LONG-TERM MONITORING OF ARIDIZATION IN AGRICULTURE BEFORE CHANGE AND FOR CLIMATE CHANGE IN UKRAINE

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Climate change is one of the most pressing issues of today and, obviously, in the long run. The authors systematized the achievements of domestic meteorological studies, covered in the literature in terms of spatial distribution of seasonal droughts for 1872-1969, and their own zonal and local observations for 1952-2020, by type of weather and climate change, which allowed to systematize the frequency of extreme conditions. agriculture, patterns of changes in weather types and identify the characteristics of climate change over the past 50 years. In general, the period of 150 years in the manifestations of extreme weather conditions and their impact on food security was monitored. The conditions of catastrophic droughts that caused famine among the population have been determined. The purpose of our research was to generalize for this period of time the patterns of distribution of seasonal droughts in Ukraine, to systematize their recurrence and the causes of catastrophic droughts and climate change. Research methods and materials: spatial, zonal and local studies of weather anomalous conditions in Ukraine were conducted using methods of systematic analysis, comparative geographical, statistical, graphical and abstract local methods in determining the patterns of extreme conditions in Ukraine based on monographic materials and own research. Research results. Manifestations of arid phenomena have the greatest negative impact on the formation of crop yields. Droughts have a systematic recurrence over time with varying intensities for certain areas. The main causes of Holocene droughts in Ukraine were formed under the influence of cyclones and persistent anticyclones that arose over the northern seas with a strong anticyclone with manifestations of high pressure, weak wind, accompanied by hot sunny weather.

Climate change in the last quarter of the twentieth century. and the beginning of the XXI century. associated with greenhouse anthropogenic emissions and simultaneous climate change due to fluctuations in the earth's ecliptic and solar activity. The beginning of modern observations of weather conditions dates back to 1872 in Ukraine, when the only method based on data from meteorological stations located in modern Ukraine, systematized and determined the quantitative and spatial distribution of droughts in Ukraine, ending in 1969, generalized I.Ye. Buchinsky (1972). A systematic approach to information has identified patterns of spring, summer and autumn droughts, which show signs of intensification of local after 4 years of extensive and very extensive droughts, catastrophic (> 50% of the territory) - every 10 years, mainly with the spread of southern, southeastern, eastern and southwestern regions of Ukraine. The droughts of 1891, 1909, 1921-22, and 1946-1947 were accompanied by famine years, causing the death of part of the population. The droughts of 1954, 1963, and 1968 were severe due to weather anomalies, but without tragic consequences for the population - the culture of agriculture and its resistance to adverse weather conditions increased. The vegetation periods of 1932-1933 were not defined as abnormal for any type of drought, which indicates the artificial origin of the Holodomor in Ukraine at that time. Zonal monitoring, conducted by us with the analysis of data from 6 meteorological stations, typical for soil and climatic zones for 1951-1984, identified three main types of weather - favorable, arid, wet and cold. The next stage of observations of the same meteorological stations for 1985-2006 was established as the initial phase of climate change with increasing signs of its aridity - with a systematic increase in air temperature in Ukraine in summer by 0.6 ° C, in winter - up to 2 ° C with alternating showers and droughts during one growing season. The average temperature increase during the vegetation periods for 1985-2006, compared to the Chernobyl period (1951-1984), occurred by 2.5%, the amount of precipitation by 10.6 mm, for the year - 4.6 mm. Climate change has already brought the weather conditions of Polissya closer to the Forest-Steppe in terms of temperature, and the northern steppe in terms of rainfall, the regions of the southern steppe have undergone significant aridization. Severe droughts of the first period (1951-1984) were accompanied by a

decrease in precipitation during the growing season at certain stations to 262 mm - 30% less than average and an increase in air temperature by 0.8 ° C with intensity in Polissya and Forest-Steppe 21 and 25%, in the Steppe zone - 44%. The phenomenon of crop stabilization was determined by the amount of precipitation in May-June, which was 83 mm, while in extreme years exceeded at this time 14-30 mm. Severe droughts of the past coincided with spring, summer and autumn droughts. The use of fertilizers in dry years increased the productivity of crops by 1.5-1.8 times compared to extensive farming without fertilizers, which avoided the famine years after the drought of 1947. Local monitoring on the model of the meteorological station NSC "Institute of Agriculture NAAS" (town. Shepherds) identified a progressive increase air temperature for the growing season from 10.1% in 2006-2010 to 18.3% to normal in 2016-1020, with a corresponding decrease in rainfall from 95 to 50% to normal, indicating a progressive increase in climate aridity . Studies in field crop rotation on the gray forest soil of the northern part of the Forest-Steppe determined the agronomic possibility to oppose the negative impact of abnormal weather conditions of the fertilizer system with optimization of mineral nutrition of plants in traditional and organic farming.