Geophysical Research Abstracts, Vol. 9, 03055, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03055

Modeling of stratigraphic columns using Markov Chains, Gibbs Sampling and Metropolis-Hasting algorithms, Campo Lama, Venezuela

M. B. Soto (1), **M. Aldana** (2)

(1)Landmark México, (2) Simón Bolívar University, Venezuela
(maldana@usb.ve/Fax:+58-212-9063503)

We have stochastically characterized a reservoir that consists of a sedimentary sequence of interbeded sandstones, shales and siltstones layers. The stratigraphic unit studied is part of the C4 sandstones of the Misoa Formation, Campo Lama, Maracaibo Lake, Venezuela. Using the information of 12 wells in the area, we have modeled stratigraphic columns applying Markov Chains, Metropolis-Hastings and Gibbs algorithms in 20 new locations. From the 32 stratigraphic columns, that includes the original and the pseudo ones, net sandstones maps were generated. The results were compared with previous studies in the area. The Markov Chains approach allowed to obtain the main net sand content in the area, indicating zones of major contents that follow a N-W trend orientation and are in agreement with previously sedimentary results. In this case, also subtle vertical alternations of facies can be inferred in the pseudo-columns. Although the Metropolis-Hasting algorithm also indicates the main variations of net sand content in the area, it does not have the sensibility to model the presence of minor shale and siltstones layers, that should also be present in the stratigraphic columns. Finally, the Gibbs algorithm applied here depends on the input data and the results obtained do not represent the main facies alternation or net sand behaviour in the area.