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## OPINION

by Assoc. Prof. Dr. Galin Petrov,  
St Cyril and St Methodius University of Veliko Tarnovo.

member of the scientific jury of the competition for the academic position „Associate Professor“  
in the Field of Higher Education 4. „Natural Sciences, Mathematics and Informatics“,  
Professional Direction 4.4. „Earth Sciences“, Scientific Specialty „Geology of Oceans and Seas“,  
Scientific Direction „Geological-Geomorphological Mapping and Monitoring of the Coastal  
Zone“ in the Section „Coastal Zone Dynamics“ at the Institute of Oceanology - BAS, Varna

### 1. Data on the competition procedure

The competition for the academic position „Associate Professor“ was opened in the State Gazette, issue 63 of 01.08.2025. A sole candidate is eligible to participate in the competition – Eng. Dr. Bogdan Kirilov Prodanov, Chief Assistant Professor in the Scientific Section „Coastal Zone Dynamics“ at the Institute of Oceanology - BAS, Varna. At 01.10.2025 the Admissions Committee found that the documents submitted by the candidates meet the requirements under Art. 52, para. 1 and Art. 53, para. 4 of the Rules for the Conditions and Procedure for Acquiring Educational and Scientific Degrees and for Engaging in Scientific Activity at the Institute of Oceanology - BAS and admitted him to participate in the competition. Based on the Decision of the Scientific Council of the Institute of Bulgarian Academy of Sciences of 17.09.2025, the Director of the Institute issued an order on the composition of the scientific jury for the competition on 26.09.2025. In accordance with it, the first meeting of the scientific jury was held on 10.10.2025. This opinion has been prepared based on the decisions of the meeting.

The candidate has submitted comprehensive documentation that allows the preparation of a reasoned opinion regarding his scientific research activities and the fulfillment of the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the Regulations for this application. The available information shows that there were no violations in the competition procedure and the determination of the composition of the scientific jury.

### 2. Candidate details

Bogdan Prodanov was born on 23.05.1987 in Varna. He completed his secondary education at the Vocational High School of Architecture, Civil Engineering and Geodesy „Vasil Levski“ in the same city and received the qualification of a specialist-geodesist.

Subsequently, he studied at the University of Mining and Geology „St. Ivan Rilski“ and in 2012 completed his studies in the specialty „Applied Geophysics“ and acquired the qualification Master - Engineer in Exploration Geophysics.

In the period 2013 - 2016, he was a full-time doctoral student at the „Coastal Zone Dynamics“ section at the Institute of Oceanology - BAS, Varna. On 27.03.2017, he was awarded the Doctor degree after the successful defense of a dissertation on the topic „Geological fundament for

mapping bottom habitats in the Bulgarian continental shelf off the Avren coast". Since 21.06.2017 he has been appointed as a Chief Assistant Professor at the Institute of Geomorphology – BAS, Varna.

In 2022 he graduated in the MP "Geomorphology" at the Faculty of Geology and Geography of St Kliment Ohridski University of Sofia and acquired the Master degree.

All this shows that Bogdan Prodanov's professional development and academic career are fully in line with the field of the scientific direction of the announced competition.

### **3. Publications and citations**

For participation in the competition, Bogdan Prodanov has submitted a total of 40 scientific publications. Of these, 21 publications are in publications in the global scientific abstract and citation databases Scopus and Web of Science. Distributed by quartiles, the ratio is one publication in Q1 and 5 – in Q2. A total of 9 publications are in publications with SJR. The majority of the publications – 36 are in English, and 4 are in Bulgarian.

Most of the publications are scientific articles or reports presented at academic forums. One of them is a chapter of a collective monograph (in Scopus), and another is a section in the National Scientific Program "Environmental Protection and Risk Reduction from Adverse Events and Natural Disasters".

One of the publications is independent, and the rest are co-authored. In 16 of the co-authored publications, Bogdan Prodanov is the lead author, and in 12 he is second in the respective author team. This distinguishes him as an authoritative researcher with a significant personal contribution to the field of the developed scientific problems.

A search in the Web of Science database shows that Bogdan Prodanov is represented there with a total of 46 publications, of which 27 are indexed publications and 19 are unindexed. In the Scopus database, the candidate is represented with 55 publications. All this proves that the candidate has successfully integrated into the global and national academic community.

It is also worth noting that Bogdan Prodanov is a co-author of a methodological normative document – "Methodology for mapping, determining boundaries and types of sand dunes". This methodology has been approved by the Minister of Environment and Water and is in force since November 2024.

Based on the submitted publications, according to the minimum requirements for the academic position "Associate Professor" under indicator group B, the candidate collects 120 points out of the required 100 points, and under indicator group D - 264 points with a minimum of 220.

The candidate has submitted data for 16 citations in scientific publications, referenced and indexed in the internationally recognized scientific information databases Scopus and WoS. This concerns citations of 4 articles and reports that are co-authored, with the most cited being the report on the geomorphological mapping of the Ahtopol coast (7 citations). One of the citations is in an Indonesian scientific publication. The citations presented under indicator D11 are quantitatively equal to 80 points, which exceeds the minimum requirements (60 points). The citations visible in the global databases Web of Science (151 excluding self-citations) and Scopus (355 citations)



prove indisputably the significant impact of the published results and show the high quality of the scientific works.

#### 4. Most important scientific and applied scientific contributions

The contributing qualities of the presented scientific production arise both from the in-depth analytical work in various scientific fields and from the skills to combine traditional and innovative research methods and approaches applied in a wide range of activities. In this sense, scientific research and applied scientific contributions can be clearly differentiated.

The following can be distinguished as the most important scientific research contributions of an original or confirmatory nature:

1. Large-scale mapping of various sections of the underwater coastal slope, on the basis of which a classification of underwater landforms was made, applicable to the entire coastal zone. A typology of lost and modified underwater landforms was prepared and these losses were quantitatively assessed.
2. Morphostructural elements of the relief (blocks, terraces, etc.) were identified and mapped, traceable both on land and underwater. Thus, the knowledge about the morphostructural structure of the coastal zone is clarified and supplemented.
3. Based on precise mapping and cartography, the first comprehensive inventory of the dune complexes along the Bulgarian Black Sea coast was carried out. A total of 46 beach-dune systems were identified, 8 of which were newly established and mapped for the first time. For some of them, their spatiotemporal dynamics were analyzed. A proposal was motivated for part of the dune complexes to receive a nature conservation regime (category "natural landmark"). On the topic of dunes, it can be noted that there is no single generally accepted typology in the world, and various classification systems have been proposed.
4. An assessment of the anthropogenic pressure on coastal bottom habitats and the loss of such habitats was made. For the first time, the loss of infralittoral is quantitatively established, which is of concern for the Kaliakra - Galata region, since associations dominated by various types of algae and seagrasses are located on the infralittoral rocks.
5. An assessment of the pollution of dune complexes with solid macro-debris (>2.5 cm) has been made. It can be noted that an initial study limited in spatial aspect has grown into a 5-year monitoring, which allows to establish and analyze the dynamics of pollution. A quantitative indicator has been proposed – Clean Dune Index, which allows for an objective comparison of the state of individual dune complexes.

The scientific and applied contributions of the candidate to the competition should also be highlighted. They arise from his skills in working with different types of equipment, technical means and software products, which allow the acquisition of precise primary data and their subsequent processing. This, in turn, is an excellent basis for conducting scientifically based analyses, assessments and forecasts, as well as for formulating relevant recommendations. In this aspect, the following activities carried out by Bogdan Prodanov can be mentioned:

- work in a GIS environment and building integrated databases;

- interpretation and processing of satellite and orthophoto images;
- work with unmanned aircraft systems (UAS);
- photogrammetric processing of the obtained images;
- preparation of digital spatial models of the underwater coastal slope of the shelf and the coastal zone;
- bathymetric measurements with multibeam echo sounder systems;
- work with multibeam sonar systems and side-scan sonars;
- sampling of bottom unconsolidated deposits;
- scanning with ground penetrating radar (GPR);
- aerial scanning with LiDAR;
- underwater observations, thanks to the diving skills and qualifications of the candidate.

It should be noted that this is not just about the technical work with the relevant research equipment on the ground, but also about accompanying and subsequent procedures - precise spatial positioning, filtering and primary processing of data, data quality assessment, data export, construction of primary mosaics, digital models, etc. Primary data make it possible to obtain correct results and scientifically based interpretations.

It can be said that in some aspects Bogdan Prodanov's work has a pioneering character in terms of the study of the Bulgarian Black Sea coast and shelf:

1. An integrated methodology for aerial photogrammetry with unmanned aerial systems for mapping the coastline and sea waters has been developed and applied for the first time for the Bulgarian coast. It allows for the preparation of a comprehensive digital model of the relief. The coastline was surveyed in the period 2018-2020 and in 2023. On this basis, the spatial-temporal dynamics of the coastline were tracked in detail.
2. A methodology for predicting the impact of extreme marine phenomena (applied to the Varna Bay) and a model for integrated assessment of the direct impacts of sea floods on the coast (demonstrated for the Varna Municipality) were developed. The need to conduct providing valid relationships between the slope of the beach front and the grain size composition, specifically for our coast, proving that none of the internationally accepted relationships gives reliable results.
3. Innovative methods for non-destructive geoarchaeological research have been successfully applied (Karia Limen, Nessebar, Burgas Bay, Sozopol and St. Ivan Island).
4. An assessment of the ecological state of some of the coastal lakes and the estuaries of some rivers (Batova and Kamchia) has been made.
5. Objective reference hydromorphological indicators have been defined based on various Type-Specific Reference Hydromorphological Conditions (TSRHC) identified for our coast, in accordance with the requirements of the Water Framework Directive (WFD 2000/60/EC).
6. A Methodology for mapping, determining the boundaries and type of sand dunes has been developed, and more specifically the section "Coastal Geomorphology", in which a standardized procedure for geomorphological mapping of coastal dunes has been introduced.



It can be summarized that the contributions of the obtained results are in various scientific fields - geomorphology, geology, geoarchaeology, phytocoenology and ecology, limnology. A large part of the research is interdisciplinary in nature, with the candidate working together with geologists, biologists, archaeologists, etc.

### **5. Project activity**

Bogdan Prodanov's project activity is an indicator of diverse research activity, skills for teamwork and for leading expert teams, for successful academic cooperation, in which visible results have been achieved. The candidate has been a member of teams for the preparation and implementation of 18 projects at the national level. He has led another 10 national research projects. Some of them have been funded by the National Fund for Scientific Research or by the Council of Ministers. In addition, Bogdan Prodanov has been the head of the implementation of 2 international projects. He has participated in the work on another 17 international projects. All this shows that the candidate, with his knowledge and skills, with the accumulated expert experience, is a sought-after authoritative participant in the development and implementation of projects.

All projects with his participation are of a scientific and research nature, and in horological terms are focused on the coast and shelf of the Black Sea. Their successful implementation leads to the accumulation of new knowledge in the field of geological-geomorphological mapping, marine geology and ecological assessment and monitoring of coastal complexes and habitats. In this sense, they fully correspond to the academic profile of the candidate and the scientific direction for which the competition was announced.

### **6. Conclusion**

The topic, volume and quality of the publications, the number of citations, as well as the significant project activity of the candidate convince me in an indisputable way that Bogdan Prodanov has a clearly outlined and solid scientific and research profile in the scientific direction for the announced competition "Geological-geomorphological mapping and monitoring of the coastal zone". The mandatory requirements under Art. 2b, para. 2, 3 and 5, as well as under Art. 24 of the Law on Development of Academic Staff in Republic of Bulgaria, the requirements under Art. 1a and Art. 53, from Regulations at the Law, as well as those under Regulations of the Institute of Oceanology - BAS.

**Based on these grounds, I express my positive opinion and will confidently vote "Yes" Bogdan Kirilov Prodanov to occupy the academic position of "Associate Professor" at the Institute of Oceanology - BAS, Varna.**

25.10.2025

Veliko Tarnovo