HYDROLOGICAL ASSESSMENT FOR SELECTED KARSTIC SPRINGS IN THE MOUNTAIN REGIONS OF BULGARIA

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Abstract: Karstic water is an important source of water in the rural areas of Bulgaria. In this study, we estimate the impact of climate variability on the regime of karstic springs of two mountainous regions of the country. Since 1981 Bulgaria has experienced a continuous decrease in rainfall combined with an increase in air temperature. As a result, ground water levels and spring discharge have decreased. Data from three karstic springs were used. The springs refer to karstified Proterozoic marbles. Their watersheds are situated in the Pirin and Rhodopes mountains located in the southwestern part of Bulgaria. The infiltrated snowmelt water is the main source of spring recharge. The springs are included in the National Hydrogeological Network. Time series of spring discharge were studied, with a special focus on the drought period during 1982–1994, which was compared to the 1960–2001 observation period. The 1982–1994 drought period in Bulgaria also considerably influenced the evaluated springs. The strongest reduction in spring discharges was registered during the period 1985–1994. After 1996, the yearly average discharges have tended to reach their multi-annual average values. However, reduced values of spring discharges were observed again in 2000 and 2001. The quantification of the effect of a documented long drought period is of great significance for the prediction of the effects of future climatic change on groundwater resources.

Keywords: karstic springs, spring discharge, hydrological assessment, drought, multi-annual variations

E. Wiegandt (ed.), Mountains: Sources of Water, Sources of Knowledge, 265–280.