

EVROS RIVER WATER DISCHARGE RESPONSE TO CHANGES IN RAINFALL REGIME

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Study area

The transboundary river Evros, one of the major catchments located in the Eastern Balkans (UNESCO Chair/INWEB). Evros river covers an area of 52,900 km² (66% in Bulgaria, 28% in Turkey and 6% in Greece) (fig.1).

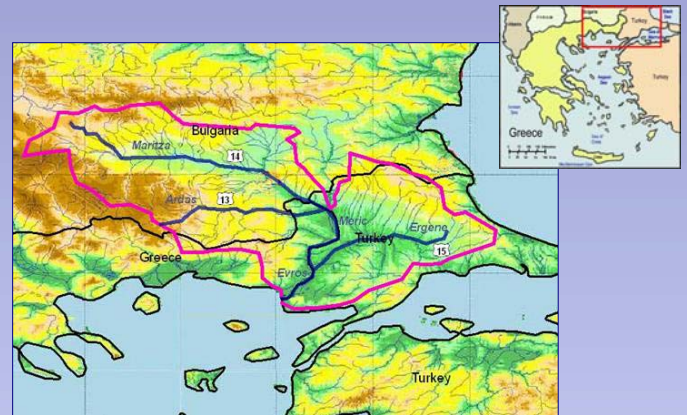


Figure 1

Purpose of the study

A comparison of past and present Evros water discharge related to fluctuations of air temperature and rainfall, due to climatic change. The latter is related also to river sediment supply variation and the overall evolution of the coastal zone.

Methodology used

❖ Temperature and rainfall time series from Soufli station (obtained by HNMS) for the period 1950- 2007 were analysed to identify any climatic variation. A correlation between rainfall and water discharge, measured at Kipi station after the confluence of all main tributaries, for two different periods (1969-1974 and 2002- 2007) were compared, in order to be identified the impact (if any) of climatic change upon water river discharge.

Data analysis results

❖ Rainfall values are of the same range during the dry period (April- September), whilst it appears a decreasing linear trend for the wet period (October- March) (fig.2). The observed extreme events of rainfall, which occur more frequently after 1980's, increase the mean annual value.

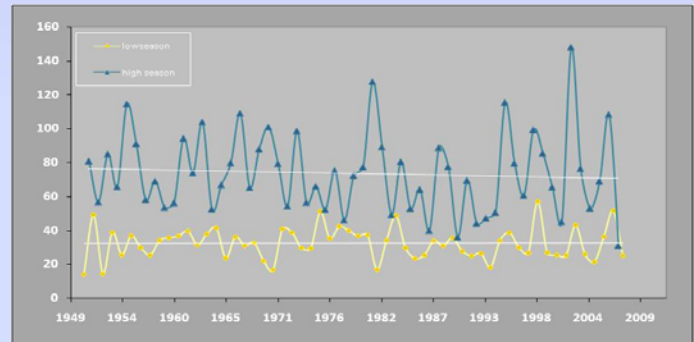


Figure 2

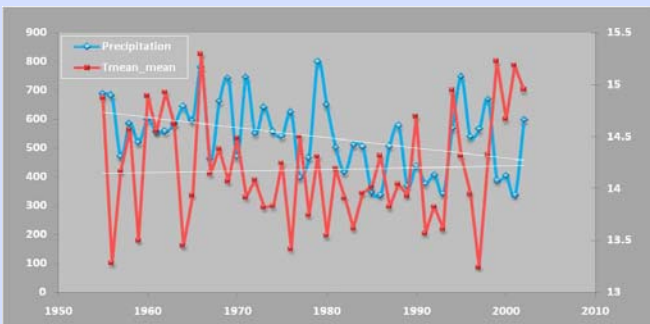


Figure 3

❖ A linear decreasing trend of precipitation is accompanied by an increasing linear trend of temperature for the same period, proclaiming a hotter and drier climate (fig.3).

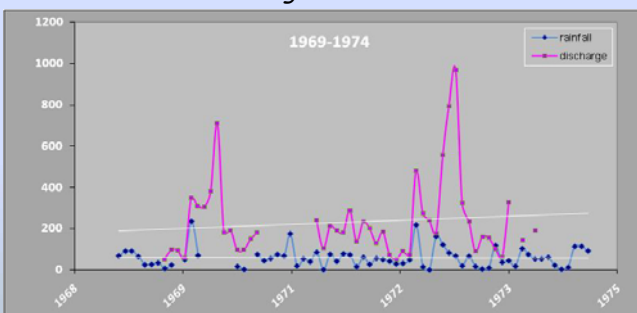


Figure 4

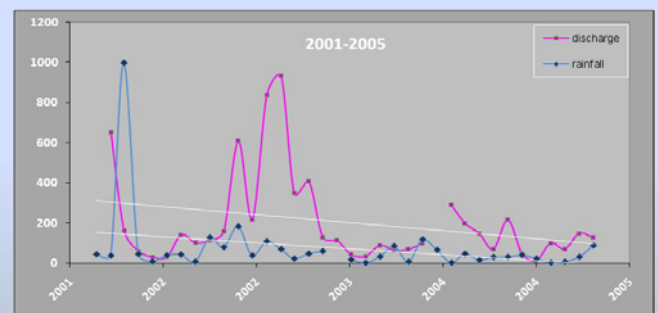


Figure 5

❖ Water discharge values follow the general distribution of rainfall, providing, therefore, a good correlation among them, although Evros water flow, as a transboundary river, is controlled by a series of dams (fig.4,5).
 ❖ This means that climatic forcing seems to play more important role than the regulation of river flow.