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# Simulation of water demand for the next 50 years in semi-arid area, Problems and solutions: two study cases; Djelfa city and Khemis Miliana city (Algeria)

Ali Rahmani Salah Eddine [1], Chibane Brahim [1]

Author contact: alirahmani101990@gmail.com

[1] Geo-environment Laboratory FSTGAT, USTHB BP 32 EL ALIA 16111 BAB EZZOUAR ALGIERS. Algeria

## Abstract

Management of water resources with the population growth up; become a challenge to the administrator, in semi-arid areas, the groundwater is the most solicited resources to satisfy population increasing water demand. In this study; we simulate the demand for water supply for population, agricultural and industrial needs for the next 50 year, to get a clear vision about resources and demand, to manage sustainably our water resources. The simulation based on lot of parameters; availability of water resources, population growth, industrial and agricultural activities evolution vs time and space; and this simulation is function of the climate change scenarios. Two study cases were tacked from Algeria, the region of Djelfa and Khemis Miliana; this study is based on data and statistical management; results are given in maps. The results of the simulation confirm a high risk of water shortage in the future because of the increased demand vs decreases of water potentialities, under climate change and perturbation in the hydrologic cycle.

Many solutions are proposed in this research to give a tool to the administrator to think correctly and scientifically to manage better resource by exploring other techniques to reinforce groundwater resources.

**Key words:** Management of water resources, Population growth up, semi-arid area, simulation, Climate change,