



Seasonal and annual precipitation series in Belgrade

I. Tosic and M. Unkasevic

Dept. of Meteorology, Belgrade University, itosic@ff.bg.ac.yu

Precipitation is a very variable climatic element, both spatially and temporally at different scales. The present study, motivated by earlier investigations and linking regional rainfall anomalies to large-scale circulation, uses time series analysis. It identifies the preferred frequency bands of rainfall variations, especially in the territory of south-eastern Europe where this analysis is missing. The annual and seasonal precipitation series of the Belgrade-Observatory station were analyzed using the multitaper method (MTM) and the wavelet transform (WT). The Belgrade-Observatory was chosen because it had the longest period of recording (1888 onwards). Using WT we obtained not only information about dominant periodicities, but when these periodicities appeared. The quasi-biennial oscillation (QBO) was found in annual and all seasonal data; the quasi-triennial oscillation (QTO) in the autumn case; and oscillation of about 8 years in the winter, spring, and autumn. Medium-wave oscillation of 14-16 years was detected in the annual, summer and winter analysis. An influence of large-scale phenomena such as El-Niño Southern Oscillation (ENSO) and the North Atlantic Oscillation (NAO) on the Belgrade precipitation series was investigated. The Belgrade area is under strong NAO influence in winter, and under ENSO influence during the spring.