

Abstract

The work deals with the flooding in July 1954 in Central Europe. It presents a complex analysis of this event in a general view of hydrometeorological conditions in the upper river basins of Labe (Elbe), Danube and Main. The meteorological situation is analyzed by the synoptic pattern development and by large-scale anomalies of dynamic and thermodynamic variables in comparison with distribution within the period 1951 – 2010. Extreme values found out during this event are those of meridional flux of moisture and vertical velocity in p-system. Moisture conditions in the catchment are described by the Antecedent Precipitation Index (API30), which reaches the highest value in Alps and the Novohradske hory Mts. However initial wetness level is not so high when compared to the 2002 and 2013 floods. Extraordinary high precipitation totals are the highest historic values of 3-days maxima and one month maxima ever recorded in Germany. In the Czech Republic, the precipitation extremity was evaluated by the Weather Extremity Index, for the 1954 flood corresponding to the 3-days sum. Comparing the WEI values, it exceeded the WEI in June 2013, but didn't reach the value of the exceptional flooding in 2002. Heavy precipitation caused notable water levels with high return periods. Due to relatively lower antecedent saturation, majority of studied area gain slightly weaker peak flood discharges than during 2002 and 2013 floods.

key words: flood, Central Europe, July 1954, API30, WEI, synoptic situation, precipitation, flood discharge