Physical and Chemical Quality of Surface Waters of the Wilaya de Bouira (Northern Algeria)

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Keywords
Bouira • Surface waters • Wadis • Water quality • Nitrogen • Major elements

1 Introduction

In Algeria, considerable efforts have been made to best meet the water needs of the population and to ensure that the needs of an economic development are met. This sector is the subject of particular attention by the public authorities, which are devoting increasingly important resources to it.

2 Materials and Methods

2.1 Description of the Study Zone

The willaya of Bouira is a town in Algeria, with a population of 88,801. It is located 98 km south-east of Algiers. It is located about 119 km southeast of Algiers and south of the Djurdjura range in the Tellian Atlas (Fig. 1).

2.2 The Hydrographic Network

The willaya of Bouira is located in the two watersheds:

- The Isser basin, composed of 05 sub-basins, covers an area of 4149 km^2. The wadi of the same name flowing from the south to the north constitutes the principal river of the basin.
- The Soummam basin, composed of 10 sub-basins, has an area of 9 125 km^2. The main drainage system of the basin comprises from the west to the east, the Oued Sahel and Bou Sellam and their tributaries.

3 Results and Discussion

The results of the water analysis of the fifty-one sites are represented by histograms, by a multivariate analysis and by a cartographic mode (Figs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 12, 13, 14 and 15).

Nitrate pollution and high turbidity separates the sites. There is a link to continue and extend this work so that a regular biomonitoring of payroll hydrosystems is initiated. The development of biotic indexes has to be developed in order to reduce and ensure the cost and reliability of such monitoring.

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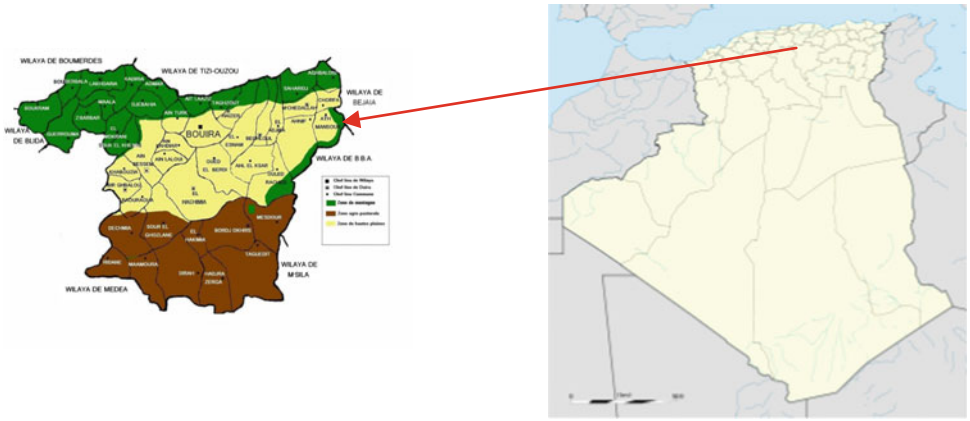

Fig. 1 Location of La wilaya de Bouira

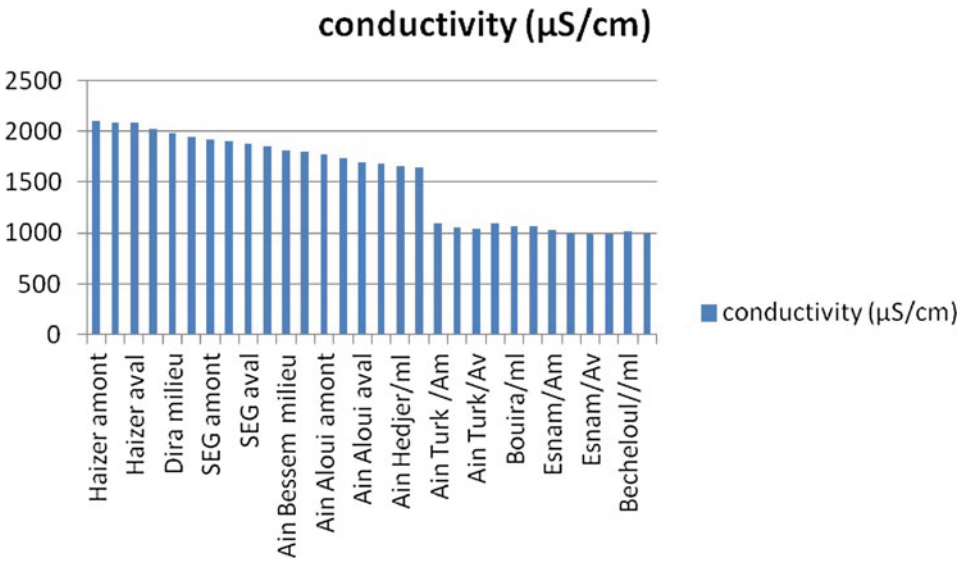

Fig. 2 Variation of the conductivity between the studied sites

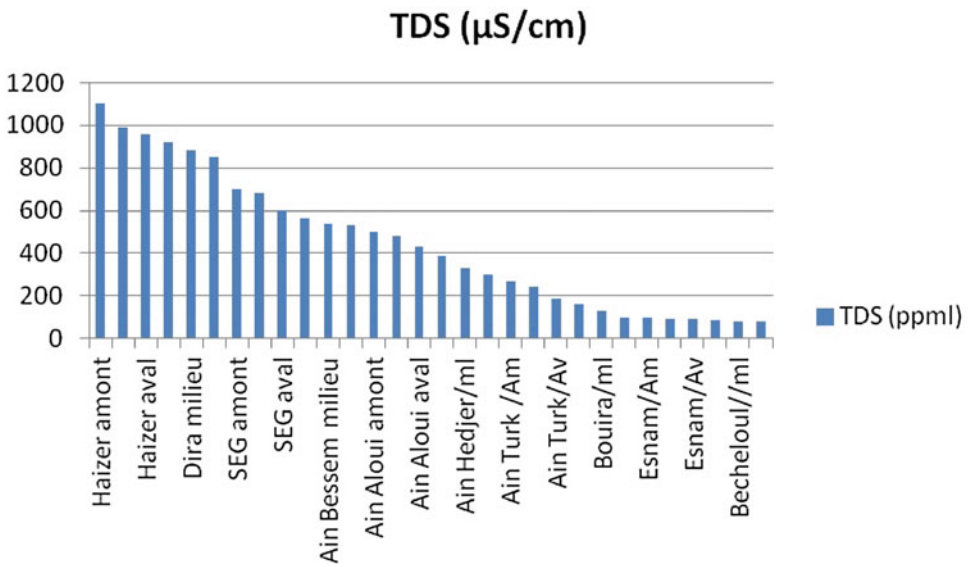

Fig. 3 Variation of the TDS tenure between the studied sites

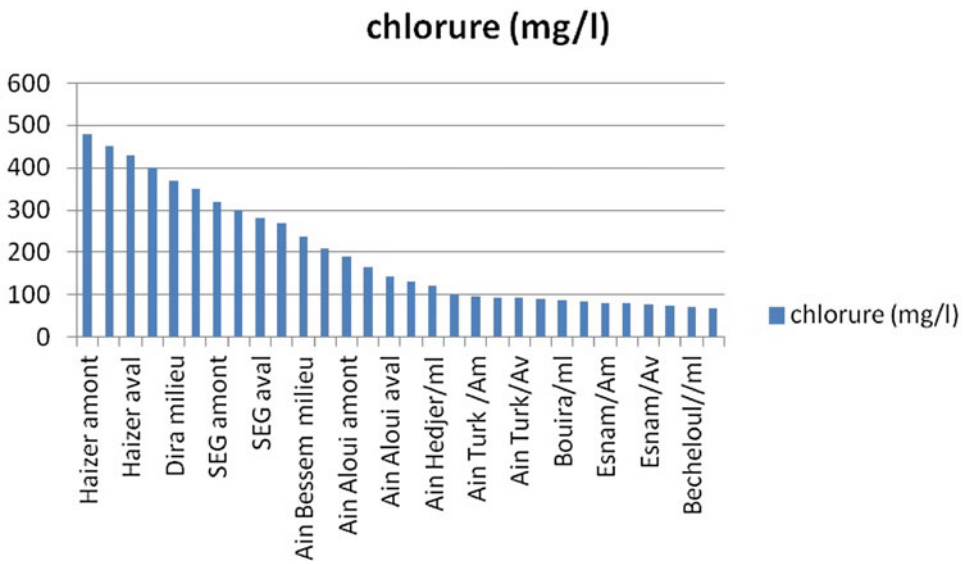

Fig. 4 Chloride tenure variation between sites studied

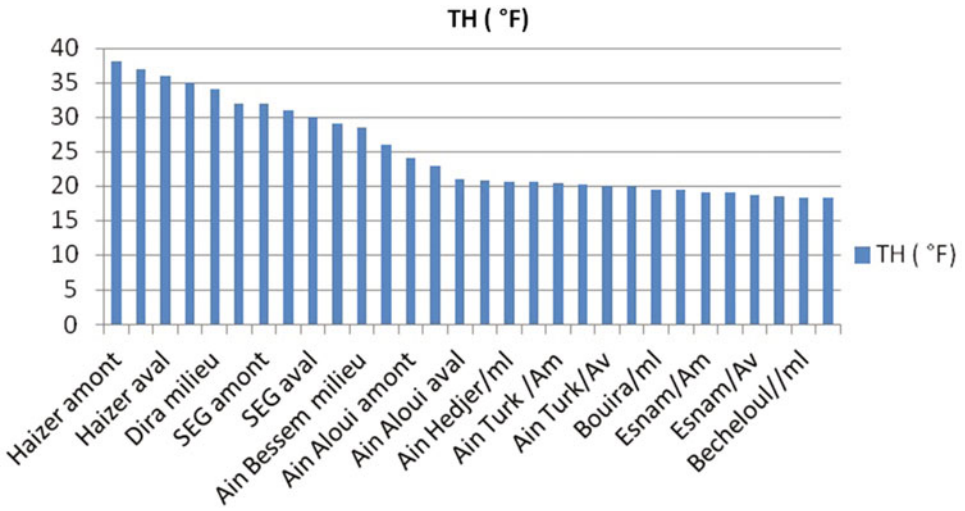

Fig. 5 Variation of hydrometric title between the sites studied

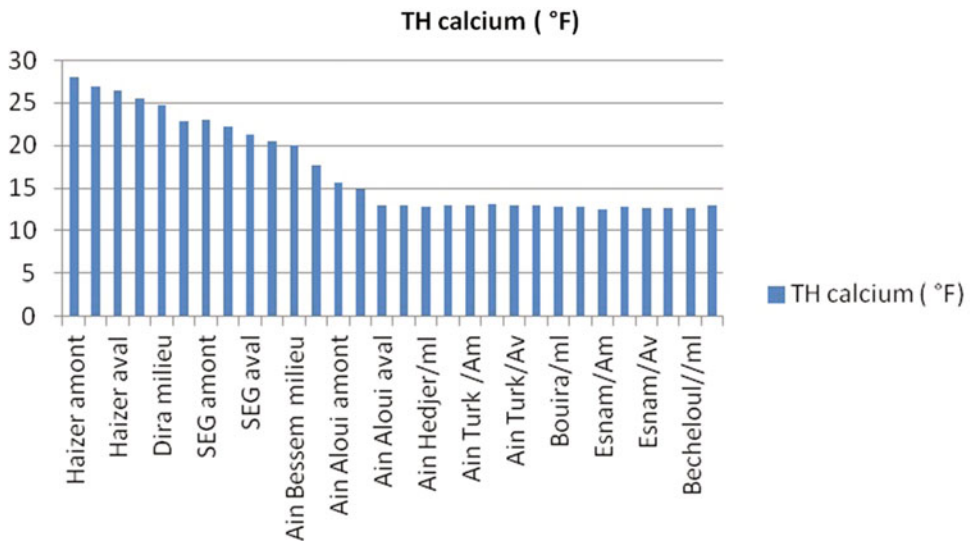

Fig. 6 Variation of the tenure in calcium TH between the studied sites

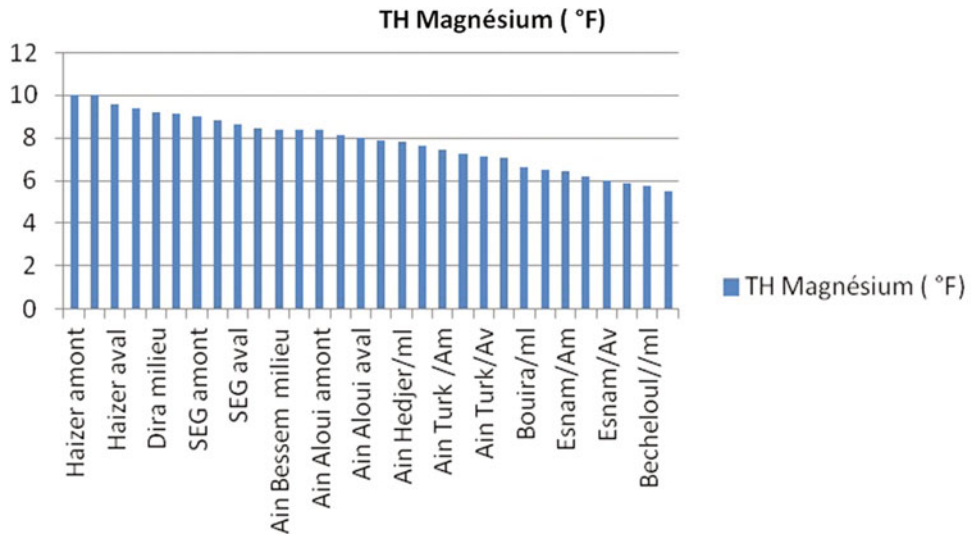

Fig. 7 Variation of the magnesium TH tenure between the sites

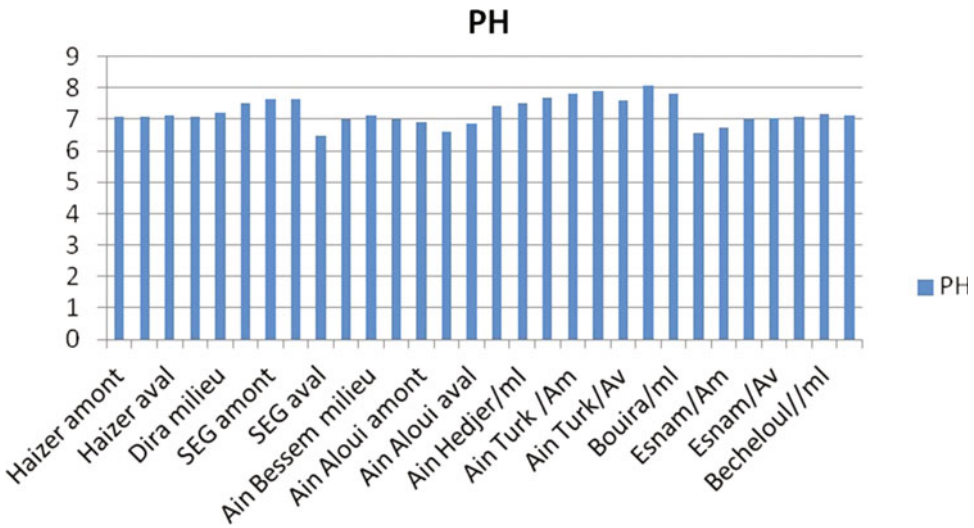

Fig. 8 pH variation between study sites

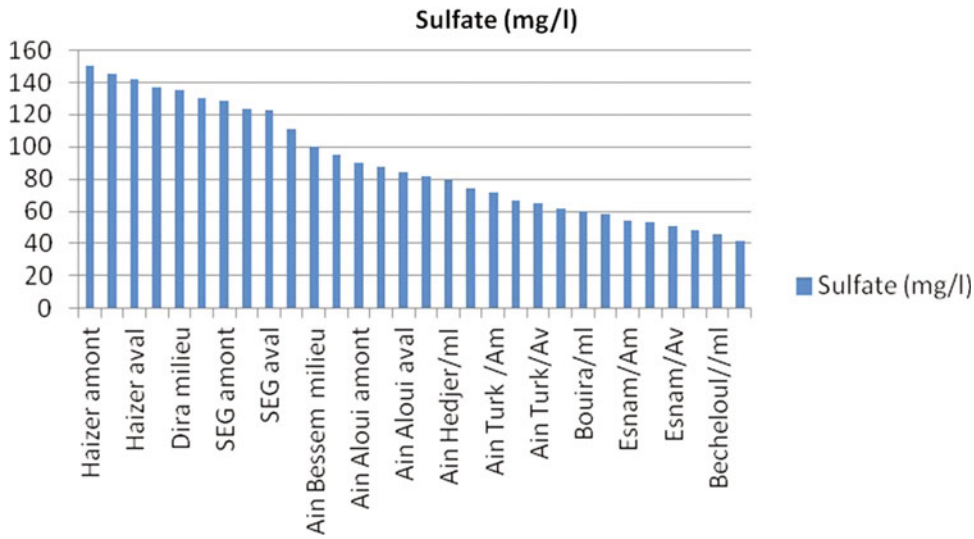

Fig. 9 Variation in the sulfate content between the sites studied

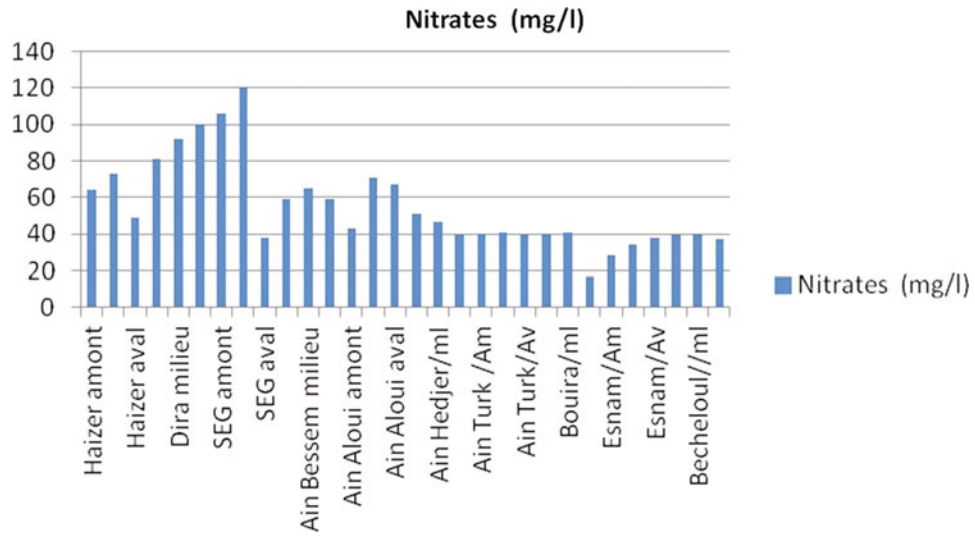

Fig. 10 Variation of nitrate content between sites studied

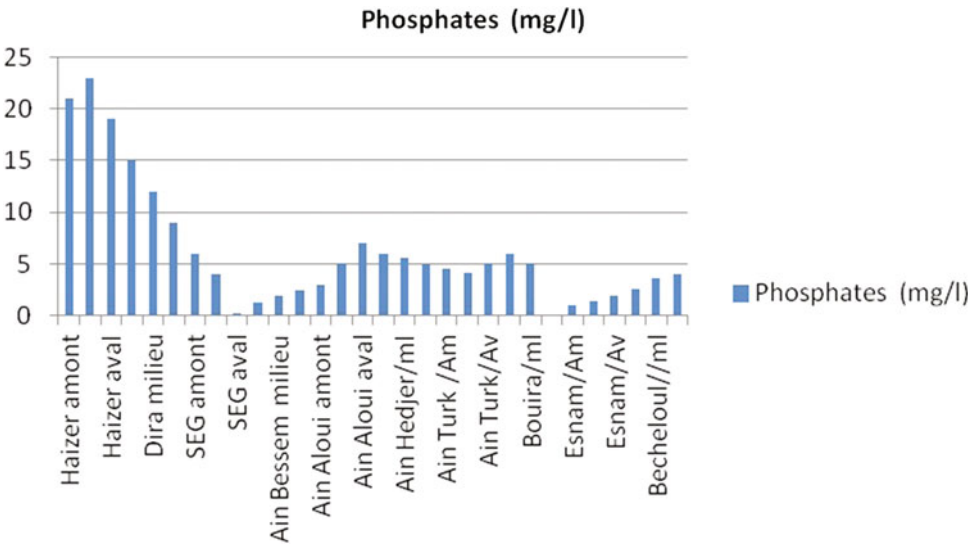

Fig. 11 variation of the phosphate content between the studied sites

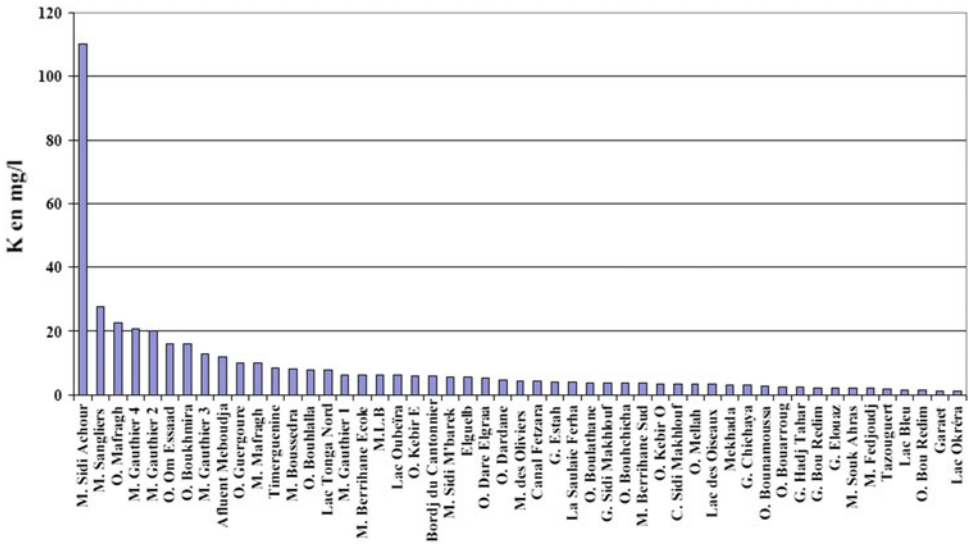

Fig. 12 Variation of potassium content between sites studied

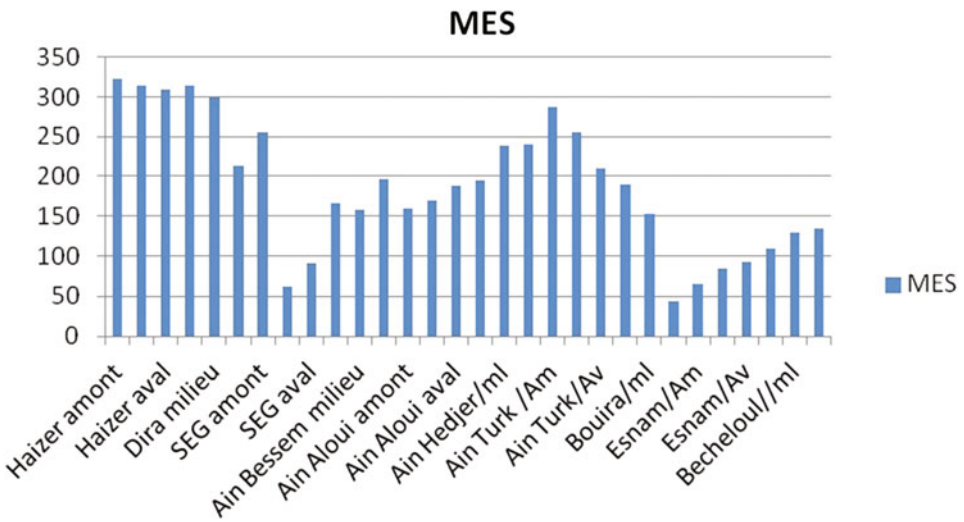

Fig. 13 Variation of MES content between sites studied

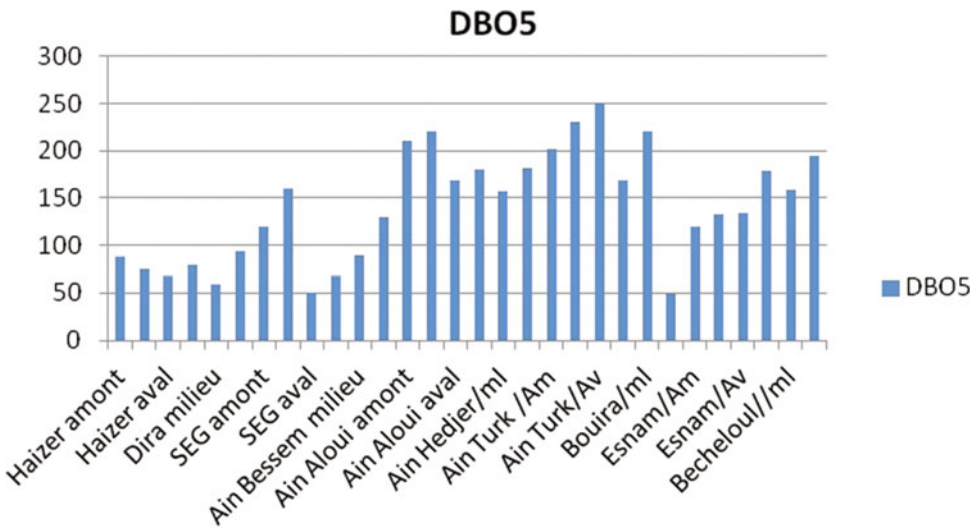

Fig. 14 Variation of DBO5 content between sites studied

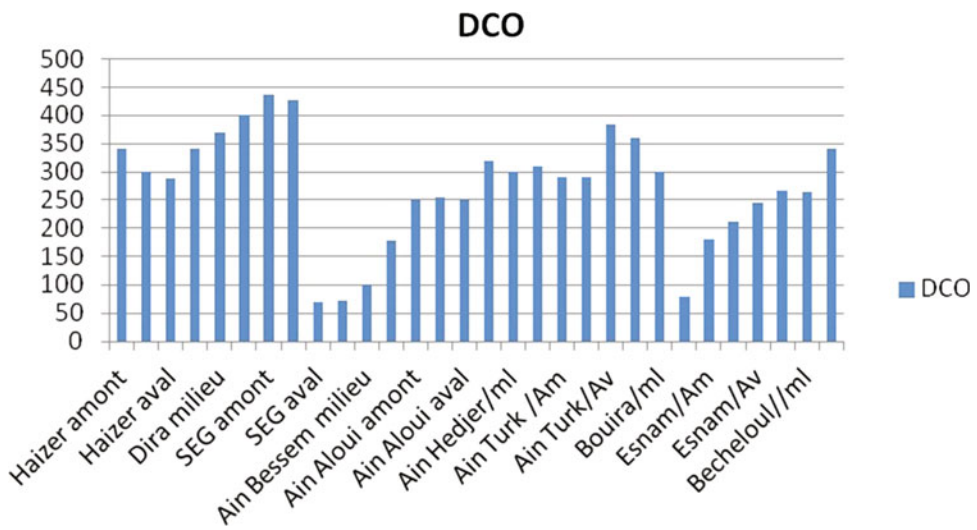

Fig. 15 Variation of DCO content between sites studied

4 Conclusion

Pollution under various traits (organic or chemical) plays a predominant role in the typology of the hydro-systems in the region. Our data distinguish high phosphate and potassium sites from other sites.

Indeed, this site is subject to the discharge of the domestic and agricultural wastewater, our data indicate that gastropods can act as biological markers of this type of pollution.

References

Barth C, Perron J. Guide d'interprétation des parametres microbiologiques d'intérét dans le domaine de l'eau potable. 1998.

Benson BB, Krause D. The concentration and isotopie fractionation of oxygen. Limnol 1984; 620–30.

Brault JI. Spécificité de l'eutrophisation des lacs et révieres. Adour-Garonne. 1989;4:20–3.

Cheverry C. Agriculture intensive et quaité des eaux. INRA Editions. 1988.

Djafer khodja H. Contribution to the management of water resources watershed of Isser (Algeria), IPCBEE vol. 91. 2016. p. 86, ISSN 2010-4618.

Georges G. Gestion intégrée de l'eau par bassin versant conception et application. 1998.

Jure M. Directives pour l'approche intégrée au développement, a la gestion et a l'utilisation des ressources en eau. 1998. p. 167.

Ministère des Ressources en eaux Etude d'actualisation du Plan National de l'Eau en Algérie, Alger. 2016.