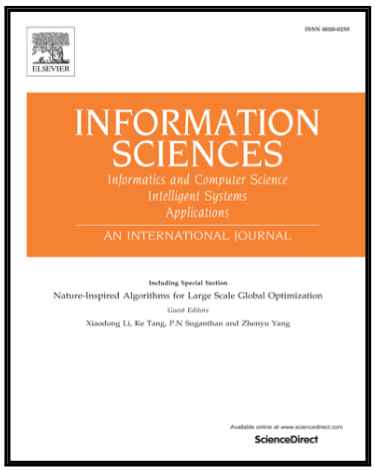
Accepted Manuscript



The early-warning system based on hybrid optimization algorithm and fuzzy synthetic evaluation model

Ranran Li , Yu Jin

PII: S0020-0255(16)32254-X
DOI: 10.1016/j.ins.2017.12.040
Reference: INS 13334

To appear in: *Information Sciences*

Received date: 29 December 2016
Revised date: 17 November 2017
Accepted date: 25 December 2017

Please cite this article as: Ranran Li , Yu Jin , The early-warning system based on hybrid optimization algorithm and fuzzy synthetic evaluation model, *Information Sciences* (2017), doi: 10.1016/j.ins.2017.12.040

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.

ACCEPTED MANUSCRIPT

The early-warning system based on hybrid optimization algorithm and fuzzy synthetic evaluation model

Ranran Li[a], Yu Jin[a,*]

[a]*School of Statistics of Dongbei University of Finance and Economics, Dalian 116025, China; lirandufe@163.com*

**Corresponding author. Address: School of Statistics of Dongbei University of Finance and Economics, Dalian 116025, China*
E-mail address: jinyudc@dufe.edu.cn

Abstract

Portending and mastering the atmospheric quality plays a significant role in polishing up people's daily life and preventing the environment against serious pollution because air pollution has exceeded the international warning level. Since, accurate contaminants concentration forecasting and objective evaluation, which is urgent to establish an early-warning system, is a critical issue for the social community. An early-warning framework based on two modules composed of forecasting part and assessment part is proposed and successfully adopted in this paper. The forecasting part is applied to a hybrid optimization model with improved Harmony Search Algorithm with PSO strategy to forecast air contaminants concentration, while the assessment part is applied to Fuzzy Synthetic Evaluation Model with entropy weight to evaluate the air quality levels. The proposed early-warning system was investigated in three cities of Jing-Jin-Ji region of China where there exists serious air pollution for the period August 1st 2015 to September 29st 2016. The findings showed that the forecasting model is greatly superior to statistical model and other models on the urban pollutant concentration data. According to the results of air quality assessment, the evaluation model based on the entropy technique can objectively assess the atmospheric quality level.

Key words: air pollution evaluation; air pollution forecast; Fuzzy synthetic evaluation; entropy technique; early-warning; air quality level

ACCEPTED MANUSCRIPT

Download English Version:

https://daneshyari.com/en/article/6856700

Download Persian Version:

https://daneshyari.com/article/6856700

Daneshyari.com