Geophysical Research Abstracts
Vol. 15, EGU2013-13569, 2013
EGU General Assembly 2013

Automatic lithofacies segmentation from well-logs data. A comparative study between the Self-Organizing Map (SOM) and Walsh transform

Leila Aliouane (1,2), Sid-Ali Ouadfeul (3), Abdessalem Rabhi (1), Fouzi Rouina (1), Zahia Benaissa (2), and Amar Boudella (2)

(1) Labophyt, Faculté des Hydrocarbures et de la Chimie, Université M'hamed Bougara de Boumerdes. Avenue de l'indépendance, Boumerdes, Algeria., (2) Geophysics Department, FSTGAT, USTHB, Algiers, Algeria., (3) Algerian Petroleum Institute, IAP, Algeria

The main goal of this work is to realize a comparison between two lithofacies segmentation techniques of reservoir interval. The first one is based on the Kohonen's Self-Organizing Map neural network machine. The second technique is based on the Walsh transform decomposition. Application to real well-logs data of two boreholes located in the Algerian Sahara shows that the Self-organizing map is able to provide more lithological details that the obtained lithofacies model given by the Walsh decomposition.

Keywords: Comparison, Lithofacies, SOM, Walsh
References:

1)Aliouane, L., Ouadfeul, S., Boudella, A., 2011, Fractal analysis based on the continuous wavelet transform and lithofacies classification from well-logs data using the self-organizing map neural network, Arabian Journal of geosciences, doi: 10.1007/s12517-011-0459-4
2) Aliouane, L., Ouadfeul, S., Djarfour, N., Boudella, A., 2012, Petrophysical Parameters Estimation from Well-Logs Data Using Multilayer Perceptron and Radial Basis Function Neural Networks, Lecture Notes in Computer Science Volume 7667, 2012, pp 730-736, doi : 10.1007/978-3-642-34500-5_86
3)Ouadfeul, S. and Aliouane., L., 2011, Multifractal analysis revisited by the continuous wavelet transform applied in lithofacies segmentation from well-logs data, International journal of applied physics and mathematics, Vol01 N01.
4) Ouadfeul, S., Aliouane, L., 2012, Lithofacies Classification Using the Multilayer Perceptron and the Self-organizing Neural Networks, Lecture Notes in Computer Science Volume 7667, 2012, pp 737-744, doi : 10.1007/978-3-642-34500-5_87
5) Weisstein, Eric W. "Fast Walsh Transform." From MathWorld–A Wolfram Web Resource. http://mathworld.wolfram.com/FastWalshTransform.html