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# **GEOGRAPHICAL SCIENCES**

## **STUDY OF THE TEMPERATURE REGIME ON THE TERRITORY OF ZHYTOMYR REGION FOR THE PERIOD FROM 2004 TO 2018**

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The latest studies show that the average air temperature is increasing, the processes of heat and moisture transfer are being restructured. An increase in air temperature throughout the year causes an increase in the frequency of natural disasters, which, in turn, has a direct impact on human safety and health.

Zhytomyr Region was formed on September 22, 1937. It is located on the Right Bank of Ukraine, its central part is Polissia. It borders the Republic of Belarus to the north, Kyiv to the east, Vinnytsia to the south, and Khmelnytsky and Rivne regions of Ukraine to the west. Almost all rivers belong to the Dnipro basin. Swamps occupy a large area in Polissia. The landscape of the Zhytomyr region is plains, densely covered with ravines and river valleys in the south. The area of Zhytomyr Oblast is 4.9% of the territory of Ukraine. The Zhytomyr region has the appearance of an undulating plain with a general decline to the north and northeast. Most of the region (southern and southwestern) lies within the boundaries of the Dnipro and Volyn-Podilsky uplands. The north-eastern part is occupied by the Polish lowland. In the north of the region is the Slovechan-Ovrutsky ridge with the highest point 316 m above sea level, in addition, the region has the Bilokorovytsky-Topylniansky and Ozeryansky ridge.

The climate of the region is moderately continental with warm, humid summers and mild, cloudy winters. The continentality of the climate increases from west to east. The climate of the region is greatly influenced by air masses from the

northern part of the Atlantic Ocean, to a lesser extent from the side of the Arctic Ocean. In forming the microclimate of the region, solar radiation, forest cover, wetlands, river system, and soil and plant cover play a major role.

There are 5 weather stations in Zhytomyr Oblast (Zhytomyr, Ovruch, Olevsk, Korosten, Novograd-Volynskiy). At the weather station of the city of Novograd-Volynskiy, observations were resumed by Ukrmet in 1922 and continue to this day. Currently, the meteorological station conducts observations according to the program of the II-class station. Observations in the city of Olevsk began in 1923. And on December 21, 1949, a second-class weather station was opened, where regular observations are still being conducted. The Korosten meteorological station, which was founded in 1924, is a mode station of the II category, and carries out round-the-clock observations of all weather parameters.

The only station in the region that observes sunlight. Meteorological observations in the city of Ovruch were started in April 1894 and are still functioning. During the analysis of temperature regime trends in the Zhytomyr region at the beginning of the 21st century, in the period from 2004 to 2018, annual and multi-year temperature distributions were calculated for each station.

Ovruch has a clear distribution with a maximum temperature in July of 19,9 °C and a minimum of -4,0 °C in January, which is the minimum value for the entire region for the entire study period. Climatic average monthly characteristics have smaller values throughout the year. The multiannual distribution also shows an increase in air temperature over the study period. In some years, the anomalies amount to 2,6 °C (2015). A similar distribution is observed at the Olevsk station: the annual trend is clearly defined with a maximum in July and a minimum in January. The average monthly indicators of the climatic norm are lower than the temperature during the study period. The perennial distribution is characterized by higher temperatures. Again, the largest anomaly was recorded in 2015 and is 2,5 °C.

Similar trends were found at the Korosten station. Clear annual distribution with higher temperatures by month compared to the climatic norm. The long-term course of temperature in Novograd-Volynskiy differs somewhat from the distribution

at other stations. A maximum of anomalies was observed in 2007-2008 and then, starting from 2012, a gradual increase in temperature anomalies. The annual distribution is typical for the entire territory of the region. Zhytomyr, which is located in the south of the region, is characterized by the largest temperature differences both in terms of monthly averages and multi-year distribution. Here again we record two peaks in temperature anomalies: in 2008 – 2,6 °C, in 2015 – 3,2 °C.

The table shows the annual course of average monthly air temperatures for the period 2004-2018 in comparison with the climatic norm. It was established that the minimum average monthly air temperatures were observed in January-February and ranged from -4,0 °C to -2,7 °C, the lowest value of -4,0 °C was determined in the north of the region in January at the Ovruch weather station. In December, the temperature ranges from -1,0 to -0,4 °C. The maximum indicators of the average monthly temperature are observed in July-August and vary from 19,0 °C to 20,6 °C. The highest value of 20,6 °C was recorded in July in the south of the region at the Zhytomyr weather station. Average annual temperatures range from 8,3 °C in the north to 8,9 °C in the south of the region.

In recent years, a positive air temperature anomaly has been noted in all months and at all studied weather stations. The analysis of the obtained results of air temperature values at five stations of the Zhytomyr region showed that at all stations during the studied period, the air temperature changed in almost the same range.

The average annual deviation of temperature indicators in comparison with the data of the climatic norm ranges from 1,5 to 2,0 °C. Average monthly temperatures are also characterized by an increase relative to the climatic norm. The smallest differences were recorded in October, when the air temperature varied within 0,5-1,0 °C, which is a general trend for the entire region. In the period from 2004 to 2018, in the annual course of average monthly air temperatures in the Zhytomyr Region, there was a trend of increasing maximum and minimum temperatures. This character of the course of the maximum and minimum air temperature reflects the features of the modern climate caused by the change in circulation processes, which contributed to the emergence of extreme air temperatures in the study region.