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[JWARP](#) > Vol.4 No.4, April 2012



## Reassessment of the Resources of a Deep Aquifer System under Physical and Chemical Constraints: The Maastrichtian Aquifer

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### ABSTRACT

The deep and confined Maastrichtian aquifer contains considerable groundwater resources. It stretches over nearly 200,000 km<sup>2</sup>, from the northern part of Mauritania to the South of Guinea Bissau where it becomes shallow. The reservoir is composed mainly of coarse sands and sandstone interbedded with some clay units. The aquifer provides 40% of the total drinking water extracted from the different aquifers and nearly 800 wells equally distributed operate only in the top 50 m of the aquifer. Despite the importance of these resources for providing water in the rural and urban areas, the aquifer characteristics are not well defined. The present paper aims to define first the physical and chemical characteristics of the Maastrichtian aquifer. The reserve of the aquifer initially estimated at 350 billion m<sup>3</sup>, is reassessed using new data providing from cross sections realized as part of our research, through the Water Sectorial Project of the Ministry of Hydraulics. Data from oil wells and geophysical logging are used to investigate the geometry of the aquifer and the position of the fresh/salty water interface. The highest thickness of the aquifer is between 200 to 400 m and salty water is present below the fresh groundwater in the west side of the aquifer. In the Eastern side, potable water lies directly above the basement. The thickness of the aquifer increases from the west to the center, and then decreases towards the shallow basement rock in the South East. The average thickness is 250 m. Chemical data coming from pumping wells indicate high chloride (250 - 1600 mg/l) and fluoride content (1 - 5.5 mg/l). Therefore, the reassessment has to take into account the chemical aspect of the water.

### KEYWORDS

Maastrichtian; Groundwater; Deep Aquifer; Senegalese-Mauritanian Sedimentary Basin; Characteristic; Pollution; Reassessment

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