



“Gheorghe Asachi” Technical University of Iasi, Romania



IMPACT OF AGRICULTURE ON THE QUALITY OF GROUNDWATER RESOURCES IN PERI-URBAN ZONE OF SONGON (COTE D'IVOIRE)

**Brou Dibi^{1,3}, Kouassi Innocent Kouame¹, Arthur Brice Konan-Waidhet^{1,3},
Issiaka Savane¹, Jean Biemi², Valentin Nedeff³, Gabriel Lazar^{3*}**

¹University of Abobo-Adjamé, Abidjan, Côte d'Ivoire

²University of Cocody, Abidjan, Côte d'Ivoire

³“Vasile Alecsandri” University of Bacau, Romania

Abstract

The expansion of agro-industrial exploitations and the increased use of pesticides is a major concern for the quality of groundwater resources in the Abidjan area. The objective of this study is to assess the global vulnerability to pollution of these resources. Therefore, two methods based on the DRASTIC model were used. These methods are DRASTICLU and DRASTICLU-P in which land use is considered as a parameter, extending to 8 the number of analyze parameters in order to make the results more robust. To assess the significance of different parameters, a sensitivity test has been calculated. Validation of the results was made from the calculation of map error (Er) on the resulting maps, to see which is best suited for this study. The results show that the global vulnerability to pollution remains generally high in the area. These areas of high and very high vulnerability are found on almost all of the study areas, but with a strong presence in center and north. Together, high and very high vulnerability cover almost 84% of the study area. These areas are highly dependent on the recharge, aquifer media, soil media and the vadose zone. The calculation of uncertainties gave relatively high values due to high overall standard deviations. Calculated map errors are 22% and 21.5% respectively for DRASTICLU-P and DRASTICLU. Although these values are substantially equal, show that the DRASTICLU-P method remains the most suitable.

Key words: agriculture; Côte d'Ivoire; DRASTICLU; global vulnerability; groundwater

Received: August, 2012; Revised final: November, 2012; Accepted: December, 2012

* Author to whom all correspondence should be addressed: e-mail: glazar@ub.ro; Phone +(40)234542411