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## TREND ANALYSIS OF EXTREME TEMPERATURE CLIMATIC INDICES IN BELGRADE (1961–2020)

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### Abstract

Climate change are one of the most significant global challenges in the 21st century. Air temperature and precipitation as the most important climatic elements, are the most frequently analyzed parameters. Climate change is not only the cause of global warming, but also brings extreme low and high temperatures, heavy rainfall and other meteorological anomalies. One of the main signals indicating climate change is the change of extreme temperatures. In order to gain insight into the changes in the temperature regime in Belgrade, the number of characteristic days - frost days (FD), ice days (ID), summer days (SU), and the number of tropical nights (TR) over a period of 60 years - was analyzed. The extremes are examined, i.e. the change in the number of days when the daily minimum or maximum temperature is below zero (frost and ice days) and the change in the number of days when the maximum temperature exceeds 25 (summer days). Two non-parametric statistical tests were used to determine the trend and the trend magnitude of the selected indices. The Mann-Kendall test was used for trend analysis and the Pettit's test was used to detect significant changes in the time series of climatological data. The study area is Belgrade, the capital of the Republic of Serbia. The data of the Hydrometeorological Institute of the Republic of Serbia (RHMZ) measured at the weather station Belgrade (Serbia) during two climatological periods 1961-1990 and 1991-2020 were used. The obtained results indicate that the number of frost and ice days decreases, while the number of summer days and especially tropical nights increases. According to the applied Mann-Kendall test, statistically significant changes were found in all data series, while the Pettit's test indicated that sudden changes in parameter values began in the late 1980s.