



Regional drought event in the Sio and lake Balaton drainage basin

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Lake Balaton has the largest water surface among the freshwater bodies in central Europe, 600 km², with mean depth of 3.4 m, and volume 2 km³. The drainage basin of the Lake (5775 km²) occupies the upper part of the Sio catchment (a left bank tributary to the Danube) in the western and central Trans-Danubian region. Out of the six sub-basins of the lake catchment the largest one is that of the Zala stream (2622 km²), which contributes almost 50% of the total inflow to the Lake. The Lake is supplied by thirty perennial and twenty ephemeral watercourses. The shore stripe not assigned to any tributary to the Lake occupies 431 km². The water budget of the lake is defined beside the inflow rate by precipitation captured by water surface and evaporation from water surface. Outflow from the Lake can be regulated by sluices at Siofok built in 1863 enabling the regulation of water levels of the lake within some constraints. Outflow leaving the lake through the sluices equals 600 mm per annum in average water budget years i.e. the same as the annual precipitation depth while the inflow is compensated by evaporation (both 900 mm/year). Consequently in most of the years the Lake Balaton water budget is characterised with water excess, expressed in regular releases from the lake. First in the history of instrumentally measured water budget negative annual values occurred in the period 2000-2003. The extreme situation has been manifested by quick drop of water levels and the absence of outflow since May 2000. The Lake behaved like an anorheic water body during the last five years not contributing to the lower part of the catchment any outflow. Results of extreme value analysis are presented based on the processing of long time series of precipitation over the catchment and those of water budget elements of the Lake and its drainage basin.