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Groundwater pollution of Essaouira Basin (Morocco), vulnerability mapping of karst aquifers using Geographic Information System (GIS)

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Abstract

The groundwater in the plain of Essaouira Basin constitutes a major natural resource in the region, however the Climate aridity and intensive exploitation due to uncontrolled pumping for irrigation have caused a drastic decrease in the piezometric level of the aquifers in Essaouira basin, and have seriously degraded groundwater quality.
the subject of this study focuses on the Atlantic coast of Morocco in the southeast of the city of Essaouira with average annual rainfall of around 300 mm•year^{-1} and an average temperature of 20˚C .
The study high lights the importance of this resource and several inferences of pollution, either as point sources or diffuse flows, appear. It is therefore necessary to apprehend water vulnerability in terms of sensitivity to pollution in the area, in order to understand and remedy the past situations, and to prevent future problems. The present work assesses the quality of underground waters in Essaouira Basin. Vulnerability maps using the ArcGis software, were developed by the DRASTIC, GOD and SI methods to identify areas of high risk of contamination and, as a result, the study area was subdivided into several units that have different levels of vulnerability.

Key-word: Basin of Essaouira (Morocco), water resources, karst aquifer, vulnerability, GIS, DRASTIC, God, SI.