and discussion of the results, (7) preparation of the response to the reviews and final editing of the manuscript.

Introduction:

Processes occurring in the coastal zone of seas and oceans are a key problem for communities living in coastal area (e.g., Hanson and Lindh, 1993; Zhang et al., 2002; Delle Rose, 2015). Coastal erosion is a global phenomenon and one of the main issues in coastal management. It sometimes causes significant losses, including natural habitats and areas of economic importance such as forests, agricultural land, tourist and residential areas (e.g. Dean et al., 1999; Kraus and Galgano, 2001). In order to effectively develop and implement land use plans, including to reduce, prevent or adapt to the effects of erosion and to realistically predict scenarios for future events, it is important to know the temporal and spatial scale of the phenomenon and its causes (e.g. Cooper and Mckenna, 2008; Williams et al., 2018; Uścinowicz et al., 2021). It is necessary to be aware of the conditions and factors that drive coastal development, such as morphology, geological structure and hydrodynamic processes, among others. To understand coastal development properly, it is necessary to understand the interaction between geological and morphological conditions and hydrodynamic processes, not only on the beach and coastline (e.g. Stive and De Vriend, 1995), but also in the wider coastal zone, i.e. both in the offshore coastal zone (shoreface) and in the landward hinterland. Geological and morphological conditions on the seabed are spatially correlated with shoreline changes at different temporal and spatial scales (e.g. Schupp et al., 2006).

The studies of changes in the Baltic coastal zone are therefore important for its optimal management, including the location of infrastructure investments, the protection of natural habitats, the protection of coastal water intakes and, consequently, the selection of optimal methods of coastal protection.

The main objective of the research work presented as my scientific achievement was a systematic and comprehensive recognition and presentation of the main conditions and factors controlling (conditioning) the development of a selected fragment of the Polish coast, including both the barrier and cliff coastal sections. The selected fragment is characterised by high morphological diversity and complexity of geological structure. The above mentioned series of thematically related works entitled "Short-term development of selected sections of the Polish coast" is the result of my research interests developed during my work for the Polish Geological Survey (PSG) on the Baltic Sea coast. The PSG task "4D cartography in the coastal zone of the southern Baltic Sea" is of fundamental importance for the results presented here. This task has been carried out in successive phases since 2012. I have been involved since the creation of the (project) framework, which defined the research methods and objectives as well as the scope of the task, and have been its manager since 2015.

In principle, this task aims at a detailed and comprehensive survey of the geological structure of the broadly defined coastal zone, including both onshore and offshore parts up to 2 km from the coast, and the processes that shape it. The task is carried out using homogeneous, modern and complementary research methods. Detailed visualisation of the relief and geological structure of the seabed and adjacent land is complemented by modelling of hydrogeological conditions, modelling of erosion-accumulation processes, including prediction of changes in the position of the coastline, and identification and assessment of geohazards.

The implementation of such extensive surveys (investigations) is carried out in three main stages, corresponding to the time framework of coastal processes. Firstly, past images of the coastal zone and its processes are analysed on the basis of archival cartographic material, aerial photographs and scientific reports and publications. The timeframe of this step goes back to the mid-19th century. The second step is to document the contemporary morphological features of the coastal zone (e.g. by airborne laser scanning and multibeam echo sounding) and to carry out a detailed geological reconnaissance (e.g. by seismo-acoustic and sonar profiling, and by compaction of drill grid and sediment sampling points), i.e. possibly faithfully and a detailed presentation of the coastal zone in its present form. In the third step, analytical and prognostic works are carried out with the aim of identifying and presenting possible directions for the development of the coastal zone (Uścinowicz, 2023).

In terms of spatial extent, level of detail and comprehensiveness, this task is unique, as the picture of the geological structure of the land-sea interface has tended to be limited both spatially to selected parts of the coastal zone and in terms of the extent and method of observations. In particular, there has been a lack of detailed knowledge of the geological structure and analysis of its influence on the variability of geodynamic processes.

Discussion of the articles in the series

The series of five articles presented as a scientific achievement entitled "Short-term development of selected sections of the Polish coast" is characterised by the complementarity of the issues discussed in the articles.

The first article (**A.1**.) presents the results of studies aimed at identifying changes in the morphology of the coastal zone in relation to geological and hydrogeological conditions, including the identification of accumulation and erosion zones and their relation to the morphology and geological structure of both the offshore and inland parts. The work was carried out on a relatively short, but geomorphologically and geologically diverse fragment of the coast in the area of Jastrzębia Góra, comprising both barrier and cliff sections. The cliff at Jastrzębia Góra has been used for many years as a testing ground for studies of slope stability and coastal erosion rates (e.g. Subotowicz, 1982, 1989, 1991, 1995a, b, 2000; Kramarska et al., 2011). The barrier of narrow beach and low dunes west of the Jastrzębia Góra cliff is also subject to significant erosion (Zawadzka, 2005). Protection of this part of the coast has been carried out since the beginning of the 20th century. The first seawall protecting the dunes was created in the interwar period. However, the first protection infrastructure at the foot of the cliff was built only in 1994. The most characteristic structure, built in 2000 to protect the most active part of the cliff, is the Massive Cliff Stabilisation System (MCSS). This diverse and relatively well-studied stretch of coastline was an excellent testing ground for the effectiveness of the scope and methodology of the research that was to be applied more widely in the Polish Geological Survey work. The work carried out combined methods of traditional terrestrial geological mapping, marine geology, geophysics and remote sensing, including the use of archival map analysis, aerial photography and terrestrial laser scanning.

The aim of this study was to collect and process data for the identification of changes in the morphology of the coastal zone in relation to geological and hydrogeological conditions, including the identification of accumulation and erosion zones and their connection with the morphology and geological structure of both the offshore and inland parts.

The observations made showed that the shoreline retreat in the discussed part of the coast is part of a general trend of observed changes of the Polish coast (Rotnicki, 1995; Furmańczyk, 2005; Zawadzka, 1999, 2012; HELCOM, 2007). However, based on the analysis of archival maps and aerial photographs, it was found that between 1957 and 2010 the barrier section experienced greater changes than the cliff section. The shoreline on the barrier receded by a maximum of about 90-95 m between 1908 and 1957 and about 85-90 m between 1957 and 2010, while on the cliff it remained stable between 1908 and 1957 (changes were within the analytical error), and between 1957 and 2010 retreated by only about 10-35 m. This paradox can be explained by the fact that on cliffy coast erroded was the colluvium of landslides that occurred at the turn of the 19th and 20th centuries, which resulted in a significant retreat of the cliff edge but limited the rate of shoreline retreat. Precise reference to previously published data on the rate of shoreline retreat on both the barrier and the cliff sections (e.g. Zawadzka-Kahlau, 1999, 2012; Subotowicz, 1982, 1989, 1991, 1995a, b, 2000) proved difficult due to the extensive coastal protection works, i.e. the extension of the seawalls and artificial beach nourishment, which have been carried out intensively since the beginning of the 21st century.

The application of large scale terrestrial laser scanning (TLS) to the cliff coast made it possible, for the first time, not only to track the retreat of the cliff top or shoreline, but also to spatially visualise the mass movements occurring across the slope. Repeated measurements at periodic intervals showed that these were highly variable in time and space. The combination of the TLS results with the detailed geological picture showed that the largest and most frequent landslides occurred in the part of the upland characterised by diverse and complex lithology, the presence of glaciotectonic deformation and irregular groundwater flow.

The laser scan also showed uneven subsidence of the MCSS. Between July 2010 and November 2012, this structure shifted up to 2.0-2.5 m seaward and subsided between 1.3 and 2 m. Spatial analyses of the geological structure and morphological changes within the hydrotechnical structures and natural (unprotected) cliff slopes challenged the paradigm about the dominant role of marine erosion as the main causal factor of cliff retreat, and in particular the model of cliff development in Jastrzębia Góra proposed by Subotowicz (1989, 1995 a,b). This model assumed marine erosion as the main cause of cliff retreat, steady retreat of the cliff base at a rate of 1 m/year and a catastrophic course of change; washing out of the colluvium and subsequent undercut of the cliff base, what should result in periodic (about every 100 years) large landsliding.

In conclusion, the studies carried out have shown that sea-level rise and storms are not always and everywhere the main factors influencing coastal erosion. Different types of coast (barriers and cliffs) have different susceptibilities to erosion, even within the same type, with erosion rates varying and changing over time. The geological structure and hydrogeological conditions of the landward part of the coastal zone can be equally important and often dominant determinants. This paper (**A.1**.) also shows that the problem of coastal erosion cannot be considered without taking into account the geological structure of the seabed. Geophysical surveys and sediment cores have shown that the seabed in the study area consists of consolidated Neogene clay and Pleistocene till and that the thickness of the modern marine sand cover is often less than 1 m and in places is absent. As a result, there is a deficit of sand in the coastal zone that could form a system of snadbars to dissipate the energy of storm waves and nourish the beaches and dunes. The shortage of marine sand on the shoreface is particularly important for the development of barrier coasts, but also plays an important role in the development of cliff coasts.

The research problem of article **A.2.** focused on a more detailed identification of the geological determinants of cliff coast development. The conditions of cliff development identified in article **A.1.** were used to initiate further detailed studies. The area of analysis was extended to include the remaining cliffs of the Kępa Swarzewska, with the aim of characterising the morphology of basic types of landslides formed in unconsolidated Cenozoic sediments and identifying control mechanisms.

Several types of research methods were applied. Firstly, spatial analyses were carried out on the oldest available maps - German topographic maps from 1877 to 1910. Based on this historical information and the current situation (position of the shoreline in 2015), the shoreline retreat was analysed. Secondly, a Digital Terrain Model [DTM] based on a 1x1m resolution airborn laser scanning was analysed using various geoprocessing techniques. This was followed by an analysis of the geological structure based on archival data. Fieldwork was the main method of geological data collection. The study area was visited more than a dozen times between 2012 and 2016.

The studies carried out have documented the continuous occurrence of mass movements of varying complexity - from simple to genetically and morphologically complex. Both types of landslide alternate depending on the changing geological structure. A special case is the landslide on the Rozewie headland, where massive seawall prevented marine erosion and stabilised the slope of the cliff for more than 100 years, until an incident in 2005 briefly activated the landslide. Kępa Swarzewska is characterised by a great diversity of geological structure, which determines the occurrence of different types of mass movements on its slopes. This paper presents detailed characteristics of four typical landslides occurring on the cliffs of Kępa Swarzewska. Comparative analyses of the position of the shoreline showed that the shoreline in the area of the landslides move landward from about 20 m to about 80 m in about 100-130 years.

Two main types of landslide have been identified:

- ❖ Predominantly simple landslides that occur in homogeneous and undisturbed sedimentary layers, e.g. clays, tills and sands.

- ❖ Less common are complex landslides, in which the movement of rock masses takes place under complex geological and hydrogeological conditions, which are further complicated by glacitectonics, e.g. the presence of discontinuity zones in the form of thrusts.

The studies and analyses carried out have shown that there is a wide gradation of conditions influencing the formation of landslides and the rate of coastal retreat. In the case of simple landslides, marine erosion plays a primary role, the geological structure is a secondary factor and weather conditions, mainly precipitation, are a third order factor. The process begins with the removal by waves of the colluvium that shields the base of the cliff. The undercut of the exposed foot of the slope by storm waves initiates the destabilisation of the cliff. At this stage, the second order factor of the geological structure begins to play a role. The first displacements occur in Pleistocene sediments with a low degree of diagenesis, resulting in a faster inflow of rainwater into the lower, more consolidated parts of the cliff, built mainly of Miocene sands and silts, and their consequent activation. This completes the sequence of events and the process begins again - erosion of the colluvium.

In the case of complex landslides, the main role in their formation is played by a complex, often disturbed arrangement of geological layers and hydrogeological conditions, and marine erosion is a less important factor. Landslides in such a situation can, for example, occur as a result of a change in hydrogeological conditions regardless of the intensity of marine erosion at the base of the cliff, or even in its absence due to the presence of protective structures. The correct recognition of the types of mass movements and the conditions for their formation is of key importance for the selection of appropriate methods of coastal protection of cliffs. The studied cliffs are characterised by the highest complexity and spatial diversity of the geological structure on the Polish coast. The obtained results can be referred to and used in the analysis of the conditions of geodynamic processes not only in other cliffs of the southern and eastern Baltic Sea, but also in other regions where cliffs of poorly consolidated sediments dominate. Similar processes and their conditions are known, for example, from the east coast of Canada, where cliffs are formed in glacioisostatically uplifted, unconsolidated Late Quaternary marine sediments (Joyal et al., 2016), and from cliffs of southern California, which are composed of cemented Eocene siltstones and sandstones and weakly cohesive, fine-grained Pleistocene sands (Young et al., 2009, 2016). The examples described here clearly show that the processes in unconsolidated cliffs of loose or poorly consolidated sedimentary rocks are universal and shed new light on the geodynamic evolution of cliff coasts. As a result, the recognition of the relationship between geological structure and hydrological conditions and the formation and development of landslides on cliffs (**A.2.**) provided the impetus to extend the scope of the study.

The aim of study **A.4**. was to identify temporal and spatial changes on the north-eastern cliff coast of Kępa Swarzewska, between Rozewie and Chłapowo. The main idea was to compare changes year by year or every two years, depending on the available material. The study was based on the analysis of five digital terrain models (DTMs) created from airborne laser scanning (ALS) carried out between 2010 and 2016. The resolution of the DTMs was 0.5x0.5 m and the mean error of the z-value (height) was about 0.15 m. The DTMs were analysed using different processing techniques. Multi-temporal terrain models were developed showing the height differences of the terrain surface in the landslide zone and on the beach over 1-2 year cycles. In addition, the average vertical displacement rates within the landslides and the sediment balance on the beach were determined.

Vertical surface displacements of different landslides varied in magnitude and intensity at different locations. Nevertheless, it was found that the largest vertical displacements, both lowering and rising of the surface occurred between 2010 and 2012. Lowering of the surface associated with the formation of landslide niches in the upper parts of the landslide ranging from 5.7 to 8.0 m and rising within the colluvium accumulation area ranging from

2.9 to 4.9 m. Changes in the 2012-2014, 2014-2015 and 2015-2016 periods were smaller, ranging from 1.4 to 4.8 m (lowering) and 1.4 to 5.8 m (rising), respectively.

There is no clear answer to the question of the cause of the increased landslide activity between 2010 and 2012. Hydrodynamic conditions in the Baltic Sea and marine erosion were not the main reasons for landslide activation in this case, as no increased number of storms was recorded during this period or immediately before, and not all landslides reactivated during this period, despite the same storm impact on the studied coastal section. Furthermore, the landslide at Rozewie showed some activity, although the foot of the cliff is protected by the seawall.

Increased precipitation between 2006 and 2010 was the most likely cause. This explains both the high landslide activity between 2010 and 2012 and the fact that different cliff sections with different geological structures may have responded differently and at different times to increased precipitation and associated changes in hydrogeological conditions. Relationships were also found between landslide activity and annual and multi-year sediment budgets on the beach and upper shoreface. An increase in beach sediment was associated with a lack of landslide activity and, conversely, a negative beach sediment balance was associated with an increase in landslide activity.

In conclusion, digital terrain models derived from cyclical repeated airborne laser scanning, which allow the acquisition of detailed high-resolution data on horizontal and vertical displacement of rock masses, provide a better understanding of the mechanisms controlling landslide formation and development. However, in order to interpret these data correctly, it is necessary to combine them with information on the geological structure of the area under investigation. This is particularly important for the assessment of geohazards in areas prone to mass movements.

Independently of the problems associated with the cliff coasts and the landslides, I have carried out parallel work in relation to the development of the barrier type coasts (**A.3.**). While the problems identified in cliffs were considered in relation to the dominant erosion process, in the case of dune barrier type coasts it was also necessary to refer to local accumulation zones. Contrary to popular belief, barriers are not only subject to erosion, but also to positive transformations in terms of sediment balance. Bariers are much more common in Poland than cliffs, accounting for about 80% of our total coast. They also play a greater economic role, so predicting changes in the coastal zone is extremely important for its proper management. The importance of predicting development increases as the pressure for coastal development increases.

The aim of the study (**A.3.**) was to present forecast variants (prognosis) of the development of a 22 km long section of the barrier coast in Pobrzeże Kaszubskie in the perspective of 15 years. The research was mainly based on spatial analysis of various cartographic materials and extrapolation of historical trends. The oldest maps that can be reliably compared with contemporary sources are German topographic maps (Messtischblatt) at the scale of 1:25,000, drawn for the study area in 1875. Another source of knowledge about the location of the coastline at the beginning of the 21st century is a modern topographic map. The next source of materials used in the research were digital terrain models [DTM] based on aerial laser scanning from 2010 and 2016. The first step in creating predictive models was to determine the position of the shoreline in the years: 1875, 2001, 2010 i 2016.

Profiles were then drawn perpendicular to the shoreline at 100 m intervals, and also at 50 m intervals for the two areas with the highest erosion and accumulation values. On these profiles, the points/locations of the coastline and the base of the dunes were marked for all the cartographic objects analysed. In this way, a set of points corresponding to the position of the shoreline and the dune base was obtained for each time period. For each point, X and Y coordinates were determined in a flat rectangular coordinate system. The position of the shoreline for the next 15 years was then determined using two computational models: the *shoreline extrapolation model* and the *averaged shoreline changes model*.

The analyses carried out showed the generally oscillatory nature of the shoreline shape, i.e. the shoreline follows a sinusoidal course, with the positive amplitude corresponding to accretion and the negative amplitude to erosion. In most cases, changes in the position of the shoreline in successive periods follow a logical and orderly course. In erosional sections, the shorelines interpreted from older material ale located progressively further away from the modern shoreline. The shoreline interpreted from the Messtischblatt is furthest from the modern shoreline. The 2001 shoreline is next, followed by the line interpreted from DTM-2010. This pattern is repeated by the lines marking the base of the dune in subsequent years. However, there are places where this seemingly simple pattern is broken. Such places are mainly found at the transition points/zones from areas of erosion to areas of accretion, or at the outlets of rivers such as the Piasnica.

By inputting shoreline and dune base position data from different time periods into the two models, four predictions were obtained:

1/ Forecast using a shoreline extrapolation model based on 1875-2016 data.

2/ Forecast using a shoreline extrapolation model based on 2001-2016 data.

3/ Forecast using a shoreline extrapolation model based on 2010-2016 data.

4/ Forecast using an average shoreline changes model based on 2010-2016 data.

The first projection (1) shows a relatively stable and uniform trend of change. The maximum predicted changes are about a dozen metres and are confined to a few main, clearly defined areas of erosion and accretion.

Forecast two (2) predicts larger changes. Shifts in areas of accretion are up to 61 m and for erosion up to 103 m, indicating some increase in projected erosion processes. There is also a greater fragmentation of the main areas (sections) of erosion or accretion.

The third prediction (3) shows an even more variable and complex picture. Firstly, the predicted values of both erosion and accretion above 100 m increase. Secondly, the fragmentation of the coastline into areas of erosion and accretion increases further. In the case of predicting changes in the dune base, the situation is more stable and the expected changes are smaller.

Projection four (4) shows averaged erosion and accretion values calculated using data from 2010 to 2016. Averaging results in smoother predicted changes, with the only perturbations associated with outlets of rivers and streams. Predicted accretion values mostly range from about 35 m to about 65 m, and erosion from about 25 m to about 65 m.

A comparison of the models reveals a certain regularity in that the shorter and closer to contemporaneous the period of data considered, the greater (more detailed) the fragmentation of the coast into sections subject to erosion or accretion. This is probably due to the much greater accuracy of digital terrain models (which show the very precise instantaneous state of the shoreline position) compared to topographic maps.

A fundamental issue for the validity of the models presented is the stability of the zones within which accretion or erosion occurs. Some authors (e.g. Zawadzka-Kahlau, 1999; Furmańczyk and Musielak, 2002) assume that the occurring sinusoidal shoreline undulations and the associated nodal points are constant. However, there are also opposing concepts that assume the migration of sinusoidal waves along the coast (Basinski, 1995; Verhagen, 1989). Given the short projection period of 15 years for the purpose of this study, it has been assumed that the sinusoidal shape of the coastline and the associated erosion and accretion zones are constant, and if not, that the migration of the zones and the reversal of the erosion/accretion system occur over a longer period of time, i.e. at least several decades.

The developed 15-year forecast may be relevant for short-term planning of coastal zone development, e.g. „light" tourism and recreational infrastructure. For the planning of larger investments and the design of port infrastructure or the protection of inhabited areas in the coastal zone against storm floods, reliable long-term forecasts are needed, which requires the development of new models and the investigation of several issues to make the models reliable. I leave aside here the issues of climate change and the related question of predicted changes in sea level or storm frequency and intensity. If we limit ourselves to issues related to geology and coastal development processes, future models will need information such as the following:

- ❖ Identify areas where erosion is significantly greater than in adjacent sections of the coastline, in particular: how fast the shoreline may be retreating; how and why the rate of coastal erosion has changed; what are the causes of rapid, localised coastal erosion?
- ❖ Is the sinusoidal shape of the coastline and the associated erosion and accretion zones constant and, if not, what is the rate of migration of these zones and reversal of the erosion/accretion system?

I have tried to address the above issues with my research team by preparing the following articles: "Rapid coastal erosion, its dynamics and cause - an erosional hot spot on the southern Baltic Sea coast" and "New insight into coastal processes in the southern Baltic Sea: relevance for modelling and future scenarios". The first one will be published in the journal 'Oceanologia' in the near future, the latter is ready to be sent to the Editorial board of one of the established journals.

Presenting the picture of the geological structure and processes occurring in the coastal zone, at different spatial and temporal scales, in an individualised way for specific types of coasts, required a gradual summary and presentation of practical applications of the research results. Therefore, article **A.5**. describes the phenomena of existing and potential natural hazards, the so-called geohazards. Geohazards, including geohazards related to the marine environment, encompass a wide range of relevant conditions, processes and events (Yonggang et al., 2016; Culshaw, 2018) and as such should be integrated into all adaptation and planning activities (Didier et al., 2019).

The study area is located on the southern coast of the Baltic Sea (Pobrzeże Kaszubskie) and extends 38 km from east to west between Chłapowo and Lubiatowo, covering both a 2 km strip of land and 2 km of seabed. Geographically, the area comprises two different geomorphological units: the lowland, and adjacent barrier, and the Pleistocene upland, on the slopes of which a cliff coast is developing. The diversity of the study area has made it possible to discuss the various natural hazards that occur under different geomorphological, geological and hydrological conditions. It is also an area of anthropopression, especially in terms of tourism and agriculture.

Under these conditions, a series of different and complementary research methods have been used, such as remote sensing analysis, mapping (geological, hydrogeological), marine surveys (bathymetric and geophysical), laboratory and modelling work, which have revealed a series of natural hazards of varying potential.

These were

- ❖ persistent hazards that cause material losses, such as landslides, coastal erosion and seabed erosion
- ❖ incidental hazards - dune belt breakage and storm surges overflows
- ❖ and hypothetical hazards that may occur in the future, such as hydrogeohazards, defined here as flooding due to rising groundwater levels, or the very rare but random hazard of earthquakes.

In order to assess the significance of each identified phenomenon, some basic questions had to be answered. Is the phenomenon real or hypothetical? Did the phenomenon occur in the last 20 years? Is the phenomenon permanent or incidental? Did the phenomenon cause material damage? Have the attempts been made to prevent the phenomenon? In answering these questions, the identified processes - geohazards - were ranked according to whether the significance of the process in question can be considered high, medium or low.

Summarising the natural hazard issues analysed, the following conclusions can be drawn. With regard to landslides, the steep cliff coast was found to be a highly dynamic zone, so that it is more appropriate to speak of landslide zones or the continuous occurrence of different mass movements along the entire section of cliff studied. On the other hand, the coastal erosion occurs in an intensified form in the sections adjacent to the seabed zones where a sand deficit was found. However, this phenomenon should be further investigated in relation to cyclical changes in accumulation/erosion processes. The associated seabed erosion (sand deficit) was observed over a large part of the study area and should be considered as a phenomenon that has a major impact on the entire coastal zone (both cliff and barrier). On the other hand, the areas most vulnerable to storm surges and dune erosion are the locations of deflation depressions, river outlets and man-made tourist passages. A hydrogeological hazard (i.e. a rise in groundwater levels) may be associated with intensive run-off of cliffs and colluvium, leading to reactivation or formation of new landslides. As a result of these processes, the rate of erosion and mass movements will be significantly higher. The barrier type coast will be exposed to erosive processes from two directions: increased abrasion from the seaward side and dune erosion from the landward side, where permanent flooding of the low-lying area may occur.

With regard to endogenous hazards, although the study area is traditionally considered as an aseismic zone, the occurrence of earthquakes that may affect the coastal zone cannot be completely ruled out. Such a situation occurred, for example, in September 2004, after the Kaliningrad earthquake, when some landslides considered inactive were reactivated. From the above summary, it is clear that interactions between different types of natural hazards can be a serious problem. The relationships between these processes, their interactions and their effects are not fully understood and should be the subject of further research. Even in areas where the level of hazard is potentially low, e.g. on the coasts of non-tidal seas and areas of low seismicity, etc., some serious hazards can be identified and their socio-economic impacts should therefore also be taken into account in spatial planning and in the preparation of risk-reducing adaptation strategies. The systematic study described above focused on a coastal stretch of several tens of kilometres, which is rare at the scale of the Baltic Sea. Therefore, the results described in the article (**A.5.**) are the first or one of the first attempts (to the author's knowledge) to describe all identified and potential processes and geohazards in such a large coastal area.

Summary (results and innovative approaches)

In the series presented, the principle of "from detail to the whole" has been followed, whereby the specific issues examined have made it possible to formulate and establish general development trends for a significant part of the Polish coast, and to identify their main determinants. It should be noted that these are not definitive results, but should be seen as open-ended, providing a starting point for further research and reflection.

The starting point of the studies in this series was a relatively small but varied section of the coast (**A.1.**), which led to studies of the geological and hydrogeological conditions controlling the development of landslides (**A.2.**), and further, after recognition of these regularities, to studies of the intensity and temporal variability of mass movements in cliffs (**A.4.**). In parallel with the studies on the cliffs, work was carried out on the conditions and processes that control the development of the barrier type coast, together with an attempt to predict these phenomena (**A.3.**). A synthesis of these works was an article (**A.5.**), which grouped and categorised the phenomena dominating a morphologically, geologically and economically important section of the Polish coast.

A methodological approach based on the complementarity of the marine and terrestrial environments has shed new light on processes that had previously been analysed separately, e.g. the movement of sediment and its thickness on the seabed is fundamental to the erosion processes observed on the coast, and the development of landslides in coastal cliffs does not depend solely on marine erosion. Often geological conditions and processes in the onshore part of the coastal zone are fundamental to their development. In addition, the results of previous work have shed new light on the interplay between seabed morphological features (large scale bedforms) interactions and hydrodynamic conditions on the seashore, as well as the anomalous occurrence of zones of increased erosion. The latter two topics are currently in the research phase and preliminary results have been presented in conference proceedings and are being prepared for publication in international scientific journals. This emphasises the open-ended nature of the work undertaken and provides a basis for further investigation and attempts to understand the coastal zone system.

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5. Presentation of significant scientific or artistic activity carried out at more than one university, scientific or cultural institution, especially at foreign institutions

I made my first international contacts, which later led to scientific cooperation, while I was still a MSc and PhD student, during research stays at the Swedish Geological Survey - SGU (2003) and at the Netherlands Geological Survey - TNO (2007). During my stay at SGU I improved my knowledge of marine geology by participating in a research cruise in the Baltic Sea and learning about the methodology and scope of laboratory and office work. My stay at TNO served to broaden my knowledge of marine coastal geology and the methods used to research it. During my stay at TNO I also participated in field work in the North Sea coastal zone. Besides longer scientific stays, I also participated in the international workshop "Relative sea level changes - from subsiding to uplifting coasts" (Gdańsk, 2005) and the international conferences "2ed MELA Conference - Glaciotectonic Structures, palaeobasins and neotectonic setting. (Vilnius, 2007) and "3rd MELA Conference - Cartographical approach of the morphotectonic of European Lowland Area" (Międzyzdroje, 2008).

After starting to work at the Marine Geology Branch of the Polish Geological Institute - National Research Institute (PGI-NRI) in 2011, I've been maintaining and developing the contacts established at that time, which in the following years led to, among other things, joint organisation of scientific events through participation in organisational and scientific committees, keynote speeches at conferences, participation in expert groups of international organisations and participation in international projects.

Among the more significant elements of scientific activity carried out outside the Polish Geological Institute - National Research Institute, I can mention:

- ❖ 11 presentations at international scientific conferences as a speaker, including 4 invited lectures.
- ❖ Participation in one organising committee and one scientific committee of international conferences (i.e: "The 13th Colloquium on Baltic Sea marine geology" held in Gdansk, Poland in 2016 and "The 14th Colloquium on Baltic Sea marine geology" held in Huddinge, Sweden in 2018.
- ❖ Review of scientific publications, including 9 reviews for foreign journals and 4 reviews of journals published in Poland.
- ❖ Participation in expert groups of international organisations:
    - ✓ HELCOM - The Baltic Marine Environment Protection Commission; Member of the Expert Group - Environmental Risks of Submerged Objects (EG SUBMERGED).
    - ✓ Geological Service For Europe (GSEU); Member of Working Group WP 5 - Coastal Vulnerability Assessment & Optimised Offshore Windfarm Siting.
- ❖ Participation in two international projects as a member of the steering committees.
    - ✓ COST Action ES0907 "INTegrating Ice core, MArine and TErrestrial records - 60,000 to 8000 years ago (INTIMATE)". The main objective of the project was to develop common research

principles for the reconstruction of abrupt and extreme climate changes for the different natural environments of Europe (glacial, marine and terrestrial) between 60,000 and 8,000 years ago. As part of the project, I participated in organisational and scientific meetings. The result of my participation in the project in 2012-2014 was to establish contacts with Polish and European scientific centres and to gain experience in co-leading activities of an international nature. It was important to get to know the national participants of the Action, especially considering that they represented research centres located (territorially and substantively) far away from maritime affairs. This enabled me to broaden my knowledge of general geological problems, in particular with regard to methods for determining the absolute age of sediments.

- ✓ COST Action CA15217 "Ocean Governance for Sustainability - Challenges, Options and the Role of Science (OceanGov)".

  The OceanGov project aims to develop an integrated and interactive approach to the governance of Europe's marine and coastal areas by linking interdisciplinary knowledge and regulation in this field. I participated in this 2017-2020 project through, among others, the work of one of the working groups of this action, namely WG 1 (Land-Sea Interactions). The aim of WG 1 was to identify the interactions between the sea and coastal areas in terms of natural, social and economic conditions. As part of the project, I participated in organisational and scientific meetings with representatives of different European centres: (1) in Spain - Spanish Institute of Oceanography in Santa Cruz de Tenerife, (2) in Slovenia - National Institute of Biology, Marine Biology Station in Piran, (3) in the Czech Republic - Mendel University in Brno. The outcome of my work within the "OceanGov" project is a co-authored article with other participants in the action entitled: "European policies and legislation targeting ocean acidification in European waters - Current state", published in Marine Policy, 118, 103947 (see list of scientific outputs) and a guide presenting information, analysis and recommendations for adapting to climate change in the context of land-sea interactions, included in the document entitled. "Adaptation to climate change impacts on land-sea interactions. - Policy Brief 2020/2.

As part of the Action OceanGov, I organised the summer school "Coastal zone management out of geological perspective" (Gdansk, 2019). The training focused on coastal zone and maritime area management in the context of geological conditions. I was the initiator and main organiser of the event, as well as lecturer and co-leader of the scientific field session.

- ✓ In addition to the full participation and contribution to the project management of the COST Actions 'INTIMATE' and "OceanGov", I also participated in the Summer School "Paleocoastlines of the Baltic Sea and Stone Age coastal settlements" within the COST Action TD0902 Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf (SPLASHCOS) (10-15 September 2012; Estonia, Latvia, Lithuania).

COST (European Cooperation in Science and Technology) is a European Union-funded programme that enables scientists to build interdisciplinary research networks across Europe and beyond. Participating in COST Actions was not only of scientific interest, but also allowed me to learn about the organisation and management of European-funded international scientific projects.

- ❖ Participation as a reviewer and member of the doctoral committee of the doctoral thesis at Vilnius University. In March 2023 I was invited to participate in the doctoral committee appointed to defend the doctoral thesis of Mr Viktoras Karaliunas. The defence of the thesis entitled "Interaction of beach and foredune on the natural and affected by human activity sea coast" took place in September 2023 at the Nature Research Center (Lithuania). The thesis was supervised by Dr Darius Jarmalavičius.

6. Presentation of teaching and organizational achievements as well as achievements in popularization of science or art

Teaching achievements

After completing my Master's degree, as part of my doctoral studies (2007-2009), I co-taught field courses in the subject "Geology of the Cenozoic" for students majoring in "Geology" and "Water and Mineral Resources Management". The one-week field courses for each year group took place in the Konin and Poznań area, including the operating lignite mines of Konin and Adamów.

As part of my work in the Marine Geology Branch of PGI NRI, I participated in didactic courses as a lecturer such as:

1) Lectures for students of geological sciences from the University of Gdansk, University of Szczecin and Jagiellonian University. Lectures on geological survey (investigtions) of the Baltic Sea and the Polish coastal zone were held in the Marine Geology Branch at the rate of 2 hours for each group of students.
2) Summer School "Coastal Zone Management out of Geological Perspective" organised within the COST OceanGov Action (2019). The training was on coastal zone and marine management in the context of geological conditions. I was the initiator and main organiser of the event, as well as lecturer and co-leader of the scientific field session.

   https://www.pgi.gov.pl/aktualnosci/display/11790-oddzial-geologii-morza-pig-pib-gospodarzem-szkolenia.html

Organisational achievements:

1) I was co-author of the guidebook and co-leader of the field session of the international conference "Central-Eastern Europe & Caspian Scout Group Meeting" held in Pomerania in May 2013.

2) I participated as a member of the organising committee of the international conference "The 13th Colloquium on Baltic Sea marine geology" held in Gdansk, Poland in 2016.

3) I participated as a member of the scientific committee of the international conference "The 14th Colloquium on Baltic Sea marine geology" held in Huddinge (Sweden) in September 2018.

4) I participated as a member of the scientific committee and co-leader of the field session of the conference "Geological processes in the sea and coastal zone - GEOST IV", held in Rowy (Poland) in September 2023.

Achievements in popularising science:

1) In 2012, 2013 and 2014 during the Baltic Science Festival, within the framework of which the Geological Science Picnic on the beach in Gdynia-Orłowo was organised, I was one of the tutors of the meetings with the visitors; among others, I discussed the phenomena occurring in the coastal zone of the sea, the geological structure of the northern Poland, issues related to the occurrence of amber on the beaches and in the Quaternary sediments, and other popular science issues related to geology.

2) In 2011-2014 I was one of the tutors of the competitive part of the "Nasza Ziemia" ["Our Earth"] contests organised by the Polish Geological Institute - National Research Institute. These were knowledge competitions for middle and high school classes.

3) I gave an interview to the online publication gazeta.pl. In the series weekend.gazeta.pl there was an article called "Wędrujące plaże. Bałtyk czasem zabierać, a czasem oddać" ["Wandering beaches. The Baltic Sea sometimes takes away, sometimes gives it back"], which included excerpts from my statements to the author of the article, Ms Agata Porażka. They concerned the coastal zone research carried

out by the Polish Geological Survey, trends in the development of the Polish coast and methods of coastal protection. https://weekend.gazeta.pl/weekend/7,177334,28227410,wedrujace-plaze-baltyk-czasem-zabiera-a-czasem-oddaje.html

7. **Apart from information set out in 1-6 above, the applicant may include other information about his/her professional career, which he/she deems important.**

In addition to the research topics presented in the series of publications that make up the body of work, during my research career I have also worked on topics such as the study of extraterrestrial matter in terrestrial and marine sediments, and deposit geology.

The beginning of my interest in extraterrestrial matter in terrestrial and marine sediments is linked to the realisation of my Master's thesis entitled "Extraterrestrial material from the surroundings of the Kaali meteorite craters". During my Master's internship I had a 2-week internship/trip to Estonia (Tallinn and Kaali on the island of Sareama), where I conducted field research at the site of one of the better preserved falls of extraterrestrial matter to Earth in Europe. After completing my Master's thesis, I continued research in this area as part of my PhD studies. The scope of the research was significantly extended to the occurrence of extraterrestrial matter (micrometeorites and spherules) in Cenozoic terrestrial and marine sediments. Initially, my studies were carried out in lignite mines in the Wielkopolskia region (KWB Konin) and in the Lubuskie region (KWB Sieniawa), in the nature reserve "Meteoryt Morasko" near Poznań and at the site of a historical meteorite fall near Przełazy (Lubuskie region). I also analysed samples of marine sediments from the Gulf of Gdańsk provided by the Polish Geological Institute, Marine Geology Branch and samples of sediments from the Pacific region of the Clarion-Clipperton fault zone provided by the Interoceanmetal Joint Organisation (IOM). I was able to isolate extraterrestrial material from marine sediments, the analysis of which enriched my thesis entitled "Magnetic spherules in the terrestrial and marine sediments of Cenozoic age". I continued my interest in this field of knowledge in a less systematic way after my doctorate. However, the period of my PhD studies and related interests provided me with a certain amount of material beyond my thesis. I used this material in a way that popularised astronomy and the dissemination of knowledge about circular structures (often of presumed impact origin). The second issue took a more formalised form of an internal PGI - NRI grant entitled "Genetic, geological and morphological recognition of the circular structure of Kościerzyna".

The outcomes of this phase of my research career were scientific publications (items 1-4 listed below) and conference paper and poster presentations (items 5-9 listed below):

1) **Uścinowicz G.**, 2012. Spherical, magnetic grains of extraterrestrial origin, separated from the Pacific sediments. Oceanological and Hydrogeological Studies, 41(3), 48–53.
2) **Uścinowicz G.**, 2014: Impact craters and the extraterrestrial matter in their surroundings: case of Morasko (Poland) and Kaali (Estonia). Baltica, 27 (1), 24–31.
3) **Uścinowicz G.**, 2017: Identification of a circular structure in eastern Pomerania (northern Poland) – a hypothesis of its origin. Geological Quarterly, 61 (2), 205-213
4) **Uścinowicz G.**, 2018: Charakterystyka geologiczna struktury kolistej Kościerzyny (Geological characteristic of the Kościerzyna circular structure). Acta Societhatis Metheoriticae Polonorum, 9, 164-176
5) Uścinowicz G., 2008: Stratigraphic use of iron spherules. Conference proceedings - Cartographical approach of the morphotectonic of European Lowland Area - 3rd MELA Conference in Międzyzdroje, Poland.
6) Stankowski W., **Uścinowicz G.**, 2009: Czas spadku meteorytu Przełazy w świetle zawartości metalicznych sferulek w płytkich profilach geologicznych (Time of fall of the Przełazy meteorite in the light of

metallic spherule content in shallow geological profiles). Conference proceedings - Polskie Towarzystwo Meteorytowe - Olsztyn.

7) **Uścinowicz G.**, 2008: Metaliczne sferule w osadach kenozoiku – występowanie i problem zanieczyszczeń antropogenicznych (Metallic spherules in Cenozoic sediments - occurrence and the problem of anthropogenic contamination). V konferencja Polskiego Towarzystwa Meteorytowego, Wrocław. The abstract appeared in the conference proceedings and in the Acta Societatis Metheoriticae Polonorum (2011), 2, 202.

8) **Uścinowicz G.**, 2015: Jan Heweliusz, w 404 lata od narodzin, w 347 lat od wydania Cometographii, 328 lat od śmierci, życie astronoma w mieście Gdańsku (John Hevelius, in 404 years from his birth, 347 years after the publication of the Cometographia, 328 years after his death, the life of the astronomer in the city of Gdansk). Conference proceedings – VIII Seminarium Meteorytowe, Olsztyn 2015

9) **Uścinowicz G.**, 2016: Genetyczne, geologiczne i morfologiczne rozpoznanie struktury kolistej Kościerzyny (Genetic, geological and morphological recognition of the Kościerzyna circular structure). Conference proceedings – IX Konferencja Meteorytowa, Łódź 2016

Research in the field of deposit geology is connected with my applied work, which I perform at PGI-NRI in parallel with my scientific work. Since the beginning of my work in the PGI (2011) I have been dealing with problems related to prospecting, documentation and management of sand and gravel deposits located in maritime areas of the Republic of Poland. This is formally reflected in numerous completed and ongoing geological works, geological documentations and deposit development projects, of which I was co-author or main author. Apart from the formal level, embedded in the regimes of legal acts, I have encountered substantive problems, which have been translated into scientific works. Apart from the work in the PGI-NRI and issues related to offshore deposits, I maintained contacts with the Adam Mickiewicz University in Poznań established during my studies, which was also reflected in the form of joint publications related to deposit geology. I am co-author of two publications and two conference presentations listed in the order 1-4 below:

1) Jurys L., Maszloch E., **Uścinowicz G.**, Wirkus K., 2022. Analiza dokładności szacowania zasobów i średnich parametrów złóż kruszywa na dnie Bałtyku na podstawie danych z dokumentacji "Ławica Słupska", "Południowa Ławica Środkowa",. "Zatoka Koszalińska" oraz "Zatoka Gdańska I" i "Zatoka Gdańska II" (Accuracy analysis of aggregate deposits resources and average parameters estimation on the Baltic seabed on the basis of data from the "Ławica Słupska", "Południowa Ławica Środkowa",. "Zatoka Koszalińska" oraz "Zatoka Gdańska I" i "Zatoka Gdańska II" deposits). Górnictwo Odkrywkowe, 1, 33–38.
2) Widera M., Stawikowski W., **Uścinowicz G.**, 2019. Paleogene–Neogene tectonic evolution of the lignite-rich Szamotuły Graben. Acta Geologica Polonica, 69(3), 387–401.
3) Kramarska R., **Uścinowicz G.**, 2015: Stan zagospodarowania złóż kruszywa w obrębie Polskich obszarów morskich i perspektywy powiększenia bazy zasobowej (Status of aggregate deposits within the Polish maritime areas and prospects for increasing the resource base). Conference materials – Złoża kopalin, Warszawa 2015
4) Kramarska R., **Uścinowicz G.**, Koszka-Maroń D., Relisko-Rybak J., 2016: The recognision of the resource base of sand and gravel aggregate in the Polish marine areas. Conference proceedings - The 13th Colloquium on Baltic Sea Marine Geology, Gdańsk 2016

During my career I have also developed my skills and qualifications in applied geology. This is reflected in the courses I have undertaken and the qualifications I have gained:

1) Geological licence in category XI (performing of geological supervision over geological works, except geophysical surveys).
   Certificate No. XI-033/POM (2008),

2) Geological licence of category XII (supervising field geological works performed outside the boundaries of the mining area and without the use of explosives or when the projected depth of the excavation does not exceed 100 m).
   Certificate No. XII-018/POM (2008),

3) Geological licence in category VIII (carrying out geological mapping works together with designing and documenting these works, with the exception of maps made under other qualification categories).
   Certificate number VIII-0188 (2014),

4) Geological licence in category VII (determination of geological-engineering conditions for the purposes of: land development, foundation of buildings, with the exception of foundation of buildings of mining plants and water construction).
   Certificate number VII-1960 (2019),

5) Courses and certificates in:

   ❖ Mapping and data visualisation (2014),

   ❖ Variogram modelling as a technique for improving the accuracy of isolinear maps (2016)

   In the SURFER software environment

6) Certificate in project management:

   PRINCE2® Foundation Certificate in Project Management

   AXELOS Global Best Practice (2020)

During my career to date I have also been awarded:

1) PGI-NRI Director's Award for scientific publications in 2020.

2) Badge of Honour "Meritorious for Polish Geology" awarded by the Minister of Climate and Environment in 2021.

3) PGI-NRI Director's Award for scientific publications in 2020.

Summary of Achievements:

My achievements include a total of 25 publications, of which 17 are indexed in the Scopus database and 16 in the Web of Science database. Five of the indexed publications are included in the presented achievement. The total current IF of the publications included into achievement is 8.3, and the total IF of all my publications is 24.7.

The papers included in the achievement have been cited a total of 35 times (24 without self-citation). The cumulative citation index of all my papers is 65 (50 excluding self-citations) according to the SCOPUS database and 42 (32) according to the Web of Science database.

I have authored and co-authored 30 presentations at scientific conferences, 13 of them at international conferences. 29 of the presentations took place after I received my PhD degree. In addition to oral presentations, I have personally presented 7 posters (6 postdoctoral).

I have been involved in the implementation and management of international projects within the COST Actions 2012-2014 (COST Action ES090 "INTegrating Ice core, MArine and TErrestrial records - 60,000 to 8000 years ago - INTIMATE") and 2017-2020 (COST Action CA15217 "Ocean Governance for Sustainability - challenges, options and the role of science - OceanGov").

Between 2011 and 2023, I have written 13 reviews of articles for international scientific journals and one review of a doctoral thesis defended at the University of Vilnius.

In the course of my professional career, I was twice, in 2020 and 2021, awarded the Prize of the Director of the Polish Geological Institute - National Reseqrch Institute for scientific publications, and in 2021 I was awarded the Badge of Honour "Meritorious for Polish Geology" by the Minister of Climate and Environment.

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