

Accepted Manuscript

Contribution of GIS to evaluate surface water pollution by heavy metals: Case of Ichkeul Lake (Northern Tunisia)

Amira YAZIDI, Salwa SAIDI, Nabiha BEN. MBAREK, Fadila DARRAGI



PII: S1464343X17302650

DOI: [10.1016/j.jafrearsci.2017.06.009](https://doi.org/10.1016/j.jafrearsci.2017.06.009)

Reference: AES 2932

To appear in: *Journal of African Earth Sciences*

Please cite this article as: Amira YAZIDI, Salwa SAIDI, Nabiha BEN. MBAREK, Fadila DARRAGI, Contribution of GIS to evaluate surface water pollution by heavy metals Case of Ichkeul Lake (Northern Tunisia), *Journal of African Earth Sciences* (2017), doi: 10.1016/j.jafrearsci.2017.06.009

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Contribution of GIS to evaluate surface water pollution by heavy metals: Case of Ichkeul Lake (Northern Tunisia)

Amira YAZIDI¹, Salwa SAIDI^{1,2}, Nabiha BEN MBAREK³ and Fadila DARRAGI¹

¹ Faculty of Sciences of Tunis, University Tunis El Manar, PB 2092 Manar II, Tunisia

² Laboratory 3E, Sfax, National School of Engineers, PB 1173, 3038, Univ. of Sfax, Tunisia

³ National Agency for the Protection of Environment (ANPE) Tunis, Tunisia

Emails: yazidiamira@gmail.com, salwa_saidi@yahoo.fr, nabiha_2003@yahoo.fr, fadila.darragi@gmail.com

ABSTRACT

The concentrations of nutrients and heavy elements in the surface water of the lake Ichkeul, main wadis which feed directly and thermal springs that flow into the lake, are measured to evaluate these chemical elements. There are used to highlight the interactions between these different aquatic compartments of Ichkeul. All metal concentrations in lake water, except Cu, were lower than the maximum permitted concentration for the protection of aquatic life. The results show that the highest concentrations are located in the eastern and south-eastern part of the lake where the polluted water comes from the lagoon of Bizerte through the wadi Tinja as well as from the city of Mateur through the wadi Joumine. The pollution indices and especially the heavy metal evaluation index (HEI) show high pollution specially located at the mouths of wadis and an increase of heavy metal concentrations, as a result of uncontrolled releases of domestic and industrial wastewater.

Keywords: Ichkeul Lake, wadis, thermal springs, heavy metals, GIS, Interpolation, pollution indices.

1. Introduction

Ichkeul Lake, object of this study, is situated in northern Tunisia, located at 20 kilometers from Bizerte. The area is recognized as the most important single wetland in North Africa (IUCN 1978). The lake is a major stopover point for hundreds of thousands of migrating birds and supports an abundance of fish (Ramsar, 2012). The lake covers 8500 hectares (85 km²), and the Park also includes a further 2740 ha (27.4 km²) of marshes and a mountain area of 13.6 km² that includes mountain Ichkeul. It is a national park ranked as a RAMSAR site, a Biosphere Reserve (Man And Biosphere), and a UNESCO World Heritage

Download English Version:

<https://daneshyari.com/en/article/5785549>

Download Persian Version:

<https://daneshyari.com/article/5785549>

[Daneshyari.com](https://daneshyari.com)