



## **Water balance in the selected regions of Poland in the changing climate**

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The last decade was the warmest worldwide since records began in the 1850s, according to a report from the UK Met Office. Climate projections for the future for Poland foresee further increase in temperature and also changes in distribution and quantity of precipitation. In the present climate, many regions in Poland suffer shortages of water, especially in the growing season. In the future, these shortages may be even more common and more severe. Changes in the thermal characteristics as well as in precipitation will influence the changes in water balance in regions of the country.

In this study, for the selected regions in Poland, the water balance components, i.e. precipitation, evaporation and runoff, will be calculated for the average conditions in the control period (1961-1990) and in the future (2071-2100). All calculations will be based on the results of daily temperature, precipitation, relative humidity and wind speed from the Hadley Centre HadRM3-PRECIS regional model simulations (for SRES A2 scenario in three model experiments) in Poland in the periods of 1961-1990 and 2071-2100. Additionally, to illustrate better the water balance variability nowadays, the estimation of the water balance components for an exceptionally warm as well as for an especially cold year will be made, based on real data.

The values of evaporation for different land use units will be estimated, based on the method developed in the Department of Agrometeorology of the Poznań Agricultural Academy. This method was developed for the purpose of estimating heat balance components based on standard meteorological data, plant development stage, and land-use conditions. Estimates of latent heat flux components allowed to obtain values of areal evapotranspiration and surface runoff.

The water balance components for the present and for the future will compared for the

studied regions. The changes in water balance between regions will be analyzed. The directions of changes will be compared and the similarities and differences among them will be recognized. Based on the estimations of the water balance components for the future, probable changes in land use in the regions caused by the changing climate conditions in Poland will be discussed.