

HYDROMETEOROLOGICAL MONITORING IN WEST MORAVA RIVER BASIN (SERBIA)

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Abstract: Due to the unfavorable environment conditions that Serbia, and mainly Čačak, have been experiencing in the last few years (such as frequent floods, droughts and fires), as well to the particularly underdeveloped monitoring system that can't properly envisage and prevent such situations, it is essential for Serbia to get familiar with the application of new and up-to-date technologies in this field. This paper has the aim to analyze the situation in the area of Čačak, in particular in the West Morava river basin, to collect data about the hydrometeorological monitoring standards in Serbia and the methodology of monitoring the main hydrometeorological parameters. The paper shows some climatic trend with the data available for precipitation and runoff in the area of West Morava river basin. The results of the research can contribute to the prevention of floods in the West Morava river basin.

Key words: hydrometeorological monitoring, West Morava river, rainfall and runoff regime

INTRODUCTION

Streamflow serves man in many ways. It supplies water for domestic, commercial and industrial use; irrigation water for crops; dilution and transport of wastes; energy for hydroelectric power; transport channels for commerce; and a medium for recreation. Records of streamflow are the basic data used in developing reliable surface water supplies because the records provide information on the availability of streamflow and its variability in time and space. The records are therefore used in the planning and design of surface water related projects, and they are also used in the management or operation of such projects after the projects have been completed.

Streamflow records are also used for calibrating hydrological models, which are used for forecasting, such as flood forecasting. Streamflow, when it occurs in excess, can create a hazard and floods cause extensive damage and hardship. Records of flood events obtained at gauging stations serve as the basis for the design of bridges, culverts, dams and flood control reservoirs, and for flood plain delineation and flood warning systems. Likewise, extreme low flow and drought conditions occur in natural streams, and should be documented with reliable streamflow records to provide data for design of water supply systems. It is therefore essential to have valid records of all variations in streamflow. In May 2014 Serbia was hit with floods and as a consequence, the importance of an efficient hydro meteorological and environmental monitoring system in strategic areas, as that close to Čačak, became vital [1-2].

West Morava river basin includes a significant part of the western and southwestern Serbia, and covers an area of 15,805 km². From a morphological point of view, in the basin stand mountains, plateaus and valleys. The highest point on the mountain basin is Hajle (2400 meters above sea level), while the lowest part of the West Morava river is 127 meters above sea level. Measured from the source West Morava is 208 km long. The average width of the river is about 35 m, with maximum depths of up to 4 meters. The bottom frame is changed depending on the surface of the terrain through which it flows, and can be rocky, gravelly, sandy to muddy the downstream part of the course. The highest mountains in the basin are Kopaonik (2017 m) and Mokra Gora (2155 m). High mountain formations occupy the western, northern and central parts of the basin, while the lower formations are in the south. As regards valleys and ravines, in the West Morava river basin we found the greatest depression Polje, in Kosovo. In the river basin take place different valleys: Part of the basin around the lower courses of the West Morava has the characteristics of plain hilly terrain. This paper shows the results of hydrometeorological monitoring in West Morava river basin on the basis of available hydrological data as well as forecasts that can be expected in the future [3].

