



A Future Estimation of the Surface Runoff in the Greek Region: A Case Study of one of the Main Catchments Areas (Aravissos – Central Macedonia)

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According to the IPCC latest report (IPCC, 2007) many semi-arid and arid areas, as the Mediterranean basin, are particularly exposed to the impacts of climate change and may suffer a decrease of water resources in the future. By the middle of the 21st century it is estimated that the annual average river runoff and water availability will decrease over these dry regions at mid-latitudes. So, it is of great importance the study of the future changes in the hydrological cycle, due to the increasing freshwater demands.

The main scope of the present study is to estimate the future changes of the surface runoff in the Aravissos area (central Macedonia - Greece) due to the enhanced greenhouse effect until the end of the 21st century. The selection of Aravissos was based to the fact that the water needs of the second largest in population city in Greece (Thessaloniki) are covered mainly by the selected catchments area.

Daily precipitation, temperature, relative humidity, wind speed and sunlight duration data derived from updated regional climate models, are used for selected grid points covering the domain of study. The main two climatological parameters (precipitation –temperature) are on a first step evaluated in comparison to re-analysis data (E-Obs –Ensembles project) for the same grid points. On a second step, utilizing several different evapotranspiration methods we calculated the surface runoff for two different time periods: the first in the middle and the second at the end of the 21st century. The first results of the study showed that the surface runoff depends on the methodology used for the calculation of the evapotranspiration but also from the regional model.

Acknowledgements: This study has been supported by the CC-WaterS project (Contract number SEE/A/022/2.1/X)