

# Accepted Manuscript

Evaluation of periodicities and fractal characteristics by wavelet analysis of well log data

Man-Hyok Song, Kyong-Ho Li, Song-Nam Kim

PII: S0098-3004(17)31137-8

DOI: [10.1016/j.cageo.2018.05.002](https://doi.org/10.1016/j.cageo.2018.05.002)

Reference: CAGEO 4127

To appear in: *Computers and Geosciences*

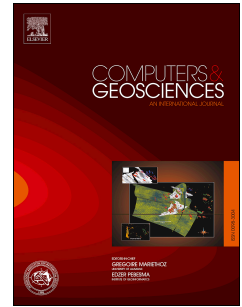
Received Date: 1 November 2017

Revised Date: 18 April 2018

Accepted Date: 3 May 2018

Please cite this article as: Song, M.-H., Li, K.-H., Kim, S.-N., Evaluation of periodicities and fractal characteristics by wavelet analysis of well log data, *Computers and Geosciences* (2018), doi: 10.1016/j.cageo.2018.05.002.

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.



## 1 Evaluation of periodicities and fractal characteristics by wavelet analysis of well log data

3 **Authors**4 Man-Hyok Song<sup>1</sup>, [smh76617@star-co.net.kp](mailto:smh76617@star-co.net.kp)5 Kyong-Ho Li<sup>2</sup>, [lkh8477@star-co.net.kp](mailto:lkh8477@star-co.net.kp)6 Song-Nam Kim<sup>1</sup>, [ksn6967@star-co.net.kp](mailto:ksn6967@star-co.net.kp)7 <sup>1</sup>Kim Chaek University of Technology, Pyongyang, Democratic People's Republic of Korea, 9990938 <sup>2</sup>Hwangbuk University, Sariwon, Democratic People's Republic of Korea, 999093

10 Corresponding Author: Man-Hyok Song

11 Phone Number: 0085023811811

12 Fax: 0085023814410

13 Mail contact: [smh76617@star-co.net.kp](mailto:smh76617@star-co.net.kp)15 **ABSTRACT**

16 Stratigraphic cycles are controlled by both deterministic and stochastic factors and commonly have  
17 both cyclic periodicities and fractal characteristics. A significant issue in stratigraphy is to be able both  
18 to evaluate the stochastic fractal trend and to detect periodic components such as Milankovitch cycles  
19 in stratigraphic records. In this context we propose the use of the relative wavelet spectrum, the  
20 wavelet-based spectral ratio, and the relative scalogram to detect dominant periods against fractal  
21 trends in stratigraphic records. Our method uses the relationships of the various kinds of wavelet-based  
22 spectra and classical power spectra. Application of the proposed method to synthetic data ( periodic

Song, M.H. compared spectra based on FT and wavelet and proposed the relative wavelet spectrum and relative scalogram. Li, K.H. applied new SNR to synthesize signals consisting of sine components and FBMs and studied the relationship between the SNR and the relative spectral value. Kim, S.N. applied the method to well log data analysis.

Download English Version:

<https://daneshyari.com/en/article/6922049>

Download Persian Version:

<https://daneshyari.com/article/6922049>

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