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Extreme precipitation events in the Czech Republic: Comparison of events leading to floods in June 2013 and last 20 years

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Assessment of the quantity and extremity of extreme precipitation is important for many sectors, especially for hydrology and geology. In present contribution we focus on precipitation leading to the flood events during May and June 2013 in the Czech Republic. The first extreme precipitation event was connected with cyclone above central Europe. The significant precipitation occurred mainly in the western and central part of the Czech Republic. On 1/6/2013 we recorded in some places 1-day precipitation amounts over 100 mm. The return period of 1-day precipitation exceeded 100 years at some stations. The second extreme precipitation event on 24/6 and 25/6/2013 affected eastern and northern part of the Czech Republic. The precipitation amounts were not as high as in the beginning of June, but in some places 2-day precipitation amount exceeded 100 mm. We compare the extremity of observed precipitation amounts with those that caused the significant floods in 2010, 2002 and 1997 using the Weather Extremity Index which evaluates the extremity (based on return periods) and spatial extent of the meteorological extreme event of interest. The generalized extreme value (GEV) distribution is used as the parametric model for annual maxima of 1-day to 7-day precipitation amounts. Parameters of the GEV distribution are estimated by the L-moment algorithm and the region-of-influence method. The work has been supported by the grant P209/11/1990 funded by the Czech Science Foundation.