

## **INTEGRATED HYDROLOGICAL STUDY OF EL KEF PLAIN (NORTH-WESTERN TUNISIA)**

Zied Chikhaoui\*, Rim Trabelsi\*, Kamel Zouari\*

\*Laboratory of Radio-Analysis and Environment \*National School of Engineering of Sfax, ENIS, Tunisia Mail: zied.chikhaoui,ing@gmail,com



## I. INTRODUCTION

- North Tunisia : Arid / Semi-Arid Climate;
  - Renewable Water Resources are Limited
- El Kef area, North-Western Tunisia, has witnessed a substantial increase in both population and agricultural activities in the last decades;
  - Increase in water demands
- Climatic and anthropogenic changes are affecting the stocks of groundwater as well as its quality;
  - Better Resource Management & Good Planning of Aquifer Exploitation

that the region is surrounded



## **II. METHOD AND ANALYSIS**

A total of 60 groundwater samples was collected from boreholes tapping MPQ shallow aquifer during the years 2018 and 2019 (Fig. 2). All chemical and isotope analyses were performed at the Laboratory of Radio-Analyses and Environment of the National Engineering School of Sfax. Analyses of major ions was performed by liquid-ion chromatography, stable isotopes are measured using liquid water isotope Analyzer LGR-ABB. Tritium contents was determined through Liquid scintillation counting. The vertical electrical sounding (VES), data acquired from the regional commissary for agricultural

measure in situ rocks resistivity.

The elements (Cl<sup>-</sup>, Na<sup>+</sup>) and (SO<sub>4</sub><sup>2-</sup>, Ca<sup>2+</sup>) are well correlated with saturation indexes of halite and gypsum, respectively (Fig.5). Therefore the dissolution of these evaporate minerals is the main contributor to



## **IV. CONCLUSION**

- El Kef plain appears to be a roughly rectangular-shaped basin filled with alluvial materials (Mio-plio-quaternary) with two hydraulically independent zones (one on the east and one on the west).

-Groundwater mineralization in El Kef shallow aquifer is controlled by the dissolution of evaporates and the cationic exchange with clayey minerals.

-The isotopic investigation indicates that the most significant recharge process is carried out through direct infiltration of recent meteoric water.

-The study has also shown the presence of evaporation process, characteristic of areas with sparse vegetation, bare soil, "shallow groundwater" and dry climatic conditions.

zied.chikhaoui.ing@gmail.com