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CLIMATE INFLUENCES ON THE LANDSCAPES OF THE NARNOVA HYDROGRAPHIC BASIN

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Landscape structure and function can change for many reasons and in many ways. Change in a patch or a landscape can be caused by any number of factors. Some of these are intrinsic, other causes are extrinsic to the ecosystem and are imposed by outside forces, such as climate change and disturbance events. The potential causes of change may be interrelated in complex ways. A drought may make a forest more vulnerable to pathogens or a new clearing may increase the vulnerability of adjacent trees to windthrow. Global climate change will force many species to adjust their geographical distributions in the near future, with important consequences for biodiversity, conservation biology and ecosystem services. Changes in landscape structure can have several spatial and temporal forms. Patches can shrink or expand, or be lost entirely. Successional dynamics on patches can lead to a shifting mosaic of patch types through time. Some changes are nearly instantaneous and occur over very short periods of time, such as the effect of fire. Other changes occur slowly and take a longer period of time to develop, such as desertification. Patch configuration on a landscape can also change. Patches can become perforated by other patch types, and large patches can be fragmented into several smaller patches.

The varied natural conditions of the Nârnova river basin, with varying altitudes, have determined the presence of a wide variety of land categories (types of landscapes). Climatic conditions have had a direct influence on the increase and decrease of certain areas of land. Within the Nârnova river basin, during the years 1991-2020, an average temperature of 10.88 degrees C was registered, and the average rainfall was 580 mm. Recently, a series of hydroclimatic changes have appeared that have led to the reduction of the snow layer, the change of precipitation from snow type to rain. Drought phenomena have also become more numerous, which has further led to the appearance of vegetation fires (dry vegetation has become more flammable) as the climate grows warmer and drier. Within the Narnova river basin, the arid climate has led to a decrease in the number and surface of the lakes, which has directly influenced even the actual course of the river, decreasing its flow. The surface of many perennial landscapes has turned into agricultural or pasture landscapes. The latitudinal distribution of temperatures influenced the growth of forest and multiannual landscapes. The torrential rains also intensified, which led to intense soil erosion due to the rather rugged terrain. This in turn led to the transition from arable landscapes to shrubs, bushes, eroded pastures, etc. If climate change is affecting landscape processes over the multidecadal time scales of human lives and infrastructure design, that could have major implications for human health and safety, economic stability, water security, natural-resource management, and ecosystem resilience.

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