



Assessing vulnerability to hydrological drought within climate change impact and human activities

Dakova

NIMH-BASc, 66 Tzarigradsko Shosse, 1784 Sofia, Bulgaria, E mail
Snejana.Dakova@meteo.bg

Because of the fact that river basins integrate meteorological variability, i.e. “filtered” climatic data, river flow is strongly influenced by climatic variations. Climate change similarly adversely affects natural and human systems and undermines long-term economic development prospects. The central objective of this paper is to find out whether the climate changes will cause a risk of hydrological drought. The difficulties ensue from the fact that the meteorological drought will not necessarily lead to hydrological or agricultural drought. The two models HadCM2 and ECHAM4 GCMs, applied to Balkan Peninsula data, were used to obtain the change of rain and temperature. Both expose an increase of annual temperature and a decrease of precipitations. The impact of climate change on river flow is assessed by HBV model modified for conditions in the Balkan Peninsula. Two rivers generating their flow in different climate conditions (from Moderate-Continental climate to the north, High-Mountain climate of the tributaries along the river and Continental-Mediterranean to the south.) are used as a case study. The data used in the analysis include historical monthly and seasonal values as well as those obtained by the above mentioned climate models. Comparative analyses by the criteria of hydrological drought have been made. Whether the expected hydrological drought for the time level of 2025 and 2050 may be accepted as hazardous will be assessed by the Drought Risk Index.