

## **HYDROMED MODEL AND ITS APPLICATION ON SEMI-ARID MEDITERRANEAN CATCHMENTS WITH HILL RESERVOIRS**

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The semi-arid region of the Mediterranean basin has specific climatic conditions associated mainly with very erratic pattern of rainfall with respect to time, duration, intensity and amount. Given the fact that, the hydrology of semi-arid is different from humid and sub-humid regions, one would expect that models developed for humid regions are not necessarily applicable to other climatic regions. The HYDROMED model has been developed specifically for the Mediterranean basin conditions. The model has two sub-models. The hydrological processes contributing to the runoff and the storage capacity of a reservoir required to maintaining a yield with a given probability of failure. The HYDROMED model is a menu driven, easy and friendly to use and runs under Windows 95 operation system. The model uses the Genetic Algorithm for Optimization and has default values that could be selected in absence of measured parameter values. The model has different options to calculate the runoff!

volume and options for the time steps ranging from less than one hour to one month. The model has facility to import data from data loggers and output results into data files and graphs. An example of calibration for El-Guazine catchment in Tunisia has been given. The model showed successfully its ability to simulate the Rainfall-Runoff event. Estimation of the probability of failure has been obtained for different months of the year. There was no high risk of El-Guazine to run dry / submerged at a capacity of 233,000 m<sup>3</sup>. Subsequently, benefits, in terms of probability of failure, by increasing the reservoir volume greater than 250.000 m<sup>3</sup> mark are not high. This is important for the design engineers. However the analysis is based on the existing water abstraction policy, and on the assumption that the present climate will prevail during the lifetime of the reservoir. Should these conditions change, a new analysis should be carried out.