

**WCRP**

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# International Conference On Regional Climate

Coordinated Regional Climate Downscaling Experiment

## ABSTRACT BOOK



**WELCOME TO**

**THE INTERNATIONAL CONFERENCE ON REGIONAL CLIMATE CORDEX 2019**

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**Parallel Session C:**

**Climate Change Impacts**

**C1: High impact regional phenomena**

**POSTER PRESENTATIONS**

## **Parallel Session C: Climate Change Impacts**

*C1: High Impact regional phenomena*

**C1-P-21**

### **Scientific and methodological approaches to taking into account the influence of climate change on the minimum rivers runoff**

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In order to account for climate changes in calculations of maximum runoff, the author had proposed to introduce "climate corrections" to the calculated values of maximum water discharges. A similar approach can be applied to the minimum runoff of rivers. Such research was carried out on the example of the Transcarpathian rivers. If we have the predicted values of air temperature and precipitation, for example during a warm period, and the dependence of these values on the present day on the elevation (because it the mountain region), "climate corrections" can be introduced to the values of the minimum runoff in the future.

With purpose to obtain the calculating equations of relation between the minimum runoff and the predicted values of temperature and precipitation, on the one hand, and local factors runoff on the other, the method of multiple linear regressions is applied. As predictors, all available factors were used, namely: average annual air temperature, rainfall for cold and warm periods of the year, latitudinal coordinates, catchment area, forest area, length, and slope of rivers. The average height of the catchment was not used in the calculations, because its influence is represented by the calculated values of temperature and precipitation. The most optimal equations were further used to determine the predicted values of the minimum runoff under different scenarios.

Another possible option considering the impact of climatic changes on minimal rivers runoff is its interconnection with the drought index, for example, SPEI. The time series of the SPEI index on different scales for the steppe zone of Ukraine, in particular for the basin of the Southern Bug River, were analyzed for the period 1950-2010. Estimation of the statistical connection between SPEI at different time scales and different phases of the river flow of the Southern Bug River during the period 1950- 2010 showed that the obtained dependencies are significant, which opens up the possibility of using the index of drought in the modelling of hydrological processes in the steppe zone of Ukraine.

**Keywords:** minimal runoff, climate change, drought index