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REGIONALIZATION OF THE TERRITORY OF BELARUS BY THE DEGREE
OF CLIMATE VULNERABILITY

Aryna M. Nebyshynets *, Yuliya A. Hledko

Belarusian State University, Minsk, Belarus

This article presents the results of a comprehensive assessment of the climate vulnerability of the territory of the Republic of Belarus, based on the application of dimensionless climate indices adapted to national natural and climatic conditions. The aim of the study is to identify territorial differences in Belarus's climate vulnerability and to determine the key climatic factors shaping its spatial structure. The study was based on long-term observation series from 45 meteorological stations of the State Climate Cadastre of the Republic of Belarus for the period 1989–2024. The methodological basis employed was the technique for calculating climate vulnerability based on dimensionless indices, proposed by V.V. Oganessian and modified by the authors to account for the density of the meteorological observation network and the objectives of regional analysis. The calculations took into account indicators of the extremity of temperature, precipitation and wind regimes. For spatial analysis and the transition from point station estimates to a continuous territorial distribution of the index, GIS analysis and spline interpolation methods were applied in the ArcGIS environment. It has been established that precipitation extremes make the greatest contribution to the composite climate vulnerability index, whilst wind plays a secondary role and temperature indicators have a comparatively smaller influence. A marked spatial heterogeneity of climate vulnerability has been identified: the highest values are characteristic of a number of Northern, North-Eastern and South-Western Regions of Belarus, whilst lower values are recorded in certain parts of the central and South-Western Regions. Based on the calculated indices, administrative districts have been classified into four categories of climate vulnerability, and maps have been produced reflecting the territorial variations of the indicator under study. The scientific novelty of the work lies in the adaptation of the dimensionless climate indices method to the conditions of Belarus, as well as in the transition from station-level analysis to regional climate zoning. The practical significance of the study lies in the potential to use the results obtained in the development of regional strategies for adaptation to climate change, the improvement of spatial planning, the assessment of climate risks, and the justification of measures to enhance the resilience of the country's natural and socio-economic systems.

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* **Corresponding Author:** Aryna M. Nebyshynets, Postgraduate Student, Lecturer, Belarusian State University, Leningradskaya st., 16, Minsk, Belarus. E-mail: arinanebyshinec@gmail.com