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Water balance in the Poznan region (Poland) - the present and the future

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In the present climate the Wielkopolska region (e.g. the Poznań area) suffers water shortages. Unfortunately, climate projections for the future foresee further worsening of the water condition caused by higher temperatures occurring simultaneously with changes in distribution and quantity of precipitations simultaneously.

In this study the water balance components, i.e. precipitation, evaporation and runoff in the Poznań region will be examined for the average conditions in the present (1961-1990) and in the future (2071-2100). All calculations will be studied based on the results of daily temperature, precipitation, relative humidity and wind speed for several regional climate models in the periods of 1961-1990 and 2071-2100.

The values of evaporation for the different land use units will be estimated based on the method developed in the Department of Agrometeorology of the Poznań University of Life Sciences. 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 values of the water balance components obtained based on different models will be discussed and compared with each other. The water balance components in the region for the present and for the future will be compared as well. The directions of changes in the studied components will be recognized and discussed. Based on the estimations for the future, the likely changes in the land use in the regions caused by the changing climate conditions in the region, if any, will be presented.