On variability and trends in extreme precipitation events over Bulgaria

L. Bocheva, T. Marinova, P. Simeonov

National Institute of Meteorology and Hydrology

66 Tsarigradsko Chaussee, Sofia 1784, Bulgaria

Lilia.Boheva@meteo.bg, Tania.Marinova@meteo.bg

Heavy precipitation events often lead to river floods and flash floods causing significant losses of life and property damages, landslide activation, and other social and economic problems. The upward tendency of damages, caused by natural disasters, supports the idea that extreme events, associated with the effects of climate change, occur with greater frequency recently. The series of hazardous precipitation events which affected Balkans and in particular Bulgaria in 2005 show that additional investigations of such type of phenomena are necessary in order to be able to predict them more precisely.

The subject of the present research is variability and trends in extreme precipitation events over Bulgaria during the period 1961 – 2005. The regime of potential dangerous heavy rain/snow events (totals over 30 mm/day are considered as risky for floods), which occurred in more than 4 districts in Bulgaria, is compared with total precipitation amounts for two periods: 1961 – 1990 and 1991 – 2005. Significant increasing (more than 50 %) of days with heavy 24-hour precipitation is received, while the total annual rainfall shows slightly decreasing trends in many regions of the country. Besides, the contribution to the observed annual precipitation totals of heavy and torrential rain/snow increases in contrast to weak and moderate precipitation amounts which decrease.

An attempt for classification of synoptic situation leading to such type of extreme events during the second period 1991 – 2005 is made in order to improve knowledge and prediction of potentially dangerous precipitation.