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BOOK OF ABSTRACTS

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Landscape Dimensions of Sustainable Development
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Ivane Javakhishvili Tbilisi State University
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STUDY OF NON-RAINFALL PERIODS AT THE RIVER BASINS OF THE SOUTH OF UKRAINE UNDER MODERN CLIMATE CHANGES

Valeriya Ovcharuk¹, Halyna Borovska², Liliia Kushchenko³

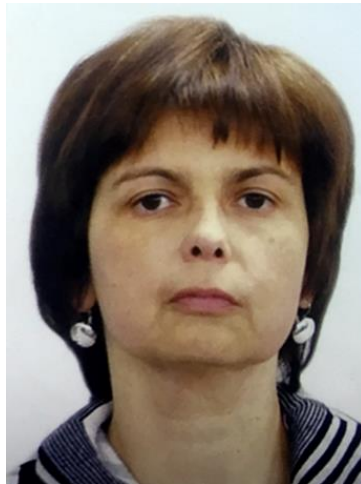
¹Director of Hydrometeorological Institute, Dr., Odessa State Environmental University, Odessa, Ukraine;

²Candidate of Geography Sciences, Associate Professor of the Department of Meteorology and Climatology, Odessa State Environmental University, Odessa, Ukraine; ³PhD student of the Department of Land Hydrology, Odessa State Environmental University, Odessa, Ukraine

¹ valeriya.ovcharuk@gmail.com; ² bqa6319@gmail.com; ³ liliakushchenko@gmail.com



Valeriya Ovcharuk



Halyna Borovska



Liliia Kushchenko

Abstract

The concept of non-rainfall periods is used to assess the climatic conditions of agriculture and water management for relatively short periods. Non-rainfall periods are a criterion for dryness because they characterize the length of the period without effective rainfall. The period of modern climate change is of scientific and practical interest, as the study of the whole process as a whole, and changes that occur in individual climatic characteristics, such as the formation and duration of non-rainy periods. The magnitude of precipitation, the intensity of their precipitation, or its absence determines in essence the presence and duration of dry periods on rivers. Particularly relevant is the study of factors in the formation of dry runoff of rivers in the South of Ukraine that can also be characterized as a zone of insufficient water. The main source of filling for rivers in the low-water period of the year is primarily groundwater runoff, as well as rainfall, which enters the channel network through their infiltration into groundwater. Therefore, long non-rainy periods can lead to a decrease in the underground supply of rivers, and sometimes to their drying up.

Since 1986, agro-climatic zoning of the territory of Ukraine has been used for the rational use of climate resources, optimal placement of major crops, and increasing agricultural productivity. At one of the stages of this zoning, the characteristics of non-rainfall periods were calculated using meteorological observations of temperature and precipitation for the period 1956 -to 1985.

In this study, such periods were determined based on regular precipitation observations for the warm season (April-October) from 1991-to 2019. at 41 meteorological stations in the southern part of Ukraine. Data on daily precipitation amounts were received from the Central Geophysical Observatory named after Boris Sreznevsky. At the meteorological station Chornomorsk (Illichivsk) there is no information about precipitation for 1991-1993.

As a result of the analysis of the initial data, information was obtained on the recurrence and total duration of rainless periods in the study area. In the South of the country in the period under review, the number of rainless periods ranged from 1 to 10 per season. It should be noted that in some years no rainy periods were detected at some stations. This precipitation regime was observed: in Khmelnytsky (Vinnytsia region) in 2012; in Ochakov (Mykolaiv region) in 2004, in Khmelnytsky in 1992 and 2010. In Khmelnytsky in July 1997 and July 2008 there was not a single day without precipitation 236 and 260 mm of precipitation fell during the month, respectively.

The maximum values of the total number of days in rainless periods reached 161 days in 2018 in Rozdilna (Odesa region), 155 days in Nova Kakhovka (2011), 154 days in the Black Sea and Genichesk in 2012, 153 days in Odesa, the Black Sea and Bechtera (2019), 150 days in Belgorod-Dniester (1992) It is interesting to compare the data obtained for the current period with similar results obtained earlier under another climatic characteristic.

Thus, compared to the last climatic period, the average number of non-rainfall periods at the stations of Kherson and Melitopol show increased it's by 0.4-0.5. In Odessa, it remained unchanged. The average duration of non-rainfall periods increased: in Melitopol by 6.4 days, in Kherson - by 5.8 days, in Odesa - by 4.3 days. The maximum duration for the stations of Odesa and Kherson, is now much lower than historical. And in Melitopol - were larger by almost half a month.

The obtained results confirm the studies, which revealed, in general, the adverse effects of climate change like the precipitation regime in the South of Ukraine in the fourth climate epoch.

Keywords: non-rainfall period, low-water, climate change