

EFFECT OF ALTITUDE ON THE WATER BALANCE OF LAND AREA OF SARAJEVO

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Abstract

This paper examined the impact of altitude on the water balance of the land area of Sarajevo (weather station Bjelave and weather station Bjelasnica) for the period 1991-2010 for the average, driest and rainiest hydrological year. The average annual potential evapotranspiration (ETP) in the weather station Bjelave was 529 mm, while in the weather station Bjelašnica potential evapotranspiration (ETP) value was much lower, amounting to 54 mm.

In the area of weather station Bjelave, the mean annual precipitation (P) for an average hydrological year amounted to 1144 mm, potential evapotranspiration (ETP) 595 mm, and actual evapotranspiration (ETR) to 522 mm. Water shortages in the area covered by the weather station appeared in the summer months (July and August), total of water of 158 mm, whereas the excess water in the soil, due to its water saturation occurred in the winter months (December, January, February) and in March and April, its total of 389 mm.

In the area of weather station Bjelašnica, the annual precipitation means (P) for an average hydrological year amounted to 955 mm, potential evapotranspiration (ETP) 70 mm, and actual evapotranspiration (ETR) 68 mm. Shortages of water were not present in a single month, and excess water might occur during all the months except October, in the amount of 719 mm.

Key words: altitude, evapotranspiration, water balance, lack of water, excess water

Introduction

Of all the natural factors, the air has the highest impact on the crop production. For the climate assessment climate of an area, long-term observation and knowledge of its elements, such as mean annual and mean monthly temperatures, amounts, i.e. total precipitations, number of days without frost, the frequency and intensity of the wind, the onset of hail, are needed. Crop production is mostly determined by the air temperature and precipitations, so the climate of a region may be assessed, accordingly.

According to Milosavljevic (1983), the area of Sarajevo is characterised to have pre-mountainous climate, with cold winters, lasting longer than the continental ones. The winds are rare, with moderately warm summers of the annual fluctuations in temperature, being 20-24°C. The average annual temperature is below 10°C, with the annual rainfall of 750-1000 mm, which corresponds to sub-humid climate.

The weather conditions determine the natural flow of water into the soil and water consumption on evapotranspiration and thus irrigation is needed. The most important are precipitations because they need to ensure a steady flow of water for normal growth and development of plants. Different plants have different water needs. The required amount of water for the cultivation of agricultural plants matches the values of potential evapotranspiration.

