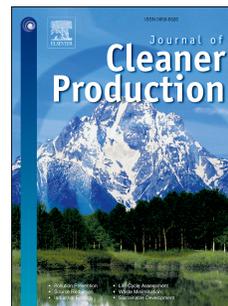


# Accepted Manuscript

A multi-objective artificial bee colony-based optimization approach to design water quality monitoring networks in river basins

Carlos J. Pérez, Miguel A. Vega-Rodríguez, Klara Reder, Martina Flörke



PII: S0959-6526(17)31776-6

DOI: [10.1016/j.jclepro.2017.08.060](https://doi.org/10.1016/j.jclepro.2017.08.060)

Reference: JCLP 10318

To appear in: *Journal of Cleaner Production*

Received Date: 24 April 2017

Revised Date: 13 July 2017

Accepted Date: 7 August 2017

Please cite this article as: Pérez CJ, Vega-Rodríguez MA, Reder K, Flörke M, A multi-objective artificial bee colony-based optimization approach to design water quality monitoring networks in river basins, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.08.060.

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.

# A multi-objective artificial bee colony-based optimization approach to design water quality monitoring networks in river basins

Carlos J. Pérez<sup>a,\*</sup>, Miguel A. Vega-Rodríguez<sup>b</sup>, Klara Reder<sup>c</sup>, Martina Flörke<sup>c</sup>

<sup>a</sup>*Facultad de Veterinaria, Universidad de Extremadura, Avda. de la Universidad s/n, 10003 Cáceres, Spain.*

<sup>b</sup>*Escuela Politécnica, Universidad de Extremadura, Avda. de la Universidad s/n, 10003 Cáceres, Spain.*

<sup>c</sup>*Center for Environmental Systems Research, Wilhelmshöher Allee 47, 34117 Kassel, Germany.*

---

## Abstract

Water quality monitoring is important for the management of freshwater resources in river basins. Allocation of monitoring stations is the first step in the design of a water quality network. For this task, planning objectives are identified and a Multi-Objective Artificial Bee Colony-based optimization algorithm is **designed and implemented** in a Geographic Information System framework. Specifically, the number of stations is minimized in a range of values at the same time that the detection of lower compliance areas, the affected population and the relative importance of the river stretches are maximized. **The estimation of pollutant parameters such as Biochemical Oxygen Demand, Faecal Coliform Bacteria or To-**

---

\*Corresponding author

*Email addresses:* carper@unex.es (Carlos J. Pérez), mavega@unex.es (Miguel A. Vega-Rodríguez), reder@usf.uni-kassel.de (Klara Reder), floerke@usf.uni-kassel.de (Martina Flörke)

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات