

REVIEW -

from

Assoc. Prof. Dr. Georgi Zhelezov

National Institute of Geophysics, Geodesy and Geography – BAS

Department of Geography

Section of Physical Geography

Subject: Competition for the academic position "Professor", in professional field 4.4. Earth Sciences, scientific specialty "Physical Geography, Landscape Science and GIS", announced in State Gazette, issue 21 of 13.03.2020, for the needs of the Department of Geography at NIGGG-BAS.

The report on the implementation of the minimum national requirements and the additional requirements of the National Institute of Geophysics, Geodesy and Geography - BAS for holding the academic position of "professor" by Associate Professor Dr. Stoyan Nedkov shows full coverage of the required number of points, greater number of required points (groups V, G, D, E). There are no data on plagiarism and use of foreign scientific achievements is established.

The total number of publications of Dr. Nedkov amounts to 55, of which 20 publications in referenced and indexed databases with scientific information (Web of science and Scopus), 5 publications in referenced and indexed databases with scientific information, 30 publications in non-referenced journals with scientific review or edited collective volumes. The number of cited publications is 19 with a total number of citations of 558, amounting to 2790 points or 2670 more than the required 120 points.

The candidate is the scientific tutor of three successfully defended doctoral students in the period 2015-2019. I especially want to note the active

participation of the candidate in 14 national and international projects and in 5 projects he was the leader in the period 2003-2020.

Stoyan Tsvetanov Nedkov was born in 1969 in Sofia. His professional development goes through the following stages:

- 01.10.1992–01.07.1997 - MA degree at Sofia University "St. Kliment Ohridski".
- 01.02.1999–01.02.2002 - Doctor - Geographical Institute - BAS.
- 01.09.1998–15.11.2003 - Teacher of Geography in English at the Second English Language High School, Sofia (Bulgaria).
- 15.11.2003–01.06.2009 - Research Associate at the Institute of Geography - BAS.
- 01.06.2009–01.07.2010 - Senior Research Fellow at the Institute of Geography – BAS, Acad. G. Bonchev str., bl.3, 1113 Sofia (Bulgaria).
- 01.07.2010–10.02.2014 - Associate Professor at the National Institute of Geophysics, Geodesy and Geography - BAS.
- 10/02 / 2014–31 / 07/2015 - Associate Professor at Sofia University "St. Kliment Ohridski".
- 31.07.2015 - until now - Associate Professor at the National Institute of Geophysics, Geodesy and Geography - BAS.

Administrative experience

Head of GIS Section at NIGGG-BAS 2010 - 2014.

Head of the Department of Geography at NIGGG-BAS 2012.

Scientific Secretary of NIGGG-BAS 2018 until now.

Chairman of the Board of the Bulgarian Geographical Society 2014-2018.

Professional skills and additional qualifications (relevant to the current position)

2005 – Training to work with AGWA (Automated Geospatial Watershed Assessment tool) organized by the US Environmental Protection Agency (EPA).

2006 – Distance learning course in Open Geographic Information Systems (OpenGIS) organized by the University of Western Hungary, College of Geoinformatics.

2006 – Distance GIS training - ESRI training and education: Migrating from ArcView 3.x to ArcGIS Desktop Creating, Editing, and Managing Geodatabases for ArcGIS Desktop (for ArcGIS 9.0-9.1)

Learning ArcGIS Desktop (for ArcGIS 9.0-9.1).

Teaching experience

- 2005/2006 – Part of the Introduction of Geoinformatics course at the Department of Geography at the University of Joensuu. Implementation of GIS in environmental research.

- 2006/2007 – Specialized course "Environmental assessment using GIS based techniques" as part of the module "Selected topics of geoinformatics" at the Department of Geography at the University of Salzburg.

- 2006/2007 – Part of the Introduction of Geoinformatics course in the Department of Geography at the University of Joensuu. GIS tools for Environmental Assessment 2009/2010. Specialized course "Environmental assessment using GIS based techniques" as part of the module "Selected topics of geoinformatics" at the Department of Geography at the University of Salzburg.

- 2009/2010 – Specialized course "Environmental assessment using GIS based techniques" as part of the module "Selected topics of geoinformatics" at the Department of Geography at the University of Salzburg.

Specialized courses

BAS Training Center

- Introduction to GIS and work with ArcGIS "2010 - until now.
- Spatial analysis and assessment of ecosystem services using GIS based applications "2018 - so far.
- Practical skills for developing a scientific publication "2018 - so far.

Sofia University "St. Kliment Ohridski", Faculty of Geology and Geography

- Master's course "Application of GIS in environmental management" 2013-2015.
- Master's course "Geographic Information Systems" 2013-2015.
- Master's course "GIS in hydro-climatic research" 2013-2015.
- Bachelor's course "Introduction to GIS" 2013-2015.
- Bachelor's course "General Cartography" 2013-2015.

University of Veliko Tarnovo "St. St. Cyril and Methodius"

Bachelor's course "Landscape Science and Environmental Protection" 2020.

Bachelor's course "Landscape Planning" 2020.

Contributions of the candidate Dr. Nedkov are divided into three scientific fields in accordance with the specific specialty of the announced competition:

I. Development and improvement of the methodology of landscape research and the application of the concept for landscape and ecosystem services.

II. Application of geoinformation technologies for sustainable management of information and cartographic products contained in the

presented for the environment and information provision of research and management activities with GIS.

III. Physico-geographical studies of the risk of dangerous natural phenomena on the territory of the country, analyzes and assessment of the ecological and paleo-geographical condition of high-mountainous territories.

The contributions of a total of ten in the publications submitted for review are distributed by thematic areas, as follows:

I. Development and improvement of the methodology of landscape research and the application of the concept for landscape and ecosystem services.

1. Certain aspects of the mapping of ecosystems and the assessment of the services they provide as part of the methodological framework of MAES (Mapping and Assessment of Ecosystem Services) at different spatial levels have been developed (publications B4_14, B4_16, B4_18). Developed for methodological guidelines for the application of this methodology at national level and its application for different areas of research (B4_15, G8_26).

2. Participation as a co-author in the development of methodological for mapping of ecosystem services based on information about landscapes, land cover and matrix for quality assessment. The approach is published in an article (B4_3) in a scientific journal with an impact factor, which has been cited many times in various scientific publications (see reference for citations). It is used for assessment, mapping and mapping of several separate ecosystem services or a set of services for different territories (B4_2, B4_9, B4_10, B4_11, G7_2, G7_4; G7_5, G8_17, G8_18).

3. Participation in the development and development of the methodological bases for mapping and mapping of ecosystem services as an element of sustainable environmental management, which are systematized in a review article (B4_5) published in an impact factor journal and cited many times

in various scientific publications (see reference to citations). Their application has been demonstrated at scientific forums as a result of which several special editions of scientific journals have been compiled and summarized in editorial articles (B4_5, B4_7, B4_8, B4_16).

4. A methodological approach has been developed through which the methodology for classification of landscapes is further developed (G8_19, G8_27) and the connection between the landscape structure and the ecosystem services is substantiated (B4_1).

II. Application of geoinformation technologies for sustainable environmental management and information support of research and management activities with GIS based information and cartographic products.

5. A methodological approach for modeling and mapping of the ecosystem service, regulation of water flows and flood protection has been developed. It is based on the application of GIS-based tools for hydrological modeling and spatial analysis in combination with a methodology for assessing the capacity of landscapes to provide ecosystem services. It can identify and map the areas of generation of ecosystem services and the areas where there is a need for their consumption. The approach is published in an article (B4_2) in a scientific journal with an impact factor, which is cited many times in various scientific publications (see reference for citations). The approach is further developed and applied for different regions in the country and abroad (B4_9, B4_10, B4_11, G7_3, G8_17).

6. A geospatial approach has been developed for the assessment, mapping and mapping of ecosystem services provided by urbanized ecosystems at national level in connection with the activities implementing the European Biodiversity Strategy and the MAES (Mapping and Assessment of Ecosystems and their Services) initiative. The approach combines methods for evaluation and mapping of 21 services organized by seven GIS-complexities (tiers). The

approach is presented in full in Article 4_19 which is published in a journal indexed in Scopus with SJR rank, and individual components of it and applications for certain ecosystem services are presented in publications B4_13, G4_2, G7_4, G7_5, G8_22.

7. GIS-based approaches, databases and cartographic products have been developed to support the study of the risk of dangerous natural phenomena in relation to various aspects of human activity (G8_3, G8_8, G8_9, G8_13, G8_15, G8_16).

III. Physico-geographical studies of the risk of dangerous natural phenomena on the territory of the country, analyzes and assessment of the ecological and paleo-geographical condition of high-mountainous territories.

8. An approach has been developed to assess the impact of climate change related to the increase in the amount and intensity of torrential rainfall on river runoff in cases of river floods, which can determine the phases of river runoff change as a consequence of increasing precipitation and to establish the critical points related to the danger of floods (G8_2, G8_12). A number of theoretical and practical aspects related to the assessment of the danger and risk of floods and the application of models for runoff analysis in cases of river floods have been studied (G8_2, G8_12, G8_15, G8_24).

9. Participation in the development of a methodological approach for differentiation on the territory of the country with regard to the risk of natural disasters for cultural and historical heritage and application of GIS for zoning of territories with high concentration of dangerous natural phenomena and archaeological sites (G8_4). Various aspects of the risk of natural disasters and the application of geographic information technologies for spatial analysis and development of models and assessment maps (G8_3, G8_9, G8_13, G8_14, G8_16, G8_20) have been studied.

10. Participation in the development of a system for monitoring of alpine ecosystems and assessment of their ecological status (B4_12, B4_17, G8_10, G8_11). Studies of the glacial and periglacial relief in connection with the elucidation of the paleogeographic development of high mountain areas (B4_4, G8_5).

From all the presented contributions of the candidate Dr. Nedkov I would like to highlight his achievements in the field of application of the concept of landscape and ecosystem services and the development of the geospatial approach for assessment, mapping and mapping of ecosystem services, confirming this scientific direction in geographical research in Bulgaria and integrating them with modern scientific research in Europe and the world. It is especially valuable that the achieved results in many cases are a consequence of large international projects.

In practical terms, the achievements in a number of theoretical and practical studies related to the assessment of the danger and risk of floods and the application of models for runoff analysis in cases of river floods are of high applicability.

Based on the analysis of the results of the scientific work of the candidate I can conclude that he fully meets the necessary requirements and express a positive opinion on the procedure for holding the academic position "Professor" by Assoc. Prof. Dr. Stoyan Tsvetanov Nedkov.

24.09.2020

Sofia

Assoc. Prof. Georgi Zhelezov