



REVIEW

by professor Petar Kolev Kalinkov, eng., PhD – member of the scientific jury in a competition for the academic position “Professor” in professional field 5.7. “Architecture, civil engineering and geodesy”, scientific specialty “Engineering hydrology, hydraulics and water management”, at the “Hydrological Forecasts” unit, “Forecasts and information services” department, published in the “State Gazette” No. 100/01.12.2023.

In the competition for the appointment of the academic "professor", as the only candidate participated associate professor Snezhanka Stoyanova Balabanova, eng., PhD, head of the "Hydrological Forecasts" section at the "Forecasts and Information Service" department.

This review was prepared on the basis of the order of Acting Director General of NIMH No. HD-04-3 from 29.01.2024 and the decision of the scientific jury taken at the meeting on 09.02.2024. It is in accordance with the requirements of the Law for the development of the academic staff in the Republic of Bulgaria (ZRASRB), the Regulations for its implementation (PPZRASRB) and the Regulations of NIMH under ZRASRB. The review consists of **three parts** and a conclusion.

I. Requirements to the candidate

under Art. 29(1) and Art. 29b of ZRASRB, art.60 of PPZRASRB and Art. 56 (1), (2) and Art. 57 (1) of the Regulations of NIMH under ZRASRB

From checking the submitted materials in the competition for a professor with a single candidate, associate professor Snezhanka Stoyanova Balabanova, eng., PhD, no violations were found in the procedure for the candidate's eligibility for the competition.

Brief biographical data

Eng. Snezhana Balabanova was born on December 29, 1958. She completed higher education in 1981 at the University of Architecture, Construction and Geodesy - Sofia with a master's degree in construction engineering, majoring in "Water Supply and Sewerage". He received the educational and scientific degree of doctor in the scientific specialty "Engineering hydrology, hydraulics and water management" in 2011.

He has been an associate professor in the "Hydrological Forecasts" section at the " Forecasting and Information Services " department since 2014.

II. Requirements regarding scientific and research-applied activities

In accordance with Art. 29 (1), item 1, item 3, item 4, item 5, item 6, (2) and (3), Art. 29b (1) of ZRASRB, Art. 60 (1), item 3, item 4, item 5, item 6, (2) and (4) of PPZRASRB, art. 56 (1), item 1, item 4, item 5, item 6, item 7, (2), (3) of the Regulations of NIMH under ZRASRB is presented:

Summary table for the implementation of the minimum required under Art. 1a (1) and (2) of PPZRASRB and Art. 2 (4) of the Regulations of NIMH under ZRASRB for occupying the academic position "professor" of associate professor Snezhanka Stoyanova Balabanova, eng., PhD

Group of indicators	Professor (min. requirements)	Professor (points of the candidate)
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A	50	50
Б	-	-
B	100	133.19
Г	200	220.43
Д	100	694
E	150	440

Review of the results presented in the table for the fulfillment of the minimum requirements under Art. 1a (1) and (2) of PPZRASRB and Art. 2 (4) of the Regulations of NIMH under ZRASRB.

Publications accepted for review by type, authorship and printing in Bulgarian and a foreign language that prove the data from the table with the minimum requirements are:

Group B4. Scientific publications in publications referenced and indexed in world-famous databases with scientific information (60/n points for each publication) – 12 publications as follows:

B4-1. Wetterhall, F., Pappenberger, F., Alfieri, L., Cloke, H.L., Thielen-Del Pozo, J., **Balabanova, S.**, Daňhelka, J., Vogelbacher, A., Salamon, P., Carrasco, I., Cabrera-Tordera, A.J., Corzo-Toscano, M., Garcia-Padilla, M., Garcia-Sanchez, R.J., Ardilouze, C., HESS Opinions forecaster priorities for improving probabilistic flood forecasts, Hydrology and Earth System Sciences 2013, pp. 4389-4399, DOI 10.5194/hess-17-4389-2013, Review, Scopus, WoS - **1.765 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-84887444753&origin=resultslist>

B4-2. Puca, S., Porcu, F., Rinollo, A., Vulpiani, G., Baguis, P., **Balabanova, S.**, Campione, E., Ertürk, A., Gabellani, S., Iwanski, R., Jurašek, M., Kaňák, J., Kerényi, J., Koshinchanov, G., Kozinarova, G., Krahe, P., Lapeta, B., Lábó, E., Milani, L., Okon, L', The validation service of the hydrological SAF geostationary and polar satellite precipitation products, Natural Hazards and Earth System Sciences, 2014, DOI 10.5194/nhess-14-871-2014, pp 871-889, Scopus, WoS - **1.33 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-84898628411&origin=resultslist>

B4-3. Artinyan, E., Vincendon, B., Kroumova, K., Nedkov, N., Tsarev, P., **Balabanova, S.**, Koshinchanov, G., Flood forecasting and alert system for Arda River basin, Journal of Hydrology 2016, pp. 457-470, DOI 10.1016/j.jhydrol.2016.02.059, Scopus, WoS- **8.57 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-84960516905&origin=resultslist>

B4-4. Kazandjiev, Valentin; Georgieva, Veska; **Balabanova, Snezhana;** Malasheva, Petia; Determination of drought vulnerable regions in Bulgaria during contemporary period, Journal of balkan ecology, 2020, Volume:23, 1, Signature:Сп I 857, ID:LTU090055838- **15 p.**

B5. Bezak, N., Petan, S., Kobold, M., Brilly, M., Bálint, Z., **Balabanova, S.**, Cazac, V., Csík, A., Godina, R., Janál, P., Klemar, Ž., Kopáčiková, E., Liedl, P., Matreata, M., Korniienko, V., Vladiković, D., Šraj, M., A catalogue of the flood forecasting practices in the Danube River Basin, River Research and Applications 2021, pg 909-9018, DOI 10.1002/rra.3826, Review, Scopus, WoS- **3.53 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85107732995&origin=resultslist>

B4-6. Yordanova, V., Koshinchanov, G., **Balabanova, S.**, Analyses of simulations with ground and satellite data using fully distributed hydrological model, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2021, pg 9-16, DOI 10.5593/sgem2021/3.1/s12.02, Scopus - **20 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85150916667&origin=resultslist>

B4-7. **Balabanova, S.**, Koshinchanov, G., Stoyanova, V., Yordanova, V., Geodatabase for occurred floods to support preliminary flood risk assessment, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2021, r. 225-232, DOI 10.5593/sgem2019/3.1/S12.029, Scopus- **15 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85073372296&origin=resultslist>

B4-8. **Snezhanka Balabanova;** Silviya Stoyanova; Vesela Stoyanova; Georgy Koshinchanov; Valeriya Yordanova, Hydrological forecasting and activities in Bulgaria in the framework of the

DAREFFORT project, Proceedings of 22nd International Multidisciplinary Scientific GeoConference SGEM 2022, DOI 10.5593/sgem2022/3.1/s12.13, Scopus - **12 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85150870935&origin=resultslist>

B4-9. Valeriya Yordanova; Silviya Stoyanova; **Snezhanka Balabanova**; Georgy Koshinchanov; Vesela Stoyanova, Flash flood forecasting using flash flood guidance system products, Proceedings of 22nd International Multidisciplinary Scientific GeoConference SGEM 2022, DOI 10.5593/sgem2022/3.1/s12.11, Scopus - **12 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85150916667&origin=resultslist>

B4-10. Vesela Stoyanova; **Snezhanka Balabanova**; Georgy Koshinchanov; Valeriya Yordanova; Silviya Stoyanova, Flood hazard mapping using two-dimensional hydraulic modeling results, Proceedings of 22nd International Multidisciplinary Scientific GeoConference SGEM 2022, DOI 10.5593/sgem2022/3.1/s12.12, Scopus - **12 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85150899475&origin=resultslist>

B4-11. Vesela Stoyanova; **Snezhanka Balabanova**; Georgy Koshinchanov; Valeriya Yordanova; Silviya Stoyanova, A combined hydrological and hydraulic model for flood applied to the downstream Kamchia river, Proceedings of 22nd International Multidisciplinary Scientific GeoConference SGEM 2022, DOI 10.5593/sgem2022/3.1/s12.02, Scopus - **12 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85150864363&origin=resultslist>

B4-12. **Balabanova, S.**, Stoyanova, V., Yordanova, V., Neural network-based models for Struma river flow forecasting, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, 2023, 23(3.1), pp.107–113-**20 p.**

Total from group B4 - 133.19 points. The check showed that the total number of points pointed out in the table is correct.

Group G. Scientific publication in publications referenced and indexed in world-famous databases with scientific information 40/n – 6 publications as follows:

G7-1. Ninov, P., **Balabanova, S.**, Evaluation of the flooded areas based on historical information in eastern aegean basin of bulgaria, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2021, p 83-89, DOI 10.5593/sgem2021/3.1/s12.12, Scopus - **20 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85131676863&origin=resultslist>

G7-2. **Balabanova, S.**, Stoyanova, V., Simulating flash floods in urban areas using two-dimensional hydraulic model, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2021, p 239-246, DOI 10.5593/sgem2021/3.1/s12.38, Scopus - **20 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85131666333&origin=resultslist>

G7-3. Spiridonov, V., **Balabanova, S.**, The impact of climate change on intensive precipitation and flood types in Bulgaria, Climate and Land Use Impacts on Natural and Artificial Systems: Mitigation and Adaptation, 2021, p. 153-169, DOI 10.1016/B978-0-12-822184-6.00001-6, Book Chapter, Scopus -**20 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85128555794&origin=resultslist>

G7-4. Koshinchanov, G., **Balabanova, S.**, Hydrological modelling using remote sensing techniques in Bulgaria, Proceedings of SPIE - The International Society for Optical Engineering 2019, DOI 10.1117/12.2533155, Scopus, WoS -**20 p.**

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85073906600&origin=resultslist>

G7-5. Velizarova, Emiliya; **Balabanova, Snezana**; Marinov, Ivan, Assessment of current and future drinking water quality vulnerability under anticipated climate changes at the watershed level, Advances in Geoecology 45. CATENA soil sciences, 2018, ISBN 978-3-510-65418-5, US ISBN 1-59326-267-1, pp14-24, WoS - **13.33 p.**

G7-6. Stoyanova, S., **Balabanova, S.**, Hydrological modelling with the soil and water assessment tool: Spatial data processing for identifying model parameters using geographic information system,

International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2019, p. 253- 258, DOI 10.5593/sgem2019/3.1/S12.033, Scopus - **20 p.**
<https://www.scopus.com/record/display.uri?eid=2-s2.0-85073374613&origin=resultslist>

Total from group G 7 - 113.33 points. The check showed that the total number of points pointed out in the table is correct.

Group G8. Scientific publication in non-refereed peer-reviewed journals or in edited collective volumes 20/n or distributed in proportion based on contribution protocol – 16 publications as follows:

G8-1. Dobri Dimitrov, **Snezhanka Balabanova**, Georgy Koshinchanov , Merged satellite information and ground measurements of the precipitation for hydrological modeling, EUMETSAT conference, September 2012 - **6.67 p.**

<https://www.eumetsat.int/2012-eumetsat-meteorological-satellite-conference>,

G8-2. **Сн. Балабанова**, Г. Кошинчанов, С. Стоянова, В. Стоянова, В. Йорданова, Н. Филипов, А. Гърдева, И. Гълъбова, Наводненията през 2014 г. и обуславящите ги условия, Bulgarian journal of Meteorology & Hydrology, vol.20, issue 5, pp. 73-104, 2015,

- **1.25 p.**

G8-3. G. Koshinchanov, E. Artinyan, **Sn. Balabanova**, Validation activities on some of the elements of hydrological cycle in the framework of HSAF project, INHGA - Scientific Conference, Romania, ISBN 978-973-0-18825-7, pp. 85-92 -**6.67 p.**

https://aleph.bibnat.ro/F/FK978NMGCKEX8D5NRY9S39URSTV836568IB193QAYFTS4S7KNF-34896?func=find-b&local_base=NOCIP&request=+978-973-0-18825-7&x=22&y=4&find_code=ISB&filter_code_4=WFM&, 2014

G8-4. Георги Кошинчанов, **Снежанка Балабанова**, Михал Веверка, Хидравлично моделиране на висока вълна с различна обезпеченост по р. Марица в участъка между Пловдив и Първомай с МИКЕ11, БУЛАКВА, бр. 3/2015, стр. 82-89, ISSN 1312-3912 -**6.67 т.**

G8-5. Ilcheva, I., Niagolov I., **Balabanova Sn.**, Yordanova A., Zaharieva V., Rainova V., Vratralova A. Georgieva D., Water resource balance for Vitosha natural park, including analysis under conditions of climate change and extreme phenomena, International Scientific Conference Proceedings, SUSTAINABLE MOUNTAIN REGIONS: MAKE THEM WORK, 14-16 May, 2015, Borovets, e-book, ISBN 978-954-411-220-2, pp. 246-253 - **2.5 p.**

<http://www.niggg.bas.bg/wp-content/uploads/2015/05/e-book.pdf>

G8-6. Валери Спиридонов, **Снежанка Балабанова**, Възстановяване на 6-часовия пиков валеж от 24 часовите измервания, Bulgarian Journal of meteorology and hydrology, volume 22, number 5, pp. 61-70, ISSN 0861-076, 2017 - **10 p.**

G8-7. Валери Спиридонов, **Снежанка Балабанова**, Влияние на климатичните промени (до 2050 г.) върху интензивните валежи на територията на България, Bulgarian Journal of meteorology and hydrology, volume 22, number 5, pp. 26-37, ISSN 0861-0762, 2017- **10 p.**

G8-8. Valeriya Yordanova, **Snezhanka Balabanova**, Vesela Stoyanova, Application of the TOPKAPI model on the Ogosta river basin“, Electronic book with full papers from XXVII Conference of the Danubian Countries on Hydrological Forecasting and Hydrological Bases of Water Management, ISBN 978-954-90537-2-2, pp. 357-364, 2017 - **6.67 p.**

G8-9. Vesela Stoyanova, **Snezhanka Balabanova**, Valeriya Yordanova, Evaluation of the thresholds for flood forecasting and warning, Electronic book with full papers from XXVII Conference of the Danubian Countries on Hydrological Forecasting and Hydrological Bases of Water Management, ISBN 978-954-90537-2-2, pp. 435-443, 2017 - **6.67 p.**

G8-10. Валерия Йорданова, **Снежанка Балабанова**, Прогнозиране на речния отток с използване на разпределен хидроложки модел (ТОПКАПИ), Bulgarian Journal of Meteorology and Hydrology, Volume 23, Number 1, pp. 80-96, ISSN 0861-0762, 2019-**10 p.**

G8-11. Георги Кошинчанов, **Снежанка Балабанова**, Верификация на хидроложките прогнози, Bulgarian journal of Meteorology & Hydrology, vol.24, issue 1, pp. 40-54, ISSN 0861-0762printed version, ISSN 2535-0595 (online version), 2020 -**10 p.**

G8-12. Balabanova, Sn., Stoyanova, V, Comparison of one- and two-dimensional models for flood mapping in urban environments, XXIX Conference of the Danubian Countries, 2021, ISBN 978-80-7653-031-7, full papers, 61-66 - **10 p.**

<https://www.chmi.cz/files/portal/docs/reditel/SIS/nakladatelstvi/assets/dunajska-konference.pdf>

G8-13. Георги Кошинчанов, **Снежанка Балабанова**, Подобряване прогнозирането на наводнения чрез намаляване на времевата стъпка, Bulgarian Journal of meteorology and hydrology, volume 25, number 1, pp. 29-44, ISSN 0861-0762printed version, ISSN 2535-0595 (online version), 2021 - **10 p.**

G8-14. Няголов, И., Николова, Кр., Илчева, И., **Балабанова, Сн.** Оценка и картиране уязвимостта на водните ресурси във водосбора на язовир "Тича". Булаква, 2, 2015, 46 - 54, ISSN 1312-3912 - **5 p.**

G8-15. V. Spiridonov, I. Ilcheva, **Sn. Balabanova**, I. Niagolov, Mitigating Vulnerability of Water Resources under Climate Change, 2014c, CC-WARE project, brochure prepared by Project Partner 08, Executive Forest Agency and associated organizations, Forest University, Forest research Institute, NIMH – BAS, 2014b; -**5 p.** <http://www.iag.bg/docs/lang/1/cat/5/index>

G8-16. НИМХ колектив, книга Променящият се климат на България - данни и анализи, 2023, **Снежанка Балабанова** (глава II.2.5.4, III.3, III.5.2), ISBN 978-954-90537-3-9

http://www.meteo.bg/meteo7/sites/storm.cfd.meteo.bg/meteo7/files/kniga_klimaticzni_promeni_NI_MH_2023.pdf

Total G 8 - 107.1 points. The check showed that the total number of points pointed out in the table is correct.

Total from group G - 220.4 points

Group D. Citations

D-12. Citations or reviews in scientific publications, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes - 66 pieces. 10 points each - total 660 p.

D-14. Citations or reviews in non-refereed journals with scientific review - 17 pieces. 2 points each - total 34 p.

Total for group D-83 citations - referenced in SCOPUS - 694 points (66x10 points +17x2 points). The check showed that the total number of points pointed in the table is correct.

Group E.

E-17. Supervision of 3 successfully defended PhD students (40 p.)

- PhD student Valeria Yordanova, topic: "Forecasting river flow using a distributed hydrological model". Date of thesis defense 23.07.2019. - 40 p.
- PhD student Vesela Tsvetanova Stoyanova, topic "Application of hydraulic models in flood forecasting and creation of flood hazard maps". Date of thesis defense 22.04.2021. - 40 p.
- PhD student Silvia Valerieva Stoyanova, topic: "Evaluation of the water balance and forecasting of the river flow using a semi-distributed hydrological numerical model". Date of thesis defense 15.06.2023 - 40 p.

Total-120 p.

E-18. Participation in a national scientific or educational project (10 p.)

- Preparation of a water balance for the territory of the "Vitosha" Nature Park, according to the project №5103020-11-654 " Implementation of priority activities from the Vitosha Nature Park management plan - phase II" financed by Contract № 5103020-C-001 under Operational Program "Environment" 2007-2013г", (2013 - 2014).
- Assessment of the formation of water flows on the territory of the Elatsite Mining Complex and preparation of recommendations for their management, financed under the Contract № ПО-32-126-1/19.10.2017 г. between NIMH and GI-BAS, (19.10.2017 г. – 30.11.2019 г).

- Determining the areas with natural restrictions according to dryness criteria with the MZHG, contract, No РД-50-49 / 07.04.2017 (2017 г.-2019 г.), according to distribution protocol.

Total: 30 p.

E-19. Participation in an international scientific or educational project (20 p.)

- "Satellite Application Facility on Support to Operational Hydrology and Water Management (H SAF)"
- FLOODGUARD Integrated actions for joint coordination and responsiveness to flood risks in the Cross Border area,
- (ARDAFORECAST), Flood warning system establishment in Arda river basin for minimising the risk in the cross border area
- Mitigating Vulnerability of water resources under Climate Change - CC-WARE (project code: SEE/D/0143/2.1/X), (Working package 3,4,5).
- Danube WATER integrated management" (WATER), 2SR-2.1-1, MIS ETC code 161, CBC project Romania - Bulgaria 2007 -2013, Funding: от: EC - Romania-Bulgaria Cross-Border Cooperation, contract 4355/08-06-2012, (2012-2015).

Total: 100 p.

E-20. Management of a national scientific or educational project (20 p.)

- Hydrological modeling and forecasting of the runoff of the Struma river basin, (2022 г. – 2023 г.), Project under Art. 171 of the Water Act.
- " Methodology for assessing the floods hazard and risk, according to the requirements of the Directive 2007/60/EC" (Part 2 Methodological guidelines for flood risk assessment) by contrac No. Д-30-62/18.04.2012г. with MOEW.
- Hydrological modeling and forecasting for flood purposes and the construction of flood early warning systems: 1. With a semi-distributed hydrological model applied to the catchment of the Vit River in the Danube Basin and 2. Modeling and forecasting of flash floods in the area of the Kamchia River from the village of Grozdevo to the mouth of the river, (2020-2021), NIMH Agreement with MOEW.
- Project "The flash floods. Creating an archive of historical past floods. Approach to the analysis and assessment of the hazard of flash floods" (2015-2016) Funding by agreement with the MOEW.
- Project under the national program "Young scientists and postdoctoral fellows" funded by the Ministry of Education and Science "Forecasting river flow and flash floods in urbanized areas using a fully distributed hydrological model", young scientist - Valeriya Yordanova
- Project under the national program "Young scientists and postdoctoral fellows" funded by the Ministry of Education and Science "Hydraulic modeling and forecasting of floods, creation of maps for the flood hazard and risk assessment", young scientist - Vesela Stoyanova.

Total: 80 p.

E-21. Management of an international scientific or educational project (40 p.)

- Danube River Basin Enhanced Flood Forecasting Cooperation (DAREFFORT) № DTP2-064-2.1 under the DANUBE transnational cooperation program 2014-2020 , (2018 – 05.2021).
- Black Sea Middle East Flash Flood Guidance System) BSMEFFG (Flash flood system for the Black Sea and Middle East region).

Total: 80 p.

E- 22. Funds raised for projects managed by the applicant

DAREFFORT (Danube River Basin Enhanced Flood Forecasting Cooperation), project by program Interreg Danube transnational programme 2014 - 2020 г., term of execution 01.01.2019 – 31.12.2021, manager for NIMH associate professor Snezhanka Balabanova, **for NIMH - 77810 EUR - 30 p Total group E - 440 p**. The check showed that the total number of points pointed out in the table is correct.

Summarized from the review carried out to fulfill the minimum requirements under Art. 1a (1) and (2) of PPZRASRB and art. 2 (4) of the Regulations of the NIMH under ZRASRB for the acquiring the academic position "professor" by Associate Professor Snezhanka Balabanova eng., PhD it can be seen that by all indicators they are not only fulfilled but to a considerable extent over fulfilled.

Scientific contributions

1. Creating a methodology for flood hazard assessment (Part 2 Methodological guidelines for flood hazard assessment) from "Methodology for flood hazard and risk assessment". The necessary data and actions are presented to produce the flood hazard maps in three different probabilities of flooding, according to Art. 146e of the Water Act.

Publications: Final report of the Methodology for assessing the threat and risk of floods, according to the requirements of Directive 2007/60/EU,

Publications: G8-4 , G8-12, B10, B11, G7-1, G8-9

2. Hydrological modeling and analyzes of the results.

Models have been developed for forecasting river flow and flash floods, as well as studies related to the applicability of different hydrological models for the conditions of the hydrological regime in Bulgaria. Forecasting systems have been developed for the catchment basins of the Ogosta, Vit, Rusenski Lom, Fakiyska and Arda rivers.

Publications: B1, B3, B5, B8, B9, G7-2, G7-6, G8-8, G8-10, G8-11, G8-13

3. Exploring the possibilities and application of artificial neural networks in hydrological forecasting. On the basis of ANN modeling tools, forecasting systems have been developed for the catchment basins of the Iskar River and the Struma River.

Publications: 1, B12

4. Study the impact of climate change on water resources and extreme events.

The impact of climate change on intense rainfall, which is a major factor in the occurrence of floods, has been studied.

Publications: B4, Г7-3, Г7-5, Г8-5, Г8-7, Г8-14, Г8-15, Г8-16

5. Using satellite data in runoff modeling.

Research to provide new products from existing and future satellites with sufficient spatial resolution for operational hydrology needs, such as precipitation, soil moisture, etc. The reliability of the satellite information was assessed using ground information from the NIMH monitoring networks and statistical estimates.

Publications: B2, B6, G7-4, G8-1, G8-3, G8-6

Scientific and applied contributions

1. Management and organization of archive and database creation activities. Activities of great importance in the assessment of the potential sizes and frequency of occurrence of floods and the factors that lead to extreme hydrological events in Bulgaria.

Publications: B7, G8-2

2. Creation of a GIS database for application in hydrological modeling.

A GIS database with thematic layers is organized and maintained: soil types, land cover, digital terrain model, river network, dams, watersheds, monitoring networks, districts, municipalities, settlements, roads.

References issued by organizations for developments and projects in which associate professor Balabanova participated.

1. For excellent work, the Vitosha Nature Park issues a reference to a team from NIMH headed by Associate professor Irena Ilcheva, in whose composition the candidate prepared a water balance on the territory of the Vitosha Natural Park;
2. The MOEW issues a reference to the applicant for the preparation of Methodological guidelines for assessing the floods hazard and risk.

The candidate's scientific and scientific-applied research, which I fully share, is mainly related to modeling and forecasting of river runoff, as well as the flood hazard in the territory of the country. They are the basis of her professional development. Given the subject matter, character and volume of the research in which many people are involved and participate, there is a collective participation in the publications and contributions with an emphasized, to a very large extent, personal and managerial participation of the candidate.

III. Opinions, recommendations and notes

I know the candidate from the time when he studied at UASG, and I led exercises in some of the disciplines taught at the Water Supply and Sewage, Water Treatment department. She obviously left a very good impression on me, because much later, at our chance meeting, we got to know each other and had a hearty human conversation

Conclusion

From the inspection of the materials submitted for the competition, no violations were found in the procedure. The requirements of Art. 29 (1), (2), (3) of ZRASRB, Art. 60 (1), (2) and (4) and Art. 61 (1), (3) of PPZRASRB art. 56 (1), item 1, item 4, item 5, item 6, item 7, (2), (3) of the Regulations of NIMH under ZRASRB.

After becoming acquainted with the candidate's documents and the evaluation, according to Art. 29b (2), (3) of ZRASRB on the publications and materials presented by her, I rate positively Assoc. Prof. Eng. Snezhanka Balabanova for acquiring the academic position of "Professor" in 5.7. Architecture, construction and geodesy, scientific specialty "Engineering hydrology, hydraulics and water management".

Date april. 2024
Sofia

Reviewer
/ Professor, Eng. Petar Kalinkov, PhD /