

УДК 551.582.2+551.577

ASSESSMENT OF THE MOISTURE CONDITIONS
OF THE TERRITORY OF BELARUS IN THE MODERN CLIMATIC PERIOD

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An assessment of the dynamics of moisture conditions is necessary to solve problems associated with the development of adaptation to drought phenomena, reducing their economic damage, as well as identifying patterns and trends in the occurrence, development, and course of droughts for the purpose of their possible forecasting. This study analyzes the meteorological indicators of droughts – hydro-thermal coefficient of Selyaninov (HTC) and the standardised precipitation evapotranspiration index (SPEI) in Belarus during warm seasons (April–September) for the period 1994–2024.

The monthly values of the SPEI index were obtained from the Global SPEI database (<https://soton.eead.csic.es/spei/database.html>) for the regions of Belarus, the data of the state climatic base of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus on average daily air temperature and precipitation were used to calculate the HTC. It was revealed that during the vegetation season of 1994–2024 in Belarus there was a tendency to worsen moisture conditions in almost all regions of the republic, especially in April, June and September. The most significant downward trend in the values of HTC and SPEI was noted in June and ranged from –1.0 to –1.5 in the regions of the country. In the remaining months, the moisture conditions remained virtually unchanged. The frequency of years with droughts of varying intensity has increased, and since the 2010s, there has been a trend towards reducing the frequency of years with excessive moisture in the territory. The most unfavorable period according to the values of the HTC and SPEI indices was August and September, in these months the number of years with slightly drought conditions prevailed over the number of years with good moisture conditions. The evaluation of the relationship between HTC and SPEI showed a high correlation coefficient and Pearson covariance, both for individual months and for the entire vegetation season. In relation to each other, these indicators are significant and have a high correlation between variables, as they reflect similar meteorological values, which makes it possible to use them both for rapid assessment of the moisture conditions of the territory, and for forecasting through the use of remote sensing data and the integration of model calculations.

<https://doi.org/10.46991/PYSUC.2026.SI1.014>

Keywords: drought, hydro-thermal coefficient of Selyaninov (HTC), index SPEI, moisture conditions.

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