

Hydrodynamic and hydrochemical characterization of groundwater in agricultural area (case of Agafay farm-Western Haouz) Morocco

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Water resources play an important role in the socio-economic development of the Haouz plain. The agriculture and tourism are two essential components of this development. They represent more than 85% of the water consumption of the Tensift catchment. Under a semi-arid climate, according to hydric stress water used for irrigation essential for most crops, comes from pumping in groundwater from the unconfined aquifer of the Haouz. The use of groundwater for irrigation causes problems of soil degradation by the intensification of salinization processes, sodisation or alkalizing at several degrees. These situations are closely related to the natural characteristics of the environment (soil and climate) and the modalities of water management dedicated for irrigation highly affected by water quality. It is in this sense that the study was conducted in an irrigated citrus orchard drip, located in the western part of Haouz at 35 km of Marrakesh.

The aim of this study is to characterize the area on hydrogeological and hydrochemical point of view, on the basis of a measurement and sampling campaign of thirty wells corresponding to June 2014. The piezometric map shows parallel flow lines oriented northwest. The aquifer recharge is ensured by lateral flow from the High Atlas and by the infiltration from surface water from Chichaoua, Assif El Mal and N'fis rivers.

The low amount of flow rate recorded and measured in the vicinity of the study area at the sensing points are relative to the rise of Paleozoic substratum which reduces the recharge of the aquifer.

On the hydrochemical level, groundwater quality is generally good (86% of cases). The strong mineralization is concentrated mainly in irrigated areas downstream along the flow direction of the aquifer and at the Guemassa substratum.