

Water balance components of Lake Balaton from 1921 until today

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The Lake Balaton is the largest shallow lake in Europe. The surface area of the water is 589 km². The lake is 76.5 km long and the average width is 7.5 km. The water depth is on the average 3.36 m. The most important water basis of Balaton is the River Zala, which flows into the lake next to Fenékpusztá. Besides this even 30 standing and 20 periodical watercourse transport water into the lake. The watershed area of the lake is 5775.5 km². The small depth of the water is the most important property of the lake therefore the Balaton has special sensitivity to the climate change and to the modification of water balance.

The registration of the water balance components on the Lake Balaton has begun in 1921. Our data series include the calculated precipitation for the surface of the lake, the inflow from the reservoir, the evaporation and the quantity of the drain off water. Yearly amounts were applied in our research. The analyses of the data series were carried out by use of statistical methods and lineal trends.

Our aim was to investigate the set of the water balance's elements on the lake taken as a function of the climate change. We would like to answer the question whether the set of the elements of water balance has changed under the past decades. We focused on the precipitation and inflow like incoming side of the balance, and the evaporation and drain off like outside.

The water level regulation can be achieved with draining off the water. At the lake, we have the possibility only to drain off the superfluous amount, but we are not able to influence the incoming side of the water balance. Therefore it has of primary importance to know this component, because this could be planned alone during the water management of the lake.

The change of the inflow shows well the modification of the precipitation amount. The size of both elements decreased on the basis of trends, but this reduction is more pronounced in the case of the inflow. The evaporation is the most important component among the outside-elements, which is highly influenced by climatic elements. The evaporation was close to constant in last decades, this constituent could be planed correctly. The change in natural water resources seems to be the best index in characterization of the function of weather on water management of Lake Balaton.

The incoming water of the lake is generally more, than the water deficit by evaporation. It is followed that the change in natural water supply is mostly positive. According to the trend - similarly to the precipitation and inflow – we found also decreased tendency in this case.

The effect of reduction in trends prognoses that the water management will be more difficult in the future, because the incoming water would be probably less.